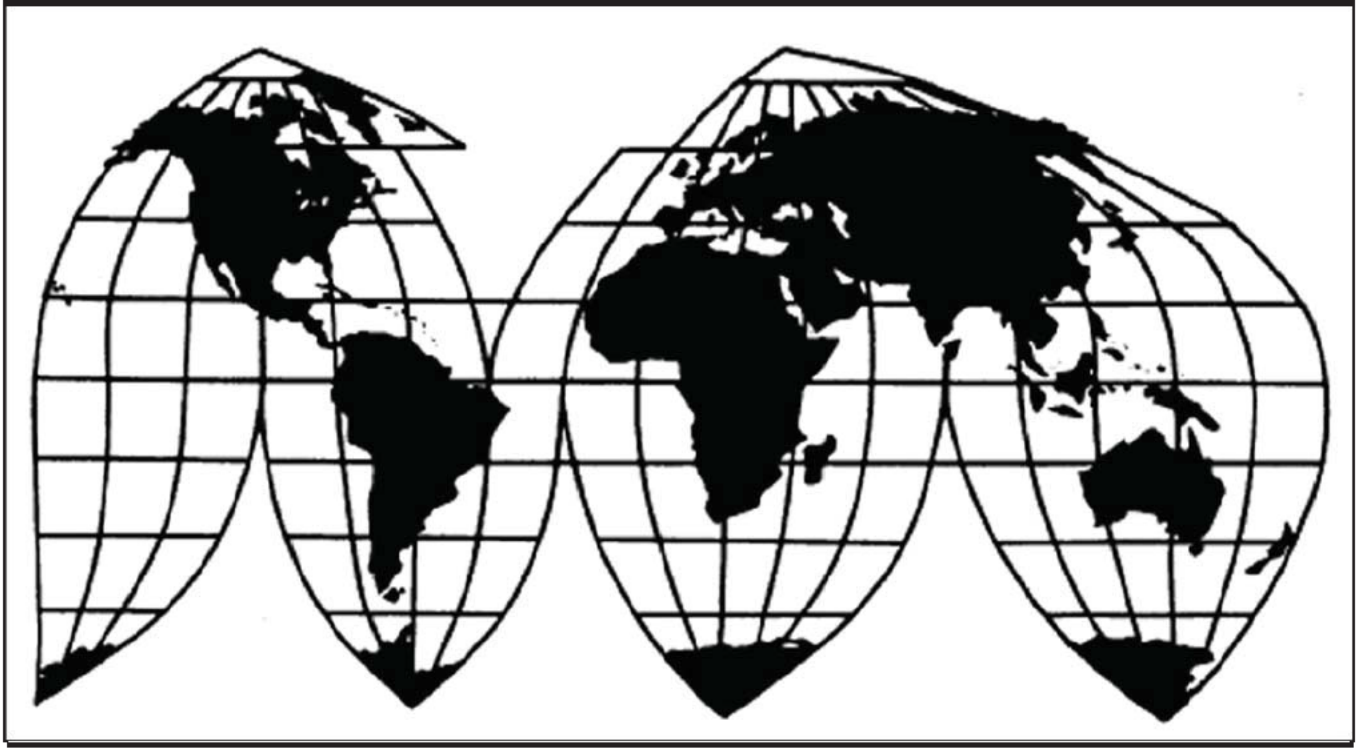
In the Matter of

CERTAIN PERSONAL DATA AND MOBILE COMMUNICAITON DEVICES AND RELATED SOFTWARE

Investigation No. 337-TA-710

Publication 4331 **June 2012**

U.S. International Trade Commission



Washington, DC 20436

U.S. International Trade Commission

COMMISSIONERS

Deanna Tanner Okun, Chairman
Irving A. Williamson, Vice Chairman
Daniel R. Pearson, Commissioner
Shara L. Aranoff, Commissioner
Dean A. Pinkert, Commissioner
David S. Johanson, Commissioner*

***Commissioner Johanson was sworn in on December 8, 2011; he did not participate in this investigation.**

Address all communications to
Secretary to the Commission
United States International Trade Commission
Washington, DC 20436

U.S. International Trade Commission

Washington, DC 20436
www.usitc.gov

In the Matter of

CERTAIN PERSONAL DATA AND MOBILE COMMUNICAITON DEVICES AND RELATED SOFTWARE

Investigation No. 337-TA-710

Publication 4331

June 2012

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN PERSONAL DATA AND MOBILE COMMUNICATIONS DEVICES AND RELATED SOFTWARE**	**Investigation No. 337-TA-710**

NOTICE OF THE COMMISSION'S FINAL DETERMINATION FINDING A VIOLATION OF SECTION 337; ISSUANCE OF A LIMITED EXCLUSION ORDER; TERMINATION OF THE INVESTIGATION

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has found a violation of section 337 in this investigation and has issued a limited exclusion order prohibiting importation of infringing personal data and mobile communications devices and related software. The Commission has determined that exclusion of articles subject to this order shall commence on April 19, 2012.

FOR FURTHER INFORMATION CONTACT: Sidney A. Rosenzweig, Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 708-2532. Copies of non-confidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-2000. General information concerning the Commission may also be obtained by accessing its Internet server at *http://www.usitc.gov*. The public record for this investigation may be viewed on the Commission's electronic docket (EDIS) at *http://edis.usitc.gov*. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on (202) 205-1810.

SUPPLEMENTARY INFORMATION: The Commission instituted this investigation on April 6, 2010, based on a complaint filed by Apple Inc., and its subsidiary NeXT Software, Inc., both of Cupertino, California (collectively, "Apple"), alleging a violation of section 337 in the importation, sale for importation, and sale within the United States after importation of certain personal data and mobile communications devices and related software that infringe certain U.S. patents. 75 *Fed. Reg.* 17434 (Apr. 6, 2010). The notice of investigation named as respondents

High Tech Computer Corp. of Taoyuan City, Taiwan and its United States subsidiaries HTC America Inc. of Bellevue, Washington, and Exedia, Inc. of Houston, Texas (collectively, "HTC").

Several patents that had been asserted by Apple in this investigation were earlier asserted by Apple in Investigation No. 337-TA-704 against Nokia Corp. of Espoo, Finland and Nokia Inc. of White Plains, New York (collectively, "Nokia"). On motion by the Commission investigative attorney ("IA") in the 704 investigation and by the respondents in both investigations, the Chief ALJ transferred Apple's assertion of overlapping patents against Nokia from the 704 investigation into the 710 investigation. *See* Inv. No. 337-TA-704, Order No. 5 (Apr. 26, 2010). However, Apple and Nokia entered a settlement agreement, and on July 21, 2011, the Commission determined not to review the presiding ALJ's termination of the investigation as to Nokia in the 710 investigation based on settlement.

On July 15, 2011, the ALJ issued the final ID. By that time, the investigation had narrowed to certain claims of four patents: claims 1, 3, 8, 15, and 19 of U.S. Patent No. 5,946,647 ("the '647 patent"); claims 1, 2, 24, and 29 of U.S. Patent No. 6,343,263 ("the '263 patent"); claims 1, 5, and 6 of U.S. Patent No. 5,481,721 ("the '721 patent"); and claims 1 and 7 of U.S. Patent No. 6,275,983 ("the '983 patent"). The final ID found a violation of section 337 by HTC by virtue of the infringement of claims 1, 8, 15, and 19 of the '647 patent, and claims 1, 2, 24, and 29 of the '263 patent. The final ID found that claim 3 of the '647 patent was not infringed. In addition, the final ID found that Apple had demonstrated neither infringement nor Apple's own practice (for purposes of establishing the existence of a domestic industry) of claims 1, 5, and 6 of the '721 patent and claims 1 and 7 of the '983 patent. The final ID concluded that HTC had not demonstrated that any of the asserted patent claims were invalid. The ALJ recommended the issuance of a limited exclusion order but that zero bond be posted during the Presidential review period.

HTC, Apple, and the IA each petitioned for review of the final ID. On September 15, 2011, the Commission determined to review several issues regarding each of the four patents asserted in this investigation. 76 *Fed. Reg.* 58,537 (Sept. 21, 2011). The parties filed briefing on the issues under review, remedy, the public interest, and bonding. In addition, the following non-parties submitted comments on the public interest: the Association for Competitive Technology; Google Inc.; and T-Mobile USA., Inc. ("T-Mobile").

Having examined the record of this investigation, including the ALJ's final ID and the aforementioned briefing and comments, the Commission has determined that there is a violation of section 337 by reason of the importation and sale of articles that infringe claims 1 and 8 of the '647 patent. The Commission has determined to reverse the ALJ's finding of violation as to claims 15 and 19 of the '647 patent and as to the asserted claims of the '263 patent. The Commission affirms the ALJ's conclusion that there has been no violation as to the '721 and '983 patents.

The Commission has further determined that the appropriate remedy is a limited exclusion order prohibiting the entry of personal data and mobile communications devices and related software that infringe claims 1 or 8 of the '647 patent. The Commission has also determined that the public

interest factors enumerated in section 337(d), 19 U.S.C. § 1337(d), do not preclude the issuance of the limited exclusion order. Notwithstanding the foregoing, the Commission has determined that based on consideration of competitive conditions in the United States economy, the exclusion of articles subject to the order shall commence on April 19, 2012 to provide a transition period for U.S. carriers. In addition, the Commission has determined, based on consideration of the effect of exclusion on United States consumers, that until December 19, 2013, HTC may import refurbished handsets to be provided to consumers as replacements under warranty or an insurance contract (whether the warranty or contract is offered by HTC, a carrier, or by a third party). This exemption does not permit HTC to call new devices "refurbished" and to import them as replacements. The Commission has determined not to issue a cease and desist order and that zero bonding is required during the period of Presidential review, 19 U.S.C. § 1337(j). The investigation is terminated.

The Commission's order and opinion were delivered to the President and the United States Trade Representative on the day of their issuance.

The authority for the Commission's determination is contained in section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and in sections 210.42-46 and 210.50 of the Commission's Rules of Practice and Procedure (19 C.F.R. §§ 210.42-46 and 210.50).

By order of the Commission.

James R. Holbein
Secretary to the Commission

Issued: December 19, 2011

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of	
CERTAIN PERSONAL DATA AND MOBILE COMMUNICATION DEVICES AND RELATED SOFTWARE	**Inv. No. 337-TA-710**

LIMITED EXCLUSION ORDER

The Commission has determined that there is a violation of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, in the unlawful importation, sale for importation, or sale in the United States after importation by Respondents High Tech Computer Corp., HTC America, Inc. and Exedia, Inc. (collectively "Respondents") of certain personal data and mobile communication devices and related software that infringe claims 1 or 8 of U.S. Patent No. 5,946,647 ("the '647 patent"). Having reviewed the record in this investigation, including the written submissions of the parties, the Commission has made its determination on the issues of remedy, the public interest, and bonding. The Commission has determined that the appropriate form of relief is a limited exclusion order prohibiting the unlicensed entry of infringing personal data and mobile communication devices and related software that are manufactured abroad by or on behalf of, or imported by or on behalf of Respondents or any of their affiliated companies, parents, subsidiaries, licensees, or other related business entities, or their successors or assigns.

The Commission has further determined that the public interest factors enumerated in 19 U.S.C. § 1337(d) do not preclude issuance of the limited exclusion order. Finally, the Commission has determined that exclusion of articles subject to the order shall commence on April 19, 2012. The respondents may import without posting a bond during the Presidential

review period.

Accordingly, the Commission hereby **ORDERS** that:

1. Personal data and mobile communication devices and related software covered by claims 1 or 8 of the '647 patent that are manufactured abroad by or on behalf of, or imported by or on behalf of, Respondents or any of their affiliated companies, parents, subsidiaries, successors, assigns, or other related business entities, are excluded from entry for consumption into the United States, entry for consumption from a foreign trade zone, or withdrawal from a warehouse for consumption, for the remaining term of the patent, except under license of the patent's owner or as provided by law, and except for refurbished articles imported on or before December 19, 2013, for use as a replacement under warranty or insurance contract for an identical article that was imported prior to April 19, 2012.

2. Notwithstanding any other provision of this Order, but subject to the limited exemption in paragraph 1 for certain refurbished articles, the Commission has determined that the exclusion of articles shall commence on April 19, 2012.

3. At the discretion of U.S. Customs and Border Protection ("CBP") and pursuant to procedures it establishes, persons seeking to import personal data and mobile communication devices and related software that are potentially subject to this Order may be required to certify that they are familiar with the terms of this Order, that they have made appropriate inquiry, and thereupon state that, to the best of their knowledge and belief, the products being imported are not excluded from entry under paragraph 1 of this Order. At its discretion, CBP may require persons who have provided the certification described in this paragraph to furnish such records or analyses as are necessary to substantiate the certification.

4. In accordance with 19 U.S.C. § 1337(l), the provisions of this Order shall not apply to personal data and mobile communication devices and related software that are imported by and for the use of the United States, or imported for, and to be used for, the United States with the authorization or consent of the Government.

5. The Commission may modify this Order in accordance with the procedures described in section 210.76 of the Commission's Rules of Practice and Procedure, 19 C.F.R. § 210.76.

6. The Secretary shall serve copies of this Order upon each party of record in this investigation and upon the Department of Health and Human Services, the Department of Justice, the Federal Trade Commission, and Customs and Border Protection.

7. Notice of this Order shall be published in the *Federal Register*.

By Order of the Commission.

James R. Holbein
Secretary to the Commission

Issued: December 19, 2011

CERTAIN PERSONAL DATA AND MOBILE COMMUNICATIONS DEVICES AND RELATED SOFTWARE **337-TA-710**

Certificate of Service

I, James R. Holbein, hereby certify that the attached **Final Determination Finding a Violation of Section 337; Issuance of a Limited Exclusion Order; Termination of Investigation** has been served by hand upon the Commission Investigative Attorney, Thomas S. Fusco, Esq., and the following parties as indicated, on **December 19, 2011**.

James R. Holbein, Secretary
U.S. International Trade Commission
500 E Street, SW
Washington, DC 20436

On Behalf of Complainants Apple Inc., f/k/a Apple Computer, Inc. and NeXT Software, Inc. f/k/a NeXT Computer, Inc.:

F. Christopher Mizzo, Esq.
KIRKLAND & ELLIS LLP
655 15th Street, NW
Washington, DC 20005

( ) Via Hand Delivery
( ) Via Overnight Mail
(**X**) Via First Class Mail
( ) Other: _____

On Behalf of Respondents High Tech Computer Corp. a/k/a HTC Corp.; HTC America; and, Exedea, Inc.:

James B. Coughlan, Esq.
PERKINS COIE LLP
700 13th Street, NW, Suite 600
Washington, DC 20005

( ) Via Hand Delivery
( ) Via Overnight Mail
(**X**) Via First Class Mail
( ) Other: _____

PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of CERTAIN PERSONAL DATA AND MOBILE COMMUNICATIONS DEVICES AND RELATED SOFTWARE	Investigation No. 337-TA-710

COMMISSION OPINION

PUBLIC VERSION

TABLE OF CONTENTS

I. INTRODUCTION

The Commission instituted this investigation on February 24, 2010, based on a complaint filed by Apple Inc., and its subsidiary NeXT Software, Inc., both of Cupertino, California (collectively, "Apple"), alleging a violation of section 337 of the Tariff Act of 1930 as amended, 19 U.S.C. § 1337, in the importation, sale for importation, or sale within the United States after importation of certain personal data and mobile communications devices and related software by reason of infringement of certain claims of ten patents. 75 *Fed. Reg.* 17434. Respondents are High Tech Computer Corp. of Taoyuan City, Taiwan and its United States subsidiaries HTC America Inc. of Bellevue, Washington, and Exedia, Inc. of Houston, Texas (collectively, "HTC").[1] The accused products are certain HTC smartphones running the Android operating system.

On July 15, 2011, the ALJ issued his final Initial Determination ("ID"). By that time, the investigation had been narrowed to certain claims of four patents: claims 1, 2, 24, and 29 of U.S. Patent No. 6,343,263 ("the '263 patent"); claims 1, 3, 8, 15, and 19 of U.S. Patent No. 5,946,647 ("the '647 patent"); claims 1, 5, and 6 of U.S. Patent No. 5,481,721 ("the '721 patent"); and claims 1 and 7 of U.S. Patent No. 6,275,983 ("the '983 patent"). The four patents are unrelated. The

[1] Five of the ten patents asserted by Apple in this investigation were also asserted by Apple against Nokia Corp. of Espoo. Finland and Nokia Inc. of White Plains, New York (collectively "Nokia") in Investigation No. 337-TA-704. On motion by the Commission investigative attorney in the 704 investigation and by the respondents in both investigations, the Chief Administrative Law Judge transferred Apple's assertion of overlapping patents against Nokia from the 704 investigation into the 710 investigation. *See Certain Mobile Communications and Computer Devices and Components Thereof*, Inv. No. 337-TA-704, Order No. 5 (Apr. 26, 2010). Subsequently, Apple and Nokia entered a settlement agreement, and on July 21, 2011, the Commission determined not to review the presiding Administrative Law Judge's ("ALJ") termination of the investigation as to Nokia on the basis of settlement.

'263 patent discloses a telecommunications interface for real-time data processing. The '647 patent discloses automatically highlighting structures (*e.g.*, telephone numbers, email addresses, and names) in a document such as an email message or word-processing file to enable certain linked actions (*e.g.*, calling that telephone number, adding the address to an electronic telephone book, or composing an email to that email address). The '721 and '983 patents both involve aspects of object-oriented programming.

Based substantially on certain claim constructions, the ID found that none of the asserted patent claims were invalid. With respect to infringement and domestic industry, the ID found as follows:

Infringement and Domestic Industry Findings in the ID

Asserted claims	Infringed	Domestic Industry
'263 claims 1, 2, 24, 29 '647 claims 1, 8, 15, 19	**Yes**	**Yes**
'647 claim 3	**No**	**Yes**
'721 claims 1, 5, 6 '983 claims 1, 7	**No**	**No**

Accordingly, the ID found a violation of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337, with respect to the asserted claims of the '263 patent and all but one of the asserted claims of the '647 patent.[2] The ALJ recommended the issuance of a limited exclusion order, that zero bond be

[2] The ALJ found that HTC did not infringe claim 3 of the '647 patent, and Apple did not petition for review of the ALJ's noninfringement finding for that claim. Accordingly, there can be no violation of section 337 as to that claim.

posted during the Presidential review period, and that no cease and desist order issue.

HTC, Apple, and the Commission investigative attorney ("IA") each petitioned for review of the ID, and each filed responses to the others' petitions. On September 15, 2011, the Commission determined to review several issues regarding each of the four patents asserted in this investigation. 76 *Fed. Reg.* 58,537 (Sept. 21, 2011). In response, the parties filed opening and reply briefs.[3] In addition, three non-parties filed comments on remedy, the public interest, and bonding: Google Inc. ("Google"); T-Mobile USA, Inc. ("T-Mobile"); and The Association for Competitive Technology ("ACT").[4]

---

[3] Apple filed separate briefs on the issues under review and on remedy, the public interest, and bonding. HTC's opening brief consolidated these matters, but it filed separate replies. Compl'ts Apple Inc. and NeXT Software, Inc.'s Written Submission in Response to the Commission's Determination to Rev. in Part a Final ID Finding a Violation of Section 337 (Oct. 6, 2011) ("Apple Br."); Compl'ts Apple Inc. and NeXT Software, Inc.'s Written Submission on Remedy, the Public Interest, and Bonding (Oct. 6, 2011") ("Apple Remedy Br."); The HTC Resp'ts' Opening Br. on Comm'n Rev. (Oct. 6, 2011) ("HTC Br."); Office of Unfair Import Investigations' Resp. to Questions Posed in the Comm'n's Notice of Sept. 15, 2011, and Briefing on the Issues of Remedy, the Public Interest, and Bonding (Oct. 6, 2011) ("IA Br."); Compl'ts Apple Inc. and NeXT Software, Inc.'s Reply to Respondents and OUII's Respective Written Submissions in Resp. to the Notice of Comm'n Determination to Rev. in Part a Final Initial Determination Finding a Violation of Section 337 (Oct. 17, 2011) ("Apple Reply Br."); Compl'ts Apple Inc. and NeXT Software, Inc.'s Reply on Remedy, the Public Interest, and Bonding (Oct. 17, 2011") ("Apple Remedy Reply Br."); The HTC Resp'ts' Reply to the Briefs of Compl't and the Office of Unfair Import Investigations on the Issues Under Review (Oct. 17, 2011) ("HTC Reply Br."); The HTC Resp'ts' Reply to the Briefs of Compl't and the Office of Unfair Import Investigations on Remedy, Bonding, and the Public Interest (Oct. 17, 2011) ("HTC Remedy Reply Br."); Office of Unfair Import Investigations' Reply to Apple's and HTC's Initial Responses to the Comm'n's Notice of Sept. 15, 2011, and Briefing on Remedy, the Public Interest, and Bonding (Oct. 17, 2011) ("IA Reply Br."). HTC's briefing totaled more than 300 pages of argument, Apple's nearly as much, all exclusive of supporting materials.

[4] Submission of Google Inc. in Resp. to the Comm'n's Sept. 21, 2011 Request for Written Submissions on the Issues of Remedy, the Public Interest and Bonding in Inv. No. 337-TA-710 (Oct. 6, 2011) ("Google Remedy Br."); Third-Party T-Mobile USA, Inc.'s Statement Regarding the Public Interest (Oct. 6, 2011) ("T-Mobile Remedy Br."); Reply Comments of the Association for Competitive Technology in Resp. to the Comm'n's Sept. 21, 2011 Request for Written

[*Footnote continued on the next page*]

On review, we have determined to affirm the ALJ's finding of a violation of section 337 as to claims 1 and 8 of the '647 patent. We affirm the ALJ's finding of no violation of section 337 as to the '721 patent and the '983 patent. We reverse the ALJ's finding of a violation of section 337 as to the '263 patent and claims 15 and 19 of the '647 patent. Our conclusions bearing on the violation of section 337 are as follows:

The Commission's Determinations on Review

Asserted claims	Infringed	Domestic Industry	Invalid
'263 claims 1, 2, 24, 29	No	No	Only under Apple's construction of "realtime API"
'647 claims 1, 8	Yes	Yes	No
'647 claims 15, 19	No position	Yes	Yes
'721 claims 1, 5, 6	No	Yes	Yes
'983 claims 1, 7	No	No	Only under Apple's construction of "selectively load" to include class loading

---

[*Footnote continued from the previous page*]
Submissions on the Issues of Remedy, the Public Interest and Bonding (Oct. 26, 2011) ("ACT Remedy Br."). On October 18, 2011, the Commission granted ACT's motion for an extension of time to file its comments. Thus, ACT's comments were filed closer in time to the parties' reply comments, and ACT referred to its comments as a "reply." Google and T-Mobile did not file reply comments. We hereby grant ACT's subsequent motion for leave to file a corrected version of its comments to fix certain typographical errors.

The Commission has determined that the appropriate remedy is a limited exclusion order, and that the exclusion of articles subject to the order shall commence on April 19, 2012. In addition, the exclusion order contains an exemption permitting HTC to import into the United States until December 19, 2013 refurbished handsets to be provided to consumers as replacements under warranty or an insurance contract. The Commission has determined that Apple has not demonstrated that a bond is appropriate during the Presidential review period, and has determined not to issue a cease and desist order.

II. VIOLATION OF SECTION 337

A. The '263 Patent

Independent claim 1 and its dependent claims 2, 24, and 29, have been asserted from this patent, which is entitled "Real-time Signal Processing System for Serially Transmitted Data." The '263 patent issued on January 29, 2002, and discloses a telecommunications interface for real-time data processing. Although the patent's written description (including the patent claims) uses the terms "real-time" or "realtime" nearly 200 times, the parties disputed its meaning before the ALJ. The ALJ construed "realtime" as "within a defined upper bounded time limit." ID at 32. The construction of that term is no longer in dispute.[5] The Commission granted review on

[5] The patent equates realtime processing to processing of "isochrononous streams of data." Col. 2 lines 26-36, 42-50. The patent references the definition of isochronous data from U.S. Patent No. 5,515,373 col. 11 lines 43-51, which shares the same inventors, and which the '263 patent disclosure incorporates by reference at col. 3 lines 30-37. The '263 patent distinguishes "isochronous data handling" from "a burst mode." Col. 2 lines 26-33. One dictionary defines "burst mode" as a "mode of transmission by which a system can send a burst of data at higher speed for some period of time." IEEE 100: The Authoritative Dictionary of IEEE Standards Terms 128 (7th ed. 2000). Because "realtime" is not disputed before the Commission, we provide this discussion for context regarding the now-agreed-upon construction's requirement of a "defined upper bounded time limit."

five issues. *See* Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011). These issues include two claim constructions ("realtime API" and "device handler"), as well as certain questions of infringement, invalidity, and domestic industry independent of those constructions.

1. "Realtime API"

The ALJ construed the term "realtime API" in claim 1 as an "API that allows realtime interaction between two or more subsystems." ID at 41. In its petition for review, HTC contended that the ALJ's construction is erroneous, and that under a proper construction, neither its products nor Apple's domestic industry products practice the asserted patent claims. The Commission granted review. *See* Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 1).

a) Claim Construction

Asserted claim 1 includes "at least one realtime application program interface (API) coupled between the subsystem and the realtime signal processing subsystem to allow the subsystem to interoperate with said realtime services." The claim construction issue regarding this "realtime API" boils down to whether the term "realtime" modifies each term it precedes in the asserted claims including "API." HTC contends that it does, and the IA agrees. HTC Br. 3-11; IA Pet. 5-7. For each component to operate in "realtime" is to say that the component itself operates within certain limits to ensure that the data stream can be processed in realtime, *i.e.*, that all frames of video are displayed, or that all packets of voice data are transmitted in time. *See* HTC Br. 4-8; IA Pet. 5-7.

Apple's proposed construction, adopted by the ALJ, found that *any* "API that allows realtime interaction between" subsystems is a "realtime API." ID at 41. We find that this

construction improperly reads the term "realtime" out of the API limitation.[6] *See, e.g.*, *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) ("claims are interpreted with an eye toward giving effect to all terms in the claim"). Specifically, the ALJ's construction makes the term "realtime" in connection with the API at most nominal and without any purpose of its own.[7] That the ALJ's construction for the "realtime API" includes the word "realtime" does not make the usage as construed any less nominal. Under Apple's and the ALJ's reading, the only operative use of realtime is the "realtime signal" itself, and the mere processing of the realtime signal under that reading necessarily gives rise to the existence of a "realtime API." We do not believe that a person of ordinary skill would read all these terms merely as nominal surplusage.[8] Rather, we conclude that a person of ordinary skill would understand that the term "realtime API" to mean that the API itself has defined upper bounded time limits. *See, e.g.*, Tr. 1329-1343, 1367-71,

---

[6] Apple's proposed construction also read "realtime" out of the "realtime signal processing subsystem" limitation of claim 1: "a realtime signal processing subsystem for performing a plurality of data transforms comprising a plurality of realtime signal processing operations." On review, HTC has focused only on the realtime API. Apple has *not* argued that it would be wrong to impose a "realtime" limitation on the API because the subsystem cannot accommodate a "realtime" limitation. Having reviewed the record, we believe that it would be proper to impose this limitation on the subsystem, and Apple has waived any argument to the contrary, *see* Apple Br. 2-7; Apple Reply Br. 4-13.

[7] This nominal usage applies not merely for the API (and the subsystem) of claim 1, but also for many limitations across the patent claims (asserted and unasserted): "realtime processor including a realtime operating system" (claim 4); "virtual realtime device" (claim 7); and "realtime engine" (claim 8).

[8] Based on the reasoning adopted in the ID, and which Apple defends before the Commission, a computer running Skype videoconferencing is "realtime" so long as Skype works properly, but once the computer buckles under the weight of other tasks and starts dropping frames, then the system is no longer realtime. Tr. 714-720 (Apr. 20, 2011) (Apple expert Nathaniel Polish). Thus, under this reasoning, as computer speeds increase, systems that had not been realtime suddenly become so through happenstance, and through no specific architectural detail such as a "realtime subsystem" or "realtime API."

1451-55.

In adopting HTC's proposed construction, we observe that unasserted claim 31 recites an API without the "realtime" modifier: "at least one application programming interface for receiving the requests generated by said device handler program . . . ."[9] The applicant, therefore, knew how to claim *any* API that would function in a realtime system, in the manner that Apple contends claim 1 should be interpreted.

We reject two of Apple's arguments that the ALJ found influential: (1) treating "realtime" as a limitation throughout the claims leads to absurd results (though not with respect to the API itself); and (2) the patent specification does not disclose how each component enforces realtime limitations. ID at 26 n.13, 29. With respect to the first argument, Apple stated that claim 24's "realtime processor including an operating system" would make no sense if the processor is realtime but the operating system is not. The ALJ agreed. *Id.* However, the omission of "realtime" with respect to the operating system recited in claim 24 does not make the operating system "not realtime" as the ALJ assumed; as to those components the claims simply do not require them to be realtime. Similarly, the fact that the preamble of claim 1 describes a "signal processing system" without "realtime," but the claim calls for a "realtime signal processing subsystem," is not problematic. For one, no party has argued that the preamble of claim 1 is limiting. For another, the claim language establishes that some aspects of the system must be realtime (those specified), while others may or may not be (those that are not so specified).

With respect to Apple's second argument, Apple states that finding the term "realtime" to

---

[9] The patent claims have other examples of components not specifically described as "realtime," for example, a "translation interface program" (claim 4), and a "device handler program" (claim 31).

have meaning as a modifier is contravened by insufficient guidance in the specification about enforcement of limitations. *Cf. id.* at 29; Apple Reply Br. 9-10; *cf.* col. 5 lines 37-63; col. 6 lines 48-52, col. 6 line 67 - col. 7 line 4; col. 7 lines 8-12; col. 7 lines 46-51; col. 8 line 57-64 (resource allocation and assessment). No party has argued, however, that the claims are invalid as construed under 35 U.S.C. § 112. To the extent that the Commission must choose between mere inferences from the specification and the plain meaning of the claim terms as informed by the intrinsic record as a whole, the Commission chooses the latter.

We also reject the ALJ's finding that treating "realtime" as a limitation is inconsistent with the "flexibility" emphasized by the patent specification. ID at 28-29 (citing col. 1 lines 30-32; col. 11 lines 7-10). We do not find that rationale persuasive, as virtually *any* limitation would undermine flexibility, and adopting this rationale would be tantamount to applying a canon of construction favoring the unduly broad.[10]

b) Infringement and Domestic Industry

Apple does not make substantial infringement and domestic industry arguments under the Commission's construction of "realtime API," and there is no genuine dispute that the identified API in both the HTC and Apple products do not operate within a "defined upper bounded time limit" as the unchallenged construction of "realtime" requires. *See* HTC Br. 11-13. Rather, Apple contends that the construction is not "faithful to the intrinsic evidence." Apple Br. 7. For

[10] The ID's discussion of "hard realtime" and "soft realtime" on pages 29-32 is inapposite with respect to the issue under Commission review. Most of that discussion related to "without handling delays," a limitation on realtime urged by HTC but not pursued on Commission review. The ALJ's construction of "realtime" as "within a defined, upper bounded time limit" does not have the effect, when applied to the claimed realtime subsystem and realtime API, of transforming the claimed system into a rigid hard-wired device eschewed by the ID.

the reasons set forth above, we disagree and find that neither the accused products nor Apple's domestic industry products practice the "realtime API" limitation. As we will discuss below, however, even if Apple's construction of "realtime API" were to be accepted, the asserted patent claims would be invalid in view of AT&T's VCOS system under that construction.

2. "Device Handler"

The ALJ construed the term "device handler," which appears in claims 1 and 24, as Apple and the IA had proposed: "software associated with an interface device that sets up dataflow paths, and also presents data and commands to a realtime signal processing subsystem." ID at 41, 44. HTC had urged a different construction: "a software module specific to a device that sets up dataflow paths, and presents data and commands to the realtime signal processing system." ID at 41. We granted review of HTC's petition for review of the claim construction of "device handler" and the application of that construction to infringement and domestic industry. Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 2).

a) Claim Construction

As noted above, HTC sought to add the requirement that the device handler be "specific to the device." *See id.* In its briefing on Commission review, HTC no longer seeks to add that construction to the "device handler" limitation. Rather, HTC claims that its previous arguments in support of that construction now support a different argument that "associated with" in the ALJ's construction means that "the device handler must know . . . about the device it supposedly handles," as opposed to the device handler "merely be[ing] somewhere in the data path for data that originated at the 'device.'" HTC Br. 23. Tellingly, HTC offers no construction. We agree with Apple, Apply Reply Br. 16, that the issue, as presented by HTC, is not one of claim construction, and to the extent that it is, the claim construction issue has been waived.

We observe that the petitions and briefs in this investigation are replete with efforts by HTC and Apple to label many or most disputed issues to be disputed issues of claim construction, even when there was no dispute as to the meaning of a term, or after a party's own construction had been adopted. These attempts cut across all the patents and are improper. The Commission was mindful to specify expressly in its review notice (which issued in the Federal Register on September 21, 2011) those issues that fairly involved claim constructions, and those in which the only issue genuinely in dispute was the application of a claim construction, *i.e.*, infringement, validity, or domestic industry. There is a distinction between a claim construction and application of the claim construction. *See, e.g.*, *Tessera, Inc. v. ITC*, 646 F.3d 1357, 1364 (Fed. Cir. 2011). Disagreements over an application of a construction – a finding of infringement or invalidity and the analysis therefor – do not themselves give rise to opportunities, after the fact, to change the agreed-upon or adopted constructions. Commission proceedings are not an iterative process whereby each unfavorable resolution results in an opportunity to offer a changed construction, or to construe the construction, in the hope of effecting a different outcome.

b) Infringement

HTC takes issue with how the term "presents data" in the ALJ's construction of "device handler" is applied with regard to the accused products. HTC believes that the device handlers in its accused products do not present data because they do not themselves "receive or transmit data"; rather, they direct the flow elsewhere. *See, e.g.,* HTC Br. 15-17. The constructions proposed by all the parties and the construction adopted by the ALJ included "presents data," *see* ID at 41, and not "receives or transmits data," as argued now by HTC. We reject HTC's attempt to create a

claim construction dispute,[11] and we affirm the ALJ's determination that the accused products contain a claimed device handler. ID at 48-49.

HTC also takes issue with whether the accused device handlers are "associated with an interface device" as urged by Apple and as required by the ALJ's construction. *Id.* at 41, 44. HTC argues that this, too, is a matter of claim construction, HTC Br. 23, but here, too, we disagree. The claim has been construed, and all that is at issue on review is application of the construction. HTC does not invite the Commission to adopt the construction it previously urged, that the device handler be "specific to" a device. HTC Br. 23-27. Instead, HTC takes issue with the application of the ALJ's construction, which we find to be a question of infringement.[12] We agree with the

---

[11] Even were we to consider the issue in the context of claim construction, we would reject HTC's proposed construction of the construction. HTC does not offer a dictionary definition in support of its argument, and we do not believe that a dictionary definition supports HTC. 2 The New Shorter Oxford English Dictionary 2340 (1993) (providing as its first definition of the verb "present": "Make present, bring into the presence of."). Instead, HTC relies on the specification and figures, which show the preferred embodiment's handler's reception and transmission of data. HTC Br. 16. In particular, HTC argues that Figure 2 shows data passing through the adapter handler 44. *Id.* Thus, HTC argues that the specification shows that the device handler act of "presenting data" is to "receive or transmit data." HTC's arguments, we believe, represent an improper incorporation into the claim language of the preferred embodiment's limitations. We reject HTC's construction without reaching Apple's counterargument that HTC's construction would exclude the preferred embodiment. *See* Apple Reply Br. 17-20; HTC Br. 18-23. Accordingly, if the question were one of claim construction, we agree with the ALJ.

[12] Again, even were we to consider the issue in the context of claim construction, we would reject HTC's proposed construction of the construction. HTC does not rely on any dictionary definition to support its narrow interpretation of "associated with" to mean something akin to "specific to." Rather, HTC declares that the plain meaning is to the contrary, HTC Br. 26, and then argues that intrinsic and extrinsic evidence support its interpretation, *id.* at 26-31. HTC's argument is based principally on a passage from the '263 patent specification: "An adapter handler 44 is specific to the particular adapter 36 and carries out features associated with that adapter." Col. 5 lines 8-9. The ALJ found that this passage related to the preferred embodiment and did not constrain the construction of "handler" generally. ID at 43. We agree. In addition, we find that the extrinsic evidence cited by HTC, Tr. 228-31, 275 (Lynch); Tr. 666-68 (Polish); Tr.

[*Footnote continued on the next page*]

ALJ's infringement analysis at pages 49-50 of the ID, and conclude that the accused devices contain the claimed "device handlers."[13]

3. A Realtime API "Coupled Between" Two Subsystems

Claim 1 requires that the realtime API be "coupled between the subsystem and the realtime signal processing subsystem," *i.e.*, between the structures of the first two elements of the claim. The parties agreed that "coupled between" should be construed as "functionally connected to, but distinct from."[14] The ALJ found that HTC's accused products practice the "realtime API" limitation because the ".h" header files in the accused Android products are "coupled between" two subsystems as required by claim 1. ID at 36-37, 56-59. It is unclear why the ALJ merged some of his infringement discussion into his claim construction analysis, *see id.* at 36-37, as the only question at issue is whether HTC infringes the patent claims on the basis of these ".h" header files under the claim construction agreed upon by the parties. We determined to review the infringement question. 76 *Fed. Reg.* 58537-38 (Sept. 21, 1011) (Issue No. 3) ("Whether the API of the accused products is 'coupled between' two subsystems.").

Despite the Commission's limitation of review on this point to infringement, HTC argues that the question on review is properly one of claim construction. HTC Br. 29-31. We disagree. As noted, HTC's noninfringement argument is based on the fact that the accused APIs

---

[*Footnote continued from the previous page*]
1297-98 (Brandt), is consistent with the plain meaning of "associated with." Accordingly, if the question were one of claim construction, we agree with the ALJ.

[13] HTC's domestic industry argument is predicated on its "associated with" argument that we have rejected in connection with infringement. *See* HTC Br. 28-29.

[14] Joint Mot. of All Relevant Parties to Amend the Joint List of Undisputed Claim Terms with Agreed Constructions App. A at 14 (Feb. 24, 2011).

are "header files," also known as ".h" files. HTC Br. 33-34. As such, these files are prepended (as headers) to other files. *See id.* at 33 & n.10. HTC argues that because the headers are attached to code that Apple accused as the realtime signal processing subsystem, the headers could no longer be an intermediary that is "functionally connected to, but distinct from" the two accused subsystems.

Although we disagree with the ALJ's placement of his infringement analysis within his discussion of claim construction, we agree with his conclusions, that the accused APIs are "coupled between" two subsystems. The term "coupled between" does not support the conclusion that HTC seeks. Substantial evidence supports the ALJ's conclusion on page 37 of the ID that the header "API is indeed functionally connected to the object(s) for which it provides an interface, and HTC does not contend otherwise. But this API is also 'distinct from' the objects for which it provides an interface in the sense that it is the only aspect of the object exposed to the higher-level components . . . , is defined separately in a header file . . . , and can provide a generic interface for multiple different objects of a similar type . . . ." ID at 37 (citing Tr. 857-59, 1067, 1091-92, 1562); *see also* Apple Reply Br. 25-30; Apple Br. 16-17 (citing Tr. 818-19, 1092). We therefore find that the ID's determination on this point is correct.

4. Inconsistency Between the ID's Infringement and Invalidity Analyses

HTC and the IA petitioned for review of the ID on the basis that its infringement analysis is inconsistent with its invalidity analysis. HTC Pet. 33-36; IA Pet. 5-13. They contended that the ALJ, in finding the asserted claims valid over the prior art VCOS system,[15] applied greater scrutiny than he did in his infringement analysis, and that this difference constituted error. The

[15] *See generally* RX-963 ("AT&T VCOS Operating System: The Multimedia Solution").

Commission granted HTC's and the IA's petitions for review on the matter. 76 *Fed. Reg.* 58537-38 (Sept. 21, 1011) (Issue No. 4). On review, we find the ALJ's infringement analysis appropriate, comparing the accused products to the claims as construed,[16] ID at 45-61, but we agree with HTC and the IA that the ALJ's invalidity analysis constitutes legal error.

The ALJ found that AT&T's prior art VCOS system does not anticipate any of the asserted claims because "it fails to disclose at least the realtime API and device handler limitations." *Id.* at 69. However, the invalidity analysis in the ID compared the VCOS system to the Chen prior-art patent (U.S. Patent No. 5,440,740 (issued Aug. 8, 1995)), which was the primary focus of the prosecution history. *See* ID at 69-71. Essentially, the ALJ assumed that if the '263 patent was patentable over Chen and if the VCOS system is in some ways similar to the Chen patent, then the '263 patent must be patentable over VCOS. *Id.*

Prosecution history is certainly relevant for claim construction, where claims are construed so not to encompass a "clear and unmistakable" disclaimer of claim scope. *E.g.*, *Purdue Pharma L.P. v. Endo Pharms., Inc.*, 438 F.3d 1123, 1136 (Fed.Cir.2006). Such disclaimers may result in complex claim constructions to accommodate the scope of disclaimer. But in this investigation, Apple has not argued that the pertinent prosecution history gives rise to disclaimer. *See* ID at 39;

---

[16] Apple, which invited the ALJ's invalidity error, *see* Apple Post-Hearing Br. 49-50 (comparing the prior art to the Chen patent), argues that if there is inconsistency between the infringement and validity analyses, infringement should not be analyzed more rigorously: "The correct claim constructions should be adopted, as the ID did. If the Commission finds that there is some inconsistency in the application of these constructions in the infringement and validity analyses as articulated in the ID – and to be clear, Apple strongly believes there is no inconsistency – the proper way to resolve this would be to clarify the findings with respect to the prior art to make even clearer the consistency of these findings with the infringement analysis." Apple Br. 26. On this we agree with Apple, and we have not disturbed the ALJ's infringement analysis on the basis of inconsistencies with the ALJ's invalidity analysis.

IA Pet. 12.

Similarly, other portions of the ALJ's invalidity discussion did not analyze whether VCOS anticipates the asserted '263 patent claims as construed, but compared the VCOS system to limitations of the '263 patent's preferred embodiment. In particular, pages 71-72 of the ID analyze whether the VCOS system contains a "realtime API" by discussing what the '263 patent's specification says about the preferred embodiment.[17] Page 73 relies on the preferred embodiment regarding the scope of "device handler program."[18] Such statements with respect to the preferred embodiment ordinarily inform claim construction, which in turn informs all subsequent inquiries (such as validity and infringement). When applied as the ALJ did, the effect is to limit improperly the scope of the claims to the preferred embodiment for purposes of preserving validity.

The ALJ's analysis of the VCOS prior art is an error made moot because the Commission has construed "realtime API" to require that the API operate within a defined upper bounded time limit. HTC does not contend that under this construction the VCOS system anticipates the asserted patent claims. However, we have determined to reach the question of validity under the

---

[17] *See, e.g.*, ID at 71 ("This need for knowledge about the particular implementation of the real-time engine is incompatible with the '263 invention and its realtime API, which 'provid[es] a layer of abstraction between the real-time engine and the remainder of the processing system, . . . eliminat[ing] the need for a device handler to have any knowledge about the particular implementation of the real-time engine.") (quoting the '263 patent); *id.* at 72 ("This need to redesign the system is also inconsistent with the invention's realtime API, in which 'any one of a hardware-implemented, software-implemented or native digital signal processor can be employed, without requiring any redesign of the system.'") (quoting the applicant's June 24, 1996 Response Under 37 C.F.R. 1.117 Expedited Procedure characterizing the preferred embodiment); *id.* (citing the '263 patent abstract and col. 2 line 66 – col. 3 line 11 for support for the same "redesign" proposition).

[18] ID at 73 ("But this is not consistent with the patent's disclosure, as the '263 patent makes clear that 'mixing audio streams into a single output stream' is a function in the preferred embodiment of serial driver 42, not the device handler program.") (quoting the '263 patent).

construction of "realtime API" adopted by the ALJ and advocated by Apple. HTC has demonstrated by clear and convincing evidence that the asserted claims of the '263 patent would be anticipated under 35 U.S.C. § 102(b) by AT&T's prior art VCOS system under the ALJ's construction of "realtime API."

The ALJ found that VCOS does not anticipate the asserted claims because it lacks the claimed "realtime API" and lacks a claimed "device handler." ID at 69. On Commission review, Apple defends the ALJ's determination on these same bases. Apple Br. 18-23. Page 1 of the VCOS Product Note (RX-963) contains a diagram showing what HTC contends is the corresponding API ("VCAS Apps Server") and the corresponding device handler ("API/Resource Manager"):

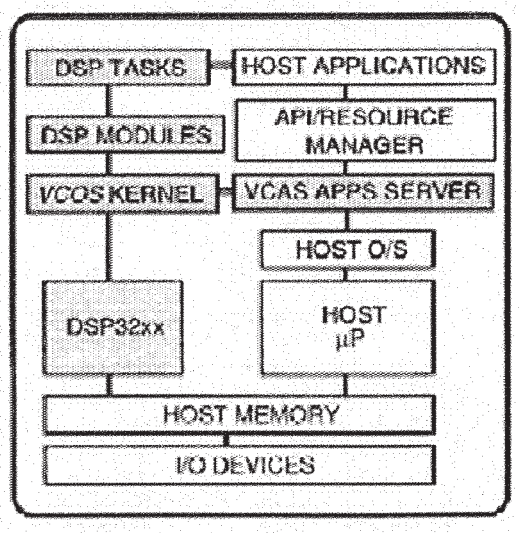


Figure 1. *VCOS*/DSP32xx System Integration

The VCOS product note defines the VCAS as follows: "VCAS is a set of interface functions that run on the host computer under the host's operating system. Included are functions for DSP initialization, buffer communications, task management, and communication with directly addressed system devices (DASDs) such as the computer's hard disk." RX-963 at 8.

We disagree with the ALJ's determination that VCOS lacked an API because it was not sufficiently separate from the DSP subsystem. ID at 72; *see* HTC Posthearing Br. 37. The evidence of record, including the figure above, clearly shows a pathway between the VCAS Apps Server and the VCOS Kernel. There was no dispute that the VCOS Kernel is part of the claimed "realtime subsystem." Thus, there are two pathways between the left and right columns: applications communicate either directly with the DSP or do so through the VCAS Apps Server. RX-963 explains that VCOS is useful for two types of developers (*i.e.*, software firms or programmers): DSP algorithm developers and application developers. RX-963 at 6. The DSP algorithm developers look to create new functions from the DSP, and the top-most connection between the columns permits that to happen. *See id.* at 6-8. We agree with the ALJ that the top-most direct pathway does not anticipate the '263 patent claims.

That conclusion, however, is not itself dispositive, because VCOS teaches a second method of operation directed to a second type of developer. The second type of developer is the application developer, who needs "to have canned DSP modules that can be treated as objects and development tools that allow developers to easily include DSP objects in their application programs. This type of environment lets application developers concentrate on the human interface aspects of their application and simply connect DSP objects together when signal processing is required." *Id.* at 6. These developers do not communicate directly from their applications to the DSP Tasks. Instead, they do it through VCAS, which is "a set of interface functions that run on the host computer under the host's operating system. Included are functions for DSP initialization, buffer communications, task management, and communication with directly addressed system devices (DASDs) such as the computer's hard disk." *Id.* at 8; *see also* RX-1019 at 107 ("The VCOS provides access to its DSP functions through a C function library,

the VCOS Application Server. This host-resident library provides an application programming interface that lets host applications load, execute, and communicate with DSP tasks running under the VCOS on the [digital signal processor]."); RX-1038 at 38 ("The VCOS Application Server (VCAS) provides host applications with a set of C functions for controlling and communicating with one or more DSPs."). It is this pathway that anticipates. *See, e.g.* Tr. 1150-65, 1172-74, 1387-1400. We agree with HTC that VCOS's VCAS is a "realtime API" under Apple's construction of that term.

We disagree with the ID that the preferred embodiment's lack of "knowledge about the particular implementation of the real-time engine" has a bearing on invalidity. ID at 71. Nothing in the patent claim language or the claim constructions requires such lack of knowledge. Moreover, HTC demonstrated that the VCOS API (*i.e.*, VCAS) could be run on multiple digital signal processing systems. Tr. 1164; RX-1038 at 13.

We also conclude that the VCOS system contains the claimed "device handler." The ALJ construed "device handler" as "software associated with an interface device that sets up dataflow paths, and also presents data and commands to a realtime signal processing subsystem." ID at 44. The ALJ determined that the API/Resource Manager was not the device handler because the device handler, among other things, mixed "streams of data into a single output stream." ID at 73. The ALJ found that in the preferred embodiment, a serial driver performed this function, and not the disclosed adapter handler (the claimed "device handler"). *Id.* As shown in Figure 2 of the '263 patent, the serial driver acts as an intermediary between the adapter handler and the hardware abstraction layer.

The patent claim uses the broad term "device handler" and there was no argument made that a person of ordinary skill would understand such audio mixing to be beyond the scope of a

device handler. To the extent that Apple now contends that such functionality is beyond the scope of a handler, it was incumbent upon Apple to propose a construction of "device handler" that was more closely tied to the preferred embodiment's description of allocation of responsibilities for unclaimed elements. Apple did not do so before the ALJ. Accordingly, we agree with HTC's argument that the VCOS Resource Manager corresponds to the claimed "device handler" and that the VCOS system anticipates the asserted patent claims.

Accordingly, we find that if "realtime API" were construed as Apple urges, the asserted claims would be anticipated by the VCOS system.

5. "Adapter Subsystem"

HTC petitioned for review of the ALJ's determination that the MacBook Pro practices claim 1's "device handler" limitation. ID at 63-64. We granted review. *See* Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 5).

In its brief on review, HTC devotes only one page to the question whether Apple's domestic industry product (the MacBook Pro) contains a "device handler." HTC Br. 41. In view of our decision to uphold the ALJ's broad construction of "device handler," we do not believe that there remains a substantial challenge to the ALJ's determination that the MacBook Pro practices claim 1's "device handler" limitation. The ALJ's decision, ID at 63-64, is consistent with his treatment for purposes of infringement, and as Apple demonstrates in its briefs, HTC has failed to provide evidence demonstrating that the ALJ's analysis is incorrect. Apple Br. 23-24; Apple Reply Br. 41-42. We therefore affirm.

6. Summary of Findings for the '263 Patent

We construe "realtime API" as an API that operates in realtime, *i.e.*, as an API that operates within a defined upper bounded time limit. We find that the accused products do not infringe, and

that Apple's domestic industry products do not practice, the asserted patent claims 1, 2, 24, and 29. We also find that under Apple's construction for "realtime API," the asserted claims would be infringed by the accused HTC products and practiced by Apple's domestic industry products but that the claims would be anticipated under 35 U.S.C. § 102(b) by the VCOS system.

B. The '647 Patent

Independent claims 1 and 15 and dependent claims 8 and 19 are before the Commission on review. The '647 patent, entitled "System and Method for Performing an Action on a Structure in Computer Generated Data," issued on August 31, 1999, from an application filed on February 1, 1996. In short, "structures" – *e.g.*, names, phone numbers, and email addresses – are identified in a document (such as an email message or word-processing file) and highlighted on a display so that the user can select to perform a linked action on a particular structure, such as dialing a telephone number. The asserted claims require "linking" an "action" to a "structure," which presents the key issue of infringement and invalidity. The Commission granted review on four issues. Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011). These issues include the applications of the ALJ's "linking" constructions to infringement and invalidity, whether the steps of method claim 15 must be performed in the order in which they appear, and whether the accused products link structures to "multiple" actions as required by claim 1.

1. "Linking Actions to the Detected Structures" (claim 1) and "Linking at Least One Action to the Detected Structure" (claim 15)

The ALJ construed the linking phrase of claim 1, "linking actions to the detected structures," as Apple proposed: "linking detected structures to computer subroutines that cause the CPU to perform a sequence of operations on the particular structures to which they are linked." ID at 127, 131. Similarly, the ALJ adopted Apple's construction for the similar linking phrase of

claim 15, "linking at least one action to the detected structure." *Id.* HTC's proposed construction was different in two respects. First, HTC included at the end "rather than an informational structure." *Id.* at 127. This added language, that the CPU perform operation on structures other than an "informational structure," was based on statements Apple made in the prosecution history. *See* ID at 128-29. Second, HTC contended that claim 1, despite requiring "actions" (plural) and "structures" (plural), only required a single action and structure. *See* ID at 127.

On petition for review, HTC challenged what it believed to be an unduly rigorous invalidity analysis, much as HTC challenged inconsistencies in the ID's treatment of infringement and invalidity for the '263 patent. HTC Pet. 38. The IA agreed with HTC, and also petitioned for review. *See* IA Pet. 15-17. In its petition for review, HTC expressly disclaimed any challenge to the claim constructions for the '647 patent. HTC Pet. 38-39. The Commission granted review on the infringement and invalidity questions. Notice, 76 *Fed.Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 1).

We find the ALJ's analysis of validity for the '647 patent in error for similar reasons as for the '263 patent. Rather than relying on the agreed-upon construction of "structure" – "an instance of a pattern, where a 'pattern' refers to data, such as grammar, regular expression, string, etc., used by a pattern analysis unit to recognize information in a document such as dates, addresses, phone numbers, etc.," ID at 127 n.35, the ALJ relied upon the preferred embodiment's use of structures to determine whether the Perspective prior art system anticipated the asserted claims. ID at 170-71. The ALJ relied upon other aspects of the preferred embodiment in his invalidity analysis.

Drawing upon the patent specification, the ALJ believed that a structure is something that the system can recognize automatically, *i.e.*, ten digits are a phone number, or a string of text with

an "@" in the middle is an email address. ID at 171. According to the ALJ's invalidity analysis, the mere search of a database of contact names and subsequent comparison to entered text cannot constitute detecting a "structure." *Id.*

The ALJ's invalidity analysis was in error for two reasons. First, the ALJ used the wrong construction of "structure" because the parties agreed to a different construction and that construction was used in the ALJ's infringement analysis. Second, the preferred embodiment does not support the unduly narrow interpretation used in the ALJ's invalidity analysis. The patent specification discusses "structures" in detail:

- "For purposes of the present description, the term 'pattern' refers to data, such as a grammar, regular expression, *string*, etc., used by a pattern analysis unit to recognize information in a document, such as dates, addresses, phone numbers, *names*, etc." Col. 1 lines 27-31 (emphasis added).

- "Fig. 4 illustrates an example of an analyzer server **220**, which includes grammars **410** and a string library **420** such as a dictionary, each with associated actions. . . . Analyzer server **220** also includes grammars for post-office addresses, e-mail addresses and dates, and a string library **420** containing *important names*." Col. 5 lines 6-14 (emphasis added).

- "Fig. 5 shows a window **510** presenting an exemplary document **210** having data containing recognizable *structures*, including a phone number, post-office address, e-mail address, and *name*." Col. 5 lines 19-22 (emphasis added).

- "As illustrated in Fig. 6, analyzer server **220** identifies the phone number, post-office address, e-mail address, and *name*. Although not shown in Fig. 6, analyzer server **220** links the actions associated with grammars **410** and strings **420** to *these identified structures* . . . ." Col. 5 lines 29-33 (emphasis added).

- "As illustrated in block **1060** [of Fig. 10], a fast string search function retrieves **1070** the contents of string library **420**, and links **1090** actions associated with the library string to the detected string." Col. 6 lines 43-47.

The patent's figures support the text. Figure 4 shows the actions that can be associated with a name:

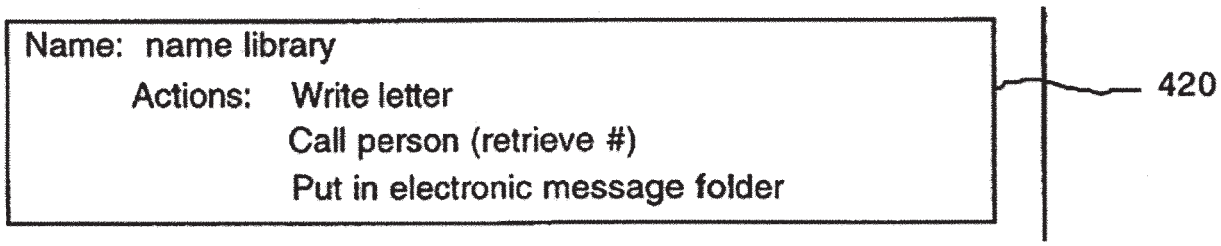
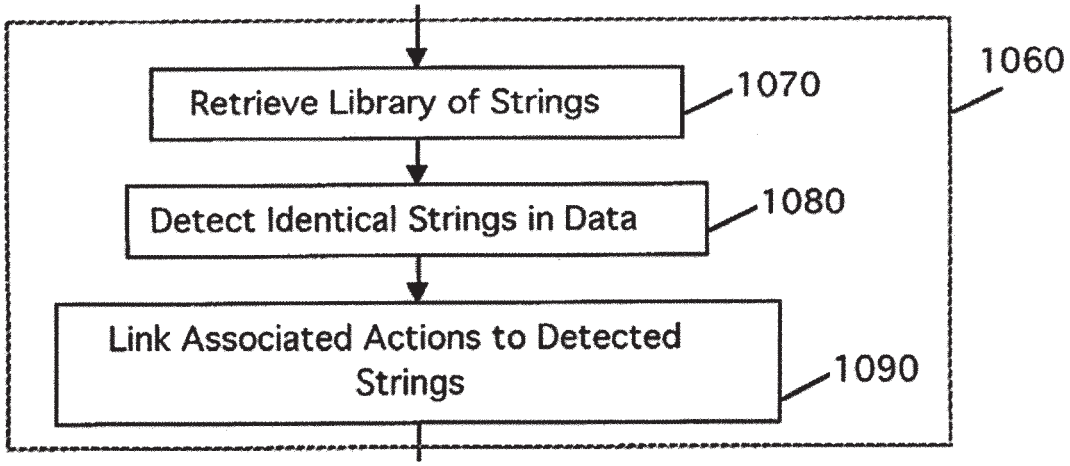


Figure 10 shows the string detection operated by comparing strings in a document to see if they are identical to those in a name library:



What the text and figures make incontrovertible is that names can be looked up in a database (a library of strings) and are "structures." To be clear, the patent does not disclose identifying names based on capitalization or a syntactic cue, but based on looking up words in a list (in the preferred embodiment, a list of names).[19]

With this understanding that the identification of names can satisfy the claim limitations – even absent the parsing of grammars such as phone numbers or email addresses, we turn to the principal elements in dispute: claim 1's "linking actions to the detected structures," and claim

[19] The asserted claims do not call for the existence of multiple grammars. *Compare* asserted claims 1 and 15 (which call for "structures" but no grammars) *with* unasserted dependent claims 4 and 17 (requiring "grammars").

15's "linking at least one action to the detected structure."

The operation of the Perspective prior art system is not substantially disputed. (The Perspective handbook was marked as Exhibit RX-935.) First, a user creates a list of contacts. When the user subsequently creates an appointment ("Meet Dan on December 15, 1992 at 2:00") or makes a note, Perspective can automatically link names it recognizes to the contact information. RX-935 at 36-40. Doing so will cause the name to be displayed as bold text. *Id.* at 40. Double tapping on the bolded name will cause the contact information to open. *Id.* at 43, 210. Tracing a "D" on top of the bolded name will cause a dialer to come on screen, populated with a phone number (if any) for that contact. Tr. 3895-99 (May 3, 2011) (Olsen); SO-RDX-27; DO-RDX-V4. If there is more than one phone number for the contact, the user will be presented with the option to choose a number. DO-RDX-V7.

The ALJ found that both of these operations – opening the contact and dialing – "invoke the database record number at the location of the gesture without knowledge of or performing operations on the detected name." ID at 167. Accordingly, the ALJ found that the Perspective action subroutines do not "operate ***on*** a detected structure and therefore do not constitute a claimed 'action.'" *Id.* We believe that the ALJ's distinction over Perspective is strained. To restate the argument, it is Apple's position that in order for Perspective to anticipate, Perspective must dial the name (an impossibility), rather than a phone number. Apple Reply Br. 54. The '647 patent teaches that an "action" can include: "Call person (retrieve #)." Fig. 4. Accordingly, this dialing can be an "action" even though this action is made on an associated phone number rather than on the name itself. *See, e.g.,* Fig. 10; col. 6 lines 43-47.

Apple argues that because Perspective operates as a "relational database," no actions are linked to structures. When Perspective automatically links an entered name to the list of contacts,

it does so by associating that entered name with database entry number for the contact. ID at 167. Apple argues, and the ALJ agreed, that this is not sufficient because subsequent actions selected by a user are no longer associated with the entered name but rather with a database number. *Id.* at 167-68. According to Apple, a user could change the name in the contact list, but the system would still maintain the original link. Apple Br. 37. We do not find Apple's argument persuasive. Even if Apple's point were relevant to the patent claims (and we do not believe that it is), the fact that a user can later break a link by changing a name in the contact list does not prevent Perspective from anticipating in its ordinary operative uses.

Perspective's automatic linking necessarily results in linking to one action – pulling up the contact information for that contact. By recognizing that the contact exists and putting the name in bold, we find that there is unquestionably a link for that contact-list action. On that basis, asserted claims 15 and 19 are invalid; only one action is required for those claims.[20] Claim 1, however, requires multiple actions,[21] and we do not find that HTC has demonstrated by clear and convincing evidence that the Perspective system has an "analyzer server" that links a second action, *i.e.*, calling a telephone number to the detected structure. The parties agreed that an "analyzer server" means "a program sub-routine that receives data from a document having

---

[20] In so finding, we reject the argument that there must necessarily be two separate selections, one for the structure and one for the action. *See* ID at 149 (infringement analysis); Apple Reply Br. 56. The claims use "selection" in the singular, permitting one or several acts of selection.

[21] The ALJ found in his claim construction analysis that in claim 1, multiple actions must be linked to each detected structure. ID at 130-31. In our September 15, 2011 notice, we did not review that finding. An alternative reading of the claim, in which there are multiple actions across multiple structures, would not lead to a different result with regard to whether Perspective anticipates the asserted patent claims.

recognizable structures, and uses patterns to detect the structures." ID at 127 n.35. Claim 1 also requires that the analyzer server "link[] actions to the detected structures" and that there be a "user interface enabling the selection of a detected structure and a linked action." We read these two claim elements to require that the system "analyze" whether an action can be performed on the structure, and it is that analysis that establishes a link. That link must exist prior to the user interface's enablement of selection because the user interface enables selection of a "linked action," *i.e.*, an action that has already been linked. HTC has not established such linkage for calling a phone number. *See* Tr. 5018-19 (Mowry). If there is no phone number associated with the contact (only an address), drawing a D on top of a highlighted name cannot result in a call being placed. The mere fact that in some instances drawing a D can result in "an action" does not mean that it is an "action" that has been "linked" to the "detected structure." Thus, for purposes of dialing, there is no link between a structure and an action, but only a link between a structure and associated data upon which action may be directed by the user.[22] We therefore find that HTC has not demonstrated that Perpective contains an "analyzer server" for "linking actions to the detected structures" or a "user interface" for enabling the selection of a "linked action." Accordingly, we find claims 15 and 19 invalid, and claims 1 and 8 not invalid.[23]

---

[22] The prosecution history distinguishes between the prior art's "linking to an informational structure" and the patent's "linking to an action." Amendment at 9 (Mar. 15, 1999). We believe that the linking for purposes of dialing may best be considered linking to an informational structure, with a user command that a particular action be performed. Without relying on the ongoing reexamination proceedings of the '647 patent, we take notice that our decision appears to be consistent with those proceedings. *See* Office Action (June 27, 2011) (finding claims 13, 15, 16, 20-22, 24 of the '647 patent anticipated by the Perspective handbook, and confirming claims 1-12 and 14 in view of claim 1's "analyzer server").

[23] Our invalidity analysis does not rely on the ALJ's (invalidity-related) assessment of what it means to operate "on a detected structure," as opposed to a representation of a detected

[*Footnote continued on the next page*]

2. The Ordering of Claim 15's Steps

HTC has argued that the steps of method claim 15 must be performed exactly in order. The ALJ disagreed, and HTC petitioned for review. We granted HTC's petition on this issue. Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 2). We believe that claim 15 is invalid in view of Perspective even if the steps of claim 15 must be performed in the order in which they appear. Accordingly, the issue is moot, and we do not reach it.

The Commission requested briefing as to whether "claim 15's 'enabling selection of the structure and a linked action' (as opposed to the unclaimed step of 'selection of the structure and a linked action' by the user) is a single step, and whether HTC made and preserved the argument that it is a single step." *Id.* at 58539 (question (c)). This question involves whether the enabling step of claim 15 can be split in half so that enabling selection of the structure can occur before linking (in the previous step) takes place. In the accused devices, linking does not [redacted][24] *See* ID at 147; HTC Br. 59.

We find, based on our prior discussion, that the Perspective system anticipates claim 15 regardless whether enabling involves one step or two. This issue is therefore also moot. In particular, Perspective detects a name and links the name to the contact list, enabling the action of viewing the contact to take place later. Perspective highlights the name enabling the structure to be selected. Both acts of "enabling selection" occur after linking.

[*Footnote continued from the previous page*]
structure. ID at 167-70. HTC's noninfringement arguments presume the ALJ's narrow application, HTC Br. 57-59, and our analyses of invalidity and infringement are therefore consistent.

[24] In contrast, the preferred embodiment shows parsing a document for structures and inventorying all the actions ahead of time, before a user selects a structure. *E.g.*, Col. 3 line 61 – col. 4 line 5.

3. Linking Structures to Multiple Actions in the Accused Products

HTC has argued that its devices link only to a single "action" as opposed to the plural "actions" recited by claim 1 (but not by claim 15). HTC Pet. 39-40. The ALJ found that HTC's noninfringement argument had been waived and also rejected HTC's argument on the merits. ID at 143-47. We granted HTC's petition for review on this issue, though in so doing, we did not "excus[e] any party's noncompliance with Commission rules and the ALJ's procedural requirements." Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011). We explained that we "may, for example, decline to disturb certain findings in the final ID upon finding that issue was not presented in a timely manner to the ALJ." *Id.*

On review, we need not determine whether the ALJ abused his discretion in finding waiver because we reject HTC's argument on the merits. According to HTC, the accused products do not infringe, because, prior to a map being displayed or a telephone number dialed, all commands pass through a single routine called alternately [redacted]" HTC Br. 43; HTC Reply Br. 41. We affirm the ID for the reasons set forth therein, including at pages 143-46, regarding intent objects in the accused devices.

4. *Global-Tech Appliances, Inc. v. SEB S.A.*, No. 10-6 (U.S. May 31, 2011)

We determined to review the ID on an issue not raised in the parties' petitions. *See* 19 C.F.R. § 210.44. In particular, we sought clarification from the parties whether the Supreme Court's recent decision in *Global-Tech* affected the ID's determination of induced infringement. Notice, 76 *Fed. Reg.*58537, -38 (Issue No. 4); *id.* at 58539 (Question (b)). On review, HTC admits that it had knowledge of the '647 patent, and "[t]hus, *Global-Tech's* willful blindness standard is irrelevant to the disputed issue on infringement." HTC Br. 71.

5. HTC's Motion for Summary Determination of Intervening Rights

On October 17, 2011, HTC filed a "Motion for Summary Determination of Intervening Rights as to U.S. Patent No. 5,946,647 in View of Claim Narrowing in Reexamination of Same and for Termination of Investigation as to Same in View of Intervening Rights." HTC argued that under the Federal Circuit's September 21, 2011 decision in *Marine Polymer Technologies, Inc. v. Hemcon, Inc.*, No. 2010-1548, the '647 patent's reexamination proceedings provide HTC with intervening rights that preclude the issuance of an exclusion order against HTC as to that patent. HTC's motion purported to be allowable pursuant to Rule 210.18 (summary determination), with its requested remedy of termination purportedly pursuant to Rule 210.21(a) (termination). Motion at 3. On October 24, 2011, the Commission issued an order to show cause why HTC's motion was procedurally allowable. The order observed that under Rule 210.18, a motion for summary determination "must be filed at least 60 days before the date fixed for any hearing." 19 C.F.R. § 210.18(a). Under Rule 210.21(a), a motion for termination (not involving a settlement, a consent order, or an arbitration agreement) must be made "prior to the issuance of an initial determination on violation of Section 337." *Id.* § 210.21(a).

In response to the Commission's order, on October 28, 2011, HTC asserted that its motion was appropriate under Commission rule 210.18(a): "Rule 210.18(a) allows filing a motion for summary determination past the usual deadline in 'exceptional circumstances' when 'good cause' for doing so exists." HTC Response 1. But HTC selectively quotes the rule, which reads, in context, as follows: "Under exceptional circumstances and upon motion, *the presiding administrative law judge* may determine that good cause exists to permit a summary determination motion to be filed out of time." 19 C.F.R. § 210.18(a) (emphasis added). The rule does not contemplate that motions for summary determination can be filed with the Commission. HTC's

second argument was that Commission Rule 201.4(b) gives the Commission the authority to waive or suspend a procedural rule when the Commission finds "there is good and sufficient reason therefor, provided the rule is not a matter of procedure required by law." *Id.* § 201.4(b); *see* HTC Response at 2. That the Commission may waive or suspend a procedural rule does not itself provide a basis for permitting the substantive filing HTC seeks to make and HTC has not cited relevant authority providing for such a basis.

Besides the procedural obstacles to HTC's motion, it fails on the merits. HTC's argument is based on Apple's August 29, 2011 statement in reexamination that "the '647 patent describes linking an action directly to the detected structure." HTC Mot. 8 (citing 8/29/2011 Remarks at 19). HTC argues that this statement creates intervening rights under *Marine Polymer*.[25]

We disagree with HTC's belief that *Marine Polymer* is pertinent here. First, HTC's argument is premature. Under the Patent Act, it is the reissuance of the patent or the issuance of a reexamination certificate that gives rise to intervening rights. Section 307 of the Patent Act states: "Any proposed amended or new claim determined to be patentable and incorporated into a patent following a reexamination proceeding will have the same effect as that specified in section 252 of this title for reissued patents . . . ." 35 U.S.C. § 307(b). Pending the completion of reexamination nothing is "incorporated into a patent following a reexamination proceeding." (Similarly, pending the completion of reissue proceedings, there is no "reissued patent." 35

[25] HTC argues in its show-cause response that its intervening rights inured when the Federal Circuit decision in *Marine Polymer* issued on September 24, 2011. HTC Resp. 1-2. The date of the Federal Circuit decision is irrelevant to whether HTC acquired intervening rights through P.T.O. action. As discussed *infra*, intervening rights do not arise until after reexamination closes, but if they did arise sooner, they would have arisen as of the date of Apple's statement to the P.T.O., and not based on the date of an intervening judicial decision.

U.S.C. § 252(b)). Accordingly, there are no intervening rights here, unlike in *Marine Polymer*, where a reexamination certificate issued while the appeal was pending before the Federal Circuit. Instead, at best HTC may claim estoppel to prevent Apple from making arguments in this investigation inconsistent with its arguments to the P.T.O, or *vice versa*. However, Apple's arguments to the P.T.O. are exactly the same as the arguments it made here, so there is nothing to be estopped.[26] *See* Apple Resp. 2.

Putting the prematurity to the side, *Marine Polymer* is still inapposite. The Federal Circuit in *Marine Polymer* held the patentee to its statements to the P.T.O. only after the Federal Circuit found that the pertinent P.T.O. claim construction was correct and the district court construction incorrect. Because the P.T.O.'s construction was adopted by the court of appeals (albeit collaterally in the appeal of the district court judgment), the Federal Circuit was able to determine that the patentee's arguments and claim withdrawals during reexamination amounted to a narrowing of claim scope. *Marine Polymer*, 659 F.3d at 1093-94. That is a very different situation from the facts of the instant investigation, where no such narrowing can be demonstrated.[27] Accordingly, HTC has not demonstrated the existence of intervening rights.

6. Summary of Findings for the '647 Patent

We find that HTC has demonstrated by clear and convincing evidence that claims 15 and 19 are anticipated under 35 U.S.C. § 102(b), by the Perspective system, but that HTC has not made such a demonstration for claims 1 and 8. We find that HTC infringes claims 1 and 8. We find it

---

[26] Moreover, even if there were some inconsistency, ordinarily Apple's earlier arguments (raised here) would estop Apple's later arguments (raised at the P.T.O.).

[27] We also observe that the P.T.O. has already found claims 1 and 8 (the claims upon which we find a violation) patentable in reexamination.

not necessary to reach whether claims 15 and 19 required ordered performance of the steps, and therefore we have made no determination whether HTC's accused products infringe those claims. Claims 15 and 19 are anticipated by Perspective even if the steps must be performed in order.[28] We deny HTC's motion for "summary determination" that it possesses intervening rights with respect to the '647 patent.

C. The '721 Patent

Independent claim 1 and its dependent claims 5 and 6 have been asserted from this patent, which is entitled "Method for Providing Automatic and Dynamic Translation of Object Oriented Programming Language-Based Message Passing into Operation System Message Passing Using Proxy Objects." The patent issued on January 2, 1996. The patent claims purport to facilitate object oriented messaging with a procedural operating system. We determined to review two claim constructions ("processing means" and "dynamic binding") as well as issues of infringement and domestic industry under the ALJ's construction of "dynamic binding." Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011).

1. "Processing Means"

The three asserted patent claims (independent claim 1 recites a method, and dependent claims 5 and 6 add more steps to that method) include "processing means" – more specifically a "first processing means" and a "second processing means" – and the parties dispute the proper construction of the term. HTC and the IA argued, and the ALJ found, that the "processing means" invoked the requirements of 35 U.S.C. § 112 ¶ 6. ID at 194-204. The ALJ determined that

[28] In our notice, 76 *Fed. Reg.* 58537 (Sept. 21, 2011), we did not determine to review the ALJ's determination that Apple's domestic industry products practice claims of the '647 patent. ID at 157-64.

substantially all of the method steps were recited functions of the "processing means."[29] The ALJ agreed with HTC's identification of the corresponding structure in the specification for performing the methods claims' steps. ID at 194-96. Before the ALJ, Apple argued that the claims should not be construed under 35 U.S.C. § 112 ¶ 6, Apple Post-Hearing Br. 147-52, and before us, Apple also raises a slightly different argument that if the claims are to be construed under § 112 ¶ 6 that the function is "processing" and that a general purpose computer performs that function. Apple Br. 56-65; *see also* Apple Pet. 44-49.

There is no dispute that if the ALJ's construction were to stand that HTC's products do not infringe. Under Apple's construction, HTC concedes that its "processing means" noninfringement and domestic industry arguments regarding this element fall away, but asserts that the patent claims are invalid in view of the prior art. HTC Br. 92, 97-102.

a) Claim Construction

Federal Circuit law on the means-plus-function question at issue is complex, and it places great reliance on the use of the word "means." *See, e.g.*, *Inventio AG v. ThyssenKrupp Elevator Americas Corp.*, 649 F.3d 1350, 1356-60 (Fed. Cir. 2011); *see also, e.g.*, *Massachusetts Inst. of Tech. v. Abacus Software*, 462 F.3d 1344, 1355-56 (Fed. Cir. 2006); *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1320 (Fed. Cir. 2004).

In our view, the ALJ applied the Federal Circuit's rules improperly. Under the ALJ's approach, the claims were literally turned inside out as each step was rewritten, for example, from

---

[29] *See generally, e.g.*, *Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324 (Fed. Cir. 2006) ("First, the court must determine the claimed function. Second, the court must identify the corresponding structure in the written description of the patent that performs that function.") (citations omitted).

"transmitting, using a first processing means, said object oriented programming language" to "a first processing means for transmitting said object oriented programming language." The result is that the claim, as effectively rewritten by the ALJ, reads:

> A method for sending an object oriented programming language based message . . . , said method comprising the steps of:
>
> a first processing means for [performing two-thirds of a page of functions recited on pages 194-195 of the ID];
>
> a second processing means for [performing two-thirds of a page of functions recited on page 195 of the ID].
>
> decoding, using a second process, said operating system based message into a language based method; and
>
> executing said object oriented programming language based message to said second object in said second process.

This restructuring is exacerbated when the dependent claims are considered. For example, dependent claim 5, which is asserted in this investigation, uses the processing means language to flesh out the executing step.

While recognizing that the ALJ's analysis was guided by Federal Circuit precedent, we disagree with his conclusion. Apple added all of the "processing means" recitations in response to an indefiniteness rejection that stated: "[A]s per claims 1, 2, 5, 6, & 11, it is unclear who or what is executing these steps. If they are executed by a computer, this must be explicitly stated within the context of the claims, and the steps involving 'providing' must be clarified in relation to a computer actually implementing these steps." JX-7, Office Action at 3-4 (Sept. 10, 1993). Apple responded by quoting the examiner's rejection explaining: "Applicant has amended these claims accordingly." Amendment and Response at 9 (Mar. 10, 1994). We do not believe that the evidence of record supports the conclusion that a person of ordinary skill in the art would

interpret Apple's amendment in the context in which it was offered to rewrite the claims in the manner required under the ALJ's analysis.

Among our questions on review posed to the parties was question (d): whether the ALJ's methodology improperly converted a method claim into an apparatus claim. Apple answers yes, Apple Br. at 52-55, but its brief fails to identify cases squarely on point. HTC's brief responds by recognizing, correctly, that method claims can nonetheless contain structural details. HTC Br. 75-78. But HTC's brief fails to identify cases squarely on point, because it is one thing to require some structure in the context of a method, and quite another to convert a method into a means-plus-function apparatus.

Under pertinent Federal Circuit precedent, the claim language "means" carries a presumption that the claim construction methodology for § 112 ¶ 6 applies, and the two bases for rebutting that presumption are inapplicable here. *See, e.g.*, *Sage Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420, 1428-29 (Fed. Cir. 1997). "Processing," (as opposed to the noun "processor") is functional rather than structural, so we do not believe that it can be fairly argued that the claim language connotes sufficient structure needed to perform a recited function. Moreover, while § 112 ¶ 6 will not apply where there is no function recited in the claim, *Sage Prods.*, 126 F.3d at 1428, the claim language in dispute provides a function, either "processing" in isolation (as Apple argues) or the two pages of functions recited by the ALJ.

We agree with Apple that in the context of the claim language itself as well as the file history, "processing" is the recited function. The file history demonstrates the examiner's and applicant's intention to broadly point out where processing occurs generally – and treating the recited function as "processing" preserves these claims as methods rather than apparatuses.

However, Apple did not argue at claim construction that the claim, if subject to § 112 ¶ 6,

had the function of "processing," but rather argued only that § 112 ¶ 6 did not apply at all. HTC argues that this failure forecloses Apple's current argument, while Apple asserts that its previous arguments that "processing means" refers to a "processor" are close enough to its current arguments to avoid waiver, Apple Br. 64. Apple also argues that the Federal Circuit's recent decision in *In re Katz Interactive Call Processing Patent Litigation*, 639 F.3d 1303, 1316 (Fed. Cir. 2011) is an intervening change in the law that should excuse any failure by Apple to preserve the issue. We excuse Apple's failure to present a § 112 ¶ 6 construction to the ALJ because its § 112 ¶ 6 argument before the Commission is of similar scope and effect as its arguments to the ALJ.[30]

Returning to the merits, that the recited function of the means is "processing" is supported by the file history, which makes clear that the corresponding structure is a general purpose computer. JX-7, Office Action at 3-4 (Sept. 10, 1993). The ALJ believed that the file history demonstrated a contrary intention, ID at 199, but we disagree with his findings. In the March 10, 1994, Amendment and Response, the applicant added the "means" language, and there is nothing there suggesting specific programmed apparatus. JX-7 at 8188-89. Other portions of the file history cited by the ALJ are the patent's own specification and provide no guidance. *Id.* at 8017, 8035. The August 23, 1994, Amendment and Response is the applicant's response to the examiner's rejection for nonenablement, *id.* at 8237, but we do not read the applicant's statement

---

[30] We do not believe that *Katz* constitutes an intervening change in the law. *Katz* merely stands for the proposition that the corresponding structure for certain "processing means" limitations may be a general purpose computer. *Id.* at 1316. We also note that *Katz* remanded the underlying claim construction issue to the district court. *Id.* at 1317.

We note that in future investigations, the Commission's ALJs may well wish to require that parties provide § 112 ¶ 6 constructions for each term for which the applicability of § 112 ¶ 6 is in dispute.

there – which necessarily pointed to an enabling disclosure in the specification – to be pertinent to the claim construction issue.

HTC contends that if the Commission were to reach this result – that the function is "processing" – that the Federal Circuit's *Katz* decision requires a remand. HTC Br. 102-103. We disagree. Apple's arguments all along were that processing merely required a processor, and the record is sufficient to resolve this issue without further remand. Moreover, we note that the motivations for the Federal Circuit's limitations on functional claiming of a general purpose computer are not invoked in connection with the steps of a method claim. *See, e.g.*, *Aristocrat Techs. Australia Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1336-37 (Fed. Cir. 2008).

b) Invalidity

HTC contends that under our adopted construction of "processing means," the asserted patent claims are all anticipated by John Bennett's 1988 Ph.D. thesis entitled "Distributed Smalltalk: Inheritance and Reactiveness in Distributed Systems." RX-920A. In the alternative, HTC contends that the patent claims are obvious in view of Bennett and Mach messages. Both Mach and a related Bennett publication are discussed extensively in the '721 patent specification. Col. 4 line 21 – col. 5 line 26 (Bennett); col. 8 line 45 – col. 9 line 63. The Bennett thesis expands upon the Bennett article cited to the examiner.[31] The ALJ did not reach the validity question because of his means-plus-function construction of the "processing means" limitations. ID at 229-30.

Notwithstanding HTC's high burden to demonstrate invalidity, we believe that it has met

[31] Dr. Bennett explained his thesis at Tr. 3227-41.

that burden here.[32] The only dispute is whether Bennett, or Bennett and Mach, teach the '721 patent claims' "operating system based messages."[33] Apple Reply Br. 82-89. The key piece of prior art is the Bennett thesis (RX-920A), which teaches the use of the User Datagram Protocol ("UDP") for the transmission of messages ("datagrams") in his distributed Smalltalk system. Bennett Thesis at 77, 100. HTC's position was that the UDP datagram was the claimed "operating system based message." [34] Rinard Expert Report App. 5 at 36 ("Bennett discloses operating system based messages. *See, e.g.,* Network communication in Distributed Smalltalk uses UDP datagrams.") (claim chart). The ALJ's construction of "operating system based" was essentially, "based *on* an operating system," as opposed to HTC's construction, which was essentially, "based *from* an operating system," *i.e.*, the operating system was the origin. *See* ID at 214-19 (rejecting HTC's proposed construction of "operating system based message" as "data sent by an operating system," and instead construing the term as "a message that is based, or dependent, on an operating system"). We determined not to review the ALJ's construction.

At trial, HTC's discussion of the relationship between the UDP message and the operating

---

[32] We have been mindful of the Supreme Court's guidance in *Microsoft Corp. v. i4i Limited Partnership*, 131 S. Ct. 2238, 2251 (2011), regarding the persuasive value of and deference toward the P.T.O. examiner's decisions.

[33] There is no argument that the references teach "dynamic binding" under both Apple's and HTC's proposed constructions.

[34] In response to HTC's invalidity contention, Apple's expert contended that the UDP datagrams were not "operating system based" because the communications protocol disclosed in Bennett (both the Bennett thesis and the related Bennett paper) was operating-system independent. Spielman Rebuttal Expert Report ¶¶ 111-117 at 50-54. For example, Apple's expert explained, "methods encoded using UDP datagrams over Ethernet are operating system independent, because both UDP and the use of Ethernet connections are system-independent in terms of the data transmission protocols and the physical connection medium. Thus, they are not operating system based messages." *Id.* ¶ 117 at 54.

system was scant in its case in chief. *See* HTC Br. 98 (citing Tr. 3237 and 4522-4524). Instead, HTC waited until its cross-examination of Apple's expert, who had opined, as discussed above, that the UDP message was operating-system independent. During the cross-examination, HTC introduced an impeachment exhibit (SSS-RDX-355) that demonstrated that the headers on UDP messages contained information the operating system would need, including ports for communication and so forth. *See* HTC Br. 98-99; *see also* Tr. 5105-5111.

HTC's argument before the Commission is based nearly entirely on its impeachment of Apple's expert including the impeachment exhibit presented to her. HTC Br. 98-99; *see also* HTC Posthearing Br. 180-81. HTC believes that this suffices to show an "operating system based message" because the UDP messages are "understood by the operating system." HTC Br. 98. HTC improperly characterizes the ALJ's construction of the "operating based system message" as "a format that is understood by, or dependent on the [operating] system." *Id.* (modification in original). The ALJ construed the term, as Apple proposed, as "a message that is based, or dependent, on an operating system." ID at 216. The ALJ explained (citing Apple's expert) that "messages that are based on an operating system have a format that is understood by, or dependent on, that system. Thus, whether a message is understood by an operating system is evidence of whether it is an operating system based message." *Id.* at 217. This is to say that the fact that the message is understood by the operating system may be necessary for it to be an operating-system based message, but it is not sufficient. The ALJ explained that "evidence that a particular format is used in a heterogenous environment, namely one with multiple different operating systems, suggests that the message is not based on an operating system." *Id.* at 218.

Accordingly, HTC has not demonstrated that the Bennett thesis anticipates any asserted patent claim because it has not shown that the pertinent messages are specific to any particular

operating system. HTC's contention that the UDP messages of Bennett bear a close resemblance to Mach messages is not sufficient for anticipation, because Bennett's messages appear to be used across operating systems, while Mach is a single operating system, '721 Patent col. 8 lines 47-60.

HTC also argues that the prosecution history demonstrates the examiner's belief that Bennett's paper disclosed operating-system based messages. HTC Br. 99. HTC asserts that "Applicants never contested the examiner's conclusion regarding operating system based messages in Distributed Smalltalk. . . . Instead, applicants focused on other limitations that Apple did not address here." *Id.* (emphasis in original). HTC cites no cases in support of its prosecution-history argument here and the law does not support HTC: "An applicant's silence in response to an examiner's characterization of a claim does not reflect the applicant's clear and unmistakable acquiescence to that characterization if the claim is eventually allowed on grounds unrelated to the examiner's unrebutted characterization." *3M Innovative Props. Co. v. Avery Dennison Corp.*, 350 F.3d 1365, 1373-74 (Fed. Cir. 2003). Apple picked alternative bases for persuading the examiner that the claims were allowable, and if the examiner mischaracterized Smalltalk's (*i.e.*, Bennett's) operating-system based messages, Apple is not held to have acquiesced to the examiner's characterization.

Having found that Bennett does not anticipate claims 1, 5, and 6, we turn to HTC's argument that Bennett combined with Mach messaging render the '721 patent obvious under 35 U.S.C. § 103. *KSR Int'l Co. v. Teleflex Inc.*, 500 U.S. 398, 417 (2007). HTC argues that it was known to use Mach messages in a way that was substitutable for the UDP datagrams of Bennett. HTC Br. 100-02; HTC Reply Br. 66-67. Apple argues that some reconfiguring of Mach would be required, Apple Br. 67-69, and that some of HTC's arguments have been waived, Apple Reply Br. 88. Even if the prior art is deemed to disclose operating system based messages, Apple contends

that Bennett does not "disclose the 'encoding,' 'decoding,' or second 'transmitting' steps of claim 1. . . . These steps require a specific architecture – the 'operating system based message is encoded using a proxy in a first process, and is then transmitted through an operating system to a 'second process,' for where [*sic*] decoding occurs." Apple Br. 67. Apple further contends that the "UDP datagrams in Bennett are decoded by the *operating system* and thus are never received by the second process." *Id.*

Based on the record, we have no reason to doubt that a person of ordinary skill could have substituted an operating-system-dependent messaging protocol for the universal protocol described by Bennett. Tr. 4535-46; Tr. 5069-71, 5075, 5113-14, 5121-25. Indeed, it is not clear from the record that use of an operating-system-dependent messaging protocol such as Mach messaging would be an improvement over Bennett's UDP messages, just a difference from Bennett with predictable results.

Apple has argued that the combination of Bennett and Mach do not make the asserted claims obvious because "combining a program designed to run on UNIX with a Mach kernel at the time of the '721 patent required the use of the Mach compatibility layer," which isolated Mach messages "within the Mach kernel and made them invisible to other processes." Apple Br. 68. According to Apple, the messages therefore "would not be sent to the second process as required by the claims." *Id.* at 68-69. We reject Apple's argument. We do not view the obviousness question in the way that Apple suggests: that the prior art be like two puzzle pieces that must fit together perfectly. Here Apple argues that based on specific details of the Mach operating system, an adaption of Bennett within Mach would have resulted in an operative system that would not include the claim elements because of a compatibility layer. We agree with HTC's demonstration to the contrary. HTC Br. 100-02; HTC Reply Br. 66-67. Moreover, and more

importantly, we view the relevant inquiry as trying to fit the improvements of Mach into the system of Bennett, or applying the teachings of both into a new system.

There is no dispute that other messaging protocols were known in the art besides UDP, and that Mach was one. *See, e.g.*, Tr. 4536-55. Some, like Mach, were unquestionably operating-system based. *See* '721 patent col. 8 lines 47-65. Others like UDP were meant to be used across different operating systems, with the benefits and weaknesses such interoperability creates. *See, e.g.*, Tr. 5075 ("The UNIX kernel here is specifying that it is an unreliable underyling communication protocol, which is what I have talked about for the UDP datagrams."). Apple has not demonstrated that the choice of one protocol versus another is anything more than a design choice. As the Supreme Court has admonished: "Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, for patents combining previously known elements, deprive prior inventions of their value or utility." *KSR*, 550 U.S. at 419. In this context, Apple's arguments fall away, because there is no dispute that a person of ordinary skill, dissatisfied with the particular advantages or disadvantages of Bennett's UDP system would have chosen something else.[35] *See, e.g.*, Tr. 4535-46. The asserted claims of the '721 patent do not purport to cover the benefit of a new messaging protocol, and do not overcome any drawbacks of Bennett with nonobvious improvements. Instead the asserted claims merely chooses a set of messaging protocols (any messaging protocol not understood across different operating systems) that happens to have been different from Bennett. Apple has

[35] *See KSR*, 550 U.S. at 417 ("[I]f a technique has been used to improve one device, and a person of ordinary skill would recognize that it would improve similar devices in the same way, using the technique is obvious unless it is beyond that person's skill. . . . [A] court must ask whether the improvement is more than the predictable user of prior art elements according to their established functions.").

presented no secondary indicia of nonobviousness. We therefore find the asserted claims obvious.

2. "Dynamic Binding"

The ALJ construed "dynamic binding" in a manner that combined HTC's proposed construction with the IA's: "permitting messages to be bound to the actual methods to be invoked depending on the class of the receiver, allowing objects of any classes that implement a given method to be substituted for the target object at run time." ID at 223. Apple had proposed a broader construction: "permitting messages to be bound to the actual methods to be invoked during runtime." ID at 219. Apple petitioned for review of the ALJ's construction, and we granted Apple's petition on this issue. 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 2). There is no dispute that under Apple's construction, the accused products and Apple's domestic industry products practice the "dynamic binding" limitation. HTC Br. 108.

The "dynamic binding" issue boils down to a battle of the dictionaries between the parties. HTC argued the pertinence of a NeXTSTEP manual upon which the ALJ relied. ID at 221-22. Apple argued that the pertinent definition was in the "Object-Oriented Programming" text by Brad Cox cited in the '721 patent specification in the paragraph prior to "dynamic binding." *Id.* at 222. The pertinent portion of column 8 of the specification reads:

The preferred embodiment of the present invention implements an object-oriented programming system using objective C language. Objective C is an extension to ANSI C that supports the definition of classes of objects and provides syntactic and run-time support for sending messages to objects. This language model is partially derived from SmallTalk and has been described in "Object-Oriented Programming: An Evolutionary Approach," Brad J. Cox, Addison-Wesley 1986 and in "SmallTalk-80: The Language and its Implementation," Adele Goldberg, Dave Robson, Addison-Wesley 1983.

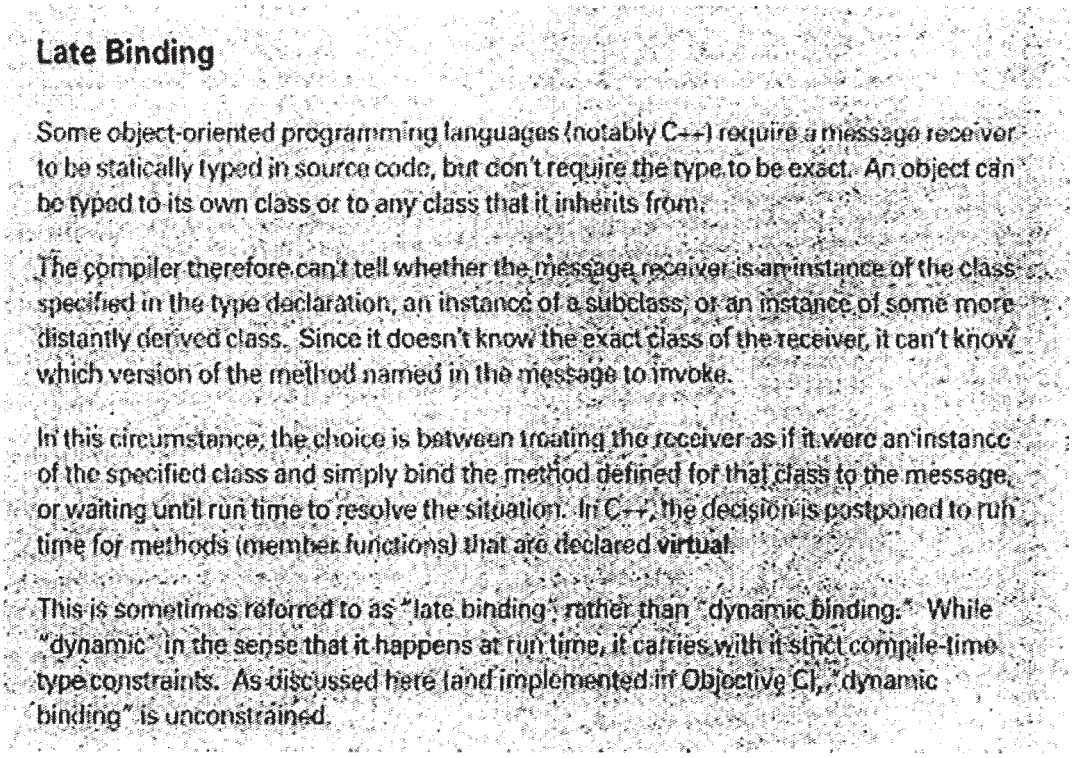
One feature of objective C is "dynamic binding" of messages to the actual methods to be invoked, depending on the class of the receiver. A programmer writing code in objective C can create code that sends a message "doSomething" to an object. The actual method corresponding to the class of the target object does not need to be determined until the message must be sent. This allows objects of any classes that implementing the doSomething method to be substituted for the target object at run time without having to modify the part of the program that sends the message. Also, in objective C, programs have run time access to method "signatures," that encode a method's argument and return types for each class. The method signature provides a way for two programs to agree on the format of messages. Moreover, there is a way to extract arguments from the stack using the signature.

Col. 8 lines 18-44. The dispute revolves around whether dynamic binding requires (as set forth in lines 34-36 above) that the "actual method corresponding to the class of target object does not need to be determined until the message must be sent."

The Cox textbook states that binding "is the process of integrating functionality from different supplier into a consumer's code." CX-780 at 13. It goes on to explain: "Delayed binding (also known as late binding or dynamic binding) means that binding is done later than compile-time, generally while the program is running." *Id.*

There is a narrower understanding of the term "dynamic binding" in the text "NeXTSTEP Object-Oriented Programming and the Objective C Language" written by Apple's predecessor NeXT, the assignee of the '721 patent. RX-84. At page 21 of the NeXTSTEP text, there is a

discussion that explains that waiting until run-time is not enough for binding to be dynamic; dynamism requires that the binding be implemented without time constraints:



Late Binding

Some object-oriented programming languages (notably C++) require a message receiver to be statically typed in source code, but don't require the type to be exact. An object can be typed to its own class or to any class that it inherits from.

The compiler therefore can't tell whether the message receiver is an instance of the class specified in the type declaration, an instance of a subclass, or an instance of some more distantly derived class. Since it doesn't know the exact class of the receiver, it can't know which version of the method named in the message to invoke.

In this circumstance, the choice is between treating the receiver as if it were an instance of the specified class and simply bind the method defined for that class to the message, or waiting until run time to resolve the situation. In C++, the decision is postponed to run time for methods (member functions) that are declared **virtual**.

This is sometimes referred to as "late binding" rather than "dynamic binding." While "dynamic" in the sense that it happens at run time, it carries with it strict compile-time type constraints. As discussed here (and implemented in Objective C), "dynamic binding" is unconstrained.

Id. at 21. We also note that the text has a definition of "dynamic binding" in the glossary that reads: "Discovering the class of an object at run time rather than compile time," which is closer to the Cox definition. *Id.* at 229.

The discussion at page 21 of the NeXTSTEP text comports with the discussion in lines 34-38 of the specification: "The actual method corresponding to the class of the target object does not need to be determined until the message must be sent. This allows objects of any classes that implement the doSomething method to be substituted for the target object at run time without having to modify the part of the program that sends the message." Apple argues that these lines are descriptive of the preferred embodiment and do not help advance a definition of "dynamic binding."

The ALJ observed the tension between the two definitions:

> On the one hand, Cox states that "late" binding is synonymous with "dynamic binding." NeXTSTEP, however, explicitly states that while "late binding" is "'dynamic' in the sense that it happens at run time, it carries with it strict compile time constraints. As discussed here (and implemented in Objective C), 'dynamic binding' is unconstrained."

ID at 222 n.58.

The specification does not purport to incorporate the Cox text but rather notes generally that the Objective C "language model" had "been described in" Cox, as well as another text. Col. 8 line 24. The NeXTSTEP manual was a public document that would provide guidance to a person of ordinary skill as to what NeXT meant by dynamic binding; NeXT is the assignee on the face of the patent. We agree with the ALJ that the discussion in column 8 from lines 29-38 is explanatory of "dynamic binding" and does not merely describe aspects of the preferred embodiment: "dynamic binding" is presented in quotation marks in line 29 as a feature of objective C, and the subsequent discussion (in lines 31-38) purports to explain what dynamic binding in Objective C is. Even if a person of ordinary skill did not adopt the meaning from the NeXTSTEP manual, that person, recognizing an extant ambiguity in the term's meaning, would read lines 29-38 as definitional. *See* Tr. 4452-56.

Apple's argument on review is that the ALJ's construction unreasonably imposes a "dynamic typing" requirement into "dynamic binding." Apple Br. 71-74. But while Apple says that the ALJ conflated "dynamic typing" with "dynamic binding," the fact is that the NeXTSTEP manual purposefully did so as well, and the discussion relied upon by HTC and the ALJ was in the manual's discussion of dynamic binding rather than in its immediately-preceding discussion of dynamic typing. The specification also conflates the two concepts. Col. 8 lines 29-41.

3. "Dynamic Binding" Under the ALJ's Construction

The ALJ found that, under his construction of "dynamic binding," the accused products do not practice the "dynamic binding" limitation. ID at 223-28. We granted Apple's petition for review of the ALJ's application of his construction of dynamic binding to the questions of infringement and domestic industry. 76 *Fed. Reg.* 58537, -38 (Issue No. 3). HTC contends that Apple has waived the infringement theory Apple now asserts.

Apple's infringement theory is [redacted] Apple Br. 77. As HTC observes, Apple's argument is difficult to follow in view of its absence from Apple's submissions in the record to the ALJ, HTC Br. 111 n.57, and we agree with HTC that Apple's infringement theory is waived. Apple contends in its reply that it could not have presented its theory because it did not know how the claim would be construed. Apple Reply Br. 97. We do not believe that to be a genuine argument here, where Apple's new infringement theory would also have led to infringement under broader constructions of dynamic binding. That the ID departed slightly from HTC's proposed construction (in a manner that Apple urged) does not entitle Apple to devise, for the Commission, new theories of infringement for the first time. Apple bore the burden of demonstrating infringement and with it the risk that its theories would not result in infringement under all possible constructions of disputed claim terms.

HTC does not contest that under the ALJ's construction of "dynamic binding" Apple's products practice the "dynamic binding" limitation. HTC Br. 108-14 (discussing infringement not domestic industry); HTC Reply Br. 73-76 (same).

4. Summary of Findings for the '721 Patent

We find that the asserted claims' "processing means" terms invoke § 112 ¶ 6, that the function is "processing," and that the corresponding structure is a general purpose computer. We affirm the ALJ's construction of "dynamic binding." We find that Apple's domestic industry products practice claim 1 of the '721 patent. We further find that HTC's accused products do not infringe the asserted claims. Finally, we find that the asserted claims are obvious under 35 U.S.C. § 103 in view of the Bennett thesis and Mach messaging.

D. The '983 Patent

Claims 1 and 7 are asserted from the '983 patent, which is entitled "Object-Oriented Operating System," and issued on August 14, 2001. The patent involves similar subject matter as the '721 patent, although the two patents are not related and do not share any co-inventors. A certificate of correction issued for the '983 patent shortly before the institution of this investigation. Among other things, that certificate corrects the priority date that appears on the front page of the patent. Priority is properly to July 19, 1993, when the application's great-grandparent application (which issued as U.S. Patent No. 5,379,432) was filed.[36] In response to question (e) in the Commission's notice, 76 *Fed. Reg.* 58537, 58539 (Sept. 21, 2011) the parties have agreed that the file histories of these earlier applications are not pertinent to any issues in the investigation, including claim construction. Apple Br. 106; HTC Br. 124-25; IA Br. 11. We note that related applications include continuations of continuations of continuations of

[36] By great-grandparent application, we mean that the patent in suit is a continuation of a continuation of a continuation of that application. Apple submitted a terminal disclaimer during the prosecution of the '983 patent, such that the patent expires when the '432 patent does, *i.e.*, on July 19, 2013.

continuations, and prosecution in the P.T.O. is still ongoing nearly twenty years after the original application was filed. *See, e.g.*, Patent Application No. 12/142,641 (filed June 19, 2008).

Asserted claim 1 requires that a "runtime loader . . . selectively load required object oriented methods into the executable program memory during runtime." Asserted claim 7 is a method that includes the step of "selectively loading the object-oriented methods into the executable program memory during runtime." We granted review on three issues that deal substantially with these claim requirements: two claim constructions ("loading" and "selectively"); and an infringement and domestic industry issue regarding these and other requirements in the claim regarding "executable program memory." We also granted review on an evidentiary matter.

1. "Loading"

Apple contended, and the ALJ found, that "loading is not limited to physical copying, but includes virtual copying as well." ID at 87. "Virtual copying" of a method is the process of putting into executable program memory a pointer to the method's existence elsewhere. *See* ID at 87-88. HTC argued for a narrower construction that excluded such virtual copying from "loading." *Id.* at 87. HTC petitioned for review, and we granted HTC's petition on this issue.[37] Notice, 76 *Fed. Reg. 58537, -38* (Sept. 21, 2011) (Issue No. 1).

HTC's claim construction argument is two-fold. First, HTC contends that the plain meaning of "load" excludes virtual copying. HTC Br. 117. Second, HTC argues that Apple clearly disclaimed virtual copying in the patent's prosecution history. *Id.* at 118.

---

[37] HTC contends that, under its construction, the accused products do not practice the claimed "loading." HTC Br. 122-25. Because we do not adopt HTC's construction, we do not reach that issue.

Although every claim of the '983 patent includes a "loading" step, the patent specification barely uses the term, and not in any way pertinent to this claim construction dispute. Instead, the patent discusses "copying" and explains, with respect to the only preferred embodiment, that copying includes virtual copying:

> Upon completion of step **314**, the library server has copied the requested computer program logic to the task address space. . . . However, preferably the computer program logic of the code library **110** is physically stored in only one physical memory area. The library server virtually copies computer program logic from the code library **110** to the task address space. That is, instead of physically copying computer program logic from one part of physical memory to another, the library server places in the task address space a pointer to the physical memory area containing the relevant computer program logic.

Col. 9 lines 37-50.

We believe that the patent specification's conflation of virtual copying and copying applies also to the patent claims' "loading." Accordingly, we believe that the specification supports the ALJ's determination that loading includes virtual copying.[38] We reject HTC's argument to the contrary. HTC Br. 117-18.

HTC also argues that to the extent that "loading" is disclosed in the specification to include "virtual copying," that the claim scope was disclaimed in prosecution. HTC Br. 118-22. The examiner rejected the claims as obvious in view a journal article by Schultz in combination with U.S. Patent No. 5,247,681 to Janis. The Janis patent is what is pertinent on Commission review.

---

[38] The parties presented plausible dictionary definitions on both sides of the issue. *See* Apple Reply Br. 100; HTC Br. 118. In particular, the definition of "load" discussed by Apple and HTC was: "To read machine code into main memory in preparation for execution and, in some cases, to perform address adjustment and linking of modules." HTC Br. 118. The first half of that definition supports HTC, and the "in some cases" portion supports Apple. We believe that in light of the specification's conflation of "copying" and "virtual copying," and the preferred embodiment's use of "virtual copying," that the "in some cases" language controls.

In the Janis patent, the invention:

> provides a system and method for sharing previously loaded software modules which are part of a computer program without having to place them in a common area of main memory of a computer system. More specifically, the present invention keeps track of the location of any software modules which remain loaded in a private area of main memory, having been loaded by a previous execution of the computer program. In this way, a subsequent execution of that computer program requiring those software modules can immediately access them rather than having to re-load them into memory.

Janis col. 3 lines 26-37; *see also, e.g.* Janis Figs. 3-5 & col. 5 line 1 – col. 7 line 3. The examiner explained that "assuming that the applicant is correct in indicating that Schmidt does not teach or suggest the feature of loading information during runtime, the feature is taught by Janis . . . to reduce the amount of memory required at runtime to improve memory management . . . ." Office Action at 3 (July 31, 2000) (citing Janis col. 3 lines 6 - col. 4 line 13).

In response, Apple argued in pertinent part:

> [T]he applicant asserts that the cited section at column 3, lines 24-37 of the Janis reference teaches away from the Applicant's claimed invention. Janis is describing sharing previously loaded software modules. . . . The Applicant is claiming a runtime loader that selectively loads the required object-oriented methods into the executable program memory during runtime before invocation of the object-oriented methods.

Amendment at 12 (Dec. 28, 2000).

HTC takes this statement as a disclaimer of virtual copying in its entirety. Apple argues that the disclaimer is more nuanced than that, and that what was disclaimed was only the virtual copying of modules that had already been loaded into executable program memory. Apple Reply Br. 102. *But see* Janis Figs. 3-5 & col. 5 line 1 – col. 7 line 3 (describing how user 1's private memory area is made available to user 2). We believe that Apple's statement in prosecution, which formed the basis for the patent's issuance, cannot be ignored. Whether purposeful or

accidental, the prosecution history statement stands: the sharing of previously loaded software modules falls outside the scope of claim 1's "selectively load required object-oriented methods into the executable program memory during runtime" and claim 7's "selectively loading the object-oriented methods into the executable program memory during runtime." Although there may be nuanced ways to distinguish the virtual copying of Janis from some other systems with virtual copying, Apple's interpretation of the file history, as it relates to the accused systems, demonstrates no such nuance.

We find that the accused products do not infringe claims 1 and 7. We discuss our noninfringement finding separately in connection with the claims' "executable program memory" limitations. To the extent that our determination is deemed to exclude the preferred embodiment, we note that the preference to construe the claims not to read out the preferred embodiment is not absolute. *Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1383 (Fed. Cir. 2008). Were it so, an applicant would be at liberty to make whatever statements it wished during prosecution, knowing that after issuance, the applicant (now a patentee) could, in enforcement proceedings, retreat from those statements to a preferred embodiment.

2. "Selectively Load Required Object-Oriented Methods"

Apple argued to the ALJ that to "*selectively* load *required object-oriented methods*" (claim 1) and the similar language of claim 7 should be construed to include loading a "class" of methods rather than just the required methods themselves. ID at 91. The ID rejected Apple's argument, concluding that the "plain language of the claim requires selectively loading 'object-oriented methods' rather than 'object-oriented' classes.'" *Id.* Under the ID's construction, HTC's products do not infringe. *Id.* at 1115-18. We granted Apple's petition for review. 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 2). HTC contends that if the Commission were to adopt

Apple's construction, that the claims are not infringed and are invalid. HTC Br. 137-42.

a) Claim Construction

It is undisputed that a class can contain hundreds of methods. *See* ID at 92. Apple's principal argument is that the '983 patent's preferred embodiment teaches class loading, Apple Br. 82-85, whereas HTC argues that the preferred embodiment teaches method loading, HTC Br. 131-33. We do not believe that the operation of the preferred embodiment is dispositive here. The patent's Figure 3 expressly recites the step "Access Library Server and Copy Method Code from Code Library to Task Address Space." The textual discussion of the figure does not recite otherwise. Col. 8 line 55 – col. 9 line 6. There is no question that in the system upon which the '983 patent purports to build methods are stored in classes. *E.g.*, col. 6 line 41 – col. 7 line 1; col. 7 lines 11-59; col. 8 lines 6-10. But we do not find this to imply, much less require, that the claims be construed to require that to "selectively load" a "required" method is to load an entire class.

As we explained earlier, the Federal Circuit's preference not to read out of the scope of a claim a patent's preferred embodiment is not absolute. *Helmsderfer*, 527 F.3d at 1383. Thus, even if Apple were correct regarding the operation of the disclosed preferred embodiment,[39] we would not be compelled to read the claim language as Apple recommends. In addition, we find Apple's argument in favor of such an interpretation particularly attenuated here, where it is not alleged that all the patent claims (either the '983 patent standing alone, or with its related patents)

[39] Apple has relied on extrinsic evidence, most of which is confidential, about the [redacted] project that gave rise to the '432 patent and the subsequent patents (including the '983 patent) claiming priority to the '432 patent. Apple Br. 82-85. We do not believe that such extrinsic evidence is pertinent for determining the scope of the preferred embodiment as actually disclosed.

would fall outside the preferred embodiment.[40]

We find the prosecution history of the '983 patent to be helpful in reaching our conclusion. As originally filed, the '983 patent included ten claims. Dependent application claims 2 and 3 are instructive. They read:

> 2. The method of claim 1 in which an object-oriented class library includes related object-oriented classes having class methods for accessing services provided by the operating system using procedural function calls compatible with the native procedural interface of the operating system, wherein the object-oriented statement located in the application is defined by the class library, further comprising the step of storing in the memory component a code library comprising computer program logic implementing the object-oriented class library.
>
> 3. The method of claim 2, wherein step (b) [of claim 1] comprises the steps of identifying one or more methods in the class library corresponding to the object-oriented statement, and copying the identified methods to a portion of virtual memory in the computer previously allocated to the application, and wherein step (c) [of claim 1] comprises the step of executing the identified methods.

Application at 56 (Aug. 26, 1998).[41] Application claim 3 undermines Apple's assertion that its patent claims cannot plausibly be read to include method-by-method loading, for that appears to be exactly what application claim 3 purported to cover. Accordingly, we find that a person of

---

[40] The case most cited for Apple's proposition is *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583-84 (Fed. Cir. 1996), but our review of that decision and the patent there at issue shows that all claims, and not merely the asserted claims, contained the disputed claim term "solder reflow temperature" or "reflow temperature of the solder."

Moreover, while we are unaware of any pertinent decisions on point, we observe that the *Vitronics*-like preference is also somewhat undercut when, through continuation practice, as here, it appears that the applicant is refining or expanding claim coverage years later.

[41] Apple accompanied these claims with a preliminary amendment that cancelled those claims and added one claim. Preliminary Amendment at 2 (Aug. 26, 1998). However, that claim was only a placeholder because Apple subsequently filed another preliminary amendment cancelling that claim and adding twenty more. Supplemental Preliminary Amendment at 1 (May 3, 1999).

ordinary skill, in view of the claim language itself (including both the "determination" and "loading" steps or elements), the specification, and file history, would interpret "selectively load required object-oriented methods" to require loading the methods actually required and not some potentially much larger superset.

We agree with the ALJ that if Apple had intended broader claim scope, it would have been easy for Apple to so claim. To that end, we note that claims 16-22 of the '983 patent do not "selectively load required object-oriented methods," but instead "load[] procedural program logic code." *Compare, e.g.*, claim 1 *with* claim 19. "Selectively" does not appear in those later claims. We also agree with the ALJ that a person of ordinary skill reading unasserted claim 12 would recognize that Apple, in its issued claims, appreciated the differences between "object-oriented methods" and "object-oriented classes." *See* ID at 91-92. We are careful not to afford these differences dispositive effect, but they support our understanding of the plain language of the asserted claims, as supported by the specification and file history.

b) Invalidity

Because the ALJ construed "selectively load" as requiring method-by-method loading as opposed to class loading, he did not analyze HTC's invalidity arguments. ID at 124. We have determined to reach these issues under the rejected claim construction (allowing class loading to satisfy "selectively loading").

(i) NeXTSTEP

The ALJ did not rule on whether Apple's NeXTSTEP 3.0 system was prior art to the '983 patent. *See* 35 U.S.C. § 102(a). Apple contends that the '983 patent antedates NeXTSTEP 3.0, because the inventors of the '983 patent conceived and reduced to practice each of the asserted '983 patent claims no later than [redacted]. Apple Br. 90. The '983 patent, however, claims

priority to a patent application filed more than two years later. *See* '983 patent (certificate of correction) (priority to July 19, 1993). NeXTSTEP was available by September 1992. HTC Reply Br. 88.

Apple and HTC both cite *Spectralytics, Inc. v. Cordis Corp.*, 576 F. Supp. 2d 1030 (D. Minn. 2008) for the pertinent burdens for swearing behind prior art (*i.e.*, for proving that the invention of the '963 patent occurred before the prior art and was followed by diligent reduction to practice). HTC Br. 136; Apple Reply Br. 112. As explained by the district court there, the patentee bears the burden of producing evidence that the claim limitations had been invented as of its proposed invention date. *Spectralytics*, 576 F. Supp. 2d at 1045. Testimony must be corroborated. *Id.* at 1046; *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1577-78 (Fed. Cir. 1996) ("This court does not require corroboration where a party seeks to prove conception through the use of physical exhibits. The trier of fact can conclude for itself what the documents show, aided by testimony as to what the exhibit would mean to one skilled in the art.") (citations omitted). It then becomes the accused infringer's burden to prove by clear and convincing evidence that the patentee's invention date did not precede the date of the purported prior art reference. *Spectralytics*, 576 F. Supp. 2d at 1045.

We believe that Apple met its burden of production. It produced evidence (source code [redacted] on which the inventors worked) that purported to demonstrate selective loading. Apple Br. 90-91; Apple Reply Br. 113-15; *see* Tr. 4832-40 (Apple expert Susan Spielman); Tr. 1797-1811 (inventor Debra Orton). In view of *Mahurkar*, we do not view Apple's testimony as freestanding evidence, but as an explanation of the source code. We believe that HTC mischaracterizes the burden of production, improperly imposing upon Apple the clear and convincing burden that HTC itself bore. HTC Br. 136; HTC Reply Br. 89.

HTC has not met its clear and convincing burden. HTC cites several passages of cross-examination of Apple's expert Spielman, HTC Br. 136-37 (citing Tr. 4818-22), but Apple's redirect examination of its expert (cited above, Tr. 4832-40) undercuts HTC's arguments. HTC cites its own witness only once, HTC Br. 136 (citing Tr. 3487-97), but the passages cited are based in part on HTC's argument that virtual copying is not loading. *See* Tr. 3489 ("Linking and loading are fundamentally separate operations."). Because we have affirmed the ALJ's finding that virtual copying is loading, HTC's basis for distinguishing the [redacted] project falls away. As to the remainder of HTC's expert's testimony, Tr. 3491-97, we find it too cursory to support a clear and convincing burden. HTC's reply brief fails to cite any testimony in support of its position, and instead relies on an incorrect explanation of the burden of proof to try to make its case. HTC Reply Br. 88-89. Accordingly, we find that NeXTSTEP 3.0 has not been shown to be prior art.

(ii) Vernon and Gautron

HTC's second invalidity argument is based on the 1989 article by Vaughn Vernon, "OS/2 Multitasking with Class" (RX-892) and on the 1987 paper by Phillipe Gautron and Marc Shapiro, "Two Extensions to C++: A Dynamic Link Editor and Inner Data" (RX-891). Vernon discloses most of the claim limitations, while Gautron discloses the selective runtime loading required by the last two elements of claims 1 and 7. *See* HTC Br. 140-41; *see also* Tr. 3469-85. HTC argues that under Apple's construction of "selectively load" to permit class loading, the asserted claims are obvious in view of Vernon and Gautron.[42] HTC Br. 140. We find that, but for our

[42] We are aware that certain aspects of C++ were before the examiner during prosecution, although the Gautron article was not. As with our earlier invalidity determinations, we have been mindful of the Supreme Court's guidance in *Microsoft Corp. v. i4i Limited Partnership*, 131 S. Ct.
[*Footnote continued on the next page*]

determination that "selective loading" requires method-by-method loading, the asserted patent claims would be obvious in view of Vernon and Gauton.

Apple offers two arguments against a finding of invalidity: (1) Vernon and Gautron were wholly incompatible with each other and the combination of the two would have produced an inoperable device, Apple Br. at 93; and (2) if Vernon and Gautron could be combined, they still lack the requirement that there be "runtime determinations regarding and selective loading of object-oriented methods *to be invoked*," *id.* at 93 (emphasis in original).

We do not agree with Apple's argument, or its' expert testimony, regarding the difficulty of combining Vernon and Gautron. Gautron explained the benefits of adding dynamic loading and linking to ordinary C++ environments. In order to do so, Gautron required the addition of "a keyword" to "the C++ language, and a few modifications to the compiler." RX-891 at 23; *see also id.* at 24 ("We present here a dynamic linker for the C++ object oriented programming language. Our work integrates linker support into the compiler. This requires a small addition to the syntax of C++, and some additions to the code generator. We link the code for a class at the time of its first instantiation."). Gautron explained that its implementation was "clean and portable," *id.*, and "clean and machine independent," by which Gautron meant that the teachings of the paper could be readily adapted across computer platforms. *See* Tr. 4801 (Apple expert Spielman). Apple's position is that Gautron was not portable, and could not be combined with the teachings of Vernon, because of the small changes Gautron made to the C++ environment. *See, e.g.*, Tr. 4804 (Spielman), Apple Br. 93. Following Apple's reasoning, Gautron cannot be

---

[*Footnote continued from the previous page*]
2238, 2251 (2011), regarding the persuasive value of and deference toward the P.T.O. examiner's decisions.

combined with anything because doing so requires modest changes to the underlying C++ environment. We do not agree with Apple's position.

Apple also claims that the combination of Vernon and Gautron would result in an inoperable device. *Id.* But that argument is based on the same assumption as the one we have just rejected: that Gautron is incompatible with conventional C++ compilers. Tr. 4696-97 (Spielman). The level of skill in the art is not in dispute, and is a "B.S. degree in computer science or equivalent, and two to three years of industry experience." ID at 86 n.30. What is missing from all of Apple's arguments is proof as to why a person of ordinary skill would have any difficulty combining the two references. Merely saying that the compilers, or the operating systems, are a little different does not demonstrate that the advancement made by Gautron and Shapiro in their system would face different unpredictable challenges in the Vernon system. In contrast, HTC's expert (Jeffay) explained in some detail why the combination would be straightforward. Tr. 3469-73; 3483-85.

Apple also makes an argument that hinges on its proposed construction of "selectively loading" to include class loading. Specifically, Apple argues that notwithstanding the permissibility of class loading (for purposes of infringement), there is no teaching in the combined Vernon and Gautron papers that the methods loaded are methods "to be invoked." Apple Br. 94. Essentially, in order to preserve the validity of the asserted patents, Apple argues that the specific method that will be run must be automatically identified and loaded, as opposed to an identification that a particular class is necessary. Apple Reply Br. 117. We find Apple's argument inconsistent with the class loading that it has emphasized elsewhere. The "selectively loading" requirement is the most restrictive element in the claim by virtue of its use of "selectively." If that requirement is nonetheless practiced when a class is loaded that contains a

needed method, then assessing that the class is needed also suffices to practice the patent. It follows *a fortiori* that if the class is deemed to be needed it is because one or more methods within that class are needed. *See* Tr. 3479-83.

Accordingly, we believe that HTC has met its burden of demonstrating that the asserted claims of the '983 patent are invalid, except as to the claim requirement "selectively" load. HTC has demonstrated that the prior art loads classes; HTC did not offer an invalidity analysis under our construction of "selectively," which excludes class loading. We find that but for this requirement, the claims of the '983 patent would be invalid.

c) Infringement

As noted above, HTC contends that under our construction of "selectively load required object-oriented methods" its products do not infringe. We agree and find no infringement. We also agree with HTC that even if class loading were found to satisfy this limitation, loading *all* classes is not selective. We discuss this noninfringement argument in connection with our discussion of the "executable program memory" limitations below.

3. "Executable Program Memory" Limitations

We granted review on the issue whether "the accused products and the Apple domestic industry products practice the claim limitations that call for executable program memory." Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 3). [redacted] ID at 116-18. Accordingly, there is not a violation of section 337 as to the '983 patent. However, based on our conclusions regarding "executable program memory," we would reach the same conclusion even if the claims were construed to permit class loading.

As discussed earlier in connection with "virtual loading," during the prosecution history, Apple disclaimed pointing to a method that is already in executable program memory. That begs the question of what the executable program memory is. The issue is not, as Apple attempts to frame the issue, one of claim construction. The claim was not sought to be construed. Rather, the question is fairly only one of infringement, whether the accused products (i) "determine during runtime" if object oriented methods are already in executable program memory and (ii) whether methods are loaded "into" that executable program memory at runtime as called for by independent claims 1 and 7.

In view of this backdrop, we believe that Apple's infringement theory is strained. Apple contends that when an accused device wishes to execute a method, it executes it, and in so doing transforms what had been nonexecutable memory [redacted] into executable memory [redacted]. That transformation occurs because of Apple's theory that executable program memory is "that subset of memory actually configured and used for execution." *E.g.*, Apple Br. 96. Apple's blurring of any distinction between executable and nonexecutable memory makes Apple's prosecution disclaimer wholly illusory. To the extent that Apple argues that this interpretation of the file history is at odds with the preferred embodiment, then the preferred embodiment must give way because otherwise the disclaimer is nonsensical. Accordingly, we do not find that there is infringement.

In addition, as the ALJ found in the ID, in the accused devices, all methods are loaded into the task address space at startup. ID at 113. The mere fact that the methods are executed later does not transform the task address space into something else, and therefore the methods are not loaded at runtime, but beforehand. Accordingly, there is nothing "selective" about Android's loading. Moreover, because the methods are in that executable program memory already and

because [redacted], no claimed "determinations" are made whether the needed methods are in executable memory in the accused devices. ID at 111. For these additional reasons, we affirm the ALJ's finding of noninfringement.

In view of our conclusion that the patent claims are not infringed by HTC, we determine to take no position on whether Apple's domestic industry product (MacBook Pro computer running Mac OS X v10.6 Snow Leopard) contains the claimed executable program memory. *See Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984). We note that both Apple and HTC devoted little time to explaining the issue, Apple Br. 103-04; HTC Br. 153-54; Apple Reply Br. 134-35; HTC Reply Br. 107, and find that neither party provided a clear or persuasive discussion in support of its conclusion.

4. The ALJ's Striking a Portion of HTC's Expert Report

In a pre-hearing evidentiary ruling, Order No. 99, the ALJ purported only to strike the portions of HTC's expert Dr. Jeffay's report regarding the "Actor's User Manual" (the user manual for a prior art system) as applied to the fourth element of claim 1 of the '983 patent. At the hearing, however, the ALJ explained that he interpreted his order to apply to claim 7 as well. *See* Tr. 3409; Apple Br. 105. HTC petitioned for review of certain of the ALJ's evidentiary decisions, and we granted review on this single ruling, 76 *Fed. Reg.* 58537, -38, because the ALJ's basis in the record was not clear to us.

We have reviewed Order No. 99, the parties' briefing of the motions leading to that order, and the expert report itself. The pertinent portion of the report is an invalidity claim chart. *See* Ex. 13 to HTC Respondents' Opp. to Compl'ts' Supp. Mem. in Supp. of Their Emergency Mot. to Strike Improper and Disallowed Allegations from Resp'ts' Opening Expert Report (Feb.

14, 2011). Dr. Jeffay relied upon the struck portions of the Actor user manual (regarding the graphical user interface, performing file I/O, and performing memory management, *see* Order No. 99) not only for claim 1, but also for the second through fourth elements of claim 7. Absent these struck portions, it does not appear that Dr. Jeffay has any viable contention in his report that Actor system practiced steps (b) and (d) of claim 7. HTC does not argue otherwise in its briefing to the Commission, and instead makes vague assertions about the fact that the claims are different. We find that the ALJ acted soundly within his discretion, and HTC's arguments do not convince us otherwise.

5. Summary of Findings for the '983 Patent

We affirm the ALJ's construction of "loading" to include virtual copying and "selectively load" to exclude class loading. We therefore affirm the ALJ's determinations that HTC's products do not infringe, and Apple's products do not practice, the asserted claims. We further find that under Apple's construction of "selectively load" to include class loading, HTC's products would not infringe the asserted claims. Under Apple's same construction, the asserted claims would be obvious under 35 U.S.C. § 103 in view of the Vernon and Gautron articles. We affirm the ALJ's evidentiary decision regarding the Actor user manual.

III. REMEDY, THE PUBLIC INTEREST, AND BONDING

Apple seeks a limited exclusion order and a cease and desist order. ID at 231, 233. In his Recommended Determination ("RD"), the ALJ recommended that should the Commission determine that a violation of section 337 exists, the Commission should issue a limited exclusion order directed to the accused personal data and mobile communications devices and related software found to infringe a patent in suit. *Id.* at 231-32. The ALJ recommended against the issuance of a cease and desist order because the evidence established that "HTC's inventories of

accused products in the U.S. are for testing purposes only, are not approved by the U.S. government, and are not for sale." *Id.* at 233. Although Apple had sought a 100% bond during the Presidential review period, the ALJ determined that Apple failed to carry its burden to demonstrate a price differential that would protect it from injury and recommended a bond in the amount of zero. *Id.* at 234-35. The IA agreed with the ALJ's remedial recommendations. We agree with the ALJ's recommendations, although we have determined to tailor the exclusion order in certain respects in view of our assessment of the statutory public interest factors.[43]

A. Remedy and the Public Interest

1. Limited Exclusion Order

Upon finding a violation of section 337, the statute provides that the Commission "shall direct that the articles concerned, imported by any person violating the provision of this section, be excluded from entry into the United States, unless, after considering the effect of such exclusion upon the public health and welfare, competitive conditions in the United States economy, the production of like or directly competitive articles in the United States, and United States consumers, it finds that such articles should not be excluded from entry." 19 U.S.C. § 1337(d)(1); *see Spansion, Inc. v. ITC*, 629 F.3d 1331, 1359-60 (Fed. Cir. 2010). We find that a limited exclusion order is appropriate here, with terms as discussed below.

There are four statutory public interest factors for the Commission to consider in determining whether an exclusion order ought not to issue. We will address these factors in turn. However, before doing so, we observe that the exclusion order extends only to HTC products, and

[43] Commissioner Pinkert writes separately to provide additional views regarding remedy and the public interest.

not to products of other Android smartphone manufacturers, such as LG, Motorola, and Samsung. Those smartphone manufacturers are not respondents in this investigation and their Android smartphones are not the subject of our violation finding. Google, whose interests align with HTC's in this investigation, argues that the Commission should not lose sight of the broader patent wars being waged and that "Apple is seeking exclusion orders directed not only at HTC, but also directed at the other primary Android device suppliers." *Id.* at 8. It is either premature or erroneous to assume that an exclusion order in this investigation is tantamount to excluding from the United States all Android smartphones.[44] Should the Commission exclude the smartphones of other manufacturers in future investigations, or should the district courts limit the availability of other manufacturers' Android smartphones to U.S. consumers, the Commission has established procedures that permit modification or rescission of an exclusion order, as appropriate based on a reassessment of the changed facts or public interest at such time. 19 C.F.R. § 210.76(a)(1).

Accordingly, the question presented is the effect on the public interest caused by a limited exclusion order against HTC's infringing smartphones. This proper framing of the issue puts HTC's public interest arguments (and the similar arguments raised by Google) in context: whether smartphones with Apple's, Microsoft's, or RIM's operating systems, or Android smartphones from other manufacturers (LG, Motorola, Samsung, among others) serve as viable substitutes to HTC's smartphones.

We turn to the statutory public interest factors. Because the arguments raised by the parties under each factor overlap to some extent, we address the factors in a different order than

[44] Should Apple assert in the future the same patents it chose to assert here, accused infringers may raise new invalidity and other defenses not presented by HTC here.

they appear in the statute.

a) United States Consumers

While HTC's arguments make vague assertions about the potential for consumers and the U.S. economy to be deprived of the benefits of mobile telephony generally, or 4G networks generally, HTC is essentially arguing that a limited exclusion order will reduce consumer choice among smartphone models or features. The right to exclude under a patent, 35 U.S.C. § 154, is the right to exclude a competitor's products; such exclusion necessarily affects consumer choice. Accordingly, the mere constriction of choice cannot be a sufficient basis for denying the issuance of an exclusion order.

Because HTC does not assert that an exclusion order would result in an actual shortage of smartphones in the United States market, its arguments largely turn on the proposition that HTC's infringing smartphones feature special or unique functionality that, if unavailable, would adversely impact the public interest. In other words, HTC's arguments turn on whether there are reasonable substitutes for its infringing products.

HTC's briefing offers little that distinguishes its smartphones to warrant denial of an exclusion order in this investigation. The only distinction HTC claims in comparison to other Android smartphone suppliers is that its smartphones use HTC's "Sense User Interface" ("Sense UI"), which is HTC's modification of the Android interface that Google provides smartphone suppliers.[45] HTC has failed to establish that other smartphone manufacturers' user interfaces (or

[45] *See* Statement of Dr. Vincent E. O'Brien in Support of Respondent HTC's Opening Br. on Commission Review at 27 ¶ 62 (Oct. 6, 2011) (Att. A to HTC Br.) ("O'Brien Stmt."). T-Mobile similarly makes the unsubstantiated assertion that "HTC smartphones offer a unique HTC Sense software user interface layer that is attractive to many customers." T-Mobile Remedy Br. 4.

in the case of "Nexus" smartphones, no manufacturer add-ons at all) are not adequate substitutes for HTC's. Moreover, HTC does not demonstrate any user preference for HTC's Sense UI over the user interfaces of smartphones running other operating systems. In sum, as we have discussed above, HTC has not demonstrated the unavailability of adequate substitutes for its Android smartphones subject to the exclusion order.[46] *See* HTC Br. 174.

HTC also observes that it has a greater share of the 4G smartphone market than for smartphones overall. HTC Br. 161. HTC's sales figures appear to rely on data from early- to mid-2011, including figures that rely on the fact that at one point HTC offered the only LTE (a type of 4G technology) smartphone in the United States. O'Brien Stmt. ¶ 53. However, the Commission takes notice of the fact that many non-HTC Android 4G smartphones for each of the four national carriers are now available to consumers.[47] Consumers may also choose 4G smartphones using different operating systems. *See* Apple Remedy Reply Br. 12-15; ACT Remedy Br. 18-22.

HTC also suggests that it may be unusual among smartphone manufacturers because of the

---

[46] We reject HTC's arguments to the extent that they are class- or race-based. HTC Br. 175. HTC has not demonstrated that low-income groups or minorities are particularly reliant on HTC Android smartphones, as opposed to mobile telephones, or smartphones generally.

[47] We take notice of the following non-exhaustive list of non-HTC 4G Android handsets offered for sale on carriers' websites and websites of their resellers on November 14, 2011: AT&T (LG Thrill, Motorola Atrix 2, Samsung Focus S, Samsung Galaxy S II, Samsung Infuse, Sony Ericsson Experia); Verizon (LG Revolution, Motorola Droid Bionic, Motorola Droid RAZR, Pantech Breakout, Samsung Stratosphere, Samsung Droid Charge); Sprint (Motorola Photon, Samsung Nexus S, Samsung Conquer, Samsung Epic, Samsung Galaxy S II); T-Mobile (LG Doubleplay, LG MyTouch, Samsung Exhibit, Samsung Exhibit II, Samsung Galaxy S II). Others have since been announced. *See, e..g*, Galaxy Nexus – The New Android Phone from Google, *at* http://www.google.com/nexus (last visited Dec. 14, 2011) (manufactured by Samsung). For discussion of regional carriers, see Apple Remedy Reply Br. 15.

speed with which it brings products to market and the number of its devices in the marketplace. O'Brien Stmt. 29-37 ¶¶ 65-83. However, we decline to find that the fact that HTC releases more models than other manufacturers itself equates to a demonstrably significant impact on consumer welfare. Moreover, HTC's statements regarding its speed to market compared to competitors, O'Brien Stmt. 30-32 ¶¶ 67-75, are unsubstantiated.

Accordingly, we find that the record supports Apple's and ACT's assertions that ample substitutes exist for HTC's Android smartphones. It is undisputed that there are many smartphone manufacturers and it is also undisputed that they compete vigorously, not only among Android smartphones, but among different operating systems. Accordingly, this investigation presents a weaker argument on this issue than one where there might be few suppliers and limited availability of products to U.S. consumers.

HTC also argues that "consumers will likely see an increase in smartphone prices, and a decrease [in] the range of available features. . . . HTC provides a wider selection of smartphones at a wider range of prices, to a wider audience than any other manufacturer. That commitment has assisted carriers like T-Mobile in providing a substantial break on prices in wireless devices and wireless service." HTC Br. 174-75 (footnotes omitted). However, HTC's support for this assertion is based on the price pressure of Android smartphones overall on iPhone prices, O'Brien Stmt. ¶ 101, and not based on the specific availability of HTC Android smartphones in the United States. Indeed, T-Mobile has informed the Commission that four months will be sufficient for it to refill its product offerings with devices from HTC competitors at the various price points that HTC products presently serve. T-Mobile Remedy Br. 6; *see also* Apple Remedy Reply Br. 14-15 (HTC competitors); ACT Remedy Br. 21-22. Thus, we do not view HTC's argument to be compelling.

Finally, HTC argues that customers ordinarily purchase HTC's Android devices with "a 2-year service contract with a substantial penalty for early termination, and the agreements often provide for replacement and repair services in the event that a device breaks." HTC Br. 173. HTC further states:

> Under standard contracts, when a consumers' [*sic*] phone breaks, the carriers and HTC arrange for a replacement device to be sent to the consumer, who sends back his or her faulty device. HTC devices are repaired and replaced by facilities outside the United States. That phone is then repaired, and returned to other consumers as a replacement device. An exclusion order would prevent the carriers and HTC from satisfying their obligations to current consumers.

HTC Br. 173-74 (footnotes omitted). T-Mobile argues that under an exclusion order "some T-Mobile customers could be left without access to the smartphone of their choice and forced to accept a substitute product, if one could be found." T-Mobile Remedy Br. 5. Apple argues, however, T-Mobile's own contract with its customers is to "repair[] or replace[] with the same *or* comparable models," Apple Remedy Reply Br. 20 (emphasis omitted), and that other carriers' agreements are to the same effect, *id.* at 19-20. Therefore, according to Apple, "excluding the Infringing Products in no way threatens a carrier's ability to fulfill its contractual obligation to customers, nor will it put consumers at risk of not receiving a replacement device." *Id.* at 20.

We agree with HTC that the effect on a consumer is somewhat different between a consumer's decision to purchase a new device and a request by a consumer for a replacement in the middle of a contract so that the consumer can fulfill the terms of the contract with the same or a comparable device.[48] We believe that the cited contracts support the expectation of *some*

[48] There is no evidence of consumer expectation upon completing a contract and purchasing a new handset that the consumer be offered the same model; indeed, there is no

[*Footnote continued on the next page*]

consumers that they will receive the same (as opposed to a comparable) model, even though HTC has offered no evidence demonstrating an obligation to provide that same model. *See* T-Mobile Remedy Br. 5. As HTC explains in the passage quoted above, defective devices are exported from the United States to be repaired overseas, and returned to a different customer in the United States. HTC Br. 173-74. Upon consideration of the effect of exclusion upon United States consumers, the Commission believes it appropriate to provide a narrow exemption to the scope of the exclusion order. HTC shall be permitted to import into the United States until December 19, 2013 refurbished handsets to be provided to consumers as replacements under warranty or an insurance contract (whether the warranty or contract is offered by HTC, a carrier, or by a third party). This exemption does not permit HTC to call new devices "refurbished" and to import them as replacements.

b) Public Health and Welfare

With respect to public health and welfare, the Commission has historically examined whether "an exclusion order would deprive the public of products necessary for some important health or welfare need: energy efficient automobiles, basic scientific research, or hospital equipment." *Spansion, Inc. v. ITC*, 629 F.3d 1331, 1360 (Fed. Cir. 2010) (citing *Certain Fluidized Supporting Apparatus and Components*, Inv. No. 337-TA-182/188, USITC Pub. 1667 (Oct.1984); *Inclined-Field Acceleration Tubes and Components*, Inv. Nos. 337-TA-67, USITC Pub. 1119, 2 ITRD 5572 (Dec.1980); *Certain Automatic Crankpin Grinders*, Inv. No. 337–TA–60, USITC Pub. 1022 (Dec.1979)).

[*Footnote continued from the previous page*]
evidence in the record that any HTC Android device is sold by a carrier for that length of time, or that there is consumer demand for an older device to be subject to the term of a new contract.

HTC asserts that exclusion of its devices "would have effects on the public health and welfare." HTC Remedy Br. 175. In particular, HTC states:

- "Excluding HTC's 4G Android devices will limit consumers' ability to access the Internet." *Id.* at 176.
- "The exclusion order would also affect traditionally underserved communities. HTC continues to be committed to being a primary provider of devices for regional wireless carriers, often servicing rural areas." *Id.*
- "[M]obile phones, and more recently smartphones, play an increasingly critical role in public health and safety." *Id.* at 177.

None of HTC's arguments, however, demonstrates cognizable public health and welfare effects that would result from the exclusion of HTC smartphones. That "mobile phones" may play a critical role in public health and safety does not mean that *HTC Android smartphones* play a critical role in public health and safety that other smartphones cannot. As discussed above, HTC's statements that consumers seeking 4G options lack choice is unsupported, rebutted by Apple and ACT, and contradicted by what products are actually available for sale in the United States. HTC fails to provide substantial support for the suggestion that it has an unusually strong relationship to rural carriers, compared to its competitors.[49] *See* Apple Remedy Reply Br. 15.

HTC also touts certain benefits of Android smartphones generally: they are used for "researching medical information, managing home security accounts, viewing surveillance videos, and monitoring the location of family members." HTC Br. 177. HTC notes that Android

[49] To the extent that a rural carrier can demonstrate that it is disproportionately impacted by the exclusion order, and if it can establish grounds for a sufficient basis for relief from the order, that carrier may petition for modification of the exclusion order. 19 C.F.R. § 210.76. It is noteworthy that no regional carriers submitted briefs in response to the Commission's request for briefing on remedy, bonding and the public interest. Nevertheless, as we discuss herein, because of competitive conditions in the U.S. economy, exclusion of subject articles shall commence on April 19, 2012 with respect to imports for all carriers.

devices are used "as an early notification system for impending national disasters" and to enable people to apply for disaster aid. HTC Br. 177-78. Again, however, there is no evidence that HTC devices play a distinct role that Samsung, Motorola or LG Android smartphones (or Apple, Microsoft/Nokia, or RIM smartphones) do not.[50]

Google argues that its "Android platform is especially well-suited to military applications, because . . . it can be adapted to a variety of different hardware and run custom programs developed for it." Google Remedy Br. 13. Military and other U.S. government sales, however, are exempted from exclusion orders by statute. 19 U.S.C. § 1337(*l*); 28 U.S.C. § 1498(a). Moreover, while Google asserts that the military is developing certain applications for Android smartphones, there has been no evidence that any military applications specially relate to HTC's Android smartphones. Google also suggests that Android devices are used by the blind and used in medical applications. Google Remedy Br. 13-14. But Google does not demonstrate that non-HTC smartphones or non-Android smartphones are any less capable of serving these purposes. *See* Apple Remedy Reply Br. 8-11.

The Commission rejects HTC's and T-Mobile's comparisons to factual circumstances in *Baseband Processor Chips*, in which the Commission provided carve-outs from an exclusion order in view of the then-developing 3G network, and the need for first responders to use that

---

[50] These facts are very different from *Certain Baseband Processor Chips and Chipsets*, Inv. No. 337-TA-543, Comm'n Op. (June 2007) (Public Version). In *Baseband Processor Chips*, the Commission was sensitive to concerns about public health and welfare for reasons not presented in this investigation. In that investigation, it was demonstrated that the move from 2G to 3G was essential for certain public safety officials to perform their duties and virtually no non-infringing substitute 3G handsets were available on the market. *Id.* at 148. By contrast, here, HTC offers no such arguments or evidence about the transition from 3G to 4G, and, in any event, HTC has not demonstrated the inadequacy of 4G substitutes. *See generally* IA Reply Br. 7-8 n.2 (discussing differences between 3G and 4G technologies).

network.[51] *See* HTC Br. 178-79, T-Mobile Remedy Br. 9. That investigation dealt with certain Qualcomm components contained in various handset manufacturers' mobile phones to be used on various carriers' networks. Some networks relied on one type of 3G standard called "EV-DO" and others relied on another 3G standard called "WCDMA." It was uncontested there that there were "no non-infringing EV-DO-compatible chips or EV-DO-compatible handsets that contain non-infringing EV-DO chips," and therefore, we concluded that there were no alternative products. *Baseband Processor Chips*, Comm'n Op. at 95-96. In addition, Qualcomm's infringing chips [made] up the vast majority of chips supplied for use in WCDMA-compliant handsets sold in the United States." *Id.* at 30. Non-infringing WCDMA-compatible chips could not "be readily substituted into handsets designed to operate with infringing Qualcomm chips, given the complexity of the operations performed jointly by the chips and the other components of the handset." *Id.* at 98. Based on these facts, the Commission found that "the substantial burden imposed on third parties and the lack of alternative products collectively outweigh[ed] the value to Complainant of obtaining a complete exclusion of the infringing articles." *Id.* at 121. As noted, above, however, HTC has not demonstrated the unavailability of suitable substitutes here, even as to 4G devices.

Accordingly, HTC has not demonstrated that the public health and welfare provides a substantial basis for not issuing an exclusion order.

---

[51] The Commission determination in *Baseband Processor Chips* was reversed in part on appeal *sub nom. Kyocera Wireless Corp. v. ITC*, 545 F.3d 1340 (Fed. Cir. 2008). That decision, however, dealt with the scope of limited exclusion orders and not with the application of section 337's public interest factors. *Id.*

c) Production of Like or Directly Competitive Articles in the United States

There is no evidence of domestic production of smartphones. "[T]o HTC's knowledge no smartphones (including Apple's iPhones) are produced in the United States; rather they are all manufactured overseas and imported into the United States." HTC Br. 161. Accordingly, we agree with Apple that the issuance of an exclusion order would not result in a deficiency in the production of like or directly competitive articles in the United States. Apple Remedy Reply Br. 19.

Google argues that the issuance of an exclusion order, however, has the "potential to leave U.S. consumers without access to innovative technologies resulting from the only open and generative mobile computing platform developed and distributed in the U.S. – Android." Google Remedy Br. 9. As we have already discussed, however, the effect of an exclusion order in this investigation is only to halt the importation of certain HTC Android devices, and not Android devices generally. Moreover, while we recognize the substantial value of many open-source projects, for example, in creating consumer choice where there had been limited choice before, we do not believe that open-source projects should be conferred special status or immunity from infringement allegations. Google offers no legal authority in support of favoring Android because it is purportedly open source,[52] but instead relies on the viewpoints of certain professors and commentators who extol the benefits of open platforms. Google Remedy Br. 11. Finally, we observe that other smartphone operating systems – including Apple's and Microsoft's – are also developed in the United States. Accordingly, we reject Google's argument that

[52] Apple and ACT contest whether Android is properly considered open source at all. Apple Remedy Reply Br. 19 n.35; ACT Remedy Br. 13-14. The Commission makes no finding on this issue.

consideration of the production of like or directly comparable articles in the United States weighs against the issuance of an exclusion order.

d) Competitive Conditions in the United States Economy

HTC asserts that the issuance of a limited exclusion order "threatens to upset the precarious nature of competition concerning the sale and use of mobile devices." HTC Br. 166. HTC further states that the "fragility of that competition may best be seen in the Department of Justice's recent announced filing to block the proposed merger between AT&T and T-Mobile and its concern about the impact on 4G development." *Id.*

T-Mobile explains that it is the only national carrier that does not offer the iPhone. T-Mobile Remedy Br. 7. It further argues that it is particularly vulnerable to the effects of an exclusion order because of its reliance on Android smartphones, and because of its reliance on HTC smartphones among Android smartphones. *Id.* at 1. It asserts that it "has invested in a new 4G HSPA+ network, but its investments depend on consumers having access to devices that can utilize the benefits of that network."[53] *Id.* at 1-2. T-Mobile further asserts as follows:

> HTC accounts for a majority of T-Mobile's U.S. smartphone sales. HTC offers smartphones at a variety of price points, and T-Mobile and HTC have partnered for many years to offer consumers HTC Android smartphones allowing high-speed Internet access. T-Mobile builds its smartphone portfolio by sourcing smartphones with specific features and prices, which it could not easily change on short notice. . . .
>
> Consumers would lose access to T-Mobile's fastest technology if HTC's Android smartphones were removed from the marketplace, particularly the recently-announced HTC Amaze 4G . . . . Without these HTC Android smartphones, T-Mobile would be unable to meet the customer demand for smartphones that take advantage of its new, faster network. At present, T-Mobile has only one other approved smartphone,

[53] To the extent that T-Mobile's HSPA+ network is properly considered 4G, the Commission takes notice of the fact that AT&T offers an iPhone on its HSPA+ network.

> the Samsung Galaxy S II, that can take advantage of its new 4G network. T-Mobile does not believe Samsung could meet expected consumer demand *in the short term* for devices that use its new network.
>
> . . .
>
> External and internal timing, qualification, and approval considerations prevent T-Mobile from offering like or directly competitive products within a commercially reasonable time without a Transition Period. Finding alternative manufactures [*sic*] and suppliers of Android smartphones; developing comparable products at the same price points as the HTC devices; obtaining necessary regulatory approval; testing proposed substitutes for performance, operation, safety, and network compatibility; and ensuring appropriate supply, among other steps, would take many months.

Id. at 3-4, 6 (footnotes omitted and emphasis added).

The key phrase, highlighted in the passage above, is "in the short term." T-Mobile asks that if an exclusion order is entered that the Commission "allow a four-to-six month transition period . . . so that T-Mobile and the rest of the industry could change to other devices . . . ." *Id.* at 2. Apple has offered no substantial challenge to T-Mobile's assertion that it would require at least four months to shift to other suppliers of smartphones. Instead, Apple asserts that T-Mobile should have begun winding down its relationship with HTC as of the date the ID issued, Apple Reply Br. 14, rather than the date of a Commission determination. While we agree with Apple that it is possible that T-Mobile has "begun implementing contingency plans based on the foreseeability of an exclusion order in this Investigation," there is no evidence in the record that T-Mobile has acted irresponsibly, or that T-Mobile's request for transition time of at least four months (in light of regulatory and other considerations) is unreasonable.

We recognize that this case raises some important competitiveness concerns. The President has determined that the build-out of high-speed wireless coverage is one of several vital

infrastructure developments for the nation.[54] The Department of Justice, representing the Administration, recently asserted in its complaint to block the proposed AT&T-T-Mobile merger: "Innovation in wireless technology drives innovation throughout our 21st-century information economy, helping to increase productivity, create jobs, and improve our daily lives. Vigorous competition is essential to ensuring continued innovation and maintaining low prices."[55] The Department of Justice complaint also discusses the benefits that a robust T-Mobile brings to the competitive marketplace: "T-Mobile's investment in an advanced high-speed network and its innovations in technology and mobile wireless telecommunications services have provided, and continue to provide, consumers with significant value." *Id.* ¶ 23. "T-Mobile has also been an innovator in terms of network development and deployment. For instance, T-Mobile was the first company to roll out and market a nationwide network based on advanced HSPA+ technology and marketed as 4G." *Id.* ¶ 29.

We find that the President's statements and the Department of Justice's lawsuit demonstrate the importance of competitive conditions in wireless telecommunications services in

---

[54] *See, e.g.*, Remarks by the President in State of the Union Address (Jan. 25, 2011) ("Within the next five years, we'll make it possible for businesses to deploy the next generation of high-speed wireless coverage to 98 percent of all Americans. . . . It's about connecting every part of America to the digital age."), *at* http://www.whitehouse.gov/the-press-office/2011/01/25/remarks-president-state-union-address; President Obama Details Plan to Win the Future Through Expanded Wireless Access (Feb. 10, 2011) ("The rollout of next generation of high-speed wireless – the '4G' technology now being deployed in the United States by leading carriers – promises considerable benefits to our economy and society."), *at* http://www.whitehouse.gov/the-press-office/2011/02/10/president-obama-details-plan-win-future-through-expanded-wireless-access.

[55] Complaint ¶ 1, *United States v. AT&T et al.*, No. 1:11-cv-01560 (D.D.C. Aug. 31, 1011).

the United States generally and T-Mobile's role within it.[56] Accordingly, we find that, to the extent an immediate exclusion of HTC Android smartphones would have a substantial impact on T-Mobile's competitiveness, such an order would not be in the public interest. In this instance, however, the Commission does not need to choose between an immediate exclusion order and no exclusion order at all. Rather, T-Mobile itself has advised the Commission that a four-month transition period would likely be sufficient for it to replace its infringing HTC smartphones with Android smartphones produced by other manufacturers, ultimately offering consumers the same range of product and price point choices they have today. T-Mobile Remedy Br. at 4. We find T-Mobile's suggestion to be reasonable and within our authority to implement. However, under the circumstances presented, we do not believe that competitive conditions in the U.S. economy require favoring T-Mobile; they warrant enabling T-Mobile to compete on a level field with other carriers. Thus, the four-month transition period should apply equally to all infringing smartphones, and not just those sold by T-Mobile.

The Commission investigative attorney's reply brief recommended that the transition period be limited to 4G smartphones. IA Reply Br. 7-12. T-Mobile's arguments, however, were not limited to 4G smartphones. T-Mobile Comments at 6. The IA's special treatment for 4G

---

[56] The Commission does not believe that the mere fact that a technological field has been determined to provide benefits to the economy is sufficient to excuse infringement of a patent in that field, resulting in what essentially amount to a compulsory license. Such a license would be the implication of HTC's arguments. HTC Br. 166-67. The Commission observes that most of its section 337 investigations (not to mention patent infringement actions in district courts) involve cutting-edge technologies involving, *inter alia*, mobile telephony, computer memory devices, global positioning components, light emitting diodes, and liquid-crystal-display devices (including televisions). Accordingly, depriving a patent of its enforceability because it discloses technologies in a growing field would deny protection for intellectual property where it is arguably most important.

smartphones was based on the assumption that there are a "relatively small number of alternative suppliers of 4G-capable phones." IA Reply Br. 11. As discussed above, HTC has not shown that its products serve a unique or distinct need in the United States with respect to 4G smartphones. Although Google asserts that the "mobile device industry" is "still emerging and fragile," Google Remedy Br. 15, *cf.* HTC Br. 166-67, presumably with reference to the 4G marketplace, there is nothing in the record to support that proposition.[57] Accordingly, there is insufficient evidence in the record to limit the transition period to 4G smartphones.

HTC also argues that balanced "against the significant harms to competition in all sectors of the mobile wireless markets that could flow from an exclusion order, Apple's purported interest in protecting its intellectual property for the asserted patents here is hollow, and highlights the anti-competitive effects of a broad exclusion order." HTC Br. 172. HTC's support for this proposition is that the products that Apple identified as practicing three of the four patents in this investigation are Apple computers rather than iPhones. HTC Br. 172-173. However, the Commission's exclusion order is based on the infringement of the '647 patent, and it is undisputed that "the iPhone 3GS running Mobile Mail" practices the asserted claims of that patent. ID at 157. Accordingly, we need not reach HTC's argument.

Google makes a different argument about competition, calling upon antitrust proceedings involving Microsoft and what Google styles as the "applications barrier to entry." Google Remedy Br. 7 (citing *United States v. Microsoft Corp.*, 253 F.3d 34, 54-55 (D.C. Cir. 2001)).

---

[57] For discussion of carriers' plans to deploy 4G networks, *see generally In re Applications of AT&T Inc. and Deutsch Telekom AG for Consent to Transfer Control of Licenses and Authorizations*, Staff Analysis & Findings, F.C.C. WT Docket No. 11-65 ¶¶ 245-58 (Nov. 29, 2011).

Because the Commission's exclusion order extends only to HTC smartphones, and not all Android smartphones, Google's arguments are at best premature.[58]

For the reasons set forth above, we find that competitive conditions in the United States do not weigh against the issuance of an exclusion order, but favor providing a transition period of four months prior to the exclusion of subject articles.[59]

e) Summary of the Effect of Exclusion on the Statutory Factors

For the reasons set forth above, the statutory public interest factors do not weigh against the issuance of a limited exclusion order in this investigation. The Commission, however, concludes that those factors favor a narrower exclusion that affords meaningful relief to the Complainant while minimizing the impact on third parties. Accordingly, we determine that the exclusion of articles subject to the order shall commence on April 19, 2012. In addition, we have determined that a narrow exemption is appropriate: HTC shall be permitted to import into the United States until December 19, 2013 refurbished handsets to be provided to consumers as replacements under warranty or an insurance contract (whether the warranty or contract is offered by HTC, a carrier, or

---

[58] We find comparison to *Microsoft* problematic. Unlike *Microsoft*, 253 F.3d at 56, HTC and Google have not alleged, nor to the Commission's knowledge has any court found, that Apple exercises monopoly power in a relevant antitrust market. Accordingly, Google does not allege unlawful anticompetitive conduct. *Cf. Microsoft*, 253 F.3d at 60-78 (reciting in detail Microsoft's illegal activities). Absent such, we are left merely with Apple's enforcement of its patent rights, and it is well-settled that those "who petition government for redress are generally immune from antitrust liability." *Professional Real Estate Investors, Inc. v. Columbia Pictures Indus., Inc.*, 508 U.S. 49, 56 (1993). We are not aware of any evidence in the record demonstrating cognizable anticompetitive conduct, and HTC and Google have not suggested to the contrary. *See* Apple Remedy Reply Br. 16.

[59] In view of our determination, *infra*, that Apple is entitled to zero bond during the Presidential review period, the effect of the transition period is to delay the enforcement of the exclusion order for two months beyond the period of Presidential review.

by a third party). As we noted earlier, this exemption does not permit HTC to call new devices "refurbished" and to import them as replacements.

2. Cease and Desist Order

Under section 337(f)(1), the Commission has the discretion to issue a cease and desist order in "addition to, or in lieu of" an exclusion order. 19 U.S.C. § 1337(f)(1). The ALJ did not recommend the issuance of a cease-and-desist order because he found that Apple failed to demonstrate that HTC maintains commercially significant levels of inventory in the United States: "the evidence shows that HTC surrenders all title and interest to its commercial products when they arrive and are warehoused in the United States." ID at 233. The ALJ found that HTC maintains a small inventory in the United States for testing purposes, but "does not store thousands of devices as Apple has implied." *Id.* (quotation omitted). Apple's arguments in favor of a cease and desist order rely on its position that HTC maintains substantial inventory in the United States and that "HTC maintains title to such inventory until it is delivered to its customers." Apple Remedy Br. 3.

We agree with the ALJ that under the facts of this investigation Apple has not demonstrated the need for the issuance of a cease-and-desist order against HTC.[60]

B. Bonding

During the Presidential review period, imported articles otherwise subject to a remedial order are entitled to conditional entry under bond, pursuant to section 337(j)(3). 19 U.S.C. §

[60] Apple's arguments rely on HTC's maintenance of title for handsets that have already been sold to its customers. Apple Remedy Br. 2-4. While the maintenance of title may in some cases be pertinent to the Commission's consideration of the issuance of a cease and desist order, Apple's reliance under the facts of this investigation elevates form over substance.

1337(j)(3). The amount of bond is specified by the Commission and must be an amount sufficient to protect the complainant from any injury. *Id.*

We agree with the ALJ that a bond in the amount of zero is appropriate in this investigation. The Commission typically bases the amount of the temporary importation bond on the price differential between the complainant's product and the infringing imports. *See, e.g.*, *Certain Microsphere Adhesives, Processes for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes,* Inv. No. 337-TA-366, Comm'n Op. at 24 (1995). Apple failed to satisfy its burden to demonstrate the imposition of a bond during the Presidential review period in view of record evidence that the HTC and Apple products are similarly priced (before carrier subsidies). ID at 235-36. Apple argues on review that "a price comparison is not practicable because, as the ALJ found, HTC sells at least 17 different Infringing Products . . . that are sold at varying prices ranging from $270 to $430." Apple Remedy Br. 7. This assertion alone does not make price comparison impracticable nor does it justify entry of 100% bond. Additionally, as the ALJ noted, parties can demonstrate the appropriateness of bonding based on other factors. ID at 234. Apple failed to do so. Complainants are, or should be aware, that such failure to satisfy their burden to support bonding may result in no bonding at all. *See, e.g.*, *Certain Rubber Antidegradants, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-533, Comm'n Op., at 39-40 (Public Version July 21, 2006) ("We find the ALJ's recommendation appropriate in the circumstances here and have determined not to require that a bond be posted for temporary importation. In our view, the complainant has the burden of supporting any proposition it advances, including the amount of the bond.").

IV. CONCLUSION

For the reasons set forth herein, we find a violation of section 337 based on importation of articles that infringe claims 1 and 8 of the '647 patent. We have determined that the appropriate remedy is a limited exclusion order, tailored in scope as set forth herein, and that a cease and desist order should not issue. We have determined that the bond amount should be zero.

By order of the Commission.

James R. Holbein
Secretary to the Commission

Issued: December 29, 2011

CERTAIN PERSONAL DATA AND MOBILE COMMUNICATIONS DEVICES AND RELATED SOFTWARE **337-TA-710**

Certificate of Service

I, James R. Holbein, hereby certify that the attached **Commission Opinion** has been served by hand upon the Commission Investigative Attorney, Thomas S. Fusco, Esq., and the following parties as indicated, on **December 29, 2011**.

James R. Holbein, Secretary
U.S. International Trade Commission
500 E Street, SW
Washington, DC 20436

On Behalf of Complainants Apple Inc., f/k/a Apple Computer, Inc. and NeXT Software, Inc. f/k/a NeXT Computer, Inc.:

F. Christopher Mizzo, Esq.
KIRKLAND & ELLIS LLP
655 15th Street, NW
Washington, DC 20005

( ) Via Hand Delivery
(x) Via Overnight Mail
( ) Via First Class Mail
( ) Other: _____

On Behalf of Respondents High Tech Computer Corp. a/k/a HTC Corp.; HTC America; and, Exedea, Inc.:

James B. Coughlan, Esq.
PERKINS COIE LLP
700 13th Street, NW, Suite 600
Washington, DC 20005

( ) Via Hand Delivery
(x) Via Overnight Mail
( ) Via First Class Mail
( ) Other: _____

PUBLIC VERSION

ADDITIONAL VIEWS OF COMMISSIONER PINKERT ON REMEDY AND THE PUBLIC INTEREST

I concur with my colleagues regarding the remedy that is appropriate in this case. Because my reasoning as to the bearing of the public interest factors on any determination to exclude HTC's smartphone devices differs from theirs, however, I write separately. In particular, I wish to emphasize that the existence of substitutes for the infringing devices does not obviate consideration of the likely impact of exclusion on the range of choices available to consumers.

There are four statutory public interest factors for the Commission to consider in determining whether an exclusion order ought not to issue. The first such factor is public health and welfare.

(A) Public Health and Welfare

In support of its assertion that an exclusion order would be detrimental to public health and welfare, HTC relies primarily on vague assertions about the benefits of mobile telephony. Although HTC and Google assert that Android smartphones are well suited to certain applications, such as researching medical information, managing home security accounts, and serving the military, there is no evidence that HTC smartphones handle those applications better than other Android smartphones. HTC Br. 177; Google Remedy Br 13. The only unique feature HTC's Android handsets appear to offer is that they use HTC's "Sense User Interface" ("Sense UI"), which is HTC's modification of the Android interface that Google provides handset suppliers.[1] HTC has failed, however, to establish that other handset manufacturers' user interfaces (or the lack thereof, in the case of "Nexus" handsets) cannot be substituted for HTC's. In sum, it appears that substitutes for the infringing devices are available in the smartphone marketplace.

HTC also maintains that it has a greater share of the 4G smartphone market than for smartphones overall. HTC Br. 161. The sales figures cited by HTC, however, appear to be based only on data from early- to mid-2011 and reflect that at one point HTC offered the only LTE (a type of 4G technology) smartphone in the United States. O'Brien Stmt. ¶ 53.

It is essential to understand that an exclusion order in this case would extend only to HTC products, not to products of other Android handset manufacturers such as LG, Motorola, and Samsung. Those handset manufacturers are not respondents in this investigation, and their Android handsets are not the subject of the finding of violation. Thus, contrary to Google's argument that issuance of an exclusion order has the "potential to leave U.S. consumers without access to innovative technologies resulting from the only open and generative mobile computing platform developed and distributed in the U.S. – Android," Google Remedy Br. 9, excluding the

---

[1] *See* Statement of Dr. Vincent E. O'Brien in Support of Respondent HTC's Opening Br. on Commission Review at 27 ¶ 62 (Oct. 6, 2011) (Att. A to HTC Br.) ("O'Brien Stmt.").

infringing devices would simply not be tantamount to the exclusion of all Android handsets from the United States. It is worth pointing out as well that other smartphone operating systems – including Apple's and Microsoft's – are also developed in the United States and that the market appears now to include many non-HTC Android 4G handsets[2] as well 4G handsets using different operating systems. *See* Apple Remedy Reply Br. 12-15; ACT Remedy Br. 18-22.

Notwithstanding that there appear to be substitutes for the infringing devices, I find it appropriate to consider here the likely impact of exclusion on the range of choices available to consumers and how that might bear on economic welfare. In other words, the availability of substitutes does not necessarily mean the consumer's desire for quality and variety can be satisfied in the absence of the infringing devices. This observation is particularly apposite in a rapidly changing, technologically driven, market like today's smartphone market. Excluding devices from such a market *could* be significantly detrimental to economic welfare, regardless of whether substitutes are available.

Having said that, I find it extremely difficult on this record to determine the degree to which any narrowing of marketplace choices flowing from exclusion would impact economic welfare, and I find no basis to conclude that a determination to delay exclusion by four months, discussed in detail below, would provide insufficient time for adjustments – by HTC's carriers and/or HTC itself – necessary to restore a full range of choice to consumers.

(B) Competitive Conditions in the United States Economy

HTC asserts that the issuance of a limited exclusion order "threatens to upset the precarious nature of competition concerning the sale and use of mobile devices." HTC Br. 166. HTC further states that the "fragility of that competition may best be seen in the Department of Justice's recent announced filing to block the proposed merger between AT&T and T-Mobile and its concern about the impact on 4G development." *Id.*

---

[2] I note the following non-exhaustive list of non-HTC 4G Android handsets offered for sale on carriers' websites and websites of their resellers on November 14, 2011: AT&T (LG Thrill, Motorola Atrix 2, Samsung Focus S, Samsung Galaxy S II, Samsung Infuse, and Sony Ericsson Experia); Verizon (LG Revolution, Motorola Droid Bionic, Motorola Droid RAZR, Pantech Breakout, Samsung Stratosphere, and Samsung Droid Charge); Sprint (Motorola Photon, Samsung Nexus S, Samsung Conquer, Samsung Epic, and Samsung Galaxy S II); and T-Mobile (LG Doubleplay, LG MyTouch, Samsung Exhibit, Samsung Exhibit II, and Samsung Galaxy S II).

According to T-Mobile, it is the only national carrier that does not offer the iPhone, and it is particularly vulnerable to the effects of an exclusion order because of its reliance on Android handsets, especially HTC Android handsets. T-Mobile requests that, if an exclusion order is entered, the Commission "allow a four-to-six month transition period . . . so that T-Mobile and the rest of the industry could change to other devices . . . ." T-Mobile Remedy Brief at 2.

I find, after considering all of the evidence demonstrating the importance of the smartphone market as well as T-Mobile's significant role in it, that it is appropriate to grant T-Mobile's request. I thus concur in the determination to commence exclusion of articles subject to the Commission's order on April 19, 2012, in order to provide all carriers time to effect transition to other products.

HTC argues that balanced "against the significant harms to competition in all sectors of the mobile wireless markets that could flow from an exclusion order, Apple's purported interest in protecting its intellectual property for the asserted patents here is hollow, and highlights the anti-competitive effects of a broad exclusion order." HTC Br. 172. HTC's support for this proposition is that the products that Apple identified as practicing three of the four patents in this investigation are Apple computers rather than iPhones. HTC Br. 172-173. The exclusion order here, however, is based on the infringement of the '647 patent, and it is undisputed that "the iPhone 3GS running Mobile Mail" practices the asserted claims of that patent. ID at 157.

(C) Production of Like or Directly Competitive Articles in the United States

There is no evidence of domestic production of smartphones. "[T]o HTC's knowledge no smartphones (including Apple's iPhones) are produced in the United States; rather they are all manufactured overseas and imported into the United States." HTC Br. 161. Accordingly, I agree with Apple that issuance of an exclusion order would not result in a deficiency in the production of like or directly competitive articles in the United States. Apple Remedy Reply Br. 19.

(D) United States Consumers

As I have discussed above, HTC has not demonstrated the unavailability of substitutes for its Android smartphones. Moreover, as I have also discussed above, HTC has not demonstrated that, with a four-month delay in implementation, exclusion would significantly constrict to the detriment of consumers the range of choices available in the smartphone marketplace.

Based on HTC's representations regarding its refurbishment process, I concur with the Commission's determination to provide a narrow exemption to the scope of the exclusion order for two years from the date of issuance, which would permit HTC to import refurbished handsets for consumers in need of a same-product replacement or repair under a warranty or service contract.

Finally, HTC argues that "consumers will likely see an increase in smartphone prices, and a decrease [in] the range of available features. . . . HTC provides a wider selection of smartphones at a wider range of prices, to a wider audience than any other manufacturer. That commitment has assisted carriers like T-Mobile in providing a substantial break on prices in wireless devices and wireless service." HTC Br. 174-75 (footnotes omitted). HTC's support for this assertion, however, is based on the price pressure exerted by all Android handsets on iPhone prices, O'Brien Stmt. ¶ 101, not on the specific impact of HTC's Android smartphones. Indeed, T-Mobile has informed the Commission that four months will be sufficient for it to refill its product offerings with devices from HTC's competitors at the various price points that HTC's products presently serve. T-Mobile Remedy Br. 9-10; *see also* Apple Remedy Reply Br. 14-15 (HTC competitors); ACT Remedy Br. 21-22.

CONCLUSION

In conclusion, I concur with my colleagues as to the nature of the exclusion order that is appropriate in this case.[3] My reasoning with respect to the public interest factors, however, differs from theirs. In particular, I wish to emphasize that the existence of substitutes for the infringing devices does not obviate consideration of the likely impact of exclusion on the range of choices available to consumers in the smartphone marketplace. Such impact may warrant more searching inquiry in other investigations.

James R. Holbein
Secretary to the Commission

Issued: December 29, 2011

[3] I join in the opinion of the Commission as to issuance of a cease-and-desist order as well as bonding.

CERTAIN PERSONAL DATA AND MOBILE COMMUNICATIONS DEVICES AND RELATED SOFTWARE **337-TA-710**

Certificate of Service

I, James R. Holbein, hereby certify that the attached **Additional Views of Commissioner Pinkert on Remedy and the Public Interest** has been served by hand upon the Commission Investigative Attorney, Thomas S. Fusco, Esq., and the following parties as indicated, on **December 29, 2011**.

James R. Holbein, Secretary
U.S. International Trade Commission
500 E Street, SW
Washington, DC 20436

On Behalf of Complainants Apple Inc., f/k/a Apple Computer, Inc. and NeXT Software, Inc. f/k/a NeXT Computer, Inc.:

F. Christopher Mizzo, Esq.
KIRKLAND & ELLIS LLP
655 15th Street, NW
Washington, DC 20005

( ) Via Hand Delivery
(x) Via Overnight Mail
( ) Via First Class Mail
( ) Other: _____

On Behalf of Respondents High Tech Computer Corp. a/k/a HTC Corp.; HTC America; and, Exedea, Inc.:

James B. Coughlan, Esq.
PERKINS COIE LLP
700 13th Street, NW, Suite 600
Washington, DC 20005

( ) Via Hand Delivery
(x) Via Overnight Mail
( ) Via First Class Mail
( ) Other: _____

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN PERSONAL DATA AND MOBILE COMMUNICATIONS DEVICES AND RELATED SOFTWARE**	**Investigation No. 337-TA-710**

NOTICE OF COMMISSION DETERMINATION TO REVIEW IN PART A FINAL INITIAL DETERMINATION FINDING A VIOLATION OF SECTION 337; SCHEDULE FOR FILING WRITTEN SUBMISSIONS ON THE ISSUES UNDER REVIEW AND ON REMEDY, THE PUBLIC INTEREST AND BONDING

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined to review in part the final initial determination ("final ID") issued by the presiding administrative law judge ("ALJ") on July 15, 2011, finding a violation of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337, in the above-captioned investigation.

FOR FURTHER INFORMATION CONTACT: Sidney A. Rosenzweig, Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 708-2532. Copies of non-confidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-2000. General information concerning the Commission may also be obtained by accessing its Internet server at *http://www.usitc.gov*. The public record for this investigation may be viewed on the Commission's electronic docket (EDIS) at *http://edis.usitc.gov*. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on (202) 205-1810.

SUPPLEMENTARY INFORMATION: The Commission instituted this investigation on April 6, 2010, based on a complaint filed by Apple Inc., and its subsidiary NeXT Software, Inc., both of Cupertino, California (collectively, "Apple"), alleging a violation of section 337 in the importation, sale for importation, and sale within the United States after importation of certain personal data and mobile communications devices and related software. 75 *Fed. Reg.* 17434 (Apr. 6, 2010). The complaint named as respondents High Tech Computer Corp. of Taiwan and its United States subsidiaries HTC America Inc. of Bellevue, Washington, and Exedia, Inc. of Houston, Texas (collectively, "HTC").

Several patents that had been asserted by Apple in this investigation were earlier asserted by Apple in Investigation No. 337-TA-704 against Nokia Corp. of Finland and Nokia Inc. of White Plains, New York (collectively, "Nokia"). On motion by the Commission investigative attorney ("IA") in the 704 investigation and by the respondents in both investigations, the Chief ALJ transferred Apple's assertion of overlapping patents against Nokia from the 704 investigation into the 710 investigation. *See* Inv. No. 337-TA-704, Order No. 5 (Apr. 26, 2010). However, Apple and Nokia entered a settlement agreement, and on July 21, 2011, the Commission determined not to review the presiding ALJ's termination of the investigation as to Nokia in the 710 investigation. HTC remains.

On July 15, 2011, the ALJ issued the final ID. By that time, the investigation had narrowed to certain claims of four patents: claims 1, 3, 8, 15, and 19 of U.S. Patent No. 5,946,647 ("the '647 patent"); claims 1, 2, 24, and 29 of U.S. Patent No. 6,343,263 ("the '263 patent"); claims 1, 5, and 6 of U.S. Patent No. 5,481,721 ("the '721 patent"); and claims 1 and 7 of U.S. Patent No. 6,275,983 ("the '983 patent"). The final ID found a violation of section 337 by HTC by virtue of the infringement of claims 1, 8, 15, and 19 of the '647 patent, and claims 1, 2, 24, and 29 of the '263 patent. The ALJ recommended the issuance of a limited exclusion order but that no bond be posted during the Presidential review period. The final ID found that claim 3 of the '647 patent was not infringed. In addition, the final ID found that Apple had demonstrated neither infringement nor Apple's own practice (for purposes of establishing the existence of a domestic industry) of claims 5 and 6 of the '721 patent and claims 1 and 7 of the '983 patent. The final ID concluded that HTC had not demonstrated that any of the asserted patent claims were invalid.

On August 1, 2011, HTC, Apple, and the IA each petitioned for review of the final ID. HTC and the IA challenge the ALJ's finding of a violation of section 337 for the '647 and '263 patents. In addition, HTC challenged some of the final ID's findings with respect to the '721 and '983 patents. Apple's petition challenges the ALJ's finding of no violation for the '721 and '983 patents. Apple does not contest the ALJ's determination that HTC did not infringe claim 3 of the '647 patent. On August 9, 2011, the parties filed responses to the others' petitions.

Having examined the record of this investigation, including the ALJ's final ID, the petitions for review, and the responses thereto, the Commission has determined to review the final ID in part.

Specifically, the Commission has determined to review the following issues:

For the '263 patent, the Commission has determined to review certain claim constructions, as well as the final ID's determinations of infringement, domestic industry, and validity, as set forth below:

1) The final ID's construction of "realtime API" and whether the accused products and Apple's domestic industry products practice this limitation if HTC's proposed construction were adopted. (HTC Pet. 15-21.)

2) The final ID's construction of "device handler" and whether the accused products and Apple's domestic industry products practice this limitation if HTC's proposed construction were adopted. (HTC Pet. 21-30.)
3) Whether the API of the accused products is "coupled between" two subsystems. (HTC Pet. 30-35.)
4) Whether the final ID's applications of the claim constructions for "realtime API" and "device handler" are consistent in its analyses of infringement and validity, and whether, based on a consistent treatment, the asserted claims are valid and infringed, and whether the domestic industry requirement is satisfied. (HTC Pet. 33-36; IA Pet. 5-13.)
5) Whether Apple's domestic industry products have an adapter subsystem for the "device." (HTC Pet. 36-37.)

For the '647 patent, the Commission has determined to review the final ID's determinations of infringement and validity, as set forth below:

1) Whether the final ID's applications of the claim constructions for "linking actions to the detected structures" and "linking at least one action to the detected structure" are consistent in its analyses of infringement and validity, and whether, based on a consistent treatment, the asserted claims are valid (in view of the Perspective system and handbook) and infringed. (HTC Pet. 53-62; IA Pet. 15-17.)
2) Whether the steps of method claim 15 must be performed in the order in which they appear in the claim, and if so, whether the accused products infringe claims 15 and 19. (HTC Pet. 47-50.)
3) Whether the accused products link structures to multiple actions. (HTC Pet. 39-47.)
4) The effect, if any, of the Supreme Court's decision in *Global-Tech Appliances, Inc. v. SEB S.A.*, No. 10-6 (U.S. May 31, 2011), on the ID's finding of inducement. (Apple Response Pet. 53.)

For the '721 patent, the Commission has determined to review certain claim constructions, as well as the final ID's determinations regarding infringement, domestic industry, and validity, as set forth below:

1) The final ID's construction of the "processing means" terms, including whether the terms are to be construed under 35 U.S.C. § 112 ¶ 6; if § 112 ¶ 6 does apply, whether the recited function is "processing"; whether the accused products and Apple's domestic industry products practice these limitations based upon the alternative constructions (*i.e.*, (i) if the "processing means" terms are subject to § 112 ¶ 6 and the function is "processing," or (ii) if the "processing means" terms are not subject to § 112 ¶ 6); and whether the asserted claims are invalid in view of Bennett alone or in view of the combination of Bennett and Mach messages based upon such alternative constructions. (Apple Pet. 35-49; HTC Pet. 63-65.)

2) The final ID's construction of "dynamic binding" and whether, if Apple's proposed construction were adopted, the accused products and Apple's domestic industry products practice this limitation. (Apple Pet. 50-54.)
3) Whether, based upon the final ID's construction of "dynamic binding," the accused products and Apple's domestic industry products practice this limitation. (Apple Pet. 55-58.)

For the '983 patent, the Commission has determined to review certain claim constructions, as well as the final ID's determinations regarding infringement, domestic industry, and validity, as set forth below:

1) The final ID's construction of "loading" to include virtual copying in the term "selectively loading," and whether, if HTC's proposed construction were adopted, the accused products and Apple's domestic industry products practice this limitation. (HTC Pet. 83-84.)
2) The final ID's construction of "selectively" to include class loading in the term "selectively loading"; whether, if Apple's proposed construction were adopted, the accused products and Apple's domestic industry products practice this limitation; and whether based upon Apple's proposed construction the asserted claims are invalid in view of NeXTSTEP Release 3, or in view of Vernon and Gautron. (Apple Pet. 4-11; HTC Pet. 86-87.)
3) Whether the accused products and the Apple domestic industry products practice the claim limitations that call for "executable program memory." (Apple Pet. 20-34.)
4) Whether the ALJ acted properly in striking portions of HTC's expert's report regarding whether the Actor User Manual anticipates claim 7 of the '983 patent. (HTC Pet. 82-83.)

By determining to review these enumerated issues, the Commission is not excusing any party's noncompliance with Commission rules and the ALJ's procedural requirements, including requirements to present issues in pre-hearing and post-hearing submissions. *See, e.g.*, Order No. 2 (Apr. 5, 2010) (ground rules). The Commission may, for example, decline to disturb certain findings in the final ID upon finding that issue was not presented in a timely manner to the ALJ.

The Commission has determined not to review the remainder of the final ID.

In connection with this determination not to review the remainder of the final ID, the Commission rejects HTC's attempt to "incorporate[] by . . . reference in their entirety all of the arguments . . . with respect to all issues decided adversely to HTC's positions" from the thousands of pages of briefing before the ALJ, "pre-hearing motions *in limine* and other evidentiary submissions, hearing transcripts, and hearing exhibits." HTC Pet. 6. Commission Rule 210.43(b)(1) states as follows: "The petition for review must set forth a concise statement of the facts material to the consideration of the stated issues, and must present a concise argument providing the reasons that review by the Commission is necessary or appropriate to resolve an important issue of fact, law or policy." 19 C.F.R. § 210.43(b)(1). HTC's purported incorporation does not satisfy section

210.43(b)(1), frustrates any meaningful opposition by the other parties, *see, e.g.,* Apple Response Pet. 54 n.32, and makes Commission review of the purportedly incorporated matter impossible. Accordingly, such issues are "deemed to have been abandoned" by HTC "and may be disregarded by the Commission in reviewing" the final ID. 19 C.F.R. § 210.43(b)(2). Similarly, HTC's single-sentence recitals of issues proposed for review – such as "HTC likewise demonstrated that claims 5 and 6 are invalid in light of multiple different combinations, including (1) Bennett in view of ANSA, (2) Bennett in view of Nelson, and (3) Bennett in view of the common sense of a person of ordinary skill, as described in *KSR*," HTC Pet. 65 – do not constitute a "concise argument" as required by Commission rules and omit the requisite "concise statement of the facts material to the consideration" of the issue. 19 C.F.R. § 210.43(b)(1). Such issues are deemed to have been abandoned as well.

The parties are invited to brief their positions on the issues under review enumerated above with reference to the applicable law and evidentiary record. In particular, the parties are requested to respond to the following questions:

a) For the '263 patent, if the Commission were to find inconsistency between the ALJ's infringement and validity analyses, should the claim constructions for "realtime API" and/or "device handler program" be narrowed in accordance with the ID's analysis of validity? If a party answers this question "yes," it is to identify where in the record (including in its petition for review) it made and preserved such contentions, and should explain in detail whether such narrowing of the scope of the asserted patent claims would result in a finding of noninfringement for any of the accused products.
b) For the '647 patent, whether the Supreme Court's decision in *Global-Tech Appliances, Inc. v. SEB S.A.*, No. 10-6 (U.S. May 31, 2011) has any effect on the ALJ's inducement finding. If a party answers this question "yes," it is to identify where in the record it made and preserved its arguments affected by *Global-Tech.*
c) For the '647 patent, whether claim 15's "enabling selection of the structure and a linked action" (as opposed to the unclaimed step of "selection of the structure and a linked action" by the user) is a single step, and whether HTC made and preserved the argument that it is a single step.
d) For the '721 patent, whether the ALJ's construction of the "processor means" has the effect of impermissibly transforming a method claim into an apparatus claim.
e) For the '983 patent, whether any aspects of the parent applications' file histories are pertinent to the issues under review. If a party makes any such contentions, it is to identify where in the record it made and preserved such a position.

In connection with the final disposition of this investigation, the Commission may (1) issue an order that could result in the exclusion of the subject articles from entry into the United States, and/or (2) issue one or more cease and desist orders that could result in the respondent(s) being required to cease and desist from engaging in unfair acts in the importation and sale of such articles. Accordingly, the Commission is interested in receiving written submissions that address the form of remedy, if any, that should be ordered. If a party seeks exclusion of an article from

entry into the United States for purposes other than entry for consumption, the party should so indicate and provide information establishing that activities involving other types of entry either are adversely affecting it or likely to do so. For background, see *In the Matter of Certain Devices for Connecting Computers via Telephone Lines*, Inv. No. 337-TA-360, USITC Pub. No. 2843 (December 1994) (Commission Opinion).

If the Commission contemplates some form of remedy, it must consider the effects of that remedy upon the public interest. The factors the Commission will consider include the effect that an exclusion order and/or cease and desist orders would have on (1) the public health and welfare, (2) competitive conditions in the U.S. economy, (3) U.S. production of articles that are like or directly competitive with those that are subject to investigation, and (4) U.S. consumers. The Commission is therefore interested in receiving written submissions that address the aforementioned public interest factors in the context of this investigation.

If the Commission orders some form of remedy, the U.S. Trade Representative, as delegated by the President, has 60 days to approve or disapprove the Commission's action. *See* Presidential Memorandum of July 21, 2005, 70 *Fed. Reg.* 43251 (July 26, 2005). During this period, the subject articles would be entitled to enter the United States under bond, in an amount determined by the Commission. The Commission is therefore interested in receiving submissions concerning the amount of the bond that should be imposed if a remedy is ordered.

WRITTEN SUBMISSIONS: The parties to the investigation are requested to file written submissions as set forth above. Parties to the investigation, interested government agencies, and any other interested parties are encouraged to file written submissions on the issues of remedy, the public interest, and bonding. Such submissions should address the recommended determination by the ALJ on remedy and bonding. Complainant and the IA are also requested to submit proposed remedial orders for the Commission's consideration. Complainant is also requested to state the dates that the patents expire and the HTSUS numbers under which the accused products are imported. The written submissions and proposed remedial orders must be filed no later than close of business on Thursday, October 6, 2011. Reply submissions must be filed no later than the close of business on Monday, October 17, 2011. No further submissions on these issues will be permitted unless otherwise ordered by the Commission.

Persons filing written submissions must file the original document and 12 true copies thereof on or before the deadlines stated above with the Office of the Secretary. Any person desiring to submit a document to the Commission in confidence must request confidential treatment unless the information has already been granted such treatment during the proceedings. All such requests should be directed to the Secretary of the Commission and must include a full statement of the reasons why the Commission should grant such treatment. *See* 19 C.F.R. § 210.6. Documents for which confidential treatment by the Commission is sought will be treated accordingly. All nonconfidential written submissions will be available for public inspection at the Office of the Secretary.

The authority for the Commission's determination is contained in section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and in sections 210.42-46 and 210.50 of the Commission's Rules of Practice and Procedure (19 C.F.R. §§ 210.42-46 and 210.50).

By order of the Commission.

James R. Holbein
Secretary to the Commission

Issued: September 15, 2011

CERTAIN PERSONAL DATA AND MOBILE COMMUNICATIONS DEVICES AND RELATED SOFTWARE **337-TA-710**

Certificate of Service

I, James R. Holbein, hereby certify that the attached **NOTICE** has been served by hand upon the Commission Investigative Attorney, Thomas S. Fusco, Esq., and the following parties as indicated, on **September 15 , 2011** .

James R. Holbein, Secretary
U.S. International Trade Commission
500 E Street, SW
Washington, DC 20436

On Behalf of Complainants Apple Inc., f/k/a Apple Computer, Inc. and NeXT Software, Inc. f/k/a NeXT Computer, Inc.:

F. Christopher Mizzo, Esq.
KIRKLAND & ELLIS LLP
655 15th Street, NW
Washington, DC 20005

( ) Via Hand Delivery
( ) Via Overnight Mail
(**x**) Via First Class Mail
( ) Other: _____

On Behalf of Respondents High Tech Computer Corp. a/k/a HTC Corp.; HTC America; and, Exedea, Inc.:

James B. Coughlan, Esq.
PERKINS COIE LLP
700 13th Street, NW, Suite 600
Washington, DC 20005

( ) Via Hand Delivery
( ) Via Overnight Mail
(**x**) Via First Class Mail
( ) Other: _____

PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN PERSONAL DATA AND MOBILE COMMUNICATIONS DEVICES AND RELATED SOFTWARE**	**Inv. No. 337-TA-710**

INITIAL DETERMINATION

Administrative Law Judge Carl C. Charneski

Pursuant to a notice of investigation, 75 Fed. Reg. 17434 (2010), this is the Initial Determination in Investigation No. 337-TA-710. It is held that complainants Apple Inc. and NeXT Software, Inc. have established that respondents HTC Corp., HTC America, Inc., and Exedea, Inc. infringed asserted claims 1, 2, 24, and 29 of U.S. Patent No. 6,343,263 (the '263 patent) and asserted claims 1, 8, 15, and 19 of U.S. Patent No. 5,946,647 (the '647 patent) in violation of section 337(b) of the Tariff Act of 1930, as amended. 19 U.S.C. § 1337(b). Complainants have not established that respondents infringed asserted claim 3 of the '647 patent or the asserted claims of U.S. Patent Nos. 6,275,983 (the '983 patent) and 5,481,721 (the '721 patent). It is further held that the asserted patents are not invalid.

PUBLIC VERSION

TABLE OF CONTENTS

I. Background

A. Institution of Investigation

The Commission instituted this investigation by publication of a notice in the *Federal Register* on April 6, 2010, pursuant to subsection (b) of section 337 of the Tariff Act of 1930, as amended. 19 U.S.C. § 1337(b). This investigation was instituted:

> to determine whether there is a violation of subsection (a)(1)(B) of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain personal data or mobile communications devices or related software that infringe one or more of claims 1-3, 7, 12, and 32 of U.S. Patent No. 5,519,867; claims 1, 3, 7, 8, and 22 of U.S. Patent No. 6,275,983; claims 1, 3, 8-10, 12, 18, 19, 23, and 24 of U.S. Patent No. 5,566,337; claims 1-3 and 7-13 of U.S. Patent No. 5,929,852; claims 1, 3, 6, 8, 10, 13-16, 19, 20, and 22 of U.S. Patent No. 5,946,647; claim 1 of U.S. Patent No. 5,969,705; claims 1-6, 24, 25, 29, and 30 of U.S. Patent No. 6,343,263; claims 1, 3, 4, 6, 7, 9, 10, 15, and 17 of U.S. Patent No. 5,915,131; claims 1-3, 6, 8, 9, 12, and 14-17 of U.S. Patent No. RE39,486; and claims 1-6 and 19-22 of U.S. Patent No. 5,481,721, and whether an industry in the United States exists as required by subsection (a)(2) of section 337.

75 Fed. Reg. 17434 (2010).

The notice of investigation names Apple Inc., f/k/a Apple Computer, Inc. of Cupertino, California; and NeXT Software, Inc., f/k/a NeXT Computer, Inc. of Cupertino, California as complainants. The named respondents are: High Tech Computer Corp. a/k/a/ HTC Corp. of Taoyuan, Taiwan; HTC America, Inc. of Bellevue, Washington; and Exedea, Inc. of Houston, Texas. The Commission Investigative Staff also is named as a party to this investigation. *Id.*

B. Procedural History

On April 19, 2010, an 18-month target date of October 6, 2011, was set in this investigation. Order No. 6; Comm'n Notice Not To Review Initial Determination (May 7, 2010).

On April 26, 2010, Chief Judge Luckern consolidated a portion of Inv. No. 337-TA-704 entitled, *Certain Mobile Communications And Computer Devices And Components Thereof,* with the current investigation. This resulted in the addition of two related respondents to the 710 investigation, *i.e.*, Nokia Corporation of Finland and Nokia Inc. of White Plains, New York (collectively, "Nokia"), with respect to the '867, '131, '705, '263, and '486 patents. *See* Inv. No. 337-TA-704, Order No. 5.

On November 10, 2010, the investigation was terminated as to the '867, '131, '852, and '486 patents. Order No. 41; Comm'n Notice Not To Review Initial Determination (Nov. 29, 2010). Shortly thereafter, on November 16, 2010, the investigation was terminated as to (1) claims 6, 10, 13, 14, 16, and 20 of the '647 patent; (2) claims 3 and 8 of the '983 patent; (3) claims 8, 23, and 24 of the '337 patent; (4) claims 4, 5, 25, and 30 of the '263 patent; and (5) claims 2, 3, 4, and 22 of the '721 patent. Order No. 46; Comm'n Notice Not To Review Initial Determination (Dec. 3, 2010).

On January 3, 2011, the target date was extended by two months to a 20-month target date of December 6, 2011. Order No. 73; Comm'n Notice Not To Review Initial Determination (Jan. 27, 2011).[1]

[1] As noted in Order No. 73, the hearing was postponed by approximately six weeks due to Apple's late discovery production.

Thereafter, on March 1, 2011, the investigation was terminated as to the '705 patent. Order No. 92; Comm'n Notice Not To Review Initial Determination (Mar. 24, 2011). Thereafter, on April 13, 2011, the investigation was terminated as to the following: claims 17, 20, and 22 of the '647 patent; claim 22 of the '983 patent; claims 3 and 6 of the '263 patent; claims 19, 20, and 21 of the '721 patent; and claims 10 and 12 of the '337 patent. Order No. 109; Comm'n Notice Not To Review Initial Determination (Apr. 27, 2011).

On April 7, 2011, an initial determination issued finding that complainants have satisfied the economic prong of the domestic industry requirement. Order No. 102. The Commission reviewed this initial determination and ultimately agreed that "Apple has satisfied the economic prong of the domestic industry requirement" with respect to each of the asserted patents. Comm'n Notice To Review Initial Determination at 3 (May 9, 2011).[2]

A tutorial was presented on November 23, 2010, and the evidentiary hearing was held April 18 – May 6, 2011. During the evidentiary hearing, complainants moved to terminate the investigation as to the '337 patent. On May 9, 2011, the investigation was terminated as to this patent. Order No. 117; Comm'n Notice Not To Review Initial Determination (May 27, 2011). Thus, four patents and fourteen claims remain in issue in this investigation: claims 1, 2, 24, and 29 of the '263 patent; claims 1 and 7 of the '983

---

[2] Inasmuch as the Commission has determined that Apple has satisfied the economic prong, Apple's arguments relating to its licensing activities need not be addressed as the issue is moot.

patent; claims 1, 3, 8, 15, and 19 of the '647 patent; and claims 1, 5, and 6 of the '721 patent.

On July 5, 2011, the investigation was terminated as to Nokia respondents based on a settlement agreement. Order No. 118 (Initial Determination).

C. The Parties

The complainants are Apple Inc. and NeXT Software, Inc. (collectively, "Apple").[3] The respondents are High Tech Computer Corp. a/k/a/ HTC Corp., HTC America, and Exedea, Inc. (collectively, "HTC").[4] The Commission Investigative Staff ("Staff") is also a party in the investigation.

II. Jurisdiction

The Commission has subject matter, personal, and *in rem* jurisdiction in this

---

[3] Apple Inc. designs, develops, markets, and sells (i) the Mac line of desktop and notebook computers, such as MacBook products, including the MacBook Pro and the ultra-light MacBook Air; (ii) a portfolio of software, such as the Mac OS X operating system that comes pre-installed on every Macintosh computer; (iii) the iPod line of mobile digital devices; (iv) the iPhone (including the iPhone 3G and the iPhone 3GS) and related accessories and services, including a complete software development kit providing tools for programmers to create their own iPhone applications; and (v) a variety of related products, accessories, peripherals, and services, including warranty and customer support. Complaint, ¶ 9. NeXT Software, Inc., a wholly-owned subsidiary of Apple Inc., was an early developer of software for object-oriented programming. Software originally developed by NeXT forms the basis for portions of Mac OS X. *Id.*, ¶ 10.

[4] High Tech Computer Corp. changed its name to HTC Corporation. HTC Corp.'s business includes developing, manufacturing, and selling wireless communication devices. HTC Response, ¶ 13. HTC (BVI) Corp., a non-party, is a wholly-owned subsidiary of HTC Corp. *Id.*, ¶ 14. HTC America is a wholly-owned subsidiary of HTC (BVI) Corp. and provides after-sale support services for HTC's wireless communication devices. *Id.*, ¶ 15. Exedea, Inc. is a wholly-owned subsidiary of HTC (BVI) Corp. *Id.*, ¶ 16.

investigation. 19 U.S.C. § 1337. All of the respondents have responded to the complaint and notice of investigation and have participated fully in the hearing conducted in this investigation.

III. Importation

Respondents have stipulated to the fact that they have imported into the United States, sold for importation into the United States, and/or sold within the United States after importation the accused personal data and mobile communications devices and related software. Stipulation Relating to Importation of Respondents HTC Corp., HTC America, Inc., and Exedea, Inc. (Nov. 12, 2010); Supplement to the Stipulation Relating to Importation of Respondents HTC Corp., HTC America, Inc., and Exedea (Apr. 15, 2011).

IV. Products at Issue

A. Apple's Domestic Industry Products

Apple's domestic industry products include the MacBook Pro running Mac OS X v10.6 Snow Leopard (CPX-10) and the iPhone 3GS (CPX-11).

B. Accused HTC Products

The Notice of Investigation identified HTC's personal data and mobile communications devices and related software as within the scope of this Investigation. Apple and HTC stipulated that certain HTC handsets, including HTC Evo 4G (CPX-1), HTC Aria (CPX-2), HTC Incredible (running Android 2.1) (CPX-3), HTC Incredible (running Android 2.2) (CPX-4), HTC T-Mobile G2 (CPX-5), running various versions of the Android operative system (including Android 1.5 ("Cupcake"), Android 1.6

("Donut"), Android 2.1 ("Éclair"), and Android 2.2 ("Froyo")), the Browser application, the HTC Messages application, and the Android Messaging application are representative of all HTC handsets running various versions of the Android operating systems and the additional applications. Stipulation Relating to HTC Representative Handsets (Mar. 29, 2011) ("HTC Rep. Prod. Stip.").

Apple and HTC stipulated that certain HTC handsets are representative of certain versions of the Android operating system and certain applications.

Specifically, for the '263 patent, the source code for the HTC Evo 4G (running Android 2.2) (CPX-1) is representative of certain source code for all HTC products running Android 2.2, and the source code for the HTC Aria (running Android 2.1) (CPX-2) is representative of certain source code for all HTC products running Android 2.1, 1.6 and 1.5. HTC Rep. Prod. Stip. at 2-3.

For the '647 patent, HTC Incredible (running Android 2.1) (CPX-3) is representative of all HTC products with the HTC Messages application and running Android 2.1, 1.6, or 1.5; HTC Incredible (running Android 2.2) (CPX-4) is representative of all HTC products with the Browser application and HTC products running Android 2.2 with the HTC Messages application; and HTC T-Mobile G2 (CPX-5) is representative of all HTC products with Android Messaging application. HTC Rep. Prod. Stip. at 6-11.

For the '721 patent, HTC Incredible (running Android 2.1) (CPX-3) is representative of all HTC products running Android 2.2, 2.1, 1.6, or 1.5. HTC Rep. Prod. Stip. at 4-5.

For the '983 patent, the source code entered into evidence for the HTC Aria (running Android 2.1) is representative of the source code for all HTC products running

Android 1.5, 1.6, 2.1, and 2.2; and the existence of a processor, RAM, and/or ROM in the HTC Aria is representative of the existence of a processor, RAM, and/or ROM in all HTC handsets running Android 1.5, 1.6, 2.1, and 2.2. HTC Rep. Prod. Stip. at 5-6.

Apple and HTC have also stipulated that HTC and its customers have powered on the HTC accused products, such that the devices have become functional for use in the United States (by testing or otherwise), as well as other uses discussed further in the patent sections below. Stipulation Relating to Use of Respondents HTC Corp., HTC America, Inc., and Exedea, Inc.'s Products in the United States (Apr. 17, 2011) ("HTC Use Stip.").

Apple and HTC also stipulated that HTC's Windows products are not subject to the Investigation. Stipulation Regarding Products With Windows Mobile or Windows Phone Operating Systems between Complainants and HTC (Nov. 18, 2010) ("Windows Stip.").

V. Overview of the Asserted Patents

A. The '263 Patent

United States Patent No. 6,343,263 ("the '263 patent") is entitled, "Real-Time Signal Processing System For Serially Transmitted Data." JX-6. The '263 patent "is directed to the transmission of data to and from a computer, and more particularly to a system for performing real-time signal processing of data that is serially transmitted to and from a computer." *Id.*, col. 1, lns. 4-7 (Field of the Invention). The invention of the '263 patent "enables any arbitrary type of data, such as voice, facsimile, multimedia and the like, which is transmitted over any type of communication network, to be handled

with any type of real-time engine, by abstracting the functions of each of the elements of the systems from one another." *Id.,* col. 2, ln. 66 – col. 3, ln. 6 (Brief Statement of the Invention).

The '263 patent "generally relates to systems for realtime processing of signals and creating greater flexibility in how those systems are managed to allow the signal processing components to be abstracted from the overall system." Polish Tr. 310. Specifically, the '263 patent is directed toward data, such as video, audio, voice, business records, and word files, that is sent over a network and then processed. Realtime signal processing is relevant to video, audio, and voice data that are associated with time frames, *i.e.,* it is time sensitive data. Polish, Tr. 311-12.

B. The '721 Patent

U.S. Patent No. 5,481,721 ("the '721 patent") is entitled, "Method For Providing Automatic And Dynamic Translation Of Object Oriented Programming Language-Based Message Passing Into Operation System Message Passing Using Proxy Objects." JX-1. The invention of the '721 patent provides a method and apparatus for the distribution of objects and the sending of messages between objects that are in different processes. *Id.,* (Abstract). *See* Spielman, Tr. 2703 ("Generally, the '721 patent is about an object-oriented message that is used in an interprocess communication making use of an operating system-based message.").

The invention relates to the field of object-oriented programming and distributed computing. JX-1 at col. 1, lns. 15-16 (Field of the Invention). The invention of the '721 patent is described as follows:

> The present invention permits the distribution of objects and sending of messages between objects that are located in different processes. Initially, a "proxy" object is created in the same process as a sender object. This proxy acts as a local receiver for all the objects in the local program. When the proxy receives a message, the message is encoded and transmitted between programs as a stream of bytes. In the remote process, the message is decoded and executed as if the sender was remote. The result follows the same path, encoded, transmitted, and then decoded back in the local process. The result is then provided to the sending object.

JX-1 at col. 6, lns. 52-63.

C. The '647 Patent

U.S. Patent No. 5,946,647 ("the '647 patent") is entitled, "System And Method For Performing An Action On A Structure In Computer-Generated Data." JX-3. The invention of the '647 patent relates to a system and method for performing computer-based actions on structures identified in computer data. JX-3 at col. 1, lns. 9-11 (Background of the Invention.) The '647 patent "brought together ideas from very different areas of computer science that are not typically combined, such as pattern recognition, user interfaces, launching applications by way of the operating system." Mowry Tr. 2443.

D. The '983 Patent

U.S. Patent No. 6,275,983 ("the '983 patent") is entitled, "Object-Oriented Operating System." JX-4. The '983 patent concerns object-oriented applications that make object-oriented method calls to a procedural operating system. Spielman Tr. 1892; JX-4 at col. 1, lns. 19-22 (Field of the Invention) ("The present invention relates generally to object-oriented computing environments, and more particularly to a system

and method for providing an object-oriented interface for a procedural operating system.").

VI. General Principles of Patent Law

Pursuant to the Commission's notice of investigation, this is a patent-based investigation. *See* 75 Fed. Reg. 17434 (2010). All of the unfair acts alleged by complainants are instances of alleged infringement of the asserted patents. Any finding of patent infringement or non-infringement requires a two-step analytical approach. First, the asserted patent claims must be construed as a matter of law to determine their proper scope.[5] Second, a factual determination must be made as to whether the properly construed claims read on the accused devices. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996).

A. Claim Construction

Claim construction begins with the language of the claims themselves. Claims should be given their ordinary and customary meaning as understood by a person of ordinary skill in the art, viewing the claim terms in the context of the entire patent. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005), *cert. denied*, 546 U.S. 1170 (2006).[6]

---

[5] Only those claim terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vanderlande Indus. Nederland BV v. Int'l Trade Comm.*, 366 F.3d 1311, 1323 (Fed. Cir. 2004); *Vivid Tech., Inc. v. American Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

[6] Factors that may be considered when determining the level of ordinary skill in the art include: "(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in

In some instances, claim terms do not have particular meaning in a field of art, and claim construction involves little more than the application of the widely accepted meaning of commonly understood words. *Phillips*, 415 F.3d at 1314. "In such circumstances, general purpose dictionaries may be helpful." *Id.*

In many cases, claim terms have a specialized meaning and it is necessary to determine what a person of skill in the art would have understood the disputed claim language to mean. "Because the meaning of a claim term as understood by persons of skill in the art is often not immediately apparent, and because patentees frequently use terms idiosyncratically, the court looks to 'those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean.'" *Id.* (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)). The "sources" identified by the *Phillips* Court include "the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Id.*

In cases in which the meaning of a claim term is uncertain, the specification usually is the best guide to the meaning of the term. *Id.* at 1315. As a general rule, the particular examples or embodiments discussed in the specification are not to be read into the claims as limitations. *Markman*, 52 F.3d at 979. However, the specification is always highly relevant to the claim construction analysis, and is usually dispositive. *Id.* Moreover, "[t]he construction that stays true to the claim language and most naturally

---

the field." *Environmental Designs, Ltd. v. Union Oil Co.,* 713 F.2d 693, 696 (Fed. Cir. 1983), *cert. denied,* 464 U.S. 1043 (1984).

aligns with the patent's description of the invention will be, in the end, the correct construction." *Id.* at 1316.

Claims are not necessarily, and are not usually, limited in scope to the preferred embodiment. *RF Delaware, Inc. v. Pacific Keystone Techs., Inc.*, 326 F.3d 1255, 1263 (Fed. Cir. 2003); *Decisioning.com, Inc. v. Federated Dep't Stores, Inc.*, 527 F.3d 1300, 1314 (Fed. Cir. 2008) ("[The] description of a preferred embodiment, in the absence of a clear intention to limit claim scope, is an insufficient basis on which to narrow the claims.").

Furthermore, claim interpretations that exclude the preferred embodiment are "rarely, if ever, correct and require highly persuasive evidentiary support." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996). Such a conclusion can be mandated in rare instances by clear intrinsic evidence, such as unambiguous claim language or a clear disclaimer by the patentees during patent prosecution. *Elekta Instrument v. O.U.R. Sci. Int'l*, 214 F.3d 1302, 1308 (Fed. Cir. 2000); *Rheox, Inc. v. Entact, Inc.*, 276 F.3d 1319 (Fed. Cir. 2002).

If the intrinsic evidence does not establish the meaning of a claim, then extrinsic evidence may be considered. Extrinsic evidence consists of all evidence external to the patent and the prosecution history, and includes inventor testimony, expert testimony, and learned treatises. *Phillips*, 415 F.3d at 1317. Inventor testimony can be useful to shed light on the relevant art. In evaluating expert testimony, a court should discount any expert testimony that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent. *Id.* at 1318. Extrinsic evidence may be considered

if a court deems it helpful in determining the true meaning of language used in the patent claims. *Id.*

This investigation involves means-plus-function claim limitations. When a claim uses the term "means" to describe a limitation, a presumption arises that the inventor used the term to invoke the means-plus-function format authorized by 35 U.S.C. § 112, ¶ 6.[7] *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1375 (Fed. Cir. 2003). "This presumption can be rebutted when the claim, in addition to the functional language, recites structure sufficient to perform the claimed function in its entirety." *Id.*

Once a court concludes that a claim limitation is a means-plus-function limitation, two steps of claim construction remain: (1) the court must first identify the function of the limitation; and (2) the court must then look to the specification and identify the corresponding structure for that function. *Biomedino LLC v. Waters Technologies Corp.*, 490 F.3d 946, 950 (Fed. Cir. 2007). If there is no structure in the specification corresponding to the means-plus-function limitation, the claim will be found invalid as indefinite. *Id.*

While the specification must contain structure linked to claimed means, "[a]ll one needs to do in order to obtain the benefit of [§ 112, ¶ 6] is to recite some structure

---

[7] The relevant portion of section 112 provides:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112, ¶ 6.

corresponding to the means in the specification, as the statute states, so that one can readily ascertain what the claim means and comply with the particularity requirement of [§ 112,] ¶ 2." *Id.* (citing *Atmel Corp. v. Info. Storage Devices, Inc.,* 198 F.3d 1374, 1382 (Fed. Cir. 1999)). Additionally, interpretation of what is disclosed in the specification must be made in light of the knowledge of one skilled in the art. *Id.* at 1380.

Thus, in order for a means-plus-function claim to be valid under section 112, the corresponding structure of the limitation "must be disclosed in the written description in such a manner that one skilled in the art will know and understand what structure corresponds to the means limitation. Otherwise, one does not know what the claim means." *Id.* at 1382. However, "the testimony of one of ordinary skill in the art cannot supplant the total absence of structure from the specification." *Id.* (quoting *Default Proof Credit Card Sys., Inc. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1302 (Fed. Cir. 2005)).

"A means-plus-function claim encompasses all structure in the specification corresponding to that element and equivalent structures." However, "[t]he statute does not permit limitation of a means-plus-function claim by adopting a function different from that explicitly recited in the claim. Nor does the statute permit incorporation of structure from the written description beyond that necessary to perform the claimed function." *Micro Chem. Inc. v. Great Plains Chem. Co., Inc.,* 194 F.3d 1250, 1258 (Fed. Cir. 1999).

B. Infringement

Under 35 U.S.C. §271(a), direct infringement consists of making, using, offering to sell, or selling a patented invention without consent of the patent owner. The complainant in a section 337 investigation bears the burden of proving infringement of

the asserted patent claims by a "preponderance of the evidence." *Certain Flooring Products*, Inv. No. 337-TA-443, Comm'n Notice of Final Determination of No Violation of Section 337, 2002 WL 448690 at *59, (Mar. 22, 2002); *Enercon GmbH v. Int'l Trade Comm'n,* 151 F.3d 1376 (Fed. Cir. 1998).

Each patent claim element or limitation is considered material and essential. *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991).[8] Literal infringement of a claim occurs when every limitation recited in the claim appears in the accused device, *i.e.,* when the properly construed claim reads on the accused device exactly. *Amhil Enters., Ltd. v. Wawa, Inc.*, 81 F.3d 1554, 1562 (Fed. Cir. 1996); *Southwall Tech. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed Cir. 1995).

If the accused product does not literally infringe the patent claim, infringement might be found under the doctrine of equivalents. The Supreme Court has described the essential inquiry of the doctrine of equivalents analysis in terms of whether the accused product or process contains elements identical or equivalent to each claimed element of the patented invention. *Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 40 (1997). Thus, infringement may be found when the accused product performs substantially the same function in substantially the same way to obtain substantially the same result. *See Eagle Comtronics, Inc. v. Arrow Comm. Labs.*, 305 F.3d 1303, 1315 (Fed. Cir. 2002).

As noted, certain of the claim elements at issue in this investigation are written in

[8] Thus, if an accused device lacks a limitation of an independent claim, the device cannot infringe a dependent claim. *See Wahpeton Canvas Co. v. Frontier, Inc.,* 870 F.2d 1546, 1552 n.9 (Fed. Cir. 1989).

means-plus-function format. "Literal infringement of a § 112, ¶ 6 limitation requires that the relevant structure in the accused device perform the identical function recited in the claim and be identical or equivalent" to the structure identified in the written description as corresponding to the recited function. *JVW Enter. v. Interact Accessories, Inc.*, 424 F.3d 1324, 1333 (Fed. Cir. 2005) (citing *Odetics, Inc. v. Storage Tech. Corp.*, 185 F.3d 1259, 1267 (Fed. Cir.1999)). For the relevant structure in the accused device to be equivalent to the structure in the written description, differences between the two must be insubstantial. For example, the structure in the accused device must perform the claimed function in substantially the same way to achieve substantially the same result as the structure in the written description. *JVW*, 424 F.3d at 1333.[9]

Under 35 U.S.C. § 271(b), "[w]hoever actively induces infringement of a patent shall be liable as an infringer." To establish liability, a patentee must prove direct infringement for each instance of indirect infringement. *DSU Medical Corp. v. JMS Co.*, 471 F.3d 1293, 1303 (Fed. Cir. 2006). "In order to succeed on a claim of inducement, the patentee must show, first that there has been direct infringement, and second, that the alleged infringer knowingly induced infringement and possessed specific intent to encourage another's infringement." *Cross Medical Products, Inc. v. Medtronic Sofamor*

[9] "The primary difference between structural equivalents under section 112, paragraph 6 and the doctrine of equivalents is a question of timing." *Frank's Casing, Crew & Rental Tools, Inc. v. Weatherford Int'l, Inc.*, 389 F.3d 1370, 1379 (Fed. Cir. 2004) (citing *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1321 n.2 (Fed. Cir. 1999)). As the Federal Circuit has explained, "[a] proposed equivalent must have arisen at a definite period in time, i.e., either before or after [patent filing]. If before, a § 112, ¶ 6 structural equivalents analysis applies and any analysis for equivalent structure under the doctrine of equivalents collapses into the § 112, ¶ 6 analysis. If after, a non-textual infringement analysis proceeds under the doctrine of equivalents." *Id.*

Danek, Inc., 424 F.3d 1293, 1312 (Fed. Cir. 2005). Mere knowledge of possible infringement by others does not amount to inducement. Specific intent and action to induce infringement must be proven. *Warner-Lambert Co. v. Apotex Corp.*, 316 F.3d 1348, 1363 (Fed. Cir. 2003).

C. Validity

One cannot be held liable for practicing an invalid patent claim. *Pandrol USA, LP v. AirBoss Railway Prods., Inc.*, 320 F.3d 1354, 1365 (Fed. Cir. 2003). However, the claims of a patent are presumed to be valid. 35 U.S.C. § 282; *DMI Inc. v. Deere & Co.*, 802 F.2d 421 (Fed. Cir. 1986). A respondent that has raised patent invalidity as an affirmative defense must overcome the presumption by "clear and convincing" evidence of invalidity. *Checkpoint Systems, Inc. v. United States Int'l Trade Comm'n*, 54 F.3d 756, 761 (Fed. Cir. 1995).

1. Anticipation

Pursuant to 35 U.S.C. § 102, prior art anticipates a patent claim when a single piece of art discloses each and every limitation of the claimed invention. *See Schering Corp. v. Geneva Pharms.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003); *C.R. Bard v. M3 Sys.*, 157 F.3d 1340, 1349 (Fed. Cir. 2000). The disclosure by an invalidating reference need not be express, but may anticipate by inherency where such inherency would be appreciated by one of ordinary skill in the art. *EMI Group North America, Inc. v. Cypress Semiconductor Corp.*, 268 F.3d 1342, 1350 (Fed. Cir. 2001). Anticipation does not require that the reference "teach" the subject matter of the patent. It is necessary only that the claims being challenged "read on" something that is disclosed in the reference.

Celeritas Techs., Ltd. v. Rockwell Int'l, 150 F.3d 1354, 1361 (Fed. Cir. 1998).

Section 102 provides that, depending on the circumstances, a claimed invention may be anticipated by variety of prior art, including publications, earlier-sold products, and patents. *See* 35 U.S.C. § 102. Anticipation, like all forms of patent invalidity, must be established by clear and convincing evidence. *Glaxo Inc. v. Novopharm Ltd.*, 52 F.3d 1043, 1047 (Fed. Cir. 1995). Whether a patent claim is anticipated is a question of fact. *See Smith Kline Beecham Corp. v. Apotex Corp.* 403 F.3d 1331, 1343 (Fed. Cir. 2005).

2. Obviousness

Obviousness is grounded in 35 U.S.C. § 103, which provides, *inter alia*, that:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

35 U.S.C. § 103(a).

An allegation of obviousness is evaluated under the so-called *Graham* factors: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness, the so-called "secondary considerations," *e.g.*, commercial success, long felt need, and failure of others. *Graham v. John Deere Co.*, 383 U.S. 1, 13-17 (1966);

Dystar Textilfarben GmbH v. C.H. Patrick Co., 464 F.3d 1356, 1361 (Fed. Cir. 2006).[10]

"[E]vidence arising out of the so-called 'secondary considerations' must always when present be considered en route to a determination of obviousness." *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983). Secondary considerations, such as commercial success, will not always dislodge a determination of obviousness based on analysis of the prior art. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 426 (2007) (commercial success did not alter conclusion of obviousness).

"One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims." *KSR*, 550 U.S. at 419-20. "[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *Id.*

Specific teachings, suggestions, or motivations to combine prior art may provide helpful insights into the state of the art at the time of the alleged invention. *Id.* at 420. Nevertheless, "an obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way." *Id.* "Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the

[10] "Before answering *Graham's* 'content' inquiry, it must be known whether a patent or publication is in the prior art under 35 U.S.C. § 102 – a legal question." *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1568 (Fed. Cir. 1987).

elements in the manner claimed." *Id.* A "person of ordinary skill is also a person of ordinary creativity." *Id.* at 421.

The Federal Circuit has harmonized the *KSR* opinion with many prior circuit court opinions by holding that when a patent challenger contends that a patent is invalid for obviousness based on a combination of prior art references, "the burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, or carry out the claimed process, and would have had a reasonable expectation of success in doing so." *PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007); *see KSR*, 550 U.S. at 416 (a combination of elements must do more than yield a predictable result; combining elements that work together in an unexpected and fruitful manner would not have been obvious).[11]

The ultimate determination of whether an invention would have been obvious is a legal conclusion based on underlying findings of fact. *In re Dembiczak*, 175 F.3d 994, 998 (Fed. Cir. 1999).

3. Indefiniteness

The definiteness requirement of 35 U.S.C. § 112 ensures that the patent claims particularly point out and distinctly claim the subject matter that the patentee regards to be the invention. *See* 35 U.S.C. § 112, ¶ 2; *Metabolite Labs., Inc. v. Laboratory Corp. of America Holdings*, 370 F.3d 1354, 1366 (Fed. Cir. 2004). If a claim's legal scope is not

[11] Further, "when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious." *KSR*, 550 U.S. at 416 (citing *United States v. Adams*, 383 U.S. 39, 52 (1966)).

clear enough so that a person of ordinary skill in the art could determine whether or not a particular product infringes, the claim is indefinite, and is, therefore, invalid. *Geneva Pharm., Inc. v. GlaxoSmithKline PLC*, 349 F.3d 1373, 1384 (Fed. Cir. 2003). Thus, it has been found that:

> When a proposed construction requires that an artisan make a separate infringement determination for every set of circumstances in which the composition may be used, and when such determinations are likely to result in differing outcomes (sometimes infringing and sometimes not), that construction is likely to be indefinite.

Halliburton Energy Servs. v. M-I LLC, 514 F.3d 1244, 1255 (Fed. Cir. 2008).

D. Domestic Industry

Complainants must demonstrate that an industry, relating to the articles protected by the asserted patent, exists or is in the process of being established within the United States. 19 U.S.C. § 1337(a)(2). The domestic industry requirement consists of an economic prong (an actual industry in the United States) and a technical prong (that industry must relate to articles protected by the intellectual property being asserted). *See Certain Ammonium Octamolybdate Isomers*, Inv. No. 337-TA-477, Comm'n Op. at 55, USITC Pub. 3668 (Jan. 2004).

With respect to the technical prong of the domestic industry requirement, complainant must demonstrate that it or its licensee is exploiting or practicing the patents at issue. *Certain Microlithographic Machines and Components Thereof*, Inv. No. 337-TA-468, ID (unreviewed in relevant part) at 63 (Public Version, Apr. 1, 2003) ("*Microlithographic Machines*"). The test for claim coverage for the purposes of the domestic industry requirement of Section 337 is the same as that for infringement: "Only

if the complainant's article or process is covered by the claims of the patent at issue, is the patent exploited for purposes of the domestic industry requirement of § 337." *Certain Doxorubicin and Preparations Containing Same*, Inv. No. 337-TA-300, ID at 109 (May 21, 1990), *aff'd*, Views of the Commission at 22 (Oct. 31, 1990). "It is sufficient to show that the domestic industry practices any [one] claim of [each of the asserted patents]." *Microlithographic Machines* at 64; *see Certain Video Graphics Display Controllers and Products Containing Same*, USITC Pub. 3224, Inv. No. 337-TA-412, Initial Determination (Unreviewed Portion) at 13-14 (Aug. 1999).

VII. U.S. Patent No. 6,343,263

The '263 patent is entitled, "Real-Time Signal Processing System For Serially Transmitted Data." JX-6. The '263 patent "is directed to the transmission of data to and from a computer, and more particularly to a system for performing real-time signal processing of data that is serially transmitted to and from a computer." *Id.* at col. 1, lns. 4-7 (Field of the Invention). The invention of the '263 patent "enables any arbitrary type of data, such as voice, facsimile, multimedia and the like, which is transmitted over any type of communication network, to be handled with any type of real-time engine, by abstracting the functions of each of the elements of the systems from one another." *Id.* at col. 2, ln. 66 – col. 3, ln. 6 (Brief Statement of the Invention).

Apple asserts independent claim 1 and dependent claims 2, 24, and 29. The asserted claims read as follow:

> **1**. A signal processing system for providing a plurality of realtime services to and from a number of independent client applications and devices, said system comprising:

a subsystem comprising a host central processing unit (CPU) operating in accordance with at least one application program and a device handler program, said subsystem further comprising an adapter subsystem interoperating with said host CPU and said device;

a realtime signal processing subsystem for performing a plurality of data transforms comprising a plurality of realtime signal processing operations; and

at least one realtime application program interface (API) coupled between the subsystem and the realtime signal processing subsystem to allow the subsystem to interoperate with said realtime services.

2. The signal processing system as set forth in claim **1**, wherein said signal processing system receives and transmits a plurality of datatypes over a plurality of different wide area networks (WANs).

24. The signal processing system of claim **1**, wherein said realtime signal processing subsystem comprises:

a realtime processor including an operating system for executing a plurality of realtime functions;

a realtime communications module which is independent of said realtime processor and is coupled to receive a plurality of communications commands from said application programs via said device handler program and said realtime API, said realtime communications module operating in response to said communications commands to issue a plurality of requests for realtime services to said realtime processor; and

a translation interface program which is specific to said realtime processor and is coupled to receive said requests for realtime services from said communications module and provide said requests to said realtime processor.

29. The signal processing system of claim **24**, wherein said realtime processor is embodied in a hardware device and includes realtime function libraries that are embodied in programmable software.

JX-6 at col. 11, lns. 28-47; col. 13, ln. 59 – col. 14, ln. 8; col. 14, lns. 22-25.

A. Claim Construction[12]

1. "realtime"

Claim Term	Apple Construction	Staff Construction	HTC Construction
"realtime" (claims 1, 24, 29)	within a defined upper bounded time limit	within a fixed upper bounded time limit	must be processed within a fixed time limit and without data handling delays

Joint Claim Construction, App'x A at 14.

Complainants argue that the proper construction of the claim term "realtime" is "within a defined upper bounded time limit." Apple Br. at 14; Motion No. 710-114, App'x A at 14 (Joint Motion of All Relevant Parties to Amend the Joint List of Undisputed Claim Terms With Agreed Constructions, Apple's Corrected Proposed Claim Construction Chart, HTC's Proposed Claim Constructions, and the Staff's Proposed Claim Constructions) (Feb. 24, 2011) ("Joint Claim Construction"); *see* Order 93 (granting Motion No. 710-114) (Mar. 1, 2011).

HTC argues that claim term "realtime" should be construed to mean that data "must be processed within a fixed time limit and without data handling delays." HTC Br. at 13; Joint Claim Construction, App'x A at 14. The Staff submits that the claim term "realtime" should be construed to mean that data should be processed "within a fixed upper bounded time limit." Staff Br. at 24; Joint Claim Construction, App'x A at 14.

Thus, the parties at least agree that processing in "realtime" involves processing

[12] A person of ordinary skill in the art would have a B.S. degree in computer science, or the equivalent, and at least two to three years of experience in signal processing systems. Polish Tr. 337; Brandt Tr. 1338; Staff Br. at 23 n.6.

time-sensitive data in a manner consistent with its upper-bounded time limit. The dispute is whether these time limits must be "defined" (Apple's proposal) or "fixed" (respondents' and Staff's proposal), and whether these time limits "must" be met without any processing delays (respondents' proposal).

As proposed by Apple, the claim term "realtime" is construed to mean "within a defined upper bounded time limit."[13]

Asserted independent claim 1 contains several claim limitations that include the disputed term "realtime" (*i.e.*, "realtime services," "realtime signal processing

---

[13] HTC notes that "[t]hree claimed realtime components require construction: 'realtime,' 'realtime signal processing subsystem,' and 'realtime application programming interface.'" HTC Br. at 13. HTC and the Staff argue that "[b]ecause the parties have agreed that 'realtime' in isolation requires time limits, it necessarily follows that components modified by 'realtime' — the signal processing system and API — must also be realtime, that is, have time limits." HTC Br. at 15; Staff Br. at 25-26.

Apple characterizes this argument as "grammatical gamesmanship." Apple Reply at 6. Complainants' submit: "The word 'realtime' is used to modify eight different terms in the asserted claims that describe widely-varying components and also 'services.' No basis exists to import separate fixed time limits into each component regardless of context, much less into 'services,' especially when the patent and preferred embodiment never mention such component-based limits." *Id.*

HTC's and the Staff's contention is rejected as being contrary to the plain reading of the claim language. Moreover, as argued by Apple (Reply at 7) this theory would lead to illogical results. For example, claim 24 recites "a realtime processor including an operating system." Thus, if HTC and the Staff were correct, the "realtime processor" would have fixed time limits, but its *non*-realtime *operating system* would not. JX-6 at col. 13, ln. 61. Further, the preamble ("signal processing system for providing a plurality of realtime services") would not understand time limits, but the realtime subsystem that comprises the signal processing system to provide realtime services would. JX-6 at col. 11, ln. 29. Finally (although not exhaustive), if HTC and the Staff were correct, claim 1's unmodified "plurality of data transforms" would not understand time limits, but the "plurality of realtime signal processing operations" it is comprised of must.

In sum, because HTC's argument is a formalistic word play that defeats the purpose of the invention and leads to nonsensical results, it is rejected. *See Howmedica Osteonics Corp v. Tranquil Prospects, Ltd.*, 401 F.3d 1367, 1372 (Fed. Cir. 2005) (rejecting claim interpretation that would defeat the "overriding purpose of the invention").

subsystem," "realtime signal processing operations," and "realtime application program interface (API)"). The specification of the '263 patent explains that "[t]he present invention is directed to the transmission of data to and from a computer, and more particularly to a system for performing real-time signal processing of data that is serially transmitted to and from a computer." JX-6 at col. 1, lns. 4-7 (Field of the Invention) (emphasis added). This statement that the particular invention of the '263 patent is directed to "a system for performing real-time signal processing of data" is entirely consistent with the preamble of asserted claim 1, *i.e.*, "[a] signal processing system for providing a plurality of realtime services." JX-6 at col. 11, lns. 28-30. In other words, a signal processing system that provides "realtime services" is a system that performs "real-time signal processing of data."

While the words "realtime," "real-time," and "real time" are disclosed throughout the specification of the '263 patent, including the claims, most of the disclosures are associated with the phrase "real-time engine" of the exemplary embodiments of the invention. The exemplary embodiments, as the patent explains, are "described with reference to the specific example of a telephone-based telecommunication subsystem that provides basic fax/data modem services, plus call management and audio stream handling." JX-6 at col. 3, lns. 43-47. The patent further explains that "[o]ther implementations of the invention, for example in the context of transmitting sounds and video data, will become apparent from an understanding of the principles of the invention explained with respect to this particular example." *Id.* at col. 3, lns. 54-58.

Significantly, the specification explains the broad and flexible applicability of the claimed invention using a "real-time engine." The specification states:

> The invention enables any arbitrary type of data, such as voice, facsimile, multimedia and the like, which is transmitted over any type of communication network, to be handled with any type of real-time engine, by abstracting the functions of each of the elements of the system from one another. This abstraction is provided through suitable interfaces that isolate the transmission medium, the data managers and the real-time engine from one another.

JX-6 at col. 2, ln. 66 – col. 3, ln. 6 (emphasis added).

The specification also explains the usefulness of the claimed invention in any system that transmits and processes data at "real-time rates" including "any type of data acquisition system." It provides:

> In essence, the real-time engine allows any type of transform to be performed on any type of data delivered over any type of transmission medium.
>
> *****
>
> .... [T]he data is delivered at a real-time rate, where it is handled by the computer's CPU.
>
> *****
>
> .... [T]he invention will find utility in any environment in which it is desirable to transmit and process data at real-time rates. Thus, while the invention has been described in the context of communications over a wide-area network, it can be used in any type of data acquisition system.

JX-6 at col. 10, ln. 61 – col. 11, ln. 21.

Therefore, as disclosed by the specification, the invention of the '263 patent is a system in which "the data is delivered at a real-time rate, where it is handled by the computer's CPU" and it "will find utility in any environment in which it is desirable to transmit and process data at real-time rates."

While repeatedly emphasizing the flexibility of the invention, the patent

distinguishes the "hardwired" prior systems that did not provide such flexibility. *Id.* at col. 1, lns. 30-32; col. 11, lns. 7-10. Requiring only a "defined" upper bounded limit conforming to different data types or communication networks, as proposed by Apple, is consistent with the patent's description and emphasis on flexibility, whereas HTC's and the Staff's restrictive construction requiring "fixed" limits that "must" be met is not. Moreover, the '263 patent does not mention "fixed" time limits or explicit clocking requirements tied to system components.[14]

Furthermore, there is no support in the prosecution history for the additional limitation that respondents seek to add (*i.e.*, "without additional handling delays"). Even though the prior art described processing delays as part of their realtime implementations (*see, e.g.*, RX-1103 at col. 17, lns. 19-37), the '263 applicants never distinguished this art on the basis that their use of "realtime" was limited to "fixed" time limits that must always be met without processing delays. Polish Tr. 1677.[15]

HTC's expert, Dr. Brandt, presented opinions on "realtime" that were inconsistent with both the intrinsic evidence and his own writings. Under cross-examination,

---

[14] The only reference to time management in the patent is in the specific context of the "native" DSP (digital signal processor) implementation where the DSP functions are carried out by the host CPU, noting that adequate CPU processing time should be ensured for DSP operations. JX-6 at col. 7, lns. 5-14; Brandt Tr. 1447-48.

[15] The extrinsic evidence further confirms Apple's proposed construction. Dr. Polish (Apple's expert) explained the various forms of realtime processing (Tr. 328-31), the proper construction of the term encompassing all such forms (Tr. 337-38), and why respondents' proposed construction is inconsistent with the intrinsic evidence and how persons of ordinary skill in the art use this term and would interpret the patent (Tr. 338-45). Nokia's expert, Dr. Gottesman, testified that he did not have "a problem with Apple's construction." Gottesman Tr. 1555. Dr. Gottesman further agreed that the time constraints in a real-time system are set by the input, *i.e.*, the data, and not something explicitly hard-coded within the computer itself. Tr.1552.

Dr. Brandt effectively admitted that he was proffering a construction of realtime that was historically limited to applications like flight control systems – where failure to meet a processing deadline generally means application or system failure – not at all applicable to desktop realtime applications that are the subject of the patented invention. Brandt Tr. 1455-58; CX-7294 at 4. Although respondents' proposed construction seeks to impose fixed deadlines that "must" be met, Dr. Brandt's own writings confirm that desktop realtime applications (such as streaming video or audio) ***do not*** require such strict performance guarantees. Brandt Tr. 1459-60 ("Q. You also said, at CDX-4002, page 4 of your thesis, that desktop realtime applications are not critical. A. Yes. Q. 'These processes do not need such strict performance guarantees, only a reasonable assurance that their resource needs will be largely met by the operating system.' You said that, right? A. Yes, exactly."); CX-7294 at 2, 4.

Also on cross-examination, Dr. Brandt conceded that "soft realtime processing" is a "type of realtime processing" that specifically permits missing deadlines and pertains to the types of applications specifically described in the '263 patent. Brandt Tr. 1460-63; CX-7294 at 4.

Furthermore, Dr. Brandt's reliance on the Laplante book as support for the HTC's construction of "realtime" is misplaced. Laplante makes clear that the term "realtime" evolved from the 1950s, when it was limited to time-critical hard realtime applications such as flight control and missile defense systems, to the relevant time period of the 1980s and 1990s, when it was commonly understood to apply to a much broader array of applications. RX-270 (Phillip Laplante, *It Isn't Your Father's Realtime Anymore* (2006)) ("For the next 30 years or so, the term realtime was applied only to industrial control,

weapons systems, and other exotic applications, all of which were essentially characterized as those where inability to meet deadlines led to failure —usually a spectacularly catastrophic one."); *see* Brandt Tr. 1466-67.

In that regard, Laplante explains:

> In short, a system does not have to process data in microseconds (millionths of a second) to be considered real-time: it must simply have response times that are constrained and thus predictable.
>
> It can be argued that all practical systems are real-time systems. It should be evident that even a batch-oriented system – the kind many insurance companies now use to process automobile insurance punch cards – is real-time. Although the system may have response times of days or weeks (the time between when you mail your card and are sent your insurance certificate), it must respond within a certain time or your insurance will lapse – a disaster. Even a word-processing program should respond to your commands within a reasonable amount of time (e.g., 1 second) or it will become torture to use. Most of the literature refers to such systems as *soft real-time systems*; that is, systems where performance is degraded but not destroyed by failure to meet response time constraints. Furthermore, systems where failure to meet response time constraints leads to system failure are called *hard real-time systems*. Recently, the term *firm real-time systems* has been defined to include those systems with hard deadlines where some low probability of missing a deadline can be tolerated. As noted, all practical systems minimally represent soft real-time systems. Since we are most interested in the so-called hard real-time systems, we will use the term "real-time system" to mean hard real-time system without loss of generality.

RX-777 at HTC007769262 (Phillip A. Laplante, *Real-Time Systems Design and Analysis* (1993) at 11) (italics in original, underlines added).

Thus, a person of ordinary skill at the time of the '263 patent, *i.e.,* 1994, would apply the evolved definition of "realtime"described by Laplante, and not the earlier,

outdated "hard realtime" definition. Thus, the Laplante references confirm that the proper construction of "realtime" is "within a defined, upper bounded time limit."

a. "a realtime signal processing subsystem"

Claim Term	Apple Construction	Staff Construction	HTC Construction
"a realtime signal processing subsystem" (claims 1, 24, 29)	Plain meaning	Plain meaning	A processor and optionally software that processes and handles data in a realtime manner

Joint Claim Construction, App'x A at 14.

As proposed by Apple and the Staff, the claim term "realtime signal processing subsystem" carries a plain and ordinary meaning.[16] "Realtime signal processing subsystem" is construed to mean "a subsystem capable of processing signals in realtime." Claim 1 recites two subsystems. HTC has never contended that the word "subsystem" is unclear. The terms "signal" and "processing" are standard computer science/engineering terms understood by ordinary artisans and laypeople alike and are similarly clear. Accordingly, this term does not require construction because it conveys that it is a subsystem that is capable of processing signals in realtime. Polish Tr. 349-50.

In fact, neither of respondents' experts (Dr. Brandt for HTC and Dr. Gottesman for Nokia, which had settled out) offered any explanation of the need for construction of the term. Moreover, respondents' proposed construction apparently requires an

[16] Inasmuch as the Staff's proposed construction for this claim term is simply "realtime signal processing subsystem," it is understood that the Staff is proposing a plain and ordinary meaning for the term.

additional processor, which is expressly inconsistent with the native implementation of a DSP described in the specification and within the scope of claims 1 and 24.

Thus, the claim term "realtime signal processing subsystem" is self-descriptive and needs no further construction. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) ("[Courts] indulge a 'heavy presumption' that a claim term carries its ordinary and customary meaning.").

b. "realtime API"

Claim Term	Apple Construction	Staff Construction	HTC Construction
"realtime application programming interface (API)" (claims 1, 24)	API that allows realtime interaction between two or more subsystems	Same as Apple	A realtime software module that receives commands from applications and generates commands

Joint Claim Construction, App'x A at 14.

As proposed by Apple and the Staff, the claim term "realtime API" is construed to mean an "API that allows realtime interaction between two or more subsystems."

The '263 patent shows that the "realtime API" of the asserted claims is an API (1) positioned at the interface of the realtime signal processing subsystem, and (2) allowing for the provision of realtime services. The specification does not explicitly mention any time constraints or clock for the realtime API. Rather, all references in the preferred embodiment are to an API that is positioned as the interface to the realtime processing subsystem that allows for realtime services to be provided by that subsystem. *See* JX-6 at col. 6, lns. 26-38 ("As illustrated in FIG. 2, there can be a number of interfaces 48 situated between the handler 44 and the real-time engine 46."); col. 7, lns. 52-67

("interface 48").

The claim phrase "realtime application program interface (API)" or "realtime API" is not disclosed anywhere else in the specification of the '263 patent. Rather, the phrase "API" or "application program interface (API)" without the modifier "realtime," is used to describe the "realtime API" in the specific embodiments. While the Inventor does not use the word "realtime" to modify the "API" that is disclosed in the detailed description portion of the specification, it is clear that one of ordinary skill would find the description of "API" as applying to "realtime API."

For example, in describing the specific embodiment as shown in FIG. 2, the specification of the '263 patent discloses:

> A real-time engine 46 can perform transforms on data streams provided to and received from the adapter 36. The particular transforms to be performed are sent as commands to the real-time engine from the adapter handler 44 via suitable application programming interfaces 48. For communicating with the real-time engine, each interface includes shared command/control mailboxes in the computer's RAM, as well as bi-directional first-in, first-out (FIFO) buffers for transferring data.
>
> *****
>
> As illustrated in FIG. 2, there can be a number of interfaces 48 situated between the handler 44 and the real-time engine 46. Each interface represents services for a particular class of functionality. For example, one interface may relate to the operation of the engine as a virtual telephone, another interface can be associated with a virtual sound device, e.g. stereo, and a third interface can pertain to a virtual video device. Each interface receives commands from an application program, through the handler 44, and instructs the real-time engine to carry out the necessary transforms which relate to the function of the virtual device being implemented, e.g. text-to-speech conversion, video image processing, etc.

JX-6 at col. 5, lns. 21-29; col. 6, lns 25-38 (emphasis added).

Thus, the above specification portion makes clear that in the context of the overall communication system that uses a "real-time engine 46," "the application programming interfaces 48" are indeed able to communicate in a realtime manner. The specification states that in "communicating with the real-time engine," each API 48 is used "for transferring data."

Similarly, the '263 patent discloses the following with respect to the application programming interfaces (APIs) in describing a specific embodiment of the invention:

> The ability to communicate over different types of transmission mediums in this single system is made possible by the fact that each of the various components is isolated from the particular features of the other through suitable levels of abstraction implemented via the application programming interfaces. For example, to change the transmission medium from the telephone lines to an ISDN line, the telecom adapter 36 is disconnected from the serial port 37, and a new adapter appropriate for ISDN is plugged into the serial port. The associated adapter handler 44 is also loaded into the system. Thereafter, whenever the adapter handler issues a command to the real-time engine to perform a transform, it identifies the fact that the transformed data must be suitable for ISDN format. In response thereto, the API 48 which receives these commands supplies the real-time engine with the appropriate parameters for performing the transforms in the required format, e.g. the proper number of bits per word, etc.
>
> Similarly, if the computer is transported from one country to another, the only change that needs to be implemented to carry out telephone communications in the new country is to switch the adapter and its handler. Upon initialization, the adapter identifies the fact that it is designed for a specific country. Whenever commands are to be sent to the real-time engine, the handler instructs the API 48 of the country as well as the command itself. For example, the

> command might be to generate a dial tone for country X. In response, the API 48 instructs the real-time engine to generate the dial tone, and provides it with the parameters pertinent to dial tones in country X.

JX-6 at col. 10, lns. 27-56 (emphasis added).

Again, the specification shows that APIs are positioned as the interface to the realtime processing subsystem that allows for realtime services to be provided by that subsystem. Further, even though the APIs are disclosed without the modifier "realtime," one of skill in the art would understand the above description is describing "realtime" APIs.

Moreover, all of HTC's witnesses admitted that an API serves as an interface to access lower-level functionality while abstracting the details of how that functionality is implemented. *See* Apple Br. at 20, 37-40. These witnesses also admitted that an API can be defined by a set of software functions defined in a ".h" header file. *See, e.g.*, Sherwood Tr. 858-59; Sparks Tr. 1067-68; Gottesman Tr. 1562.

In addition, HTC argues that the "'realtime application program interface' must also be a software module that generate commands." HTC Br. at 18. In support of this argument, respondents cite to the '263 patent (JX-6 at col. 6, lns. 33-38 & col. 10, lns. 53-56), as well as to the testimony of Inventor John Lynch (Tr. 244-46, 252, 277-78, 301-02) and the testimony of Apple's expert, Dr. Polish (Tr. 354-55). HTC Br. at 19. HTC also argues that complainants are estopped from arguing otherwise because "Apple distinguished the purported invention from the Chen patent on the grounds that the claimed API generated commands rather than merely routing commands received from elsewhere." *Id.*, citing JX-11 at APPHTC_00013716 & 000135773; Brandt Tr. 1321-22.

For the reasons that follow, HTC's arguments must fail. First, the prosecution history statements cited by respondents confirm that **all** APIs generate commands, and that "[a]n element which routes API commands to other elements is ***not the same as an API itself***." HTC Br. at 19 (citing JX-11 at APPHTC_00013716 (emphasis added)). As Inventor John Lynch explained, "[a]n API is a set of software functions, and executing those functions is issuing the commands." Lynch Tr. 302-303. In other words, generating commands means executing the functions in an API.

Second, HTC veers away from the plain meaning of the words "realtime API" when it argues, via its proposed claim construction requiring a separate "software module," that a typical header-file-defined API is not coupled between the subsystems for which it provides an interface. The API is indeed functionally connected to the object(s) for which it provides an interface, and HTC does not contend otherwise. But this API is also "distinct from" the objects for which it provides an interface in the sense that it is the only aspect of the object exposed to the higher-level components (Sherwood Tr. 857-59; Sparks Tr. 1091-92), is defined separately in a header file (Sherwood Tr. 858-59; Sparks Tr. 1067; Gottesman Tr. 1562), and can provide a generic interface for multiple different objects of a similar type (Sparks Tr. 1091 (explaining that header file defined interface for multiple nodes)).

Additionally, the fact that the defined functions become part of the objects for which they provide an interface upon compilation does not transform the functions such that they are no longer APIs. Sherwood Tr. 853, 857-59. HTC's own documents confirm this. *See* CX-6947C at ln. 316 ("This API is to allow for extensibility of the PVMF Node interface.").

Finally, HTC's reliance on the prosecution history to estop Apple from arguing that APIs route commands is equally unavailing. Nothing in the prosecution history approaches the required "clear and unmistakable" surrender by Apple. *Purdue Pharma L.P. v. Endo Pharms. Inc.*, 438 F.3d 1123, 1136 (Fed. Cir. 2006) (disavowal of claim scope must be "clear and unmistakable" during prosecution).

Contrary to HTC's argument, the Chen reference was not overcome during prosecution based on an argument that it disclosed an API, just the wrong type. Instead, the Chen reference was overcome because the DSP Manager 71, fundamentally, "***is not an API.***" JX-11 at APPHTC_00013529-30, 3544, 3713-16, 3773-74.

The basis for Apple's distinction of the Chen reference was that Chen's DSP Manager 71 was "not an API" and "does not include an API." JX-11 at APPHTC_00013716, 73. While the Board of Patent Appeals and Interferences ("BPAI") of the USPTO also found that Chen's DSP Manager 71 "did not generate API commands," this is because a non-API does not generate API commands. *See* Apple Br. at 20; Apple Reply at 15-17. Indeed, respondents themselves rely on a statement in the prosecution history explaining that "[a]n element which routes API commands to other elements is not the same as an API itself." HTC Br. 19. Chen's DSP Manager 71 was not an API, could not generate API commands, and could only perform the function of "routing" commands. JX-11 at APPHTC_00013773.

The DSP Manager 71 in Chen did not include the claimed API because Chen solved a different problem. JX-11 at APPHTC_00013713. Chen explicitly sought to improve upon prior, single soft DSP systems, such as VCOS, by managing multiple soft DSPs. RX-1103 at col. 1, ln. 58 – col. 2, ln. 11. Specifically, Chen only teaches that the

DSP Manager 71 routed requests from an application to load a particular task onto the corresponding soft DSP, *e.g.*, load task H onto DSP #3. JX-11 at APPHTC_00013713; Polish Tr. 1668-69. Under this architectural arrangement, the application knows that the system includes several DSPs, specifically only soft DSPs, knows which tasks each DSP supports, and knows that it is loading a chosen task onto a specific DSP. *See id.* Chen's DSP Manager 71 abstracts none of these details. Thus Apple argued, and the BPAI agreed, that DSP Manager 71 is not an API, does not generate API commands, and does not include an API. JX-11 at APPHTC_00013716, 73.

HTC has not identified any statements made during prosecution that rise to the level of establishing a clear and unmistakable surrender of claim scope.[17] Apple did not argue that the Chen reference lacked a realtime API by clearly and unmistakably disavowing its plain and ordinary meaning. Rather, Apple prevailed in prosecution because Chen's DSP Manager 71 was not an API at all. The '263 patent overcame Chen during prosecution because Chen's DSP Manager was not an API providing the requisite layer of abstraction. The distinction ***cannot*** have been that Chen's DSP Manager was only an ordinary header file API because it ***wasn't a header file at all***—it was a software module. RX-1103 at FIG. 22 (showing active internal functions of DSP Manager 71 software module).

---

[17] *Purdue Pharma L.P. v. Endo Pharms. Inc.*, 438 F.3d 1123, 1136 (Fed. Cir. 2006) (disavowal of claim scope must be "clear and unmistakable" during prosecution); *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1347 (Fed.Cir.2001) (refusing to limit the ordinary meaning of the claim because the alleged disclaimer in the file wrapper was at best "inconclusive"); *Northern Telecom Ltd. v. Samsung Electronics Company*, 215 F.3d 1281, 1293-95 (Fed. Cir. 2000) (same).

Like the "realtime" limitation itself, HTC also veers from the plain meaning of the "realtime API" limitation. But HTC does not identify a clear and unmistakable disclaimer of the plain meaning of "realtime API" during prosecution or elsewhere, and documents and testimony show that the products have realtime APIs providing an interface to, and abstracting the details of, their realtime processing subsystems.

Respondents propose a construction that the "realtime API" must be a stand-alone software module, ostensibly excluding typical APIs such as functional interfaces defined by object-oriented header files. This is inconsistent with the intrinsic evidence discussed above and the plain and ordinary meaning of the term.

The evidence established that the plain and ordinary meaning of the term "application program interface" includes functional interfaces defined by objected-oriented (*e.g.* C++) header files. [

] [18] Google's manager for the Android multimedia framework, David Sparks, confirmed that "APIs are designed to abstract the implementation details" and that ".H" header files defined the APIs for the nodes in the Android products. Sparks Tr. 1091-92.

---

[18] [

]

Even Nokia's expert, Dr. Gottesman, agreed that in "the general usage of the term 'API,' a person of skill in the art would consider that to include this concept of header files." Gottesman Tr. 1562. Further, contrary to respondents' contention that APIs must be a separate "software module," Dr. Gottesman was impeached with his unequivocal deposition testimony that "absolutely, for decades" persons of ordinary skill in the art in 1994 understood that "an API itself would not be a running piece of software." *Id.*, Tr. 1563-64.

Based on the reasons set forth above, the claim term "realtime API" is construed to mean an "API that allows realtime interaction between two or more subsystems."

2. "device handler"

Claim Term	Apple Construction	Staff Construction	HTC Construction
"device handler" (claims 1, 24)	software associated with an interface device that sets up dataflow paths, and also presents data and commands to a realtime signal processing subsystem	same as Apple	a software module specific to a device that sets up dataflow paths, and presents data and commands to the realtime signal processing subsystem

Joint Claim Construction, App'x A at 14.

Apple and the Staff construe the claim term "device handler" to mean "software associated with an interface device that sets up dataflow paths, and also presents data and commands to a realtime signal processing subsystem." Joint Claim Construction, App'x A at 14.

Respondents differ with this construction insofar as they insert the term "specific to" in place of "associated with" for the software's relation to the interface device. *Id.*

Respondents argue that this narrower language requires a unique relationship between a device handler and a particular device. HTC also interprets the agreed language "presents data and commands" to require direct handling or processing of data by the device handler.

The claim term "device handler" is construed to mean "software associated with an interface device that sets up data flow paths, and also presents data and commands to a realtime signal processing subsystem."

As for the "associated with" (Apple/Staff) versus "specific to" (HTC) dispute, Apple's and the Staff's construction is consistent with the '263 patent's Abstract and Brief Statement of the Invention. JX-6 Abstract ("A device handler ***associated with*** the interface device sets up dataflow paths, and also presents data and commands from the data managers to a real-time data processing engine.") (Emphasis added); *Id.* at col. 2, lns. 57-59 ("a device handler ***associated with*** the interface device sets up data paths and issues service requests.") (Emphasis added).

Non-asserted independent claim 31 provides additional support for Apple's and the Staff's position. Claim 31 recites "a device handler program ***associated with*** said input/output device." (Emphasis added). The term "specific to" cannot be narrower than "associated with" (as HTC suggests) because the unmodified term "device handler program" in claim 1 cannot be more restricted than the modified "device handler program" in claim 31. *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1249-50 (Fed. Cir. 1998) ("Nor may we, in the broader situation, add a narrowing modifier before an otherwise general term that stands unmodified in a claim.").

HTC derives its proposed language from a misreading of the description of the preferred embodiment: "An adapter handler 44 is specific to the particular adapter 36 and carries out features associated with that adapter." JX-6 at col. 5, lns. 9-10. Unlike the Brief Statement of the Invention, this language is anchored to the preferred embodiment and thus an inappropriate source for limiting the claims. *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1117 (Fed. Cir. 2004) ("particular embodiments appearing in the written description will not be used to limit claim language that has a broader effect"); *Seachange Intern, Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1377 (Fed. Cir. 2005) ("[W]e do not import limitations from a preferred embodiment.").

Moreover, even the language respondents cite does not mean that the device handler must be "specific to" in the sense that it has special knowledge of a particular device. As the context of the Detailed Description reveals, there can be a "number of interfaces" connected to a handler, and the interfaces can correspond with different types of devices and/or networks. JX-6 at col. 6, lns. 26-38; col. 4, lns. 49-54 (adapter for "one or more communications networks").

Apple's expert, Dr. Polish, confirmed that the intrinsic evidence would lead a person of ordinary skill to understand the disputed term as Apple's and the Staff's proposed construction does. Polish Tr. 347-49. He also explained that it would not make sense to have the device handler be "specific to" a particular device to the exclusion of others (Polish Tr. 349), and noted that the device handler program was abstracted from the device by two layers (including a hardware abstraction layer) in the preferred embodiment (Polish Tr. 799-800). In contrast, HTC's expert failed to offer any opinion supporting its proposed construction.

As to the dispute about the meaning of the agreed language "presents data and commands," HTC's expert, Dr. Brandt, testified that the "presents data and commands to a realtime signal processing subsystem" language requires the device handler program to itself process and handle data and then send that data to the realtime signal processing subsystem. Brandt Tr. 1299-1300, 1304; *see* HTC Br. at 22. This new "interpretation" is, however, improper because it would exclude the preferred embodiment of the invention. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996) ("Such an interpretation is rarely, if ever, correct and would require highly persuasive evidentiary support.").

The function of the device handler program is to set up data flow paths and present data and commands – *i.e.*, to orchestrate the flow of data and commands necessary for the data to be directed to the right place in the architecture. In setting up and coordinating flow through those paths, however, the device handler need not, and in fact in the preferred embodiment does not, process and handle the data itself. JX-6 at FIG. 2; col. 5, ln. 67 – col. 6, ln. 3 (data flows directly through DMA 50 and not adapter handler 44). In support for this position, Inventor John Lynch testified that the device handler in the actual embodiment of the invention did not handle data. Lynch Tr. 221. HTC's argument conflicts with the intrinsic evidence and is rejected.

Accordingly, the claim term "device handler" is construed to mean "software associated with an interface device that sets up dataflow paths, and also presents data and commands to a realtime signal processing subsystem."

B. Infringement

1. Claim 1

Apple argues that the Android multimedia architecture, including PacketVideo's OpenCore PVPlayer[19] and/or Stagefright Player,[20] as implemented on all of the HTC products, infringe asserted claim 1 of the '263 patent. Apple Br. at 26.

HTC argues that the accused devices are missing several key limitations of claim 1 and thus do not infringe. According to respondents, the HTC phones lack the claimed "device handler," an API "coupled between" the host and realtime subsystems, and the claimed realtime components, *i.e.,* a realtime API, a realtime signal processing subsystem, and realtime services. HTC Br. at 20.

The Staff submits that under its constructions of the disputed claim terms, HTC's accused products do not satisfy the claim terms "realtime signal processing subsystem" and "realtime API" and, therefore, the accused products do not infringe claim 1. Staff Br. at 29-30.

For the reasons set forth below, Apple has shown that HTC's accused products infringe all asserted claims of the '263 patent.

The preamble of claim 1 recites:

> **A signal processing system for providing a plurality of realtime services to and from a number of independent client applications and devices, said system comprising:**

Apple has satisfied the preamble.

---

[19] [ ] is present in the accused HTC handsets based on Android versions 1.5, 1.6, 2.1, or 2.2. Polish Tr. 371-72; Sparks Tr. 1042-43.

[20] [ ] is present in the accused HTC handsets based on Android version 2.2. Polish Tr. 371-72; Sparks Tr. 1042-43.

The parties agreed that the claim term "realtime services" should be construed to mean "constant bit rate data handling in realtime."

Apple argues that HTC did not present any argument or evidence at trial that the preamble of claim 1 of the '263 patent should be found limiting and given this waiver, HTC cannot meet their burden of overcoming the "presumption against reading a statement of purpose in the preamble as a claim limitation." Apple Br. at 27, citing *Marrin v. Griffin*, 599 F.3d 1290, 1294-95 (Fed. Cir. 2010). Apple, nonetheless, asserts that the evidence adduced at the hearing proved that the HTC accused products include a signal processing system for providing a plurality of realtime services to and from a number of independent client applications and devices. *Id.*

The HTC accused products include client applications such as the YouTube video player and an audio player. CX-325 at 6; CX-453 at 1; Polish Tr. 368-69, 452-53; Sparks Tr. 1047. They include devices such as cellular and WiFi antennae. Polish Tr. 368-69. The HTC accused products provide, to and from the client applications and devices, realtime services such as audio and video playback, audio and video streaming from a network, audio and video encoding, and audio and video decoding. CPX-1; CPX-2; Polish Tr. 367-68.

HTC counters that "realtime services" as recited in the preamble is a claim limitation and that "Apple presented no evidence that the accused HTC phones provide 'realtime services'." HTC explains that the parties agreed that "realtime services" means "constant bit rate data handling in realtime," "[b]ut nothing in the record even hinted at

constant bit rate data handling." HTC Reply at 25-26.[21]

HTC's argument is without merit inasmuch as the testimony of Apple's expert, Dr. Polish, relating to the preamble of claim 1 is unrebutted. Polish Tr. 363 ("A. One of them is "realtime services," which has been an agreed construction of constant bit rate data handling in realtime... Q. And have you applied these agreed constructions in your analysis of the accused products [and] the domestic industry product in this case? A. Yes, I have."); Polish Tr. 369 ("Q. And do you understand the parties to be disputing in any way the satisfaction of these claim limitations [in the preamble of claim 1] with respect to the HTC accused products? A. No. It is my understanding that there is no dispute as to these elements.")

HTC did not challenge Dr. Polish on this point at the hearing. Thus, HTC cannot now argue that there is a dispute with respect to the preamble and its accused products.

The first element of claim 1 recites:

> **a subsystem comprising a host central processing unit (CPU) operating in accordance with at least one application program and a device handler program, said subsystem further comprising an adapter subsystem interoperating with said host CPU and said device;**

Apple has satisfied this claim element.

The claim term "device handler" has been construed to mean "software associated with an interface device that sets up dataflow paths, and also presents data and commands to a realtime signal processing subsystem."

[21] HTC did not address the preamble in its initial brief. The Staff does not dispute that the accused products satisfy the preamble.

HTC accused products include at least one [ ] central processing units (CPUs). Polish Tr. 368-69. The CPUs operate in accordance with application programs such as the YouTube video player or the music player. CX-325 at 6; CX-453 at 1; Polish Tr. 368-69, 452-53; Sparks Tr. 1047. HTC accused products include [

] Stipulation Regarding Issues Related to U.S. Patent No. 6,343,263 (Apr. 17, 2011) ("'263 Issues Stip."), ¶ 6; Polish Tr. 368-69.

The CPUs operate in accordance with a device handler program such as the [

] implementations. CX-325 at 6; CX-453 at ln. 16; CX-454 at ln. 50; Polish Tr. 371, 374-75, 460-61.

[

]

Both David Sparks, HTC's fact witness and Google's manager for the Android multimedia framework, and Drllip Sherwood, PacketVideo's chief software architect, confirmed that [ ] set up data flow paths and present data and commands to the realtime signal processing subsystem. CX-327 at 12; CX-307C at PV-92; Polish Tr. 372-73, 375, 383-85; Sherwood Tr. 822-23, 859-60; Sparks Tr. 1052-53, 1069-70; Sparks Tr. 1089 [

]

Moreover, the [ ] implementations are also associated with and specific to a device. CX-307C at PV-90, 92; Polish Tr. 387-88, 394-96. In particular, [

] The types of PVMF nodes used and the graph configuration would depend on the playback parameters such as source clip type and playback operation." CX-486C at 10. Dr. Sherwood confirmed that [

]

HTC argues that its accused devices do not infringe because they do not satisfy two of the four requirements for a device handler[22] – they do not present data to the accused realtime signal processing subsystem, and they are not "specific to" or "associated with" an interface device. HTC Reply at 12.

Regarding the [ ] HTC contends that Dr. Brandt confirmed that the [ ] implementation does not present data to the accused signal processing subsystem and data never flows through the [ ] implementation, but instead, the [ ] implementation sets up the[ ] and these [ ] receive and

[22] The claim term "device handler" has been construed to mean "software associated with an interface device that sets up dataflow paths, and also presents data and commands to a realtime signal processing subsystem."

pass data. HTC Br. at 22. Similarly, HTC claims that the accused device handler in [ ] do not present any data because they never receive data in the first place. *Id.*

HTC is incorrect in arguing that because the claimed "device handler program" allegedly "presents data . . . to the realtime signal processing subsystem," the media data must be "passed through" the device handler program. This additional "passed through" requirement ignores the remainder of the specification, and specifically the preferred embodiment, to improperly re-define the proposed construction to require that the media data be "passed through" the device handler program.

This argument represents an incorrect reading of "presenting" data that is inconsistent with the intrinsic evidence and in fact would exclude the preferred embodiment. The functions of the claimed device handler program are setting up and controlling the flow of data (*i.e.*, presenting data and commands) throughout the system. Dr. Polish explained that the device handler program's role was to "in a sense shepherd data to other aspects of the system" and that there "may not necessarily be direct communication" with the device. Polish Tr. 666.

The fact that the device handler program need not have data pass through it to control the flow of data is illustrated in FIG. 2 and its accompanying description in the specification. There, in describing an exemplary facsimile transmission, the '263 patent states that data sent to or from a network is "passed" by the preferred direct memory access components (DMA 50), not the device handler that "requests" (*i.e.*, controls) the transmission. JX-6 at col. 5, lns. 45-48; col. 5, ln. 64 – col. 6, ln. 3; FIG. 2.

Accordingly, the language "presents data" in each proposed construction does not

require that data "flows through" the device handler or else the construction would improperly read out the preferred embodiment.

Moreover, the proof of Apple's conception and reduction to practice further demonstrates that HTC is misconstruing this limitation and the invention. At the hearing, Inventor John Lynch testified regarding the embodiment of his invention that he had worked on and ultimately reduced to practice no later than [ ] Lynch Tr. 211-263. Mr. Lynch explained that [

] Lynch Tr. 221-22.

Lynch's testimony is consistent with the description of the preferred embodiment in the '263 patent in which the device handler program controls the flow of data but does not directly participate in "handling" or "processing" it. JX-6 at col. 5, lns. 45-48; col. 5, ln. 64 – col. 6, ln. 3.

In short, HTC's argument regarding the "device handler program" is in error because the claim does not cover the preferred embodiment that is disclosed in the '263 patent. *See, e.g.*, *Osram*, 505 F.3d at 1358 (finding claim construction erroneous because it "would exclude the . . . products that the patents were designed to cover").

Accordingly, HTC's argument that its device handlers do not "present data" is rejected.

HTC's contention that its accused devices do not infringe because they are not "specific to" or "associated with" an interface device is likewise rejected for the reasons that follow. In this vein, HTC argues that [ ] do not infringe

because "the accused device handlers do not meet the agreed requirement that the claimed device handler 'know something' about the device it is supposedly handling." HTC Br. at 23.

As an initial matter, the language of the claim does not require this "knowledge." Also, as noted, the claim term "device handler" has been construed to mean "software associated with an interface device that sets up dataflow paths, and also presents data and commands to a realtime signal processing subsystem." Thus, it is clear that under proper construction, the "device handler" does not have this "knowledge" requirement. Further, this "knowledge" requirement is not found elsewhere in the intrinsic evidence, but instead comes from HTC's misreading of certain extrinsic testimony.

HTC specifically contends that it cannot infringe because a "hardware abstraction layer" abstracts the antenna from the accused device handler program, and as a result the program allegedly cannot "know" details about this device. HTC Br. at 24. HTC cites to the testimony provided by Google's Mr. Sparks, who explained that the accused [

] doesn't have the allegedly necessary "knowledge" of the antenna because the accused products [

]

HTC's "knowledge" argument deviates from the intrinsic evidence and reads the preferred embodiment out of the claims. FIG 2's preferred embodiment shows a "hardware abstraction layer 40" (as well as an additional driver layer) between the preferred embodiment's device handler program ("adapter handler 44") and the device ("telecom adapter 36"). JX-6 at FIG. 2, *see* Polish Tr. 800. The hardware abstraction layer 40 is a "hardware dependent" driver that "isolates" the adapter from the "remainder

of the software" including the handler 44. JX-6 at col. 4, lns. 57-65. The "particular characteristics" that the hardware abstraction layer is configured to hide in the preferred embodiment are exactly the "details" that HTC improperly contends the device handler program must "know" about. *Id.* Thus, HTC's argument that a device handler program cannot be separated from a device by intervening modules like "hardware abstraction layers" is contrary to the description of the preferred embodiment.

In contrast to HTC's persistence to tie the device handler inflexibly to a single device, the '263 patent is specifically targeted at creating a system that has the flexibility to handle many different devices, data types, and communication networks. The specification makes clear that this flexibility is enabled "by abstracting the functions of ***each of the elements of the system*** from one another." JX-6 at col. 2, ln. 66 – col. 3, ln. 4 (emphasis added). Thus, despite HTC's assertion that one element – the device handler program – must have detailed knowledge about a particular device, the patent teaches the opposite. Consistent with John Lynch's testimony at the hearing regarding the commercial embodiment, the "association" specified in the Apple/Staff construction means that the handler [ ] Lynch Tr. 297; Polish Tr. 666. It does not need to know "hardware-dependent" characteristics like the resolution of a screen or features of a microphone. Adding onto the handler any further requirement that it needs to "know" or be "specific to" the "particular characteristics" of a device, as HTC suggests, would improperly read out the preferred embodiment. As a result, HTC's argument is rejected.

Based on the analysis set forth above, Apple has satisfied the first element of claim 1.

The second element of claim 1 recites:

> **a realtime signal processing subsystem for performing a plurality of data transforms comprising a plurality of realtime signal processing operations; and**

Apple has satisfied this claim element.

An example of a realtime signal processing subsystem comprises [

] Polish Tr. 446-47, 450-52, 454-55, 485-86. It performs a plurality of data transforms comprising a plurality of realtime signal processing operations, such as encoding and decoding of compressed audio and video data. CX-595C at 30-31; CX-453; Polish Tr. 448-49, 453-54, 459; Sparks Tr. 1057-60.

[

] CX-453 at ln. 78; CX-7097C at ln. 72; CX-6872C at lns. 1131-1151; Chen Tr. 883-86.

Moreover, the [ ] engine must output the media data properly in time. This is accomplished by evaluating [

] More specifically, the [

]

Accordingly, Mr. Sparks and Dr. Sherwood confirmed that the HTC products perform signal processing operations within the upper bounded time limit defined by the data. Polish Tr. 477-83, 805-09; Sherwood Tr. 826, 830-32; Sparks Tr. 1081-87.

HTC argues that [

] But neither accused subsystems are 'realtime' because they both lack time limits." HTC Br. at 29 (citations omitted).

The claim term "realtime" has been construed to mean "within a defined upper bounded time limit." Documentation describing the accused HTC products confirms that its software expressly meets this requirement. [

]

HTC argues that [ ] the phones instead use [ ] (HTC Br. at 30, 32), but this ignores the fact that [

]

Thus, one can tell if processing is meeting the deadlines defined by the encoded rate if continuous playback is achieved. Polish Tr. 316; Sparks Tr. 1085 [

]

HTC contends that [

] But on cross-examination, Mr. Sparks clarified that [

] This is indeed Laplante's definition of hard realtime. RX-777.30 (Definition 1.5); Polish Tr. 329-30. The fact that [

]

Accordingly, Apple has satisfied the second element of claim 1.

The last element of claim 1 recites:

> **at least one realtime application program interface (API) coupled between the subsystem and the realtime signal processing subsystem to allow the subsystem to interoperate with said realtime services.**

Apple has satisfied this claim element.

As noted, the claim term "realtime API" has been construed to mean "API that allows realtime interaction between two or more subsystems."

Examples of realtime APIs include [

] These allow realtime interaction between two or more subsystems. [

]

Specifically, Mr. Sparks testified that [

]

Indeed, both Mr. Sparks and D Sherwood confirmed that [

] Polish Tr. 400-04; Sherwood Tr. 819-20, 857-59; Sparks Tr. 1067-68, 1091-93. In the Android architecture, [

] Sparks Tr. 1057-59.

[

] Sherwood Tr. 822 [

]

The Android architecture uses [

]

Sparks Tr. 1092 [

]

HTC contends that because "Apple failed to identify any time limits in the system," Apple cannot establish that the "realtime signal processing subsystem" limitation is satisfied. HTC Br. at 45. This argument is the same as the one for the first element of claim 1, *supra*. Thus, this argument is rejected for the same reasons that the first element of claim 1 was found to be infringed.

HTC further asserts that "Apple's allegations regarding the realtime API are also defective. In both OpenCORE and StageFright, Apple accuses 'header' files as the claimed realtime API." HTC Br. at 26. HTC explains that "Apple's exclusive reliance on header files results in a fatal flaw. Header files are not on the accused phones, and anything from them that is compiled onto the phones exists only within the accused signal processing system, preventing the accused API from being *coupled between or distinct from the subsystems*." *Id.* (emphasis added).

HTC's argument that accused APIs are not "coupled between" or "distinct from the subsystems" has already been rejected in connection with claim construction for "realtime API," *supra*.

Accordingly, Apple has satisfied the last element of claim 1.

2. Claim 2

Dependent claim 2 recites:

> **The signal processing system as set forth in claim 1, wherein said signal processing system receives and transmits a plurality of datatypes over a plurality of different wide area networks (WANs).**

Apple has satisfied claim 2.

HTC products receive and transmit datatypes such as MP3 audio, telephony audio and MPEG video. Stipulation Relating to Use of Respondents HTC Corp., HTC America, Inc., and Exedea, Inc.'s Products in the United States (Apr. 17, 2011), ¶ 5; Polish Tr. 486-87. The datatypes are received and transmitted over WANs such as various cellular networks and the internet via IEEE 802.11 WiFi. Polish Tr. 487.

3. Claim 24

The preamble and the first element of claim 24 recite:

> **The signal processing system of claim 1, wherein said realtime signal processing subsystem comprises:**
>
> **a realtime processor including an operating system for executing a plurality of realtime functions;**

Apple has satisfied the preamble and the first element.

Each HTC product includes a realtime processor, [

]

The second element of claim 24 recites:

> **a realtime communications module which is independent of said realtime processor and is coupled to receive a plurality of communications commands from said application programs via said device handler program and said realtime API, said realtime communications module operating in response to said communications commands to issue a plurality of requests for realtime services to said realtime processor; and**

Apple has satisfied this element. The accused products include a realtime communications module which is independent of the realtime processor and is coupled to receive a plurality of communications commands from the application programs via the device handler program and realtime API, the realtime communications module operating in response to said communications commands to issue a plurality of requests for realtime services to said realtime processor.

Each HTC product includes realtime communications modules such as the

[

] Indeed, [

]

These realtime communications modules are also [

]

The last element of claim 24 recites:

> **a translation interface program which is specific to said realtime processor and is coupled to receive said requests for realtime services from said communications module and provide said requests to said realtime processor.**

Apple has satisfied this element.

For HTC products, an example of a translation interface program is [

]

4. Claim 29

Dependent claim 29 recites:

> **The signal processing system of claim 24, wherein said realtime processor is embodied in a hardware device and includes realtime function libraries that are embodied in programmable software.**

Apple has satisfied claim 29.

Each HTC product includes a realtime processor, [

] CX-199C at 15, 21, 29; CX-202C at 17-18, 46-48, 100; CX-595C at 11, 30-31; Polish Tr. 465-66, 469-70, 487-88, 493. [

]

In summary, Apple has shown that HTC's accused products infringe all asserted claims of the '263 patent.

C. Technical Prong of the Domestic Industry Requirement

For the reasons set forth below, Apple has satisfied the technical prong of the domestic industry requirement with respect to the '263 patent.

1. Claim 1

The preamble of claim 1 recites:

> **A signal processing system for providing a plurality of realtime services to and from a number of independent client applications and devices, said system comprising:**

Apple has satisfied the preamble.

Apple's domestic industry product ("DI Product")[23] includes applications such as QuickTime X. CPX-10; Polish Tr. 616. It also includes devices such as the hardware network interface, speakers and a display. Polish Tr. 617. The DI Product also provides, to and from the client applications and devices, realtime services such as progressive download, audio and video playback, and audio and video streaming from a network. Polish Tr. 617, 619-20; CPX-10.

The first element of claim 1 recites:

> **a subsystem comprising a host central processing unit (CPU) operating in accordance with at least one application program and a device handler program, said subsystem further comprising an adapter subsystem interoperating with said host CPU and said device;**

Apple has satisfied this claim element.

The DI Product includes a CPU. Polish Tr. 616; CPX-10. The CPU operates in accordance with application programs such as QuickTime X. Polish Tr. 616. The CPU also operates in accordance with device handler programs [ ] CX-670 at 9; CX-5714C; CX-5717C; Polish Tr. 620-24. The DI Product includes an adapter subsystem, [ ] that interoperates with the host CPU and devices. '263 Issues Stip., ¶ 5; Polish Tr. 616-17.

HTC argues that Apple's domestic industry product, the MacBook Pro, does not practice the '263 patent because it does not include the claimed "device handler" program. HTC Br. at 45. Specifically, HTC contends that [

[23] Apple's domestic industry products include the MacBook Pro running Mac OS X v10.6 Snow Leopard (CPX-10) and the iPhone 3GS (CPX-11).

] (which Dr. Polish identifies as the device handler), is neither "specific to" nor "associated with" the claimed device, which Apple claims is the network interface because[

] *Id.*

HTC's contention is rejected for the same that its infringement argument was rejected above. As noted, the device handler program need not have detailed knowledge about a particular device. [Furthermore, HTC erroneously limits its domestic industry analysis to a discussion about the hardware network interface. Id. Rather than citing to any evidence, HTC claims that [ ] does not satisfy the device handler limitation based solely on conclusory statements by Dr. Brandt that [

] *Id.* (citing Brandt Tr. 1437-38).] Again, this argument incorrectly requires that the device handler program needs to know details about the device and specifically limits the device to the hardware network interface.

[

] CX-670 at 9. Dr. Polish explained how [

] Polish Tr. 620-21; CX-670 at 11, 18.] Satisfaction of this limitation is clear given the proper claim construction. Apple has satisfied the first element of claim 1 for the technical prong.

The second element of claim 1 recites:

> **a realtime signal processing subsystem for performing a plurality of data transforms comprising a plurality of realtime signal processing operations; and**

Apple has satisfied this claim element.

An example of a realtime signal processing subsystem comprises [

] CX-7453C; CX-7454C; Polish Tr. 627-28; *see* CX-5718C; CX-5719C; CX-5726C; CX-5727C; CX-5720C – CX-5725C. The realtime signal processing subsystem performs a plurality of data transforms comprising a plurality of realtime signal processing operations [

] CX-670 at 14; Polish Tr. 648-52.

HTC argues that Apple's domestic industry product, the MacBook Pro, does not practice the '263 patent because it does not perform realtime processing. HTC Br. at 44. Specifically, HTC asserts that all of the proposed constructions of the term "realtime" require the claimed "realtime" components, including the "realtime signal processing subsystem" to operate according to time limits and that the MacBook Pro does not operate under any such time limits, and as such, does not practice the '263 patent. *Id.* HTC also contends that "Dr. Polish did not even attempt to establish that the MacBook Pro uses time constraints [ ] *Id.*

HTC's arguments ignore Dr. Polish's explanation of how Apple's DI Product [ ] Polish Tr. 650. In particular, [

] Polish Tr. 650-51. Further, [

] CX-670 at 14; Polish Tr. 648-49. Thus, [

] Polish Tr. 650.

Accordingly, Apple has satisfied the second element of claim 1 for the technical prong.

The last element of claim 1 recites:

> **at least one realtime application program interface (API) coupled between the subsystem and the realtime signal processing subsystem to allow the subsystem to interoperate with said realtime services.**

Apple has satisfied this claim element.

The DI Product includes a realtime API [ ] Polish Tr. 625. [ ] allows the subsystem to interoperate with realtime services [ ] CX-7453; Polish Tr. 625-28. Apart from the argument that Apple's DI Product does not contain realtime components, both respondents and the Staff do not dispute that [ ] qualifies as the claimed realtime API. Inasmuch as the proper claim construction of "realtime API" does not require that the API itself be realtime, it is undisputed that Apple's DI Product includes a realtime API [ ]

HTC contends that because "Apple failed to identify any time limits in the system," Apple cannot establish that the "realtime API" limitation is satisfied. HTC Br. at 45.

This argument is the same as the one for the first element of claim, *supra*. Thus, this argument is rejected for the same reasons that the first element of claim 1 was found to be infringed.

2. Claim 24

The preamble and the first element of claim 24 recite:

> **The signal processing system of claim 1, wherein said realtime signal processing subsystem comprises:**
>
> **a realtime processor including an operating system for executing a plurality of realtime functions;**

Apple has satisfied the preamble and the first element.

Apple's DI Product has a realtime processor such as an Intel core. Polish Tr. 656-57. The realtime processor includes an operating system such as Mac OS X, which is for executing a plurality of realtime functions. *Id.*

The second element of claim 24 recites:

> **a realtime communications module which is independent of said realtime processor and is coupled to receive a plurality of communications commands from said application programs via said device handler program and said realtime API, said realtime communications module operating in response to said communications commands to issue a plurality of requests for realtime services to said realtime processor; and**

Apple has satisfied this element.

Apple's DI products include realtime communications modules, [

] CX-7454; Polish Tr. 654-55. [ ] are independent of the realtime processor and coupled to receive a plurality of communication commands from applications [

] CX-7454; Polish Tr. 647-48, 654-55. [ ] issue requests for realtime services, [ ] to the

realtime processor. CX-670 at 17-18; CX-7454; Polish Tr. 627, 650-51, 654-55

The last element of claim 24 recites:

> **a translation interface program which is specific to said realtime processor and is coupled to receive said requests for realtime services from said communications module and provide said requests to said realtime processor.**

Apple has satisfied this element.

Apple's DI product includes a translation interface program [

] CX-7454; Polish Tr. 655-56. [

] CX-5726C; CX-5727C; Polish Tr. 657-58. [

] receives requests for realtime services [ ] and provides them to the realtime processor. CX-7454.

In summary, Apple has satisfied the technical prong of the domestic industry requirement with respect to the '263 patent.

D. Validity

HTC asserts that the AT&T VCOS system anticipates and renders obvious all asserted claims of the '263 patent. HTC Br. at 33-39. HTC further asserts that U.S. Patent No. 5,790,781 ("Cox") anticipates all asserted claims of the '263 patent. HTC Br. at 39-44.

The Staff submits that there is clear and convincing evidence that the asserted claims of the '263 patent are invalid as anticipated and obvious by AT&T's VCOS system and that claim 24 is invalid as indefinite because one skilled in the art would not have had "any idea as to the scope of the claim due to the irresolvably ambiguous term

'realtime communication module'." Staff Br. at 37, 40-41. The Staff also argues that "the other prior art asserted by respondents may also invalidate the '263 patent claims (such as U.S. Patent No. 5,790,781 to Cox), but that the VCOS system is the closest prior art." *Id.* at 37 n.15.

Apple argues that the VCOS system and the Cox patent do not invalidate the '263 patent because they are "fundamentally different from the '263 patent, and in the same way as the art that was cited and overcome during prosecution." Apple Br. at 48-49.

1. AT&T VCOS System

As noted, HTC and the Staff assert that the AT&T VCOS system anticipates and renders obvious all asserted claims of the '263 patent. HTC Br. at 33-39; Staff Br. at 37.

For the reasons set forth below, HTC and the Staff have not shown by clear and convincing evidence that the AT&T VCOS system anticipates and renders obvious all asserted claims of the '263 patent.

The VCOS system[24] does not anticipate any of the asserted claims because it fails to disclose at least the realtime API and device handler limitations. Polish Tr. 1671-76. The VCOS system was expressly discussed as similar but inferior prior art in column 1 of the Chen patent. RX-1103 at col. 1, ln. 58 – col. 2, ln. 2; JX-11 at APPHTC_00013767-76 (USPTO BPAI, Decision on Appeal (May 31, 2001)); Polish Tr. 1675-76. Thus, this art fails for at least the same reasons that the claims were found patentable over Chen during prosecution.

In order to determine whether the VCOS system anticipates the '263 patent, it is

[24] HTC and the Staff also failed to present clear and convincing evidence of any act sufficient to establish that a particular "VCOS system" was prior art to the '263 patent claims.

important to understand the prosecution history of the '263 patent as it relates to the Chen patent. During the prosecution of the '263 patent, the examiner focused on the Chen patent as the key prior art. JX-11 at APPHTC_00013307; *see* RX-1103. In relevant part, Chen discloses a DSP manager for loading tasks onto specific DSP hardware, and for managing DSP hardware resources (*e.g.* memory). RX-1103 at col. 2; Polish Tr. 1667-69.

Apple's response explained that Chen did not disclose an application programming interface "coupled between the subsystem [which includes the device handler program] and the realtime signal processing subsystem." JX-11 at APPHTC_00013529 (alteration in original). Chen did not disclose the invention's "architectural arrangement provid[ing] a layer of abstraction which eliminates the requirement that the handler have any knowledge of the particular implementation of the realtime engine." *Id.* at APPHTC_00013529-30.

Despite Apple's explanation, the examiner maintained his obviousness rejection and responded that Chen had "various APIs coupled between device drivers … and a DSP manager." *Id.* at APPHTC_00013544. Apple appealed, again explaining that "[t]he function of [Chen's DSP] manager is essentially to call and load various multi-media software tasks into the hardware for the digital signal processors" and that "does not constitute … an application programming interface provid[ing] a layer of abstraction between the particular implementation of a realtime engine and the [host CPU] subsystem." *Id.* at APPHTC_00013715. In other words, "[t]here is no disclosure in the Chen et al patent which supports a conclusion that the DSP manager 71 itself constitutes, or otherwise contains, an [API], nor that it generates API commands." *Id.* at

APPHTC_00013716.

The BPAI agreed with Apple and allowed the claims. *Id.* at APPHTC_00013772. The BPAI ruled that the "Examiner has failed to set forth a *prima facie* case," finding that Chen's DSP Manager "is not an API, does not include an API, and does not generate API commands." *Id.* at APPHTC_00013772-74. In other words, Chen's DSP Manager is not "an API interfaced between the CPU subsystem and the real-time processing subsystem." *Id.* at APPHTC_00013774.

"realtime API"

Functionally, VCOS is another "bottom-up" system, designed by AT&T to ease integration of AT&T's particular DSP3210 chips into a host system. Lynch Tr. 1186-87; Polish Tr. 1671-73; RX-960.006. More specifically, VCAS allows applications to load and run VCOS DSP tasks on a VCOS DSP. Lynch Tr. 1161-62; Polish Tr. 1673. It is undisputed that VCOS DSP tasks are "written for the VCOS system" and "would not run correctly" in a non-VCOS system, as confirmed by respondents' own paid consultant. Lynch Tr. 1164, 1187-88;[25] *see* RX-1038 at 17 ("The hardware that runs VCOS must include at least one AT&T DSP3210."). Applications using VCAS thus need to know that the DSP is a VCOS DSP in order to load VCOS DSP tasks. This need for knowledge about the particular implementation of the real-time engine is incompatible with the '263 invention and its realtime API, which "provid[es] a layer of abstraction

[25] Although HTC's paid consultant John Lynch, did mention that AT&T had "looked at" the possibility of building a different system that might be used with non-AT&T DSPs (Lynch Tr. 1164-65), this conclusory testimony falls far short of providing clear and convincing evidence of anything. He confirmed that they "didn't do it" and never explained any details about this hypothetical system or when the discussions even took place.

between the real-time engine and the remainder of the processing system, … eliminat[ing] the need for a device handler to have any knowledge about the particular implementation of the real-time engine." JX-11 at APPHTC_00013684; JX-6 at Abstract, col. 2, ln. 66 – col. 3, ln. 11; Polish Tr. 1671-73, 1675-76.

Similarly, if a non-VCOS DSP is used, the application would have to be redesigned to use different DSP tasks compatible with that non-VCOS DSP. This need to redesign the system is also inconsistent with the invention's realtime API, in which "any one of a hardware-implemented, software-implemented or native digital signal processor can be employed, without requiring any redesign of the system." JX-11 at APPHTC_00013684; Polish Tr. 1671-73, 1675-76.

As indicated above, the '263 patent is a fundamentally different dual subsystem architecture, with a realtime API that abstracts a separate realtime processing subsystem and so allows the host CPU subsystem to be reused—without redesign—with any different kind of realtime subsystem, even a "native" DSP engine running on the CPU. Lynch Tr. 216-18; Polish Tr. 310, 332-33, 352-53. Because VCOS lacks the requisite "layer of abstraction between the real-time engine and the remainder of the processing subsystem," the real-time engine is tightly integrated into the host CPU subsystem.

The VCOS documentation is clear in distinguishing its approach from the '263 invention: "***[r]ather than having a separate DSP subsystem***, the VCOS Operating System ***integrates*** the DSP32xx into [host] computer environments." RX-963 at 1; Polish Tr. 1672-73 (emphasis added). This tight integration is visually depicted in FIG. 1 (RX-963 at 1), which shows applications directly linked to DSP tasks without an API coupled between them. *See* RX-963 at 2 ("In the VCOS environment, applications

communicate directly with DSP tasks via standard buffers in system memory.") VCOS, like Chen, thus lacks a realtime API "coupled between" or "distinct from" the realtime subsystem and the host CPU subsystem.

"device handler program"

VCOS further fails to meet claim 1 because it does not disclose a device handler program. Polish Tr. 1676. VCOS device drivers and the VCOS Resource Manager (VRM) do not constitute the claimed device handler program as neither is involved in setting up data flow paths.[26] First, the VRM is not abstracted by VCAS (the alleged realtime API) because VCAS and VRM reside in the same software layer. RX-1038 at 14.

HTC attempts to correlate the function of the VRM to the device handler program by noting that it is involved in mixing streams of data into a single output stream. HTC Br. at 36. But this is not consistent with the patent's disclosure, as the '263 patent makes clear that "mixing audio streams into a single output stream" is a function in the preferred embodiment of serial driver 42, not the device handler program. JX-6 at col. 4, ln. 66 – col. 5, ln. 8.

Moreover, the only alleged support in the record that HTC points to for "VCOS device drivers" being the claimed device handler program is Dr. Brandt's testimony referencing a figure in non-prior-art RX-1037. Brandt Tr. 1389-90. But these "drivers" are akin to the "serial drivers" in the preferred embodiment, not the device handler

[26] Dr. Brandt relied on RX-1037 (published sometime in 1994) at the hearing as proof of the "device drivers" and the VRM. Dr. Brant, however, has not testified regarding these limitations based on any document that *actually* pre-dates the invention of the '263 patent (August 2, 1994).

program, and there is no evidence that they set up data flow paths as opposed to simply being a part of those paths.

VCOS also fails to meet claim 24 because it lacks at least a "realtime communications module." HTC's expert (Dr. Brandt) identified "VCOS communication code" without further explanation. Brandt Tr. 1396. Thus, HTC has insufficient proof with respect to at least the "realtime communications module" limitation of claim 24. HTC seeks in its brief to "fix" Dr. Brandt's conclusory testimony about "communications code" satisfying this limitation by redirecting its arguments to "FIFO and parameter functions" that were never referenced at the hearing.[27] HTC Br. at 38. Respondents' attorney argument is unsupported by record evidence.

Accordingly, HTC and the Staff have not shown by clear and convincing evidence that the AT&T VCOS system anticipates and renders obvious all asserted claims of the '263 patent.

2. U.S. Patent No. 5,790,781 ("Cox")

As noted, HTC asserts that U.S. Patent No. 5,790,781 ("Cox") (RX-1117) anticipates all asserted claims of the '263 patent. HTC Br. at 39-44. The Staff merely contends, without any relevant analysis, that the Cox patent "may also invalidate the '263 patent claims." Staff Br. at 37 n.15.

Apple argues that the Cox patent is not prior art against at least claim 1 because

[27] HTC relies on RX-1038 as showing that the FIFO and parameter functions are a "lower level" in VCAS. HTC Br. at 38-39. There is no evidence of multiple layers in VCAS. *E.g.*, RX-1038 at 13 ("Generic VCOS consists of ***only two host-side layers***. One of these is the HAL; the other is . . . VCAS.") (emphasis added). Even if the VCAS module were split into layers, respondents never once limit their identification of the VCAS API to anything less than the entire VCAS module.

its priority date is December 8, 1993 (RX-1117.02), well after the '263 patent's May 1992 conception date and August 1993 actual reduction to practice. Apple Br. at 53. Apple further submits that the Cox patent does not invalidate the '263 patent because it is "fundamentally different from the '263 patent, and in the same way as the art that was cited and overcome during prosecution." *Id.* at 48-59.

For the reasons stated below, respondents and the Staff have not shown by clear and convincing evidence that the Cox patent anticipates all asserted claims of the '263 patent.

Conception and Reduction to Practice

HTC did not challenge or rebut evidence proving the '263 invention was conceived by May 29, 1992. This date of conception is corroborated by [ ] CX-1490C; CX-1515C; CX-1518C; Polish Tr. 1687-90. [ ] describes a computer system architecture to support realtime services to and from a number of applications [ ] CX-1490C at 21, 29, 85, 89. The disclosed computer system includes a subsystem with a CPU, a [ ]device handler program, and adapter subsystem. CX-1490C at 85, 105. The disclosed computer system includes a realtime signal processing subsystem [ ] and realtime application programming interface (RALF API). CX-1490C at 89, 98. The realtime API is coupled between the subsystem and realtime signal processing subsystem. CX-1490C at 98, 105; CX-1515C; CX-1518C. [ ] that includes all of these elements of the '263 invention. CX-1490C at 105; Lynch Tr. 252-55. [ ] shows both the claimed elements and relative position of those

elements. CX-1490C at 105. [

] conception of the '263 invention was complete. Lynch Tr. 255 ("Q. Now, as of this date, May 29th, 1992, was [ ] A. Yes, it was.").

The '263 patent was reduced to practice by [

] the inventors worked to reduce their invention to practice. CX-1529C; CX-1537C; CX-1540C; Lynch Tr. 256. [

]

CX-1554C; Lynch Tr. 262-63; Polish Tr. 1690-91. HTC failed to challenge or rebut this evidence.

HTC counters that Apple cannot show that the "device handler" element of claim 1 was conceived and reduced to practice prior to the filing date of the '263 patent because Dr. Polish failed to provide any analysis for how the [ ] "presents data" to a realtime subsystem. HTC Br. at 43.

HTC's argument is without merit. The undersigned rejected HTC's earlier infringement argument that the agreed portion of the construction that "presents data" requires the device handler program to itself process and handle data, because it would exclude the preferred embodiment of the invention. Thus, [

] as HTC claims.

Accordingly, the Cox patent is not prior art against at least claim 1 because the record evidence shows that the invention was conceived in May 1992 and reduced to practice in August 1993.

"realtime API"

The Cox patent does not anticipate any of the asserted claims because it fails to disclose the "realtime API" element. Polish Tr. 1677-78. Cox was Intel's effort at an integrated DSP system and does not disclose a realtime API coupled between or distinct from a separate realtime signal processing subsystem—the applications need to have detailed knowledge of the DSP implementation in order to know what DSP task to run. Polish Tr. 1677-78; Brandt Tr. 1399; RX-1117 at col. 5, lns. 10-27.

Specifically, the alleged realtime API, DSP Interface 120, is not coupled between a first subsystem and a realtime signal processing subsystem. RX-1117 at FIG. 4. FIG. 4 depicts only two subsystems—a host subsystem and a multi-function I/O subsystem. RX-1117 at FIG. 4. DSP Interface 120 is located ***in the middle of the host subsystem***, and is thus a part of it, as opposed to coupled between to abstract the two subsystems. *Id.* In that regard, HTC confuses the record by stating that "Apple contends that the DSP Interface is not a 'realtime API' because it 'needs knowledge of what is running on that DSP.'" HTC Br. at 42. To be clear, Dr. Polish testified that the Cox patent is different from the '263 invention because in Cox "the ***application*** has to know what DSP task to run . . . ***it*** needs knowledge of what is running on that DSP." Polish Tr. 1678 (emphasis added).

HTC's argument that "the DSP interface has no knowledge" thus misses the point—it is the application (or alleged device handler program) in Cox that has knowledge of DSP implementation details, demonstrating that the DSP Interface 120 does not provide the necessary layer of abstraction between the application and DSP. Polish Tr. 1678. In fact, each device driver in the Cox patent needs to know the details of

an associated DSP-OS task. RX-1117 at col. 5, lns. 21-28 ("Each host device driver defines an appropriate set of message formats . . . for communications with the corresponding DSP-OS task."). The device driver controls the "functions of a DSP-OS task . . . by placing messages in a corresponding mailbox." RX-1117 at col. 6, lns. 20-26.

Moreover, like the DSP Manager in Chen, Cox's DSP interface 120 does not provide a layer of abstraction, but rather routes commands (messages) from the device driver to the DSP-OS task. RX-1117 at col. 6, lns. 33-42. "The DSP interface 120 enables command message transfer between the host device drivers 110-114 and the DSP-OS tasks." RX-1117 at col. 6, lns. 62-67. The communication is sufficiently direct that FIG. 5 does not even depict the DSP Interface. Indeed, the link between alleged device handler program and DSP is sufficiently tight that "[a] host device driver and a corresponding DSP-OS task have a client/server relationship." RX-1117 at col. 7, lns. 16-17; *see also id.* col. 7, lns. 29-30 ("The DSP-OS tasks send data to the host device drivers, and receive data from the host device drivers.").

Respondents' characterization of Cox as the "same mechanism used by the realtime API in the '263 Patent" (HTC Br. at 42) is unsupported and wrong. The '263 patent discloses command/control mailboxes, but the device handler program in the '263 patent places into those mailboxes abstract commands for "particular transforms to be performed"—not commands linked to a specific DSP task on a specific DSP. JX-6 at col. 5, lns. 21-25. If the device handler program of the '263 patent needed to know the "appropriate set of message formats" (RX-1117 at col. 5, lns. 29-37) for a directly associated DSP task, then the realtime API would not and in fact could not provide the requisite layer of abstraction that is required by the '263 patent invention.

"device handler program"

The Cox patent also does not anticipate any of the asserted claims because it fails to disclose the "device handler program" element. Polish Tr. 1678. Respondents' identification of the host device drivers in Cox as the device handler program is wrong. Cox fails to disclose that the host device drivers set up data flow paths. Polish Tr. 1678. In fact, host device drivers are not mentioned anywhere in the context of the data flow path: "DSP-OS tasks . . . read input data from a source device, process[] the input data, and then write the processed data to a sink device." RX-1117 at col. 7, lns. 49-51. Dr. Brandt's conclusory testimony on this matter (Brandt Tr. 1403-04) finds no support in the record, and falls far short of respondents' clear and convincing burden of proof.

Dependent Claims

Cox also fails to teach the limitations of the asserted dependent claims. Claim 2 requires "a plurality of different wide area networks (WANs)." HTC concedes that all of the disclosed data types are sent "via the telephone" and thus Cox does not disclose at least two WANs.

HTC's proof for the limitations of claim 24 also falls short. Dr. Brandt's conclusory analysis places the "realtime communications module" and the "translation interface" in two different subsystems, despite the fact that in the patent they are both part of the realtime processing subsystem. Brandt Tr. 1410-11. Moreover, HTC argues without support that "DSP device drivers" in Cox correspond with the translation interface program. However, as explicitly stated in Cox, the "DSP device drivers" are programmed directly into the DSP, *i.e.*, are part of the DSP. RX-1117 at col. 7, lns. 41-48, FIG. 4.

The Cox patent does not anticipate claims 24 or 29 at least because the alleged realtime communications module is not independent of the DSP (Brandt Tr. 1410; RX-1117 at col. 5, lns. 29-38); and because the alleged translation interface program resides entirely *on* the DSP (Brandt Tr. 1410). Thus, HTC and the Staff have failed to put forth clear and convincing proof that the Cox patent anticipates the asserted dependent claims of the '263 patent.

In sum, HTC and the Staff have not shown by clear and convincing evidence that the Cox patent anticipates all asserted claims of the '263 patent.

3. Claim 24 – Indefiniteness

As noted, the Staff asserts that dependent "claim 24 is indefinite because one skilled in the art would have not had any idea as to the scope of the claim due to the irresolvably ambiguous term 'realtime communication module'." Staff Br. at 40-41.

HTC no longer asserts that claim 24 is indefinite.

Apple argues that for claim 24, the claim language, the specification, the prosecution history, and the testimony of Dr. Polish, confirm that the "realtime communications module" is definite and should be afforded the construction offered by Apple. Apple Br. at 23-25.

As discussed below, the Staff has not shown by clear and convincing evidence that dependent claim 24 is indefinite because the term "realtime communications module" cannot be understood by a person of ordinary skill in the art. The claim term "realtime communications module" is not insolubly ambiguous—the high standard required to be met before classifying a claim issued by the USPTO as indefinite. *Exxon Research and Engineering Co. v. United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001)

("If a claim is insolubly ambiguous, and no narrowing construction can properly be adopted, we have held the claim indefinite. If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds.").

Its context in the claim language alone tells a person of ordinary skill in the art what is claimed by a "realtime communications module." Polish Tr. 356-59; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005). The term uses common terminology, and the word "module" even appears in respondents' proposed constructions. Claim 24 describes that the realtime communication module: (1) is independent of the realtime processor; (2) is coupled to receive a plurality of commands from application programs via the device handler program and the realtime API; and (3) operates in responses to commands to issue a plurality of requests for realtime services to said realtime processor. Thus, a person of ordinary skill would be familiar with the constituent words in the limitation, would know where the software resides in the computer architecture, and would know what functions the software performs.[28]

The specification also confirms to a person of ordinary skill the proper meaning of the term "realtime communication module." In the preferred embodiment, the "generic service provider 62" performs exactly the same functions as recited in dependent claim 24 for the realtime communications module. JX-6 at col. 7, lns. 13-37, FIG. 3.

---

[28] Moreover, while not limiting the term, dependent claims 25 and 26 would provide additional guidance to a person of ordinary skill, explaining further what the realtime communications module does and further dispelling any alleged ambiguity. *Phillips*, 415 F.3d at 1314 ("Other claims of the patent … can also be valuable sources of enlightenment as to the meaning of a claim term.").

Even though the exact claimed term may not be present in the specification, the fact that an embodiment of the realtime communication module is consistently described in the specification would confirm to a person of ordinary skill that the term is not insolubly ambiguous. *Bancorp Servs. LLC v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1371-73 (Fed. Cir. 2004) (reversing district court finding of indefiniteness even though claim term was "not defined [or] used, anywhere in the specification" because its construction was discernible from context of a different term consistently described in the specification).

Moreover, the prosecution history shows that the examiner, presumptively a person of ordinary skill, had no trouble ascertaining what the "realtime communications module" was and in applying prior art against the claims that contained this limitation. *See* JX-11 at APPHTC_00013308 (Aug. 18, 1995 Office Action, at 5).

HTC offered essentially no expert testimony to support its construction. HTC's Dr. Brandt only made a passing reference to the term being indefinite when applying claim 24 against the prior art. Brandt Tr. at 1396. Such testimony falls well short of meeting the burden to prove the limitation is insolubly ambiguous by clear and convincing evidence. This contrasts with Dr. Polish's detailed explanation as to how a person of ordinary skill in the art would understand the limitation, and how the specification's description "match[es] up exactly" with the context in which the limitation appears in claim 24. Polish Tr. 335-337, 356-359.

The Staff argues that the claim term "realtime communications module" in claim 24 is indefinite because although "claim 24 specifies what the realtime communication *does*, the patent provides no description of what it *is*." Staff Br. at 41. But the claim *does* in part describe what the limitation is ("independent of said realtime processor"); the term

itself describes what it is (a "realtime communications module"); and the claims describe its architectural position in detail (*e.g.* "coupled to receive. . ."). A person of ordinary skill would know not only what the realtime communication module does, but also where it resides in the architecture and how it fits with other components.

Moreover, even if the limitation *were* purely functional, its meaning is discernible in context and thus it would not be indefinite. *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332-34 (Fed. Cir. 2010).

Accordingly, the Staff has not shown by clear and convincing evidence that dependent claim 24 is indefinite.

VIII. U.S. Patent No. 6,275,983

The '983 patent is entitled, "Object-Oriented Operating System." The '983 patent discloses the use of object-oriented methods requiring native system services that enable object-oriented applications to access a procedural operating system in an object-oriented manner. JX-4 at col. 5, lns. 11-15. The invention is described, in part, as follows:

> The present invention is directed to a system and method of enabling an object-oriented application to access in an object-oriented manner a procedural operating system having a native procedural interface. The system includes a computer and a memory component in the computer. A code library is stored in the memory component. The code library includes computer program logic implementing an object-oriented class library. The object-oriented class library comprises related object-oriented classes for enabling the application to access in an object-oriented manner services provided by the operating system. The object-oriented classes include methods for accessing the operating system services using procedural function calls compatible with the native procedural interface of the operating system. The system also includes means for processing object-oriented statements contained in the

> application and defined by the class library by executing methods from the class library corresponding to the object-oriented statements.

JX-4 (Summary of the Invention), at col. 3, lns. 45-62.[29]

Apple asserts independent apparatus claim 1 and independent method claim 7. The asserted claims read as follow:

> **1.** A computer system, comprising:
>
> computer hardware for performing native system services;
>
> a procedural operating system, having a native interface, for controlling the computer hardware to perform the native system services;
>
> object oriented methods requiring native system services;
>
> procedural program logic code, responsive to invocations

---

[29] Under the heading "Computing Environment," the Detailed Description Of The Preferred Embodiments in part states:

> The present invention is directed to a system and method for providing an object-oriented interface to a procedural operating system having a native procedural interface. The present invention emulates an object-oriented software environment on a computer platform having a procedural operating system. More particularly, the present invention is directed to a system and method of enabling an object-oriented application to access in an object-oriented manner a procedural operating system having a native procedural interface during run-time execution of the application in a computer. The present invention is preferably a part of the run-time environment of the computer in which the application executes. In this patent application, the present invention is sometimes called an object-oriented wrapper since it operates to wrap a procedural operating system with an object-oriented software layer such that an object-oriented application can access the operating system in an object-oriented manner.

JX-4 at col. 4, ln. 66 – col. 5, ln. 15 (emphasis added).

of the object-oriented methods during runtime, for causing the procedural operating system to control the computer hardware to perform the required native system services;

executable program memory associated with the computer hardware for runtime execution of the procedural operating system, invocations of the object-oriented methods and related portions of the procedural program logic code;

means for making determinations during runtime execution if object-oriented methods to be invoked are present in the executable program memory; and

a runtime loader, responsive to the determinations, to selectively load required object-oriented methods into the executable program memory during runtime before invocation of the object-oriented methods.

7. A method for operating a computer system, comprising the steps of:

executing a procedural operating system on computer hardware, the procedural operating system including a native interface, responsive to procedural function calls, for providing native system services;

issuing calls during runtime, compatible with the native interface, to provide the native system services in response to invocations of object-oriented methods requiring such native system services;

determining during runtime if object-oriented methods to be invoked during runtime execution are present in executable program memory associated with the computer hardware; and

selectively loading the object-oriented methods into the executable program memory during runtime before invocation thereof, if not yet loaded.

JX-4 at col. 37, ln. 50 – col. 38, ln. 7; col. 38, lns. 40-56.

A. Claim Construction[30]

The parties have agreed to constructions for the terms "native systems services," "procedural logic code," and "during runtime" (claims 1 and 7). Joint Claim Construction, App'x A at 1 & April 4, 2011, Supplement. The disputed terms are discussed below.

1. "to selectively load required object-oriented methods into the executable program memory"

Claim Term	Apple Construction	HTC Construction	Staff Construction
"to selectively load required object-oriented methods into the executable program memory during runtime before invocation of the object oriented methods" (claim 1) "selectively loading the object-oriented methods into the executable program memory during runtime before invocation thereof" (claim 7)	loading required object-oriented methods into the executable memory during runtime before invocation of the object-oriented methods as needed	selecting the required object oriented method code for the system during runtime and copying the selected code into the executable program memory just before invocation thereof	copying (or transferring) required objected-oriented methods into the executable memory during runtime before invocation of the [object-]oriented methods as needed

Joint Claim Construction, App'x A at 2.

The parties dispute the meaning of "loading … into the executable program memory" and "selectively load required object-oriented methods." Apple argues that

[30] A person of ordinary skill in the art would have a B.S. degree in computer science or equivalent, and two to three years of industry experience. Jeffay Tr. 3306; Spielman Tr. 4681.

loading is not limited to physical copying, but includes virtual copying as well.[31] Apple further argues that with respect to "selectively loading," "[t]here is nothing in the '983 patent or its file history that imposes any limitation of 'selectively loading' in claims 1 and 7 to extracting only a single method from its class, as opposed to loading the class containing the desired method (but not loading other classes). JX-4; JX-10." Apple Br. at 59-63.

HTC argues that loading requires copying and that Apple disclaimed virtual copying during patent prosecution. HTC Br. at 64-69. HTC further contends that selective loading of methods is different from selective loading of classes. *Id.* at 69-72. The Staff agrees with HTC. Staff Br. at 46-51.

The claim term "to selectively load required object-oriented methods..." of claim 1 and "selectively loading the object-oriented methods..." of claim 7 are construed to mean "physically or virtually copying, or transferring, required object-oriented methods into the executable memory during runtime before invocation of the object-oriented methods as needed, where those methods do not include or cover classes."

Describing the operation of the preferred embodiment as shown in FIG. 3, the '983 patent specification states:

> After the library server associated with the code library 110 is identified, or if the library server was already known, then step 314 is processed. In step 314, a request is sent to the library server asking the library server to copy the computer program logic associated with the method reference in the statement to the task address space. Upon

[31] As noted by Apple, "[i]n a preferred embodiment, this loading is done by 'virtual copy' – setting a pointer that resides in the executable program memory part of the RAM to the portion of the code library (located in another part of RAM) containing the methods to be invoked." Apple Br. at 54-55, citing JX-4 at col. 9, lns. 42-50.

> completion of step 314, the library server has copied the requested computer program logic to the task address space. Preferably, the code library 110 is a shared library. That is, the code library 110 may be simultaneously accessed by multiple threads. However, preferably the computer program logic of the code library 110 is physically stored in only one physical memory area. The library server virtually copies computer program logic from the code library 110 to task address spaces. That is, instead of physically copying computer program logic from one part of physical memory to another, the library server places in the task address space a pointer to the physical memory area containing the relevant computer program logic. In step 316, the computer program logic associated with the object-oriented statement is executed on the computer platform 102. As noted above, in the case where the object-oriented statement accesses the operating system 114, the computer program logic associated with the method contains at least one procedural function call which is compatible with the native procedural interface of the operating system 114. Thus, by executing the method's computer program logic, the procedural function call is invoked and executed, thereby causing the operating system 114 to provide the service on behalf of the application 130A.

JX-4 at col. 9, lns. 32-61 (emphasis added).

The specification thus confirms that the '983 patent is not limited to physical copying. The description of the preferred embodiment encompasses virtual copying as complainants argue. HTC's and the Staff's attempt to limit copying to physical copying and to read out the preferred embodiment of virtual copying is contrary to the explicit disclosure of the '983 patent and must fail. *See Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583–84 (Fed. Cir. 1996) (a construction that reads out a preferred embodiment "is rarely, if ever, correct and would require highly persuasive evidentiary support").

HTC and the Staff nonetheless argue that claims 1 and 7 cannot include virtual

copying, contending that the Applicants disclaimed virtual copying during prosecution of the '983 patent. This allegation is not supported by the record and falls short of the heavy burden required for a finding of a prosecution disclaimer. In order to find a prosecution disclaimer, there must be a showing that the Applicants made a "clear and unmistakable" disavowal of loading code by a means other than physical copying. *See Purdue Pharma L.P. v. Endo Pharms. Inc.*, 438 F.3d 1123, 1136 (Fed. Cir. 2006).

During the prosecution of the '983 patent, the Examiner found all claims invalid in light of U.S. Patent No. 5,247,681 to Janis et al. JX-10 at APPHTC_00012891-98. To distinguish Janis as prior art, the Applicants argued:

> In response, the Applicant asserts that the cited section at Column 3, lines 24-37 of the Janis reference teaches away from the Applicant's claimed invention. Janis is describing sharing previously loaded software modules. Janis says it twice in the same quotation used by the Examiner. The Applicant is claiming a runtime loader that selectively loads the required object-oriented methods into the executable program memory during runtime before invocation of the object-oriented methods. The Janis reference teaches away from the Applicant's claimed invention. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away front the claimed invention. W.L. Gore & Associates, Inc. v. Garlock. Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

JX-10 at APPHTC_00012996 (Amendment at 12, Dec. 28, 2000) (emphasis in original). The Examiner subsequently granted the patent. JX-10 at APPHTC_00013000. HTC asserts that the above paragraph shows that to distinguish Janis as prior art, "the Applicants argued that sharing previously loaded software modules (*i.e.*, virtual copying) taught away from the claimed invention." HTC Br. at 67.

HTC and the Staff are conflating two different issues. Sharing previously loaded

software modules is not the same as virtual copying, and the Applicants never argued during prosecution that virtual copying is not covered by the claims. JX-10 at APPHTC_00012996. Furthermore, Dr. Jeffay (HTC's expert) conceded at the hearing that the portion of Janis actually cited by the examiner and responded to by Applicants has nothing whatsoever to do with how the code is copied, and instead focuses entirely on where the code is copied. Jeffay Tr. 3542-49.

In addition, Ms. Spielman (Apple's expert) made clear, and Dr. Jeffay did not contest, that the Applicants distinguished Janis on the basis of ***where*** that system loaded code from (loading software modules that were already in executable program memory) – not ***how*** the code was loaded (whether by sending, transferring, copying, or otherwise). Spielman Tr. 1951-52; Orton Tr. 1877-79; Jeffay Tr. 3542-43. Thus HTC ignores the distinction that the Applicants actually made over Janis. HTC urges that "[t]he Janis system kept track of software modules previously loaded into memory" (*id.*), but ignores that the functionality disclosed in Janis—loading the previously loaded modules ***from executable memory***—is fundamentally different from the '983 invention which loads code into executable memory ***from non-executable memory***. *Id.*; Spielman Tr. 1950-51.

Moreover, if Apple clearly disclaimed "virtual copying" or placing pointers within the "task address space" as argued by HTC and the Staff, then the Examiner would not have allowed non-asserted claim 16. Claim 16 includes multiple claim elements that cover the concept of "virtual copying" as disclosed in the specification, including "running an object-oriented program in a task address space of the memory" (element 5), "determining during runtime whether said … code is available in said task address space" (element 6), and "loading … code into said task address space during runtime" (element

7).

In addition, Apple argues that "the '983 patent makes explicit that class loading is covered by the asserted claims." Apple submits that "[t]here is nothing in the '983 patent or its file history that imposes any limitation of 'selectively loading' in claims 1 and 7 to extracting only a single method from its class, as opposed to loading the class containing the desired method (but not loading other classes)." Apple Br. at 62.

Apple is incorrect. The plain language of the claim requires selectively loading "object-oriented methods" rather than "object-oriented classes." Importantly, the second step of non-asserted independent method claim 12 provides guidance on this issue. The second step of claim 12 recites:

> providing an object-oriented interface, executing on the computer hardware environment, and responsive to object-oriented programming, for instantiating objects from object-oriented classes, encapsulating data for exclusive use with each object, and invoking object-oriented methods in the objects for operating on the encapsulated data;

JX-4 at col. 39, lns. 29-35 (emphasis added).

A person of ordinary skill reading the above step's use of both the "object-oriented classes" and the "object-oriented methods" in the same claim element would conclude that the "object-oriented classes" and the "object-oriented methods" are indeed not interchangeable as they are recited in claim 12. Similarly, unless the patentee explicitly uses the "object-oriented classes" language in asserted claim 1, a person of ordinary skill would not conclude that the "object-oriented methods" of claim 1 is broad enough to encompass "object-oriented classes." Since the patentee did not so claim, Apple's argument that "loading an entire class in order to load particular methods" would

be covered by asserted claim 1 is rejected.

Moreover, it is undisputed that "methods" are not "classes," and that classes can contain dozens, if not hundreds, of methods. Spielman Tr. 2138-39, 2209. In that regard, Inventor Debra Orton testified that there is a distinction between methods and classes, and a distinction between loading classes and loading individual methods:

> Q. When you refer to objects, what are you referring to?
>
> A. Objects are also somewhat used interchangeably with classes. That would be loading by classes. ***But it was perfectly possible to simply load a method as well.***

Orton Tr. 1792 (emphasis added).

Ms. Spielman (Apple's expert) also admitted that class loading differs from runtime loading of methods. She testified that class loading loads all the code for a class (without checking to see what will be executed), while runtime loading loads only the methods that will be executed. Spielman testified:

> Q. So runtime loading is a method of loading in which you are only loading the code that will actually be executed during runtime. Fair?
>
> A. Yes, that's the statement I make.
>
> Q. Okay. And that's what you state to distinguish what this patent is using, runtime loading, versus what you call static loading, right?
>
> A. Yes.
>
> *****
>
> Q. Would you agree with me that a class can contain method code that will not be executed in a particular program?
>
> A. Sure, if the method is never called, the code for the method will still be there. It might not be executed if no one invokes it, the method.

Spielman Tr. at 2147-48, 2157; *see* Bornstein Tr. 3088. Ms. Spielman further admitted that the asserted claims are directed towards a single method that corresponds to a single object-oriented statement. Spielman Tr. 4751-52, 4763.

Apple counters that "each reference to loading object-oriented methods in the '983 patent could entail loading a class containing the method(s) since the class is the basic unit of object-oriented programming and defines the methods it contains." Apple Br. at 62. To support its argument, Apple points solely to FIG. 4 and col. 10, lns. 14-17 (JX-4), asserting that the code library "stores those methods in classes arranged in a class library." *Id.*

Apple's argument is unpersuasive. The manner in which methods are stored does not determine how those methods are loaded from storage. Thus, a program can store methods in a "class library" but load them selectively, method-by-method, and Apple does not point to anything to the contrary in the '983 patent. Rather, Apple claims that the logical unit of selective loading is the class because methods are grouped into classes. *Id.* Yet, Apple admits that classes themselves are "arranged in a class library." Thus, by Apple's own logic, loading the entire class library could also be "selectively loading methods."

Further, Ms. Spielman testified that the claims revolve around the identification, determination, loading, and execution of methods – ***not*** classes. Spielman Tr. 4763. The claimed invention operates before the execution of a single object-oriented method (Spielman Tr. 4683-84) and, as detailed in FIG. 3, determines whether that method is in executable program memory and, if not, copies the method into executable program memory.

Accordingly, the claim terms "to selectively load required object-oriented methods into the executable program memory during runtime before invocation of the object-oriented methods" (claim 1) and "selectively loading the object-oriented methods into the executable program memory during runtime before invocation thereof" (claim 7) are construed to mean "physically or virtually copying, or transferring, required object-oriented methods into the executable memory during runtime before invocation of the object-oriented methods as needed, where those methods do not include or cover classes."

2. "a procedural operating system, having a native interface"

Claim Term	Apple Construction	HTC and Staff[32] Construction
"a procedural operating system, having a native interface" (claim 1) "procedural operating system including a native interface" (claim 7)	an operating system having a procedural interface that includes procedural functions which are called to access services	a procedural operating system: an operating system that provides a procedure-oriented environment in which to develop and execute software native interface: interface to an operating system in the same format as the operating system

Joint Claim Construction, App'x A at 1.

As proposed by Apple, the claim terms "a procedural operating system, having a native interface" (claim 1) and "procedural operating system including a native interface" (claim 7) are construed to mean "an operating system having a procedural interface that includes procedural functions which are called to access services."

[32] The Staff did not offer any arguments regarding this claim limitation in its post-hearing briefs.

As a threshold matter, this claim limitation is construed in a unified manner as proposed by Apple, rather than separately construing "procedural operating system" and "native interface" as proposed by HTC and the Staff. Both claims 1 and 7 require that the limitation be construed as a whole. Spielman Tr. 1927-28. Specifically, claim 1 requires "a procedural operating system, having a native interface, for controlling the computer hardware to perform the native system services." Similarly, claim 7 requires "the procedural operating system including a native interface, responsive to procedural function calls, for providing native system services." Because of the way in which "procedural operating system" and "native interface" are tied together in the claims, Apple's unified construction is correct.

The '983 patent specification supports this construction. It explicitly describes the claimed invention in terms of a procedural operating system having a native interface. Spielman Tr. 1928-31. For example, the Summary of the Invention states that "[t]he present invention is directed to a system and method of enabling an object-oriented application to access in an object-oriented manner a procedural operating system having a native procedural interface." JX-4 at col. 3, lns. 45-48 (emphasis added). Further, the Detailed Description of the Preferred Embodiments states that "[t]he computer platform 102 also includes a procedural operating system 114 having a native procedural interface (not shown)." JX-4 at col. 5, lns. 33-35 (emphasis added).

The specification of the '983 patent discloses the following regarding operating systems:

> It should be noted that the operating system 114 may represent a substantially full-function operating system, such as the Disk Operating System (DOS) and the UNIX

> operating system. However, the operating system 114 may represent other types of operating systems. For purposes of the present invention, the only requirement is that the operating system 114 be a procedural operating system having a native procedural interface. Preferably, the operating system 114 represents a limited functionality procedural operating system, such as the Mach micro-kernel developed by CMU, which is well-known to those skilled in the relevant art.

JX-4 at col. 5, lns. 45-56 (emphasis added).

Thus, as explained by the specification, "operating system 114 may represent a substantially full-function operating system" as one possible embodiment of the '983 patent. However, the specification also makes clear that "For purposes of the present invention, the only requirement is that the operating system 114 be a procedural operating system having a native procedural interface." Additionally, the specification explains that "limited functionality procedural operating system, such as the Mach micro-kernel" is a preferred embodiment of operating system 114.

The specification provides additional similar disclosure regarding operating systems:

> As noted above, the present invention shall be described herein with reference to the Mach micro-kernel, although the use of the present invention to wrap other operating systems falls within the scope of the present invention.

JX-4 at col. 7, lns. 6-10 (emphasis added).

Thus, the specification portion cited above makes clear that the operating system of the '983 patent can take many forms, including the preferred embodiment of the Mach micro-kernel.

In addition, HTC's construction is further contradicted by testimony from Ms. Orton, the first named Inventor on the '983 patent. Orton Tr. 1875-77 (testifying that

"we had envisioned a wide range of possible operating systems, from limited functionality all the way up to full blown bells and whistles"); *see* Spielman Tr. 2243-46.

HTC reads in an added limitation—an "environment in which to develop and execute software"—that is not required by the claims. Spielman Tr. 1934-35. Indeed, the only discussion of any development or execution environment in the '983 patent is found at column 3, lines 20-22 ("Thus, conventional operating systems provide procedure-oriented environments in which to develop and execute software."). HTC's conversion of one mention of a development and execution environment into a claim requirement in all instances is inconsistent with the disclosure provided at column 5, lines 45-56, cited above, which makes clear that while such functionality ***may*** be provided by an operating system that would meet the asserted claims, it is ***not required***. Spielman Tr. 1934-35; Orton Tr. 1875-76.

3. "means for making determinations during runtime execution if object-oriented methods to be invoked are present in the executable program memory"

Claim Term	Apple Construction	HTC and Staff Construction
"means for making determinations during runtime execution if object-oriented methods to be invoked are present in the executable program memory" (claim 1)	*Function*: making determinations during runtime execution if object-oriented methods to be invoked are present in the executable program memory *Corresponding Structure*: a computer processor configured to perform the function of element 308 in Fig. 3, as described in the '983 patent specification at col. 8:55-	*Function* making determinations during runtime execution if object-oriented methods to be invoked are present in the executable program memory *Corresponding Structure*: a computer processor configured to perform the function of element 308 in Fig. 3, as described in the '983 patent specification at col. 8:55-59 and col. 9:62-65; '983 File History, June 28, 2000, Response at 5; '983

Claim Term	Apple Construction	HTC and Staff Construction
	59 and col. 9:62-65;	File History, Dec. 28, 2000, Response at 9 and 12

Joint Claim Construction, App'x A at 2.

The parties agree that this is a means-plus-function term, that the function is "making determinations during runtime execution if object-oriented methods to be invoked are present in the executable program memory," and that the '983 patent specification identifies corresponding structure.

Apple argues that the only remaining dispute is "whether the file history requires additional structure beyond that disclosed in the specification." Complainants propose that "the only required structure is the structure disclosed in the specification that is necessary to perform the claimed function" and additional citations to the file history are not necessary. Apple Br. at 65.

HTC and the Staff argue that the structure for the claim term "means for making determinations" should include "additional citations to the file wrapper that more fully describe the corresponding structure that performs the identified function." HTC Br. at 72-73; Staff Br. at 44.

As proposed by Apple, the structure of the claim term "means for making determinations" is construed to mean "a computer processor configured to perform the function of element 308 in Fig. 3, as described in the '983 patent specification at col. 8, lns. 55-59 and col. 9, lns. 62-65."

The specification describes element 308 as follows:

> Referring now to FIG. 3, in step 308, it is determined whether the computer program logic (also called computer

> code) from the code library 110 which implements the method referenced in the statement is present in the task address space associated with the application 130A.

JX-4 at col. 8, lns. 55-59.

> The above-described performance in the computer platform 102 of steps 306,[33] 308, 310, 312, and 314 is due, in large part, to the run-time environment established in the computer platform 102.

JX-4 at col. 9, lns. 62-65.

The file history for the '983 patent includes an excerpt from the Preliminary Amendment that is in issue. The excerpt reads:

> In response, the Applicant states that Schmidt fails to disclose or suggest loading the method during runtime before invocation thereof, as claimed by the Applicant. The examiner cites the Schmidt reference to show that the applications built using Schmidt's libraries ultimately make system calls at run-time. This is true of all applications, not merely Schmidt's. Ultimately, the actual calls on system functionality get made at runtime in all cases. What the Applicants are claiming is that the claimed invention can defer the decision about which system implementation to use until run time. The Applicant's claimed invention loads the method during runtime just before invocation thereof. Adding the claim element of "loading the method during runtime before invocation thereof" means that (unlike Schmidt) it is possible to wait until the program is running before the particular library is chosen and used by the program. There is nothing in Schmidt that even suggests this claimed feature.
>
> In the claimed invention, the application can be written and compiled, and only when it is actually running does the particular library get linked to it to specify which actual code (including the code with system calls specific to this platform) would be used. In the case of Schmidt, the developer makes the decision which library to use at development time, not run time. Schmidt then specifies a particular library with which to link (still at development time) and the resulting application is now hard-coded to work on only one particular system (and then, of course, the actual system calls eventually occur at run-time). Thus, in the claimed invention, the choice of which system implementation to use can be deferred to run-time, whereas in Schmidt's disclosed system it is determined prior to run-time and once determined can no longer be changed at run time".

JX-10 at APPHTC_00012889 (Preliminary Amendment at 5, June 28, 2000).

HTC's and the Staff's argument that the above Response requires additional structure (*i.e.*, structure for making a system implementation choice) is unconvincing. As

[33] It is noted that step "306" is not shown in FIG. 3, nor disclosed elsewhere in the specification.

explained by Ms. Spielman, "system implementation" as discussed in the Response appeared only in applied-for claim 27—which issued as claim 12 and is not an asserted claim. Spielman Tr. 1966-67. Indeed, the last element claim 12 recites: "whereby a choice of which system implementation to use can be deferred to run-time." There is no "system implementation" in asserted claims 1 and 7. *Id.* Thus, the portion of the file history that HTC and the Staff seek to include concerns a wholly different claim limitation from a non-asserted claim.

There is no connection between this portion of the file history and the "means for making determinations" limitation. In fact, the Applicants noted in the cited file history that Schmidt discloses system implementation determinations, so this would not even be a distinction between Schmidt and the '983 claims. JX-10 at HTC00012889. The point of the cited file history is that the '983 invention happens "during runtime," whereas Schmidt disclosed compile-time technology. *Id.* In other words, the Applicants informed the Examiner that the "during runtime" claim limitation was absent in Schmidt. Informing an Examiner that an entire limitation is missing from a prior art reference is *not* a disclaimer or additional structure and HTC's attempt to characterize it as one is misplaced. *See Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 939 F.2d 1540, 1544 (Fed. Cir. 1991) (distinguishing a prior art reference in the file history as failing to disclose a claim limitation does not lead to file history estoppel.).

Additionally, HTC and the Staff further rely on Applicants' December 28, 2000 Response with regard to the Janis reference, and propose that this response should also be included in the construed structure. HTC and the Staff are wrong. As discussed above with respect to the "selectively loading" limitation, the Applicants' discussion of Janis in

the file history focused on distinguishing Janis' disclosure of "sharing previously loaded software modules" *within* executable memory space, as opposed to the claimed invention of the '983 patent that loads necessary methods *into* executable program memory space. Spielman Tr. 1972-73. Applicants' discussion of Janis in the file history adds no additional structure or disclaimers with regard to the "means for making determinations" limitation, since that discussion is focused on the "selective loading" limitation of the asserted claims as opposed to the "means for making determinations" limitation.

In short, there is no connection between the portions of the file history that HTC and the Staff seek to include as structure in the construction of the "means for making determinations" limitation. *See Telcordia Techs., Inc. v. Cisco Sys., Inc.*, 612 F.3d 1365, 1376 (Fed. Cir. 2010). There also is no "clear and unmistakable" disavowal of claim scope, as required to find a file history disclaimer. *Elbex Video, Ltd. v. Sensormatic Elec. Corp.*, 508 F.3d 1366, 1371 (Fed. Cir. 2007).

The only required structure is the structure disclosed in the specification that is necessary to perform the claimed function. *See John Mezzalingua Associates, Inc. v. International Trade Com'n*, 2010 WL 6561393, *4 (Fed. Cir. 2010) ("Claim interpretation under § 112, ¶ 6 does not 'permit incorporation of structure from the written description beyond that necessary to perform the claimed function.'") (*quoting Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999)).

B. Infringement

For the reasons set forth below, Apple has not shown that HTC's accused products infringe the asserted claims of the '983 patent.

The preamble and the first and second elements of apparatus claim 1 recite:

A computer system, comprising:

computer hardware for performing native system services;

a procedural operating system, having a native interface, for controlling the computer hardware to perform the native system services;

The preamble and the first element of method claim 7 recite:

A method for operating a computer system, comprising the steps of:

executing a procedural operating system on computer hardware, the procedural operating system including a native interface, responsive to procedural function calls, for providing native system services;

Computer System Comprising Computer Hardware

The parties do not dispute that Apple has satisfied the preamble and the first element of claim 1, and the preamble and the "computer hardware" aspect of the first element of claim 7. The HTC accused products are computer systems that include computer hardware. For example, the HTC Aria (code name Liberty), which the parties stipulated to as representative of all HTC products, [ ] and RAM and ROM for memory. CX-1001C at HTC000013956; Spielman Tr. 1977; CX-7251C, R. Wu Dep. 32-34; CPX-2.

"procedural operating system"

The claim terms "a procedural operating system, having a native interface" (claim 1) and "procedural operating system including a native interface" (claim 7) have been construed to mean "an operating system having a procedural interface that includes procedural functions which are called to access services." The evidence establishes that

HTC accused products include [

]

It is undisputed that [

] Ms. Spielman and Dr. Jeffay agree that Linux is written in the procedural C programming language. Spielman Tr. 1980, 1982-83; Jeffay Tr. 3558. Both Ms. Spielman and Dr. Jeffay also agree that [

]

Moreover, HTC's own documents and witnesses establish that [

] The HTC presentation [

]

Accordingly, the evidence establishes that the HTC accused products have a procedural operating system, namely the Android Linux kernel.

"native interface"

The HTC accused products include [

]

"native system services"

The HTC accused products include [

]

[

] In fact, Ms. Spielman testified that she analyzed [

]

The HTC accused products literally infringe under proper construction of "procedural operating system, having a native interface." Spielman Tr. 1979. As described above, proper claim construction requires an operating system [

] having a procedural interface [ ] that includes procedural functions which are called to access services [

]

HTC asserts that [

] However, as discussed above, [

]

HTC also contends that Android has an object-oriented operating system because there is an object-oriented interface in Android. HTC Br. at 89-90. HTC misreads the '983 patent, which uses wrappers precisely for the purpose of providing an object-

oriented interface to an underlying procedural operating system, just like Android. JX-4 at col. 5, lns. 1-4; col. 6, lns. 25-40. Indeed, Android [

]

Finally, HTC urges that even if [

]

First, [

]

Second, Dr. Jeffay agreed that the native interface in the '983 patent is the procedural interface as shown in [

]

A comparison of the native interface (below) in Android as identified by Ms. Spielman, and in the '983 patent as identified by Dr. Jeffay, shows that the architecture of the '983 patent is the same as Android.

[

]

Accordingly, HTC's non-infringement position is rejected.

The third and fourth elements of apparatus claim 1 recite:

> **object oriented methods requiring native system services;**
>
> **procedural program logic code, responsive to invocations of the object-oriented methods during runtime, for causing the procedural operating system to control the computer hardware to perform the required native system services;**

The second element of method claim 7 recites:

> **issuing calls during runtime, compatible with the native interface, to provide the native system services in response to invocations of object-oriented methods requiring such native system services;**

"object oriented methods requiring native system services" (claim 1) and "object-oriented methods requiring such native system services" (claim 7)

The evidence establishes, and HTC does not dispute, that the HTC accused

products include object-oriented methods requiring native system services. For example, the Phone application source code includes [

]

"procedural program logic code" (claim 1) and "issuing calls during runtime, compatible with the native interface" (claim 7)

Apple's expert, Ms. Spielman, testified regarding two code traces to show how the HTC accused products satisfy these limitations of claims 1 and 7. HTC's expert does not dispute that the HTC accused products practice this limitation.

Phone Application code trace

The Phone application, an Android application (CX-7432C, A. Hsieh Dep. 95-96), [

]

Specifically, [

]

Zygote Application code trace

[

]

[

]

The fifth and sixth elements of apparatus claim 1 recite:

> **executable program memory associated with the computer hardware for runtime execution of the procedural operating system, invocations of the object-oriented methods and related portions of the procedural program logic code;**
>
> **means for making determinations during runtime execution if object-oriented methods to be invoked are present in the executable program memory; and**

The third element of method claim 7 recites:

> **determining during runtime if object-oriented methods to be invoked during runtime execution are present in executable program memory associated with the computer hardware; and**

"executable program memory"

Apple has not shown that HTC accused products include "executable program memory" as required by the fifth element of claim 1. This limitation requires "executable program memory . . . for runtime execution of the procedural operating system, invocations of the object-oriented methods and related portions of the procedural program logic code." That is, claim 1 requires a single "executable program memory" allowing both execution of the procedural operating system *and* invocation of the object-oriented methods and related procedural logic. Thus, the "executable program memory" must be the same memory for performing both claimed requirements. However, Apple identifies *two distinct and non-overlapping* areas of memory to satisfy this limitation: (1) the "kernel space" for the first requirement, and (2) the "task address space, which resides in an application's heap and is characterized as "dirty' memory" for the second requirement.

Apple Br. at 75-76.

In Android, [

] Apple Br. at 76. This assertion is incorrect. Daniel Bornstein, who designed Dalvik, confirmed that [

] Thus, Dalvik's class resolution functionality—accused by Apple of infringing the '983 patent—cannot even discern whether [

]

Moreover, the '983 patent does not mention clean or dirty memory. Also, named Inventor Debra Orton testified that this distinction "didn't matter" in her invention. Orton Tr. 1845-46. Indeed, Apple's expert, Susan Spielman, admitted that executable program memory includes clean as well as dirty memory:

> Q. Okay. So some clean memory is executable memory?
>
> A. Yes, ***if a program is executable, it can run in clean memory***. Clean memory is typically unwritten memory. So the attributes of the memory are defined by whatever is being—that memory is being used for. So in the Android presentation that was given to the Android developers, that's the term that they chose to use to define the attributes in their system.

Spielman Tr. 2215-16 (emphasis added).

Accordingly, Apple's contention that "dirty" memory is the only "executable program memory," or that preloaded .dex files are not loaded into "executable program memory" because they are allegedly mapped to clean rather than dirty memory, is rejected.

"means for making determinations during runtime execution if object-oriented methods to be invoked are present in the executable program memory"

Apple has not shown that the HTC accused products determine during runtime if object-oriented methods are present in executable program memory. The HTC accused devices do not include the claimed "means for making determinations" of the '983 patent for two reasons.

First, the accused products running Android [

]

Claims 1 and 7 require a determination during runtime if object-oriented methods to be invoked are present in executable program memory. The accused products, however, do not determine during runtime if object-oriented methods to be invoked are present in executable program memory. [

]

In that regard, Daniel Bornstein (Google tech leader and manager of the Dalvik team within the Android project) explained that [

]

[

]

Android's "load everything" approach is supported by ample evidence and is not disputed by Apple. Bornstein Tr. 3105-06. Apple's expert, Ms. Spielman, testified that [

]

This difference stems from the fact that Android operates in a fundamentally different environment than contemplated in the '983 patent. Jeffay Tr. 3278-79. Unlike users of early 1990s desktop computers, modern smartphone users generally demand much faster response times. Bornstein Tr. 3118-19. Since runtime loading is a complex operation which drains battery power and can cause glitches or delays in the user experience, [

]

Additionally, Apple accuses [ ] but this code determines [ ] not whether a method used by an existing object has been loaded into executable program memory. Apple specifically accuses [

]

The code itself confirms that [

] Thus, the opinion offered by Ms. Spielman is rejected.

[

] According to Dr. Jeffay, this simplicity in design

speeds up performance. *Id.*

Apple argues that because [

] Thus, Apple's infringement argument regarding classes is rejected.

Apple further argues that HTC accused products infringe under the doctrine of equivalents. Apple again misses the mark. Determining whether a class already in memory is resolved constitutes a substantially different function, performed in a substantially different way, to arrive at a substantially different result than determining whether a specific method code is in memory. Jeffay Tr. 3370-71.

The last element of apparatus claim 1 recites:

> **a runtime loader, responsive to the determinations, to selectively load required object-oriented methods into the executable program memory during runtime before invocation of the object-oriented methods.**

The last element of method claim 7 recites:

> **selectively loading the object-oriented methods into the executable program memory during runtime before invocation thereof, if not yet loaded.**

Apple has not satisfied these claim elements. The claim term "to selectively load required object-oriented methods…" of claim 1 and "selectively loading the object-oriented methods…" of claim 7 have been construed to mean "physically or virtually

copying, or transferring, required object-oriented methods into the executable memory during runtime before invocation of the object-oriented methods as needed, where those methods do not include or cover classes." Apple cannot prove infringement of these claim elements because it cannot show that the HTC accused devices "selectively load required object-oriented methods." It is undisputed that Android does not selectively load methods.

The Android platform includes [

]

Moreover, it is undisputed that [

] Accordingly, it cannot be the case that

[

]

Apple admits that [

]

Apple also argues that if this claim element is "interpreted so narrowly as to require method-by-method (as opposed to class) loading, then HTC still infringes under the doctrine of equivalents." Apple Br. at 85. Apple contends that [

] Apple further explains:

[

]

Apple's conclusory contention regarding doctrine of equivalents is unconvincing. As explained by HTC's expert, Dr. Jeffay, the accused HTC products perform a substantially different function in a substantially different way (class resolution as

opposed to method loading) to arrive at a substantially different result (resolving classes already in the task address space) than what is claimed in the '983 patent. Jeffay Tr. 3366-68. Indeed, Android is [

]

In summary, Apple has not shown that HTC's accused products infringe the asserted claims of the '983 patent.

C. Technical Prong of the Domestic Industry Requirement

Apple argues that "[t]he only dispute raised by HTC is whether the "selective loading" limitation of claims 1 and 7 is met by the MacBook Pro, which selectively loads the required object-oriented methods [

] Apple further contends that its "MacBook Pro meets the 'selective loading' limitations of claims 1 and 7 by [

] Apple Br. at 86.

HTC and the Staff agree with Apple that the only remaining dispute is with respect to "selectively loading" limitation, but argue that Apple's MacBook Pro does not satisfy this limitation. HTC Br. at 91; Staff Br. at 57-58.

For the reasons set forth below, Apple has not satisfied the technical prong of the domestic industry requirement with respect to the '983 patent.

The preamble and the first and second elements of apparatus claim 1 recite:

A computer system, comprising:

computer hardware for performing native system services;

a procedural operating system, having a native interface, for controlling the computer hardware to perform the native system services;

The preamble and the first element of method claim 7 recite:

A method for operating a computer system, comprising the steps of:

executing a procedural operating system on computer hardware, the procedural operating system including a native interface, responsive to procedural function calls, for providing native system services;

Computer System Comprising Computer Hardware

Apple has satisfied the preamble and the first element of claim 1, and the preamble and the "computer hardware" aspect of the first element of claim 7, which are not disputed by the parties. It is undisputed that Apple's MacBook Pro is a computer system that includes computer hardware for performing native system services, such as a processor, memory, and input/output devices. Spielman Tr. 2106-07; CX-802.

"procedural operating system"

It is undisputed that Apple's MacBook Pro includes the Darwin operating system, a procedural operating system. Spielman Tr. 2107-08; CX-803 at APPHTC_00001890, APPHTC_00002034. The Mach microkernel called out as the preferred embodiment in the '983 patent is part of the Darwin operating system. Spielman Tr. 2109; JX-4 at col. 5, lns. 53-56; CX-803 at APPHTC_00001894.

"native interface" and "native system services"

Darwin is accessible via a procedural native interface and [

] accessed via procedural function calls. Spielman Tr. 2109-11; CX-803 at APPHTC_00001901; CX-4379C at APPHTC-S_00001203-04; CX-4374C at APPHTC-S_00001090-91. Moreover, Darwin [

] Spielman Tr. 2112; CX-803 at APPHTC_00001901.

The third and fourth elements of apparatus claim 1 recite:

> **object oriented methods requiring native system services;**
>
> **procedural program logic code, responsive to invocations of the object-oriented methods during runtime, for causing the procedural operating system to control the computer hardware to perform the required native system services;**

The second element of method claim 7 recites:

> **issuing calls during runtime, compatible with the native interface, to provide the native system services in response to invocations of object-oriented methods requiring such native system services;**

Apple has satisfied this claim element.

"object oriented methods requiring native system services" (claim 1) and "object-oriented methods requiring such native system services" (claim 7)

It is undisputed that the MacBook Pro includes [

] which are object-oriented methods requiring native system services. At the hearing, Ms. Spielman detailed [

] Spielman

2112-17; CX-4363C; CX-4386C; CX-4387C; CX-4388C; CX-4473C; CX-4379C]

"procedural program logic code" (claim 1) and "issuing calls during runtime, compatible with the native interface" (claim 7)

It is undisputed that the MacBook Pro includes procedural program logic code, responsive to invocations of object-oriented methods during runtime, to control the computer hardware to provide native system services. Spielman Tr. 2115-17; CX-4473C at APPHTC-S_00013309; CX-4379C at APPHTC-S_00001203. Specifically, [

] *Id.*

The fifth and sixth elements of apparatus claim 1 recite:

> **executable program memory associated with the computer hardware for runtime execution of the procedural operating system, invocations of the object-oriented methods and related portions of the procedural program logic code;**
>
> **means for making determinations during runtime execution if object-oriented methods to be invoked are present in the executable program memory; and**

The third element of method claim 7 recites:

> **determining during runtime if object-oriented methods to be invoked during runtime execution are present in executable program memory associated with the computer hardware; and**

"executable program memory"

It is undisputed that the MacBook Pro includes executable program memory for runtime execution of the Darwin operating system, invocations of Java methods, and related portions of procedural program logic code. Spielman Tr. 2117-18. Specifically, the MacBook Pro provides executable application memory as well as operating system

memory. Spielman Tr. 2118; CX-803 at APPHTC_00001894.

> **"means for making determinations during runtime execution if object-oriented methods to be invoked are present in the executable program memory"**

It is not disputed that the MacBook Pro makes determinations whether object-oriented [ ] methods to be invoked are present in executable program memory. Spielman Tr. 2118-19. Specifically, the MacBook Pro includes the agreed structure of a CPU that will perform step 308 of FIG. 3 in the '983 patent. Spielman Tr. 2118-19; JX-4, FIGS. 1 and 3. Specifically, the MacBook Pro includes [ ] that checks to see if the [ ] methods are present in executable program memory. Spielman Tr. 2119-20; CX-802 at APPHTC_00001869; CX-4468C at APPHTC-S_00013399. At the hearing, Ms. Spielman described [

] Spielman Tr. 2119-22; CX-4383C; CX-4390C; CX-4391C; CX-4394C; CX-4467C; CX-4468C.

The last element of apparatus claim 1 recites:

> **a runtime loader, responsive to the determinations, to selectively load required object-oriented methods into the executable program memory during runtime before invocation of the object-oriented methods.**

The last element of method claim 7 recites:

> **selectively loading the object-oriented methods into the executable program memory during runtime before invocation thereof, if not yet loaded.**

Apple has not satisfied these claim elements which require selective loading. Apple has failed to prove that the MacBook Pro running Snow Leopard practices these

limitations for the same reason that Apple was unable to demonstrate that HTC infringes these elements. Apple contends that "MacBook Pro includes a runtime loader that selectively loads required object-oriented [ ] methods into executable program memory during runtime, before invocation thereof." Apple Br. at 88. Apple explains that [

] Id. at 88-89.

Thus, as Apple admits, [ ] Indeed, Apple's expert Ms. Spielman admits that [

]

Spielman Tr. 2121-22, 2124-25 [

] *see* Jeffay Tr. 3377-78 [

] CX-4383C at APPTHTC-S_00001281-82 (classLoader.cpp). Thus, this loading is not selective with regard to ***methods*** to be invoked as the claims require.

Accordingly, Apple has failed to show that it practices the "to selectively load required object-oriented methods into the executable program memory during runtime before invocation of the object-oriented methods" limitation of claim 1, or the "selectively loading the object-oriented methods into the executable program memory during runtime before invocation thereof, if not yet loaded" limitation of claim 7.

In summary, Apple has not satisfied the technical prong of the domestic industry

requirement with respect to the '983 patent.

D. Validity

HTC states that it "does not contend that the '983 patent is invalid under HTC's and the Staff's constructions, which require selectively loading ***methods***. HTC's invalidity theories are advanced solely under Apple's constructions, which remove the limitation of '***selectively*** loading the object-oriented ***methods***'." HTC Reply at 59 n.31. The Staff agrees that HTC only argued invalidity of the '983 patent only under Apple's proposed claim constructions. Staff Br. at 57-58.

The undersigned agreed with HTC and the Staff that the proper construction of the last elements of claims 1 and 7 require selective loading of *methods*, which is different from selective loading of *classes*. Thus, HTC's contentions regarding invalidity of the '983 patent is no longer in play.

Accordingly, HTC has not shown by clear and convincing evidence that the NeXTSTEP Release 3 System anticipates asserted claims 1 and 7 of the '983 patent. Further, HTC has not shown by clear and convincing evidence that the combination of Vernon and Gautron references renders obvious asserted claims 1 and 7 of the '983 patent.

IX. U.S. Patent No. 5,946,647

The '647 patent is entitled, "System and Method For Performing An Action On A Structure In Computer-Generated Data." The Summary of the Invention states, in part:

> The present invention overcomes the limitations and deficiencies of previous systems with a system that identifies structures in computer data, associates candidate actions with each detected structure, enables the selection

> of an action, and automatically performs the selected action on the identified structure. It will be appreciated that the system may operate on recognizable patterns for text, pictures, tables, graphs, voice, etc. So long as a pattern is recognizable, the system will operate on it. The present invention has significant advantages over previous systems, in that the present system may incorporate an open-ended number and type of recognizable patterns, an open-ended number and type of pattern analysis units, and further that the systems may enable an open-ended number and type (i.e. scripts, macros, code fragments, etc.) of candidate actions to associate with, and thus perform, on each identified structure.

JX-3 (Summary of the Invention) at col. 2, lns. 4-20.

Apple asserts apparatus claims 1, 3, and 8 and method claims 15 and 19. Claims 3 and 8 depend on independent claim 1 and claim 19 depends on independent claim 15. The asserted claims read as follow:

> **1**. A computer-based system for detecting structures in data and performing actions on detected structures, comprising:
>
> an input device for receiving data;
>
> an output device for presenting the data;
>
> a memory storing information including program routines including
>
> an analyzer server for detecting structures in the data, and for linking actions to the detected structures;
>
> a user interface enabling the selection of a detected structure and a linked action; and
>
> an action processor for performing the selected action linked to the selected structure; and
>
> a processing unit coupled to the input device, the output device, and the memory for controlling the execution of the program routines.

> **3**. The system recited in claim **1**, wherein the input device receives the data from an application running concurrently, and wherein the program routines stored in memory further comprise an application program interface for communicating with the application.
>
> **8**. The system recited in claim **1**, wherein the user interface highlights detected structures.
>
> **15**. In a computer having a memory storing actions, a method for causing the computer to perform an action on a structure identified in computer data, comprising the steps of:
>
> receiving computer data;
>
> detecting a structure in the data;
>
> linking at least one action to the detected structure;
>
> enabling selection of the structure and a linked action; and
>
> executing the selected action linked to the selected structure.
>
> **19**. The method recited in claim **15**, wherein the memory contains strings, and wherein the step of detecting a structure further comprises the steps of retrieving a string from the memory and scanning the data to identify the string.

JX-3 at col. 7, lns. 8-24, 27-32, 50-51; col. 8, lns. 22-33, 47-50.

A. Claim Construction[34]

The parties agree to the meaning of "detecting" / "detected," "structure," "analyzer server," and "application running concurrently."[35] The parties dispute the

---

[34] With respect to the '647 patent, a person of ordinary skill in the art has at least a B.S. degree in computer science (or equivalent coursework) and two to three years of academic or work experience in the field. Mowry Tr. 2459-62; Olsen Tr. 3839-3841; Staff Br. at 60 n.22.

[35] The parties agree that (1) detecting" / "detected" means "finding and identifying" /

meaning of "linking actions to the detected structures" / "linking at least one action to the detected structure" and "input device." These disputed terms are discussed below.

1. "linking actions to the detected structures" and "linking at least one action to the detected structure"

Claim Term	Apple Construction	HTC and Staff Construction
linking actions to the detected structures (claim 1)	linking detected structures to computer subroutines that cause the CPU to perform a sequence of operations on the particular structures to which they are linked	linking a detected structure to a computer subroutine that causes the CPU to perform a sequence of operations on that particular structure to which it is linked, rather than an informational structure
linking at least one action to the detected structure (claim 15)	linking a detected structure to at least one computer subroutine that cause the CPU to perform a sequence of operations on the particular structure to which it is linked	linking a detected structure to a computer subroutine that causes the CPU to perform a sequence of operations on that particular structure to which it is linked, rather than an informational structure

Joint Claim Construction, App'x A at 16.

The parties' constructions differ in two respects. First, HTC's and the Staff's proposals add the phrase "rather than an informational structure." Second, HTC and the Staff contend that claim 1's "linking actions" term does not require multiple linked actions.

"found and identified;" (2) "structure" means "an instance of a pattern, where a 'pattern' refers to data, such as grammar, regular expression, string, etc., used by a pattern analysis unit to recognize information in a document such as dates, addresses, phone numbers, etc.; (3) "analyzer server" means a program sub-routine that receives data from a document having recognizable structures, and uses patterns to detect the structures;" and (4) "application running concurrently" means "application running during the same run-time." Joint Claim Construction, App'x A at 16; *see* Mowry Tr. 2490; Olsen Tr. 3883-84.

As proposed by Apple, the claim term "linking actions to the detected structures" of apparatus claim 1 is construed to mean "linking detected structures to computer subroutines that cause the CPU to perform a sequence of operations on the particular structures to which they are linked." Similarly, the claim term "linking at least one action to the detected structure" of method claim 15 is construed to mean "linking a detected structure to at least one computer subroutine that causes the CPU to perform a sequence of operations on the particular structure to which it is linked."

During prosecution, the Examiner rejected the pending claims as obvious based on the Sobotka reference in in combination with U.S. Patent No. 5,247,437 ("Vale"). The Examiner contended that Vale disclosed "linking between DIN and HN structure." JX-9 at APPHTC_00338339-40 ('647 File History, Dec. 6, 1998 Office Action at 2-3). In response, the Applicants argued:

> The linked actions of the claimed invention are patentably distinguished from the heading node (HN) structure of *Vale*. The linked actions enable execution of an action, which is a computer subroutine causing a CPU to perform a sequence of operations. Additionally, in the claimed invention, "[a]n action may specify opening another application, loading the identified structure into an appropriate field, and closing the application. An action may further include internal actions… and external actions…." Thus the linked actions can cure deficiencies of prior systems employing laborious and disruptive processes.
>
> In contrast, the HN structure of *Vale* consists of heading nodes, each of which includes the title of its associated index entry and defines information for one of the headings listed in the heading column of a keyword list. Each heading node also stores heading string, a sort string, a see string, and a heading ID. The HN structure is thus used to delineate the structural relationship of the key words or headings for a given index, but cannot cause a CPU to

> perform an operation, or an action, as can the claimed invention.
>
> In brief, *Sobotka* does not teach or suggest *linking a structure to an action*. *Vale* discloses *linking to an informational structure*, but that does not cure the references' lack of *linking to an action*. Therefore, the claimed invention, which recites *linking to an action*, or as claimed "linking actions to the detected structures," is patentably distinguished from *Sobotka* and *Vale*, either alone or in combination.

JX-9 at APPHTC_00338619-20 ('647 File History, Mar. 15, 1999 Amendment at 8-9) (citations omitted) (emphasis in original).

Applicants distinguished Vale because it does not disclose linking to an action. Rather, Vale describes linking ***only*** to an informational structure, the "HN" or "heading node," which represents a type of index. Importantly, the heading node is not an action, does not contain an action, and does not link to an action. Mowry Tr. 2470-71 ("Vale does not link to an action"), Tr. 2472 (Heading nodes represent information in an index.), Tr. 2474-75 (Heading nodes do not lead to an action and, in Vale, there are no actions, *i.e.*, operations that are performed on a detected structure, because there are no detected structures.); JX-9 at APPHTC_00338620 ("Vale discloses linking to an informational structure, but that does not cure the references' lack of linking to an action.").

Accordingly, the Applicants did not disclaim use of informational structures. Rather, they emphasized that there must be a link to an action. Mowry Tr. 2471-72, 2661-62 (no disclaimer). Apple's proposed construction, which does not include the phrase "rather than an informational structure," more accurately defines the "linking

actions" claim terms.[36]

Moreover, the phrase "rather than an informational structure" is unnecessary. Indeed, in its opening statement at trial, HTC based its non-infringement case on a single contention – *i.e.,* that the HTC devices "link[] to an informational structure," and ***not*** to an action. In advancing this argument, HTC counsel stated, "Vale discloses linking to an informational structure. The claimed invention links to an action. Our devices work like Vale, not like the '647." Tr. 169. Later, HTC abandoned this distinction by agreeing that the phrase "rather than an informational structure" adds no meaning. Olsen Tr. 4030 (conceding that HTC accused products allow a user to select from a "list of possible actions"), Tr. 3836-37 & 4023-24 (admitting that Apple's and HTC's constructions "are essentially the same.").[37]

Additionally, Apple's constructions for "linking actions …" (claim 1) and "linking at least one action…" (claim 15) differ in terms of the number of actions that must be linked to a detected structure. For example, Apple's construction for "linking actions…" in claim 1 requires that multiple actions be linked to a detected structure. HTC and the Staff propose that both phrases be construed in the exact same way such that there need only be one action linked to a detected structure. The intrinsic evidence

---

[36] The Staff argues that in the above Amendment, "the Applicant made clear that the required linking was to actions [ ] rather than to 'informational structures,' such as the indexes present in Vale." Staff Br. at 62. The Staff is incorrect for the reasons discussed above.

[37] In fact, as noted, HTC states that "only one of the remaining claim construction issues is outcome determinative," *i.e.*, "whether the term 'input device' can include software only or must include some form of hardware." HTC Br. at 104. (HTC did not even brief the present claim limitation.) *See* HTC Reply at 74 (briefing only the "input device" limitation for claim construction).

supports Apple's construction.

The language of claim 1 requires "'linking actions," the word "actions" being plural, to detected structures. *See* Mowry Tr. 2477. In contrast, claim 15 requires linking "at least one action" to a detected structure. *Id.* Apple's constructions reflect that clear distinction.[38] Further, the Summary of the Invention describes "candidate actions" (plural) available "[u]pon selection of a detected structure" (singular). JX-3 col. 2, lns. 42-62; *see* Mowry Tr. 2477-78. Dr. Olsen (HTC's expert) did not offer any opinion to the contrary. Olsen Tr. 3837 (referring to "some quibble about plurals" between the parties but offering no opinion in support of HTC's construction).

2. "input device"

Claim Term	Apple Construction	HTC and Staff Construction
input device	computer software or hardware	plain and ordinary meaning (hardware only)

Joint Claim Construction, App'x. A at 16.

As proposed by HTC and the Staff, the claim term "input device" is given its plain and ordinary meaning, *i.e.*, "computer hardware but not computer software."

The specification of the '647 patent discloses the following regarding "input device":

> Referring now to FIG. 1, a block diagram is shown of a computer system 100 including a CPU 120. Computer system 100 is preferably a microprocessor-based computer,

[38] *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed.Cir.2005) ("Differences among claims can also be a useful guide in understanding the meaning of particular claim terms."); *see also Voda v. Cordis Corp.*, 536 F.3d 1311, 1319-1320 (Fed. Cir. 2008) (considering differences in independent claim language in determining scope of claims).

> such as a Power Macintosh manufactured by Apple Computer, Inc. of Cupertino, Calif. An input device 110, such as a keyboard and mouse, and an output device 105, such as a CRT or voice module, are coupled to CPU 120. ROM 155, RAM 170 and disk storage 175 are coupled to CPU 120 via signal bus 115. Computer system 100 optionally further comprises a printer 180, a communications interface 185, and a floppy disk drive 190, each coupled to CPU 120 via signal bus 115.

JX-3 at col. 3, lns. 22-33 (emphasis added); *see* FIG. 1 (clear denotation of hardware versus software elements).

Thus, the specification shows that "input device" includes hardware that receives input, such as a keyboard and mouse.[39] Indeed, there is nothing in the '647 specification that suggests that the Applicants were importing a special meaning into the term "input device." The disclosure of "input device" in the specification is entirely consistent with the plain and ordinary meaning of the term.

Apple seeks to expand the plain and ordinary meaning of "input device" to include any software that can receive data — regardless of whether hardware is present. Mowry Tr. 2465-66. Dr. Mowry does not dispute that an "input device" can be hardware that receives data. *Id.* at 2467 ("I agree that a hardware input device is an input device."). However, Dr. Mowry then expands such a meaning to conclude essentially that if something (whether it be a program or any software-based application) receives data it must be an "input device." *Id.* at 2466-67. Dr. Mowry reaches this conclusion by asserting that "programs pass information from one program to another. When this occurs, the mechanism that passes the information is software." *Id.* at 2467.

[39] Additionally, Dr. Olsen testified that "input device" includes other hardware such as an input buffer or a touchscreen. Olsen Tr. 4037-38 (describing various portions of the '647 patent and specification in which input devices are physical hardware).

This testimony is far from being convincing. As the Staff notes, simply because software routines pass information between them does not transform them into input devices. Moreover, there is no evidence that anyone in the art would refer to "software" as a device. Indeed, claim 1 of the '647 patent requires that the processing unit be "coupled to" the input device. This requirement would not make much sense if the input device was software running on the processing unit.

Apple's construction runs contrary to the plain meaning of the term "input device" and the intrinsic record and is, therefore, rejected.

B. Infringement

For the reasons set forth below, Apple has shown that HTC's accused products infringe the asserted claims 1, 8, 15, and 19 of the '647 patent. However, Apple failed to show infringement with respect to claim 3.

1. Independent claims 1 and 15

The preamble of independent apparatus claim 1 recites:

> **A computer-based system for detecting structures in data and performing actions on detected structures, comprising:**

The preamble of independent method claim 15 recites:

> **In a computer having a memory storing actions, a method for causing the computer to perform an action on a structure identified in computer data, comprising the steps of:**

Apple has satisfied the preambles of claims 1 and 15. The parties agree that the preambles of claims 1 and 15 are not limitations because they do not give "life, meaning and vitality to the claim[s]." *Altiris, Inc. v. Symantic Corp.*, 318 F.3d 1363, 1371 (Fed.

Cir. 2003); Mowry Tr. 2480. In any event, HTC accused products satisfy the preambles because they are computer-based systems for detecting structures in data and performing actions on detected structures (claim 1) and are computers having memory storing actions that perform an action on a structure identified in computer data (claim 15). Mowry Tr. 2480-81.

The first element of independent apparatus claim 1 recites:

an input device for receiving data;

The first element of independent method claim 15 recites:

receiving computer data;

Apple has satisfied these claim elements. There is no dispute that HTC accused products contain a hardware input device for receiving data and a method of receiving computer data. Mowry Tr. 2481-82; Olsen Tr. 4019-20. These products contain hardware input devices such as wireless-internet adapters for receiving internet data, radios for receiving text messages, a touchscreen, and memory. Mowry Tr. 2482; CPX-3; CPX-4; CPX-5.

The second element of claim 1 recites:

an output device for presenting the data;

Apple has satisfied this claim element. The HTC accused products contain an output device for presenting the data in the form of a touchscreen display. Mowry Tr. 2487; CPX-3; CPX-4; CPX-5.

The third element of claim 1 recites:

a memory storing information including program

routines including

Apple has satisfied this claim element. As confirmed by HTC's user guides and an analysis of the physical devices, the accused products contain memory storing information including program routines. Mowry Tr. 2488-90; CPX-3; CPX-4; CPX-5; CX-391; CX-3510 (Droid Incredible User Guide) at 301.

The fourth element of independent apparatus claim 1 recites:

an analyzer server for detecting structures in the data, and for linking actions to the detected structures;

The second and third elements of independent method claim 15 recite:

detecting a structure in the data;

linking at least one action to the detected structure;

Apple has satisfied these claim elements. As seen by the plain language of the claims, the fourth element of apparatus claim 1 coincides with the second and third elements of method claim 15. Thus, claim 1 has two requirements. First, the analyzer server must detect structures in the data. Second, the same analyzer server must link actions to the detected structures.

As an initial matter, the agreed-upon construction of "structure" requires, among other things, an "instance of a pattern," which is a "positive match of a pattern to something in a document." Mowry Tr. 2491. Examples of recognizable structures having semantic significance include dates, addresses, phone numbers and names. *Id.* 2492-93; JX-3 at col. 1, lns. 14-16.

"analyzer server for detecting structures in the data" (claim 1) and "detecting a structure in the data" (claim 15)

As to the first portion of this claim element, *i.e.*, "detecting structures in the data," HTC concedes that Browser, Android Messaging, and HTC Messages detect structures in data. Olsen Tr. 4020-21; Mowry Tr. 2490. The Browser detects e-mail addresses, phone numbers, and postal addresses, and Android Messaging and HTC Messages detect e-mail addresses and phone numbers. Mowry Tr. 2496, 2499, 2506.

[

]

Android Messaging and HTC Messages [

]

[

]

"analyzer server for ... linking actions to the detected structures" (claim 1) and "linking at least one action to the detected structure" (claim 15)

With respect to the second portion of this claim element, *i.e.*, "linking actions to the detected structures," Browser, Android Messaging, and HTC Messages infringe these limitations. Mowry Tr. 2515-16.

Generally, Browser and Android Messaging [

]

[

]

HTC Messages [

]

[

]

[

]

In other words, [

]

The Browser's analyzer server and method for linking actions includes [

]

[

]

[

40

]

[

]

[

40 [

]

]

HTC contends that Apple has failed to prove infringement because Apple has implicitly conceded that the pointers described in the '647 patent differ fundamentally from HTC's accused Android devices. HTC Br. at 101-104.

HTC states in its brief that it would apply "Apple's proposed claim constructions for purposes of HTC's non-infringement defense." HTC Br. at 104. But, contrary to this representation, HTC rejects Apple's construction in favor of a new one that implies that "linking" must occur through the use of pointers. *Id.* at 103-104. This new construction—improperly raised in the post-trial "background" section—is rejected as untimely under Ground Rule 4(c) because it was not in HTC's pre-hearing statement.

In any event, the unrebutted testimony shows that the plain meaning and proper construction of "linking" is "associating." Mowry Tr. 2475-77. HTC's new construction seeks to improperly limit the patent to the preferred embodiment. JX-3 at col. 3, lns. 65-67; Staff Br. at 66 ("the patent does not require any specific type of linking . . ."); *Altiris Inc. v. Symantec Corp.*, 318 F.3d 1363, 1369 (Fed. Cir. 2003) (district court wrongly imported limitation from preferred embodiment).[41]

[41] In an attempt to limit the claims to the use of pointers, HTC contends that the patent's reference to "automatically" performing actions is "inconsistent with" the operation of the HTC products. HTC Br. at 102. Per Ground Rule 4(c), HTC has waived this argument by failing to raise it in its pre-hearing statement. Moreover, the word "automatically" is not a part of any claim element and "pointers" are not necessary to enable the performance of a selected action. [

Moreover, HTC's comparison of its linked actions to pointers is incorrect because HTC misidentifies the infringing actions. As explained by Dr. Mowry, the infringing action subroutines [

] The detected structures are linked to these subroutines, which cause the CPU to perform a sequence of operations on the structures. Mowry Tr. 2520-22, 2533, 2535-36.

Likewise, HTC's focus on (1) the ability of users to install third-party applications like Skype and (2) [

]

HTC further submits that Apple has failed to prove infringement because Apple [

]

This new contention, that the HTC [

] Ground Rule 4(c) requires a party to "set[] forth with particularity" all of its contentions in its pre-hearing statement; "[a]ny contentions not set forth in detail as required herein shall be deemed abandoned or withdrawn." Order No. 2 at 4(c). HTC

]

has abandoned the argument that [ ] constitute a single action subroutine by failing to raise it in its pre-hearing statement.

HTC attempts to justify this failure by incorrectly claiming that Dr. Mowry changed his opinions at trial.[42] [

]

Substantively, HTC is incorrect that [

] As Dr. Mowry testified, these methods are

[42] HTC incorrectly contends that Dr. Mowry changed his opinion by identifying [

]

[

]

HTC incorrectly asserts that Dr. Mowry agreed that [

]

HTC contends still further that Apple has failed to prove infringement because

[

]

At the outset, HTC is precluded from making this new non-infringement argument under Ground Rule 4(c), and in any event, is wrong. Dr. Mowry's unrebutted testimony proved that the HTC products link actions before the user's selection of that action. *E.g.* Mowry Tr. 2522-23.

With respect to Browser and Android Messaging, [

] HTC's argument is based on the incorrect premise that Dr. Mowry [

] HTC fails to provide a supporting citation for this statement. In fact, Dr. Mowry, Google witness David Sparks, and Dr. Olsen all testified that [

]

HTC's citations to the transcript are improper because they all refer to the different linking mechanism of HTC Messages, not Browser or Android Messaging. HTC Br. at 112-113; Mowry Tr. 2680:3-7. In HTC Messages, [

]

HTC offers yet another argument that Apple has failed to prove infringement because for claim 15, the claimed method's structure requires performance in order, and Apple concedes that the steps in HTC's Android devices are not performed in the same order as the claim. HTC Br. at 113-115. Specifically, HTC asserts that claim 15's "linking at least one action to the detected structure" must occur before "enabling selection of the detected structure."

Claim 15, however, requires no such order. Mowry Tr. 2517. The Federal Circuit has set forth a two-part test to determine whether steps in a method claim must be performed in a particular order: when (1) "as a matter of logic or grammar, they ***must*** be performed in the order written," and (2) the specification "directly or implicitly ***requires*** such a narrow construction." *Altiris*, 318 F.3d at 1369-70 (internal citations omitted) (emphasis added).

HTC's position relies on two significant misstatements of the law. First, HTC incorrectly contends that when "***most*** of the method steps refer to the completed results from the prior step, then ***all the steps*** must take place in order." HTC Br. at 113 (emphasis added). The Court in *E-Pass* actually stated that when "most" of the steps of a method claim refer to a prior step, then "all of ***those*** steps" must take place in order. *E-Pass Techs., Inc. v. 3Com Corp.*, 473 F.3d 1213, 1222 (Fed. Cir. 2007). The Court did not state that "most" steps should be expanded to "all" steps.

Second, the Court in *Altiris* did not state that a method claim must be performed in order if the "specification ***suggests*** performing method steps in order." HTC Br. at 113 (emphasis added). *Altiris* held that steps in a method must be performed in order when the specification "***requires***" such order. *Altiris*, 318 F.3d at 1370 (emphasis added). The Court further held that the preferred embodiment's use of a certain order does not meet this standard. *Id.* at 1371.

Application of the correct law establishes that claim 15 does not require that "linking at least one action" to occur before "enabling selection of the structure." While other elements of claim 15 refer to prior steps, HTC cannot show the required dependency between the steps of "linking at least one action" and "enabling selection of the structure." *Id.* at 1370 (holding that while some steps of the method claim needed to be performed in order, others did not). HTC attempts to circumvent this result by interpreting "enabling selection of the structure and a linked action" as a single step, even though the parties agree that this claim element requires enabling the ***separate*** selection of a structure and a linked action. Mowry Tr. 2560:-61; Olsen Tr. 4043; *e.g.* JX-3 at Abstract. ("the user interface can[,] . . . upon selection of a detected structure, present the linked candidate actions"). There is no logical or grammatical reason in the claim language that justifies HTC's limitation. *See Morris Reese v. Samsung Telecomms. Am.*, No. 2:05-CV-415-DF, 2006 WL 6112195, at *19 (E.D. Tex. 2006) (dividing two elements of "step (b)" in holding that "the 'assigning' in step (b), must occur after step (a)" but that "[t]he 'generating' in step (b), on the other hand, need not occur after step (a).") Non-asserted dependent claim 21 further undermines HTC's position because it identifies "enabling selection of an action" as its own "step," separate from the step of

enabling selection of a detected structure. JX-3 at col. 8, lns. 55-58. That the dependent claim imparts an order implies that claim 15 does not require an order.

The fifth element of independent apparatus claim 1 recites:

> **a user interface enabling the selection of a detected structure and a linked action; and**

The fourth element of independent method claim 15 recites:

> **enabling selection of the structure and a linked action; and**

Apple has satisfied these claim elements. Claims 1 and 15 require enabling the user to select a detected structure and separately select a linked action. Mowry Tr. 2560-61; Olsen Tr. 4043. The HTC accused products comprise such user interface program routines and methods for enabling the selection of a detected structure and a linked action. Mowry Tr. 2506-07.

[

]

[

]

HTC contends that the limitations "a user interface enabling the selection of a detected structure and a linked action" (claim 1) and "enabling selection of the structure and a linked action" (claim 15) are not met because accused HTC products do not give users the option of multiple actions. HTC Br. at 110.

Again contradicting its statement that it would use Apple's constructions, HTC contends for the first time that claim 15 requires linking multiple actions. HTC is

precluded from making this new argument under Ground Rule 4(c), and in any event, is wrong. Apparatus claim 1 requires linking more than one action to a detected structure, but method claim 15, by its plain language, only requires "linking at least one action" to a detected structure. Mowry Tr. 2468.

HTC argues that claim 15 requires linking of multiple actions because Dr. Mowry supposedly testified that the "selection of . . . a linked action" requires the user to choose among multiple actions. HTC Br. at 110. But Dr. Mowry did ***not*** testify that claim 15 requires the user be given a choice of multiple linked actions. Mowry Tr. 5017-18. Rather, Dr. Mowry testified that the user must be given a choice to select an "action" such that the selection is separate from, or independent of, the selection of the "structure." *Id.* As explained above, the accused HTC products provide that choice and link multiple actions to a detected structure.

HTC incorrectly asserts that Dr. Mowry "disclaimed" an opinion that the

[

] That

testimony is consistent with and buttresses the identified linked actions and does not

amount to a disclaimer.

The sixth element of independent apparatus claim 1 recites:

> **an action processor for performing the selected action linked to the selected structure; and**

The fifth element of independent method claim 15 recites:

> **executing the selected action linked to the selected structure.**

Apple has satisfied these claim elements. HTC conceded that [

]

As described above, [

43

]

[

]

The last element of claim 1 recites:

> **a processing unit coupled to the input device, the output device, and the memory for controlling the execution of the program routines.**

Apple has satisfied this claim element. The HTC accused products contain a processing unit coupled to the input device, the output device, and the memory for controlling the execution of the program routines. Mowry Tr. 2569-72; CX-3510 at 301; CX-409C at HTC00623252, 60.

---

[43] [

]

2. Claim 3

Dependent claim 3 recites:

> **The system recited in claim 1, wherein the input device receives the data from an application running concurrently, and wherein the program routines stored in memory further comprise an application program interface for communicating with the application.**

Apple has not satisfied claim 3. Claim 3 requires that "the input device receives the data from an application running concurrently." [

] However, this piece of software is not an "input device" under proper claim construction. Indeed, Dr. Mowry admits that an instance of this software exists within the HTC Messages and Android Messaging applications. Mowry Tr. 2483. Thus, the accused HTC devices do not infringe because Dr. Mowry only identifies software as the "input device" of claim 3, and software alone cannot constitute an "input device" under proper claim construction.

Apple also contends that the "input device" limitation is met under the doctrine of equivalents. Mowry Tr. 2486. Dr. Mowry, however, provides no reasoned basis for why this piece of software should be an "input device." *Id.* (merely asserting "any differences are insubstantial" without further analysis). In fact, Apple's expert offered no analysis of how software alone would satisfy the function-way-result test. Mowry Tr. at 2575-76. Without such analysis, Apple cannot carry its burden of showing that software performs a function in the same way as hardware does. *Moore USA, Inc. v. Standard Register Co.*, 229 F.3d 1091, 1113 (Fed. Cir. 2000) ("The mere recital of the *Graver Tank* mantra that the accused device performs 'the same function, in the same way, to achieve the same

result,' without more, does not create a genuine issue of material fact as to whether an accused device infringes by equivalents"). Accordingly, the accused devices fail to satisfy claim 3 under the doctrine of equivalents.

3. Claim 8

Dependent claim 8 recites:

> **The system recited in claim 1, wherein the user interface highlights detected structures.**

Apple has satisfied claim 8. The HTC accused products comprise a user interface that highlights detected structures. Mowry Tr. 2576. Android Messaging and HTC Messages highlight detected structures in blue, underlined font. *Id.* 2576-77. Browser highlights detected structures with a green rectangle during the user's selection of a structure. *Id.*

4. Claim 19

Dependent method claim 19 recites:

> **The method recited in claim 15, wherein the memory contains strings, and wherein the step of detecting a structure further comprises the steps of retrieving a string from the memory and scanning the data to identify the string.**

Apple has satisfied claim 19. The accused HTC products containing the Browser infringe claim 19. Mowry Tr. 2577. [

]

5. Indirect Infringement

HTC indirectly infringes, through inducement, method claims 15 and 19. Mowry Tr. 2578. HTC has stipulated that it and its customers use the accused functionalities of Browser, Android Messaging, and HTC Messages as described in Dr. Mowry's Expert Report regarding infringement and in accordance with their user guides. HTC Use Stip. ¶¶ 15-17; Mowry Tr. 2580-81. The user guides provide further evidence that HTC induces its customers to infringe claims 15 and 19. For example, the HTC Droid Incredible User Guide teaches how to practice the '647 patent using HTC Messages and the T-Mobile G1 User Guide teaches how to practice the '647 patent using the Browser. CX-3510C at 104; CX-995C at HTC000005489; Mowry Tr. 2579-80. Additionally, HTC induces infringement by complying with AT&T's device specifications, which require that phones practice the '647 patent. Mowry Tr. 2579-80; CX-3083C at HTC007471669 ("The device shall support the parsing of the message text and address fields for usable items such as URLs and phone numbers.").[44]

HTC counters that "Apple has not shown that HTC's user guides induce infringement; rather, they simply instruct users how to use the phones." As for the AT&T specification, HTC asserts that "it only contains a high-level requirement that devices 'shall support the parsing of the message text and address fields for usable items such as URLs and phone numbers'" and the specification "does not require practicing the claims." HTC Reply at 75.

[44] The Staff agrees with Apple and submits that "HTC has induced infringement of the patent after learning of its infringement." Staff Br. at 66 n.24. The Staff also notes that HTC advertises the use of dialing phone numbers directly from text messages to its customers. *Id.*

HTC's arguments are unpersuasive. In any event, HTC does not seriously contest Apple's assertion regarding induced infringement. In fact, HTC did not challenge Dr. Mowry during the hearing. As noted, HTC has stipulated that it and its customers use the accused functionalities of Browser, Android Messaging, and HTC Messages as described in Dr. Mowry's Expert Report regarding infringement and in accordance with their user guides. Moreover, AT&T specification's requirement that devices support message "parsing" supports Apple's assertion that HTC induces infringement by complying with AT&T's device specifications.

Accordingly, HTC indirectly infringes, through inducement, method claims 15 and 19.

In summary, Apple has shown that HTC's accused products infringe the asserted claims 1, 8, 15, and 19 of the '647 patent. However, Apple failed to show infringement with respect to claim 3.

C. Technical Prong of the Domestic Industry Requirement

Apple argues that it "proved that the iPhone 3GS running Mobile Mail ('iPhone') practices claims 1, 4,[45] 8, 15, and 19 of the '647 patent" and that "Apple's evidence that the iPhone satisfies the domestic industry requirement is undisputed by both HTC and Dr. Olsen." Apple Br. at 123-124.

HTC did not contest Apple's contention that it satisfies the technical prong of the domestic industry requirement.

The Staff submits that Apple practices claims 1, 4, 8, 15, and 19 of the '647 patent in the iPhone. Staff Br. at 67. The Staff explains that "HTC's expert appears to have

[45] It is noted that Apple has not asserted dependent claim 4 for infringement.

failed to provide any testimony regarding Apple's proof on this issue. Therefore, the undisputed evidence is that Apple uses this patent." *Id.*

For the reasons set forth below, Apple has satisfied the technical prong of the domestic industry requirement with respect to the '647 patent.

1. Independent claims 1 and 15

The preamble of independent apparatus claim 1 recites:

> **A computer-based system for detecting structures in data and performing actions on detected structures, comprising:**

The preamble of independent method claim 15 recites:

> **In a computer having a memory storing actions, a method for causing the computer to perform an action on a structure identified in computer data, comprising the steps of:**

Apple has satisfied the preambles of claims 1 and 15. As noted, the parties agree that the preambles of claims 1 and 15 are not limitations. In any event, Apple's iPhone satisfies the preambles of claims 1 and 15. Mowry Tr. 2582; CPX-11 (iPhone 3GS). The iPhone is a computer-based system that, using Apple's Data Detector technology, detects structures in data and performs actions on those detected structures (claim 1) and has memory storing actions that perform an action on a structure identified in computer data (claim 15). Mowry Tr. 2587; Serlet Tr. 4248-49.

The first element of independent apparatus claim 1 recites:

> **an input device for receiving data;**

The first element of independent method claim 15 recites:

> **receiving computer data;**

Apple has satisfied these claim elements. Apple has shown that the iPhone contains hardware-based input devices for receiving computer data, including a touchscreen, wireless internet adapter for receiving email data, a radio for receiving text messages and phone calls, and memory. Mowry Tr. 2584; CPX-11; CX-0384 at APPHTC_00002112 (radio and wireless internet), CX-0386C at APPNOK1209485 (256MB of DDR RAM). Such hardware input devices satisfy "input device" as properly construed. Mowry Tr. 2584-85.

The second element of claim 1 recites:

an output device for presenting the data;

Apple has satisfied this claim element. The iPhone contains an output device for presenting the data in the form of a touchscreen display. Mowry Tr. 2585; CPX-11 (iPhone 3GS); CX-0384 at APPHTC_00002114.

The third element of claim 1 recites:

a memory storing information including program routines including

Apple has satisfied this claim element. The iPhone contains memory storing information including program routines. Mowry Tr. 2585; CPX-11; CX-0384 at APPHTC_00002114 (Flash memory), CX-0386C at APPNOK1209485 (256MB of DDR RAM).

The fourth element of independent apparatus claim 1 recites:

an analyzer server for detecting structures in the data, and for linking actions to the detected structures;

The second and third elements of independent method claim 15 recite:

detecting a structure in the data;

linking at least one action to the detected structure;

Apple has satisfied these claim elements as discussed below.

"analyzer server for detecting structures in the data" (claim 1) and "detecting a structure in the data" (claim 15)

Apple has shown that the iPhone includes an analyzer server for detecting structures in data under the parties' agreed-upon constructions of "analyzer server," "detecting," and "structures." Mowry Tr. 2586. Specifically, Mobile Mail finds and identifies phone numbers, URLs, street addresses, and email addresses in mail messages. *Id.* 2586-87.

Dr. Mowry testified that the analyzer server for detecting structures [

] Mowry Tr. 2588; CX-4324C; CX-4325C. [

] used to detect structures [

]

Mowry Tr. 2588; CX-4324C; CX-4334C. [

] *Id*

"analyzer server for ... linking actions to the detected structures" (claim 1) and "linking at least one action to the detected structure" (claim 15)

Apple has shown that the iPhone includes an analyzer server and method for linking actions to detected structures. Mowry Tr. 2591. In Mobile Mail, a user is

presented with several actions to take on a detected structure. *Id.* 2593. For example, in the case of a detected phone number, possible actions include launching the phone or text message application with the detected structure. *Id.*

Dr. Mowry testified that the analyzer server for linking actions to the detected structures [

] Mowry Tr. 2591-92; CX-4347C; CX-4348C; CX-4349C; CX-4340C; CX-4332; CX-444. [

] Mowry Tr. 2592. [

] Mowry Tr. 2595.

There is no dispute that the iPhone performs these limitations. Mowry Tr. 2595. Dr. Mowry testified that the linked actions in the iPhone "necessarily lead[] to causing the CPU to perform a sequence of operations on the detected structure. And that's precisely the type of linking to actions as described in the '647 patent." *Id.* 2598.

The fifth element of independent apparatus claim 1 recites:

a user interface enabling the selection of a detected

structure and a linked action; and

The fourth element of independent method claim 15 recites:

enabling selection of the structure and a linked action; and

Apple has satisfied these claim elements. First, Dr. Mowry testified that the iPhone has a user interface and method for enabling the selection of detected structures in an email. Mowry Tr. 2589. That user interface comprises [

] *Id.* 2589-90; CX-4319C; CX-4328C.

Second, the iPhone also has a user interface and method for enabling the selection of a linked action. Mowry Tr. 2598-99. This user interface comprises the [

] *Id.* 2599-2600; CX-4340C; CX-4347C; CX-4348C; CX-4349C.

The sixth element of independent apparatus claim 1 recites:

an action processor for performing the selected action linked to the selected structure; and

The fifth element of independent method claim 15 recites:

executing the selected action linked to the selected structure.

Apple has satisfied these claim elements. Apple has shown that the iPhone has an action processor and method for executing or performing the selected action linked to the

detected structure. Mowry Tr. 2600. Dr. Mowry testified that the action processor [

] Mowry Tr. 2600; CX-4342C; CX-4354C; CX-4329C. [

] Mowry Tr. 2600-01; CX-0385C at APPHTC_00652555 (describing [

] Neither HTC nor Dr. Olsen contests that the iPhone satisfies these limitations.

The last element of claim 1 recites:

> **a processing unit coupled to the input device, the output device, and the memory for controlling the execution of the program routines.**

Apple has satisfied this claim limitation. The iPhone contains a processing unit coupled to the input device, the output device, and the memory for controlling the execution of the program routines. Mowry Tr. 2602-03; CPX-11; CX-0386C at APPNOK1209485 (ARM Cortext-A8 processor).

2. Claim 4

Dependent claim 4 recites:

> **The system recited in claim 1, wherein the analyzer server includes grammars and a parser for detecting structures in the data.**

Apple has satisfied claim 4. Apple proved that the iPhone's analyzer server uses grammars and a parser to detect structures as required by claim 4. Mowry Tr. 2604; CX-4314C; CX-4315C; CX-4337C; CX-4338C. For example, [

] Mowry Tr. 2604; CX-4315C.

3. Claim 8

The system recited in claim 1, wherein the user interface highlights detected structures.

Apple has satisfied claim 8. The iPhone highlights detected structures and therefore satisfies claim 8. Mowry Tr. 2605-06. As described above, the iPhone [ ] to highlight and underline structures in blue. *Id.*

4. Claim 19

The method recited in claim 15, wherein the memory contains strings, and wherein the step of detecting a structure further comprises the steps of retrieving a string from the memory and scanning the data to identify the string.

Apple has satisfied claim 19. As required by claim 19, the iPhone scans a mail message to identify strings retrieved from a string library. Mowry Tr. 2606-07; CX-4351C; CX-4353C. For example, the iPhone includes files listing strings [ ] which are retrieved from memory and used in a parser to detect structures in data. *Id.*]In summary, Apple has satisfied the technical prong of the domestic industry requirement with respect to the '647 patent.

D. Validity

HTC contends that the asserted claims of the '647 patent are anticipated or rendered obvious by the Perspective System and Handbook. HTC Br. at 117. HTC further argues that the NeXTSTEP reference manual ("Manual") (RX-889) and the NeXTSTEP System each anticipate the asserted claims of the '647 patent. *Id.* at 130. Additionally, HTC urges that U.S. Patent No. 5,859,636 ("Pandit") (RX-4603) anticipates claims 1, 8, 15, and 19 under the parties' claim constructions and that Pandit anticipates claim 3 under Apple's construction. *Id.* at 138.

The Staff, in agreement with HTC, submits that all asserted claims[46] of the '647 patent are anticipated and/or rendered obvious by the Perspective System and Handbook. Staff Br. at 67. The Staff further contends that "if the Perspective product and handbook do not anticipate every asserted claim of the '647 patent, those claims are anticipated also by, at least, U.S. Patent No. 5,859,636 to Pandit." *Id.* at n.26.

Apple argues that Perspective fails to disclose, among other things, claim elements in independent claims 1 and 15 that require linking actions to the detected structure, enabling the selection of a linked action, and performing the selected action on the selected structure. Apple Br. at 84. Apple also contends that NeXTSTEP Spell Checker does not anticipate claims 1 and 15 because it does not disclose detecting structures, linking actions to detected structures, and enabling the selection of a detected structure. *Id.* at 140-142. Apple further urges that dependent claims 3 and 19 are not anticipated and that the asserted claims are not rendered obvious by NeXTSTEP. *Id.* at

[46] The Staff, however, states that "[c]laim 3 is not invalid under the Staff's construction of "input device," but it is invalid under Apple's construction." *Id.* at n.25.

142-143. As to the Pandit patent, Apple contends that Pandit does not anticipate the asserted patents because Pandit is not prior art and Pandit also lacks detecting a structure, and enabling the selection of a detected structure. *Id.* at 128-135, 143-144.

As explained below, HTC and the Staff have not shown by clear and convincing evidence that the asserted claims of the '647 patent are (1) anticipated or rendered obvious by Perspective; (2) anticipated by NeXTSTEP;[47] and (3) anticipated by the Pandit patent.

1. Perspective

Perspective is a "personal information manager . . . that allowed the user to keep track of contacts and appointments and notes." Schaffer Tr. 3700-01. Perspective is a relational database—it marks a location of text with a database record number and relates that number to a database entry irrespective of the text at the marked location or the text within the database entry. Mowry Tr. 4890-92.

The testimony of Dr. Mowry shows that Perspective fails to disclose, among other things, claim elements in claims 1 and 15 that require linking actions to the detected structure, enabling the selection of a linked action, and performing the selected action on the selected structure.

"linking actions to the detected structures"

The fourth limitation of apparatus claim 1 requires "linking actions to the detected structures" and the corresponding third limitation of method claim 15 requires "linking at least one action to the detected structure." As discussed below, Perspective does not link

[47] It is noted that the Staff did not assert NeXTSTEP as an invalidating prior art to the '647 patent.

actions to the detected structures and thus does not anticipate claims 1 and 15.

HTC alleges that in Perspective the detected structure is the text "Bob" and the "double-tap" and "D" gestures invoke linked actions. HTC Br. at 123; Olsen Tr. 3883. But neither of these gestures links actions or is itself an action linked to the text Bob because (1) they are simply gestures and not computer subroutines and (2) neither gesture invokes code that is associated with or operates on the text "Bob." Mowry Tr. 4890-92.

It is undisputed that each party's construction of "linking actions" and "linking at least one action" requires the action subroutine operate on the particular structure to which it is linked. Mowry Tr. 4887-88. In Perspective, "double-tapping" a name opens a profile in the Address Book and writing a "D" on a name brings up a dialer. *Id.* 4886-87; Olsen Tr. 3893. Both operations invoke the database record number at the location of the gesture without knowledge of or performing operations on the detected name. Mowry Tr. 4890-92. It is undisputed that "[a]t no point along the way is the value in that text used. It is not necessary. Relational databases don't need them and they don't use them." Mowry Tr. 4891.

As a relational database, Perspective uses "standard relational techniques to use integers to connect together different entries in different components of the database." *Id.* 4908. When opening a profile by double-tapping on a name or opening a dialer by writing "D" over a name, the value of the name is never used or operated on. *Id.* 4890-92. Perspective simply follows the number underlying the chosen text to open a profile or display the dialer. *Id.* The alleged action subroutines identified by Dr. Olsen never operate ***on*** a detected structure and therefore do not constitute a claimed "action."

In fact, the source code that Dr. Olsen relies on to demonstrate this functionality supports Apple's position. *Id.* 4899-4901. Simply put, Perspective only cares "about ***where*** you have tapped, not ***what*** you have tapped on." *Id.* 4897 (emphasis added).

In another scenario, where the user writes a name and the contact list contains more than one entry for that name, Perspective does not link to a subroutine that causes the CPU to perform operations on a detected structure as it simply marks the name's location in text with a database record number. *Id.* 4903-04. In the last scenario, where the user writes the word "Meet" followed by a name that is ***not*** in the contacts list, Perspective does not detect the name and thus does not link actions to a detected structure. *Id.*

HTC and the Staff incorrectly argue that the HTC products do not use the detected structures in performing actions (HTC Br. at 124), and "Apple has not shown that the actual text of 'Bob' is acted on" when a dialer is launched in the HTC products (Staff Br. at 69). Contrary to the Staff's contention, Apple did not suggest that the HTC products will detect the text "Bob" and then launch the dialer with that text. Rather, Apple has shown that the HTC products operate on a detected structure. For example, unlike Perspective, the HTC accused products detect phone numbers and will launch a dialer ***with the detected number*** when a user selects the detected number and then selects the associated "Call" action. *E.g.*, Apple Br. at 111-112.

HTC also argues that Dr. Mowry testified that the HTC products use the "value" rather than the actual structure. But Dr Mowry's testimony contradicts that contention.[48]

[48] HTC is precluded from arguing that [

] HTC Br. at 124. First, under Ground

E.g., Mowry Tr. 2553 (testifying that HTC products "cause the CPU to perform operations on a structure"), 2637-38 ("The structure is the value . . . a structure is an instance of a pattern, so the structure is the value."). And HTC's expert agrees with Dr. Mowry that the HTC products "detect structures and ***allow the user to perform actions on these structures***." Olsen Tr. 4021 (emphasis added).

HTC further alleges that the database record number is a "proxy" for a detected structure. HTC Br. at 124. The claims, however, require that the action operate on the detected structure. Dr. Mowry's testimony, cited by HTC, makes clear that Perspective does not act on the detected name or even care about its value. Mowry Tr. 4891-92, 4896-4902. As the Staff admitted, in Perspective, using the detected text "would be useless." Staff Br. 69.

Moreover, HTC misstates its own expert's testimony to support a new theory of linking actions—contending that "Perspective's Associate linked actions . . . using specific identifier numbers for the method to be invoked." HTC Br. at 123. Notably, on direct, HTC's expert disagreed and stated that these "specific identifier numbers" are "actually ***not*** part of Perspective. This is part of Penpoint." Olsen Tr. 3892 (emphasis added). Penpoint was an operating system distinct from Perspective. Schaffer Tr. 3700-01. HTC did not assert Penpoint against the '647 patent at the hearing or cite any

---

Rule 4(c), HTC waived this argument by failing to raise it in its pre-hearing statement. Second, Apple objected to HTC making this exact same argument at trial and HTC represented that it was not doing so. Tr. 4025-26 ("MR. DONOVAN: I have an objection . . . If there is a new non-infringement object based on that the [ ] it is not in the report . . . . MR. VAN NEST: I don't think that's part of what Dr. Olsen is talking about, Your Honor. At least it is not what I intend to have him talk about."). In any event, this new argument is without merit.

Penpoint functionality, including "specific identifier numbers," in its pre-hearing statement. Thus, this new argument is substantively wrong and is procedurally barred.

HTC also criticizes Apple as resorting to a "hyper-technical (and incorrect) reading of the agreed-upon portion of the claim construction."[49] HTC argues that "[i]n an effort to distinguish Perspective, Dr. Mowry grasps at a thin reed—the word 'on'—arguing that it requires the action—the subroutine—to use the 'value' of the detected structure." HTC further contends that the '647 patent "does not support Apple's meta claim construction" and that the word "'on' simply means 'associated with' or 'related to'; there's no basis for reading in the further limitation 'on the value of'." HTC Reply Br. at 79.

The '647 patent, however, explains that a "structure" is in fact more specific than as proposed by HTC.

> Much data that appears in a computer user's day-to-day activities contains recognizable structures that have semantic significance such as phone numbers, e-mail addresses, post-office addresses, zip codes and dates. In a typical day, for example, a user may receive extensive files from word-processing programs and e-mail that contain several of these structures. However, visually searching data files or documents to find these structures is laborious and cognitively disruptive, especially if the document is lengthy and hard to follow. Furthermore, missing a structure such as a date may lead to missing an important meeting or missing a deadline.
>
> To help facilitate searching a document for these structures, programmers can create or employ pattern analysis units, such as parsers, to automatically identify the structures. For

[49] While the parties dispute the proper construction of this claim element, they agree that it should include "linking detected structures to computer subroutines that cause the CPU to perform a sequence of operations ***on the particular structures*** to which they are linked." Joint Claim Construction, App'x A at 16 (emphasis added).

> the purposes of the present description, the term "pattern" refers to data, such as a grammar, regular expression, string, etc., used by a pattern analysis unit to recognize information in a document, such as dates, addresses, phone numbers, names, etc. The term "structure" refers to an instantiation of a pattern in the document. That is, a "date" pattern will recognize the structure "Oct. 31, 1995." The application of a pattern to a document is termed "parsing."

JX-3 at col. 1, lns. 13-35 (Description of the Background Art) (emphasis added).

Thus, the '647 patent shows that a "structure" is more specific than as proposed by HTC. The patent explains, for example, that "a 'date' pattern will recognize the structure 'Oct. 31, 1995'." Although HTC argues that the word "on" simply means "associated with" or "related to" and that there's no basis for reading in the further limitation "on the value of," the patent itself discloses that "structures" have "semantic significance such as phone numbers, e-mail addresses, post-office addresses, zip codes and dates." The patent teaches that a specific "pattern" will recognize a specific "structure" since the "term 'structure' refers to an instantiation of a pattern in the document." For example, a date pattern will recognize a hypothetical structure "July 15, 2011" and a zip code pattern will likewise recognize a hypothetical structure "20436."

The Perspective prior art lacks this required pattern-structure element. First, HTC's and the Staff's exemplary structure "B-O-B" in Perspective does not have a corresponding pattern. Thus, Perspective is not able to "automatically identify the structures" which is a key feature of the disclosed invention of the '647 patent and required by the fourth claim element "an analyzer server for detecting structures in the data." Even if "B-O-B" in Perspective is a "structure," Perspective does not have "an analyzer server for detecting structures in the data." Rather, a person using Perspective

has to manually detect the alleged structure "B-O-B" in the data by either double clicking or writing a "D" over the alleged structure.

Moreover, the Staff concedes that, in Perspective, the detected "text is not important for the action." Staff Br. at 69. The Staff now asserts that the "detected structure" is not the name, but rather a phone number or an entry in the database (contact list). *Id.* But this contention cannot meet the claims because neither the phone number nor the text within the database is detected, is a structure, or is selected by the user—all of which are claim requirements. Thus, properly understood, the Staff's position on Perspective shows that Perspective is not the same as the claimed invention.

At bottom, HTC contends that the actions need only be linked to the detected structures but not operate on those particular detected structures. HTC Br. at 78-81. The plain language of the claims, the parties' agreed-upon construction of the term "action," and the entire specification make clear that the action must operate on the detected structure. *See, e.g.*, JX-3, preamble of claim 1 ("performing actions on detected structures"), preamble of claim 15 ("to perform an action on a structure identified in computer data"), col. 2, lns. 31-34 (defining "action" as a computer subroutine that "perform[s] a sequence of operations on the particular structure to which it is linked"); Staff Br. at 61 (adopting the same definition).

Accordingly, Perspective does not link actions to the detected structures and thus does not anticipate claims 1 and 15.

"performing the selected action linked to the selected structure"

The sixth limitation of apparatus claim 1 requires "performing the selected action linked to the selected structure" and the corresponding fifth limitation of method claim 15

requires "executing the selected action linked to the selected structure."

HTC contends that the [

] satisfy these elements because they are called by the "D" and double-tap gestures. HTC Br. at 127. However, for the reasons discussed above, Perspective does not perform (or execute) an action linked to a selected structure because it performs no operations on the detected text. In fact, Dr. Mowry testified that the [

] do not use or even contain the detected structure. Mowry Tr. 4899-4902.

"enabling the selection of a detected structure and a linked action"

The fifth limitation of apparatus claim 1 requires "enabling the selection of a detected structure and a linked action" and the corresponding fourth limitation of method claim 15 requires "enabling selection of the structure and a linked action."

HTC contends that a user can simultaneously select a structure and a linked action when a user double-taps or writes a "D" on a name. HTC Br. at 125. As shown above, Perspective fails to disclose "linking actions" and thus it necessarily fails to disclose enabling the selection of a "linked action." Further, it is undisputed that these elements require the ***separate*** (independent) selection of a detected structure and a linked action. Mowry Tr. 2560-61; Olsen Tr. 4043. Yet, Perspective offers no such separate selection—the user cannot select "Bob" and also separately choose to open the dialer or contact. The only "selection" identified by Dr. Olsen is the selection of a recognized name (Mowry Tr. 5018); this does not enable the separate or independent selection of an action. *Id.* 4905-06, 5010, 5018-19. In an attempt to show separate selection, HTC and the Staff argue that selection of a structure occurs by "putting the stylus above the bolded

word 'Bob' as opposed to the other words on the screen." Staff Br. at 70; Olsen Tr. 3917-18. But the claims require program routines and methods for selecting a structure, not a user's mental choice to hover the stylus over a piece of text. JX-3, claims 1, 15; Mowry Tr. 4905-06.

Moreover, contrary to HTC contention that Dr. Mowry testified that a single selection step satisfies these elements, Dr. Mowry instead testified that a single selection step satisfies the claim elements ***only if*** the selection of the structure and selection of the action are "***independent***," *e.g.*, when all of the structures and associated actions are presented to the user, and Perspective does not allow for this independent selection. Mowry Tr. 5017-19 (emphasis added).

HTC then wrongly contends that Dr. Mowry construed the claims to require a particular user interface for displaying actions. HTC Br. at 126. Dr. Mowry testified repeatedly that the asserted gestures in Perspective (1) do not constitute an independent selection of a structure and action; (2) are not presented as actions associated with a structure; and (3) could not have been presented to the user because the "D" gesture was a hidden option unknown to Perspective users. Mowry Tr. 4905-06, 5010-14, 5017-18. In fact, the Handbook never mentions the "D" gesture scenario. Mowry Tr. 5045.

In summary, HTC and the Staff have not shown by clear and convincing evidence that the asserted claims of the '647 patent are anticipated by Perspective because it fails to disclose, among other things, claim elements in independent claims 1 and 15 that require linking actions to the detected structure, enabling the selection of a linked action, and performing the selected action on the selected structure.

Obviousness of Claims 1, 3, 8, 15, and 19

HTC contends that the Perspective "system" and Handbook separately combined with the "state of the art" render the asserted claims obvious. Olsen Tr. 3947-49. Yet, Dr. Olsen's obviousness analysis is rejected due to his application of an entirely inconsistent and significantly incorrect level of ordinary skill. Mowry Tr. 4880-83. In addition, both of Dr. Olsen's Perspective combinations suffer the same problems: Dr. Olsen failed to explain what constitutes the "state of the art," what elements of the "state of the art" make up for Perspective's shortcomings, or why a person of ordinary skill would combine the state of the art with the disclosures of the Perspective system. Simply put, Dr. Olsen's conclusory statements regarding an unidentified "state of the art" cannot establish that each element of any asserted claim was obvious to one of ordinary skill. *See id.* 4908-09.

2. NeXTSTEP Spell Checking Tool

For the reasons set forth below, HTC has not shown by clear and convincing evidence that NeXTSTEP Spell Checking Tool anticipates or renders obvious the asserted claims of the '647 patent.

As an initial matter, HTC has not identified a proper NeXTSTEP "System." HTC alleges that the NeXTSTEP "system" anticipates claims 1, 3, 8, 15, and 19. Olsen Tr. 3855. But Dr. Olsen never defined the purported NeXTSTEP "system," and thus HTC cannot show that a NeXTSTEP "system" invalidates the claims. Olsen Tr. 3961 (failing to define the NeXTSTEP "system"). Nor can HTC contend that the individual references relied on by Dr. Olsen constitute a single system. Dr. Olsen based his opinion on references from different versions of NeXTSTEP: (1) source code, including release

] (2) the NeXTSTEP General Reference book ("Reference") describing ***version 3.0***; and (3) devices running an ***unknown version*** that were not admitted into evidence. Olsen Tr. 3950 (relying on source code, Reference, and devices), 4046-47 (software is version 3.2); MowryTr. 5025 (same), 4911-12; RX-889 at HTC007279798 (Reference describes version 3.0). [

] HTC's contention that they count as a single system is inconsistent with the understanding of one of ordinary skill and is unsupportable under the law. Mowry Tr. 4911-12; *Studiengesellschaft Kohle,* 726 F.2d at 726–27.

"detecting structures"

The '647 patent requires detection of a "structure," which the parties agree means an "instance of a pattern" where a pattern is used to "recognize information." Olsen Tr. 4096; Mowry Tr. 2458-59, 2491-93, 4912-13. Structures are thus semantically significant nuggets of text (e.g., telephone numbers) that are "positive match[es] of a pattern." Mowry Tr. 2491-93; JX-3 at col. 1, lns. 13-16; col. 2, lns. 10-13; col. 2, lns. 28-32; JX-9 at APPHTC_00338320.

In plain contrast, former NeXTSTEP employee Bertrand Serlet testified that misspellings are "just words that were not in the dictionary"—i.e., text that is ***not recognizable, has no semantic significance, and does not match a pattern***. Serlet Tr. 4250-51 [ ] 4250 [

] Mowry Tr. 4913-14; RX-2346C at L.89. Misspellings are therefore meaningless "non-instances of patterns"—the "polar opposite" of the parties' definition of "structure." Mowry Tr. 4913-14. Indeed, Dr. Olsen's contention that

NeXTSTEP anticipates is admittedly based on his claim that "the absence of a particular pattern" counts as a pattern. Olsen Tr. 4103. This contention would render the term "structure" meaningless. Mowry Tr. 4914-15 ("[T]he universe of possibilities is a non-instance of a pattern. There would be no rhyme or reason to that."), 5049-51.

"linking actions to the detected structures"

The parties agree that these limitations require the linked action to operate ***on the detected structure***. Mowry Tr. 4887-88; Olsen Tr. 3838. HTC's contention that options to "correct," "find next," or "ignore" unrecognized text constitute linked actions fails because none of these options operate on a structure. Mowry Tr. 4918-20; Olsen Tr. 3969-70. Further, even assuming for the sake of argument that [

] Mowry Tr. 4918-20, 5051; RX-2355C at L.130-153. [

] Mowry Tr. 4918-20; RX-2344 at L.1051-57. And [

] Mowry Tr. 4918-20.

"enabling the selection of a detected structure and a linked action"

These limitations require a user to be able to "select" a particular detected structure, such as by clicking it with a mouse. Mowry Tr. 4915-16; JX-3 at col. 4, lns. 11-17; col. 4, lns. 23-27. [

] Mowry Tr. 4916-17.

HTC's contention that the "find next" button satisfies these limitations fails because it improperly conflates selection and detection. Olsen Tr. 3979-80. [

] Mowry Tr. 4916-18; RX-2344C at L.1051-1057.]

In summary, HTC has not shown by clear and convincing evidence that NeXTSTEP Spell Checking Tool anticipates asserted claims 1 and 15 of the '647 patent.

Additional limitations of claim 3 and 19

Dr. Olsen testified that NeXTSTEP had a software input device that satisfies claim 3. Olsen Tr. 3988; Mowry Tr. 4920. Under a proper claim construction, input device does not include software. Thus, HTC has failed to show that NeXTSTEP anticipates claim 3.

For the string-matching limitation of claim 19, HTC contends that the opposite of string matching—***failing*** to match a string—satisfies the step of detecting structures. Olsen Tr. 3993-94; 3968-69. This contention must fail and in fact [

]

Mowry Tr. 4920-21.

Obviousness of Claims 1, 3, 8, 15, and 19

HTC contends that the NeXTSTEP "system" and Reference each combined with the "state of the art" render the asserted claims obvious. Olsen Tr. 3987-88, 3997-98. Dr. Olsen's conclusory obviousness analysis is rejected due to his application of

inconsistent and incorrect levels of ordinary skill. Mowry Tr. 4880-83. Dr. Olsen's NeXTSTEP combinations suffer from the same flaws as his Perspective combinations: he does not identify what aspects of the "state of the art" make up for NeXTSTEP's shortcomings, where the missing elements can be found in the "state of the art," or why a person of ordinary skill would combine those pieces of the "state of the art" with the NeXTSTEP "system" or Reference. *Id.* at 4922.

3. U.S. Patent No. 5,859,636 ("Pandit")

For the reasons set forth below, HTC has not shown by clear and convincing evidence that the Pandit patent anticipates the asserted claims of the '647 patent.

HTC alleges that Pandit anticipates the asserted claims of the '647 patent. Olsen Tr. 4011-12, 4014. HTC asserts Pandit as § 102(e) prior art. Pandit was filed on December 27, 1995, only five weeks before Apple filed for the '647 patent. RX-4603; JX-3 (filing date of February 1, 1996). But Pandit is not prior art because the inventors conceived and reduced to practice the claimed inventions of the '647 patent well before Pandit's filing date. Mowry Tr. 4923-24; *see infra* (conceived in late 1994; reduced to practice in mid-1995).

"detecting structures"

In addition to not being prior art, Pandit fails to disclose detecting structure(s). Mowry Tr. 4923-24. The parties agree that "detecting" means "finding and identifying." Olsen Tr. 3884. But Pandit does not "find and identify" structures. Rather, Pandit requires that users "find" and accent a ***single*** piece of text before even trying to recognize the text. Mowry Tr. 4924-25; RX-4603 at FIG. 2. Pandit may not even recognize the

user-accented text. Mowry Tr. 4925-26. Thus, Pandit does not "detect" a structure, let alone multiple structures, as required by claims 15 and 1 respectively. Mowry Tr. 4926-28.

HTC asserts that Apple "admits that Pandit recognized structures" and that "Apple's sole dispute is that Pandit did not 'find' structures because Pandit 'requires that users 'find' and accent a single piece of text'." HTC explains that "Apple's argument relies on an erroneous reading of the '647 patent and ignores Pandit's plain disclosure." HTC Br. at 87.

HTC's argument falls short. As an initial matter, it is undisputed that the parties agreed that "detecting" means "finding and identifying." Staff Br. 60; Apple Br. 103 n. 27; HTC Br. 139 n.31. But Pandit does not "find" structures, and HTC cannot plausibly contend otherwise because a user must accent a single piece of text before Pandit will try to recognize it. This does not satisfy the "finding" requirement of the claims.

HTC attempts to overcome this critical omission by contending, for the first time, that there is no support for the "finding" requirement. HTC Br. 139-140. First, HTC is precluded from disavowing an agreed-upon construction. Second, HTC is misguided. Claim 1 requires that the computer system have the ability to detect multiple structures at one time in the data received by the input device. Further, the specification makes clear that detecting structures includes finding them within a user's documents. *See, e.g.*, JX-3, col.1, lns.13-27 (describing problem that "visually searching data files or documents to ***find*** these structures is laborious and cognitively disruptive, especially if the document is lengthy and hard to follow") (emphasis added); Bonura Tr. 2295-96 (describing same).

As HTC notes, the specification also discloses analyzing an entire document or a

portion of the document. HTC Br. at 140 (quoting JX-3, col. 5, lns. 55-56). In contrast, Pandit does not analyze the content or a portion of a document; Pandit could only look at the single piece of user-accented text. *See, e.g.*, RX-4603, FIG. 2. And, although Pandit may use pattern matching, that does not satisfy the "finding" requirement. Mowry Tr. 5035. In short, Pandit does not detect structures because it does not "find" them; Pandit relies on the user to do the work of finding and accenting text.

"enabling the selection of a detected structure and a linked action"

Pandit does not disclose this limitation. Mowry Tr. 4923-24. As explained above, Pandit does not detect structures. In Pandit, the user must manually "find" and accent text before Pandit will attempt to recognize it. As such, the accenting of unrecognized text cannot be the selection of a detected structure. Mowry Tr. 4928.

Additional limitations of claims 3, 8, 19

Dr. Olsen testified that Pandit had a software input device that satisfies claim 3. Olsen Tr. 4012. Moreover, Dr. Olsen failed to identify the purported software that is the claimed input device. *See* Mowry Tr. 4928-29. Under a proper claim construction, input device does not include software. Thus, HTC has failed to show that Pandit anticipates claim 3.

Regarding claim 8, because Pandit does not detect structures, there are no detected structures to highlight. Further, even if the user-accented text is recognized, Pandit does not disclose text that is highlighted. *Id.* Regarding claim 19, Pandit fails to disclose string matching. *Id.* Dr. Olsen's conclusory and unsupported testimony regarding claims 8 and 19 cannot satisfy HTC's burden of proof on invalidity. Olsen Tr.

4014.

4. Conception and Reduction to Practice

Conception in Late 1994 to Early 1995

Apple has shown that the inventors—Thomas Bonura, Jim Miller, Bonnie Nardi, and David Wright—conceived the inventions of claims 1, 3, 8, 15, and 19 of the '647 patent as early as September 25, 1994, and no later than March 1995. Mowry Tr. 4942, 4974; Bonura Tr. 2301, 2305. The inventors of the '647 patent were a multidisciplinary group of researchers in the Intelligent Applications subgroup of the Advanced Technology Group—Apple's research arm. Bonura Tr. 2292-94. The evidence shows that [ ] the inventors had begun working on the "structure detectors" [

] *Id.*, *id.* at 2294-99; CX-2407C. That project led to the conception and eventual reduction to practice of the '647 inventions.

Inventor Testimony and Dr. Miller's Septemter 1994 Email

One of the inventors, Dr. Bonura, testified at the hearing that by late summer to early fall of 1994 the inventors had formed in their minds a definite and permanent idea of the '647 inventions. Bonura Tr. 2300-01, 2305-08; Mowry Tr. 4974; CX-2404C.

[

]

CX-2404C; Bonura Tr. 2303-05; Mowry Tr. 4966. [ ] shows conception of a computer system and method for automatically finding and identifying interesting

"nuggets" of information (i.e., structures), associating actions to those structures, allowing users to select and initiate those actions, and providing a user interface for controlling the functionality. CX-2404C; Bonura Tr. 2300-01; 2303-04.

[ ] for detecting structures and linking actions to detected structures (the analyzer server), enabling the selection by the user of a detected structure and a linked action (the user interface), and performing the selected action linked to the detected structure (the action processor). CX-2404C; Mowry Tr. 4963-65. [ ] had an input device for receiving data, an output device for presenting data, memory storing information [ ] and a processor unit coupled to the input device, the output device and the memory. Mowry Tr. 4961-63, 4965. [ ] also shows that the system would have string-matching capabilities to detect information [ ] (claim 19). *Id.* 4965-66; CX-2404C.

[ ]

Apple has shown that [ ] further evidences conception of claims 1, 3, 8, 15, and 19 of the '647 patent [ ] Mowry Tr. 4966-67, 4974. Dr. Bonura testified that [ ] Bonura Tr. 2307. [ ] Bonura Tr. at 2308-10; Mowry Tr. 4966-67; CX-2267C. For example, [ ] Bonura Tr. 2328-30; Mowry Tr. 4968; CX-8002C; CX-3382C. [ ] Bonura Tr. 2324-25,

2328-30; CX-8002C – CX-8006C. Further, Dr. Mowry [

] and concluded that it showed conception. Mowry Tr. 4957, 4959, 4974; CX-3382C; CX-3383C; CX-3385C; CX-3391C; CX-8002C.

Claims 1 and 15

[

] Bonura Tr. 2328-30, 2335; CX-8003C. [

]

and highlights detected structures [ ] Bonura Tr. 2335-36; CX-8004C; CX-3383C. The user selects one of the structures [

] Bonura Tr. 2336-37; CX-8005C; CX-3382C. For example, [

] *Id.* [

] Bonura Tr. 2337; CX-8006C; CX-3391C.

[ ] therefore is a computer-based system with an input device for receiving data (*e.g.*, [ )] an output device for presenting data, memory storing information including program routines, and a processing unit coupled to the input device, the output device and the memory. Mowry Tr. 4969-70; CX-8002C; CX-8003C; CX-3382C; CX-3383C. [ ] also shows routines that detect structures, link actions to detected structures, enable the separate selection of a detected structure and linked action, and perform the selected action on the detected structure.

Mowry Tr. 4970-72; CX-8004C; CX-3383C; CX-8005C; CX-3385C; CX-8006C; CX-3391C.

Claims 3, 8, and 19

Apple argues: [ ] shows conception of claim 3 because [

] Apple Br. at 131, citing Mowry Tr. 4973; CX-8003C; CX-8004C; CX-3383C. Apple has not shown conception of claim 3 because [ ] is not included under a proper claim construction of "input device."

[ ] shows conception of claims 8 and 19 because it highlights detected structures, [ ] which are detected using string matching. Mowry Tr. 4974; CX-8004C; CX-3383C.

[ ] Reduction to Practice

Apple proved, and HTC did not dispute, that the inventors worked diligently in late 1994 to reduce to practice the claimed invention [

] Bonura Tr. 2338-40, 2347, 2357-58; Mowry Tr. 4987, 4977-78.

Dr. Bonura testified that the inventors [

] Bonura Tr. 2338-39. [

]

Bonura Tr. 2338-46; CX-2178C; CX-2192C; CX-2193C; CX-2195C; CX-2183C; CX-

2184C; CX-2186C. Dr. Mowry testified that [

] Mowry Tr. 4975-77, 4987.

Dr. Bonura also testified that, [

] Bonura Tr. 2347, 2357-58; Mowry Tr. 4978; CX-2297C. [

] Bonura Tr. 2347-50, 2358; CX-8007C – CX-8011C. Dr. Mowry [

] and concluded that [ ] showed actual reduction to practice. Mowry Tr. 4958-60, 4987; CX-3394C – CX-3397C; CX-3401C; CX-3402C]

Independent claims 1 and 15

The Preambles

[ ] are computer-based systems for detecting structures in data and performing actions on detected structures (claim 1) and are computers having memory storing actions that perform an action on a structure identified in computer data (claim 15). Mowry Tr. 4979-80, 4983-84; Bonura Tr. 2339-40.

> **an input device for receiving data (1) / receiving computer data (15); an output device for presenting the data (1); a memory storing information including program routines (1)**

Because they run on a computer with a user interface, [

] each had an input device for receiving data and a method for receiving computer data, an output device for presenting the data, and a memory storing

information including program routines. Mowry Tr. 4979-80]

an analyzer server for detecting structures in the data and for linking actions to the detected structures (1) / detecting a structure in the data; linking at least one action to the detected structure (15)

[ ] each satisfy these limitations. Mowry Tr. 4980-82; Bonura Tr. 2355-56. [ ] detects structures in data and, [ ] links actions to detected structures. Mowry Tr. 4980-82; CX-2193C at BONURA00000145-146, 157; CX-2178C; CX-2184C; CX-2183C; CX-2195C; Bonura Tr. 2341, 2346. [ ] Mowry Tr. 4978-79; CX-2195C.

[ ] shows the detection of structures in the data and the linking of actions to those structures. Mowry Tr. 4980-82; Bonura Tr. 2351-56; CX-8008C; CX-8010C; CX-3396C.

a user interface enabling the selection of a detected structure and a linked action (1) / enabling selection of the structure and a linked action (15)

[ ] each include a user interface enabling the separate selection of a detected structure and a linked action. [ ] highlights detected structures [ ] to select them. Mowry Tr. 4980-81; CX-2193C at BONURA00000149, 151-152. Moreover, [ ] could select an action linked to the detected structure. Mowry Tr. 4982-83; CX-2192C at BONURA00000136 [

] Mowry Tr. 4980-81; Bonura Tr. 2351-52, 2355-56; CX-8008C; CX-3396C.

Selecting one of these detected structures [

] Mowry Tr. 4982-83; Bonura Tr. 2353-54; CX-8010C; CX-3401C.

an action processor for performing the selected action linked to the selected structure (1) / and executing the selected action linked to the selected structure (15)

[ ] each comprise an action processor for performing the selected action linked to the selected structure. Mowry Tr. 4983-84; Bonura Tr. 2354-55; CX-2183C at BONURA00000100-101,104; CX-8011C; CX-3402C.

[ ] initiate the performance of the selected action. Mowry Tr. 4983-84. [

] Mowry Tr. 4983-84; Bonura Tr. 2354-55; CX-8010C; CX-8011C.

a processing unit coupled to the input device, the output device, and the memory for controlling the execution of the program routines (1)

[ ] ran on a computer with a user interface and thus each used a processing unit coupled to the input device, the output device, and the memory for controlling the execution of the program routines. Mowry Tr. 4979-80.

Claim 3, 8 and 19

Apple contends that [ ] practices claim 3 because [

] Apple Br. at 135, citing Mowry Tr. 4984-85; Bonura Tr. 2358-59; CX-8007C; CX-3394C; CX-2290C. Apple has not shown conception of claim 3 because software is not included under a proper claim construction of "input device."

[ ] highlight detected structures and therefore practice claim 8. Mowry Tr. 4980-81, 4986; CX-2193C; CX-8008C; CX-3396C.

[ ] practice claim 19 by using string matching to detect structures. Mowry Tr. 4986-87 (describing string matching in the [ ]CX-2186C; CX-8008C; CX-3396C.

HTC argues that "because of evidentiary flaws at trial," Apple cannot support its argument that the invention of Pandit patent was conceived and diligently reduced to practice before the filing of the patent application. HTC Br. at 143-144. Specifically, HTC explains that Apple relies on the testimony of Dr. Bonura but the bulk of his testimony was based on screen shots from a disk that was not allowed into evidence. HTC urges that Dr. Bonura's testimony regarding the screen shots should be stricken or given no weight and similarly, Dr. Mowry's testimony about screen shots taken from Miller-1154 should be stricken or given no weight because those screen shots were never authenticated.

HTC's argument is unconvincing. The undersigned ***unconditionally*** admitted the screen shots and invited HTC to renew its objections to the extent issues regarding the workability of the CD remain unresolved. Bonura Tr. 2333-39. As noted at trial, HTC's sole basis for objection to the CD—its assertions that it could not open or understand the

contents of the CD—was inconsistent with the record, including that its expert had no issues with the timely produced CD and had in fact used and testified about them in his report. Bonura Tr. 2317-18, 2321. After HTC's objection to the CD at trial and before Dr. Mowry's testimony, Apple inquired as to whether HTC needed additional disks or information about them and HTC declined, thus waiving any "conditionality." Mowry Tr. 4944-45. HTC's objections are without merit and refuted by its own expert, as well as the personal knowledge of two separate witnesses, whose testimony was without objection.

Indeed, Dr. Bonura testified that he [

] Bonura Tr. 2307, 2309-10, 2324-25, 2328, 2338; 2347-50. Dr. Mowry subsequently testified that the screen shots admitted into evidence during Dr. Bonura's testimony were consistent with and "identical" in substance to those he prepared and relied on in forming his opinions regarding conception and reduction to practice. Mowry Tr. 4957-60. HTC made no effort to cross-examine either Dr. Bonura or Dr. Mowry regarding the substance, origins, or genuineness of these screenshots, which comes as no surprise given that HTC was well aware of and had access to the demo and prototype. *See* Bonura Tr. 2323 (HTC admitted that "[t]hose screen shots are things the experts have talked about. We all know where the screen shots came from.").

Moreover, the record is clear that HTC welcomed testimony regarding the screen shots prepared by Drs. Bonura and Mowry in lieu of admission of the disks from which they came. As HTC must concede, ***HTC did not renew its objections***. In fact, HTC expressly stated that it had no objections to the screen shots and testimony regarding them. *See, e.g.*, Mowry Tr. 4943-44 (HTC stating no objection to testimony regarding screen shots), 4950-51 (same), 4955 ("And we have no objection to the screen shots. . ."), 4957-58 (no objection to admission of screen shots CX-3382C, CX-3383C, CX-3385C, CX-3391C, CX-3394C – CX-3397C, CX-3401C, CX-3402C). In contrast to its post-hearing brief, HTC represented that it ***did not think*** the underlying CD from which the screen shots came would be useful to the undersigned. *Id.* 4955-56 (Staff representing the same). It is disingenuous for HTC to argue that the CD is unnecessary and should not be admitted because the screen shots have been admitted, but then move to strike testimony concerning the screen shots because the CD was not admitted. *See, e.g.*, Bonura Tr. 2327 (overruling HTC's objection, stating "[y]ou can't have it both ways. You wanted a screen shot. You didn't want the CD to be used, but you said that counsel can use the screen shot."). As a result, it is meritless for HTC to now raise objections to this evidence.

X. U.S. Patent No. 5,481,721

The '721 patent is entitled, "Method For Providing Automatic And Dynamic Translation Of Object Oriented Programming Language-Based Message Passing Into Operation System Message Passing Using Proxy Objects." JX-1. The invention of the '721 patent provides a method and apparatus for the distribution of objects and the

sending of messages between objects that are in different processes. *Id.,* (Abstract). *See* Spielman Tr. 2703 ("Generally, the '721 patent is about an object-oriented message that is used in an interprocess communication making use of an operating system-based message."). The invention relates to the field of object-oriented programming and distributed computing. *Id.,* col. 1, lns. 15-16 (Field of the Invention).

Apple asserts independent claim 1 and dependent claims 5 and 6. The asserted claims read as follow:

> **1**. A method for sending an object oriented programming language based message having dynamic binding from a first object in a first process to a second object in a second process, said method comprising the steps of:
>
> transmitting, using a first processing means, said object oriented programming language based message to a first proxy in said first process;
>
> using said first proxy and said first processing means, encoding said object oriented programming language based message into an operating system based message at run time;
>
> transmitting said operating system based message to said second process in said second processing means at run time;
>
> decoding, using a second process, said operating system based message into a language based message;
>
> transmitting, using said second processing means, said object oriented programming language based message to said second object in said second process;
>
> executing said object oriented programming language based message by said second object in said second process.
>
> **5**. The method of claim **1** wherein the step of executing said object oriented programming language based message further includes the steps of:

said second object determining, using said second processing means, whether additional information is needed to execute said object oriented programming language based message;

said second object generating, using said second processing means, an object oriented programming language based query if it is determined that additional information is needed;

encoding, using said second processing means, said object oriented programming language based query into an operating system based query at run time if it is determined that additional information is needed;

transmitting said operating system based query to said first process at run time, using said second processing means if it is determined that additional information is needed;

decoding, using said first processing means, said operating system based query into an object oriented programming language based query at run time if it is determined that additional information is needed;

transmitting, using said first processing means, said object oriented programming language based query to said first object if it is determined that additional information is needed.

6. The method of claim **5** further including the steps of:

said first object generating, using said first processing means, an object oriented programming language based reply to said object oriented programming language based query;

encoding said object oriented programming language based reply into an operating system based reply at run time, using said first processing means;

transmitting, using said first processing means, said operating system based reply to said second process at run time;

decoding, using said second processing means, said

operating system based reply into an object oriented programming language based reply at run time;

transmitting, using said second processing means, said object oriented programming language based reply to said second object.

JX-1 at col. 71, lns. 2-23; col. 71, ln. 46 – col. 72, ln. 24.

A. Claim Construction[50]

1. "first processing means" and "second processing means"

Claim Terms	Apple Construction	HTC and Staff Construction
"first processing means" (1, 5, 6, 19, 20, 21)	This term is not a means-plus-function term, and should be construed to mean: a processor.	*Function*: • transmitting said object oriented programming language based message to a first proxy in said first process (1, 19) • encoding said object oriented programming language based message into an operating system based message at run time (1, 19) • decoding said operating system based result into an object oriented programming language based result at run time (2, 20) • transmitting said object oriented programming language based result to said first object (2, 20) • decoding said operating system based query into an object oriented programming language based query at run time if it is determined that additional information is needed (5, 21) • transmitting said object oriented programming language based query to said first object if it is determined that additional information is needed (5, 21) • said first object generating an object oriented programming language based reply to said object oriented programming language based query (6) • encoding said object oriented programming language based reply into an operating system based reply at run time (6)

[50] A person of ordinary skill in the art would have a Bachelor's degree in computer science, or its equivalent, and at least three years in programming or software design and implementation, or its equivalent. Rinard Tr. 4369-70; Spielman Tr. 5094.

		• transmitting said operating system based reply to said second process at run time (6) *Corresponding Structure:* a computer processor configured to perform the steps set out in Figures 3A, 3B, 3C, 4 & 5; and as described in the '721 patent at col. 7:30-59, 8:29-45, 10:53-11:65, 12:21-13:15, 14:50-15:26; *see also* claim 24
"second processing means" (1, 5, 6, 19, 20, 21)	This term is not a means-plus-function term, and should be construed to mean: a processor.	*Function*: • transmitting said operating system based message to said second process at run time (1) • transmitting said object oriented programming language based message to said second object in said second process (1, 19) • encoding said object oriented programming language based result into an operating system based result at run time (2, 20) • transmitting said operating system based result to said first process at run time (2, 20) • said second object determining whether additional information is needed to execute said object oriented programming language based message (5, 21) • said second object generating an object oriented programming language based query if it is determined that additional information is needed (5, 21) • encoding said object oriented programming language based query into an operating system based query at run time if it is determined that additional information is needed (5, 21) • transmitting said operating system based query to said first process at run time if it is determined that additional information is needed (5, 21) • decoding said operating system based reply into an object oriented programming language based reply at run time (6) • transmitting said object oriented programming language based reply to said second object (6) • decoding said operating system based message into a language based message (19) • said second object executing said object oriented programming language based message and generating an object oriented programming language based result (20) *Corresponding Structure:* a computer processor configured to perform the steps set

		out in Figures 3A, 3B, 3C, 4 & 5; and as described in the '721 patent at col. 7:30-59, 8:29-45, 10:53-11:65, 12:21-13:15, 14:50-15:26; *see also* claim 24

Joint Claim Construction, App'x A at 10-12.

Apple argues that "[p]roperly understood, the 'processing means' terms should be construed as 'a processor'," citing a recent Federal Circuit decision that complainants submit rejects HTC's and the Staff's position that terms with an ordinary meaning are means-plus-function terms simply because they include the word "means." Apple Br. at 148.

HTC and the Staff contend that the "first processing means" and "second processing means" are means-plus-function terms and that the specification contains the corresponding structure for the functions performed. HTC Br. at 147-157; Staff Br. at 74-79.

For the reasons set forth below, as proposed by HTC and the Staff, the claim terms "first processing means" and "second processing means" are found to be means-plus-function terms and the functions and the structures of these terms are construed as proposed by HTC and the Staff.

As an initial matter, Apple's proposed construction and its expert's reports did not identify alternative functions to those identified by HTC and the Staff. (Apple disputed whether there were any functions at all recited in the claims, but not which functions correspond if the terms are means-plus-function). Thus, the parties' only dispute here involves structure. Apple has preserved no dispute regarding the functions of the first and second processing means.

It is settled law that "[t]he use of the word 'means,' which is part of the classic

template for functional claim elements, gives rise to a presumption that the inventor used the term advisedly to invoke the statutory mandates for means-plus-function clauses." *Sage Prods. v. Devon Indus, Inc.*, 126 F.3d 1420, 1427 (Fed. Cir. 1997) (quotes and citation omitted); *see York Products, Inc. v. Central Tractor Farm & Family Center*, 99 F.3d 1568, 1574 (Fed. Cir. 1996) (word "means" in a claim creates a rebuttable presumption that § 112, ¶ 6 applies). The presumption in favor of means-plus-function construction is rebutted if the patentees show (1) that the claim specifies no function performed by the "means," or (2) the claim itself recites sufficient structure to perform the recited function entirely. *Sage Prods.*, 126 F.3d at 1427-28.

A claim recites sufficient structure to perform a function where the claim uses language with precise structural character that can perform the entire recited function. Thus, a claim requiring the function of "tearing" recited sufficient structure where it identified "perforations" in the claim itself. *Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 531 (Fed. Cir. 1996).

With respect to the '721 patent, intrinsic evidence shows that the "first processing means" and "second processing means" are used to perform specific functions. For example, claim 1 states that the first processing means is used for the function of "transmitting said object oriented programming language based message to a first proxy in said first process." It is also used for the function of "encoding said object oriented programming language based message into an operating system based message at run time." JX-1 at col. 71, lns. 10-12.

Claims 5 and 6 likewise disclose functions performed using the first or second processing means. The disclosed functions include "determining whether additional

information is needed to execute said object oriented programming language based message," "generating an object oriented programming language based query if it is determined that additional information is needed," "generating an object oriented programming language based reply to said object oriented programming language based query," and "encoding said object oriented programming language based reply into an operating system based reply at run time." JX-1 at col. 71, ln. 46 – col. 72, ln. 23.

Additionally, the '721 patent's file history demonstrates the context in which these "means" terms were introduced to the claims. It is clear that the Applicants intended to take advantage of section 112, paragraph 6 to overcome multiple rejections of their application.

The '721 patent specification and claims underwent several rejections under section 112. JX-7 at APPHTC-00008074-8076 (rejection under section 112, paragraphs 1 & 2), APPHTC-00008204-05 (same). In order to overcome these rejections, the Applicants amended the claims to add a "means" limitation. JX-7 at APPHTC-00008182. The Applicants further argued that the specification disclosed structure for implementing the invention, including a "forward::" method that enabled certain claimed functions. JX-7 at APPHTC-00008188-8189 (identifying source code and patent specification disclosures), APPHTC-00008017 (specification discloses "[t]he receiver proxy 904 is an object that executes a *forward*:: method"), APPHTC-00008035 (source code identified to PTO invokes "forward::" method), APPHTC-00008237 (directing PTO to "proxy 904 that executes a *forward*:: method to encode the message and transmit the message to the remote object").

The Applicants presumably were aware that "means" terms carry a special

meaning in patent claims, and knew what signal the word "means" would send to the examiner. *See Brasseler, U.S.A. I. L.P. v. Stryker Sales Corp.*, 267 F.3d 1370, 1385 (Fed. Cir. 2001) ("knowledge of the law is chargeable to the inventor," and "inventors represented by counsel are presumed to know the law"). The applicants consciously chose to use "means" language; if the applicants instead wanted to describe a "computer," or a "processor," they knew how to do so. (JX-1 at col. 73, lns. 45-46 (claim 14) ("first and second computers"), col. 7, lns. 5-6 ("general purpose computer system"), col. 7, lns. 30-31 (same), col. 7, lns. 35-36 ("computer system of FIG. 4"); col. 7, ln. 35 ("CPU"); col. 7, ln. 39 (same), col. 7, ln. 49 (same), col. 7, ln. 53 ("microprocessor"), col. 7, ln. 59 (same).

Applicants, however, did ***not*** use any of those words. Rather, they used the word "means" in response to a section 112 rejection, knowing the special meaning and import that word would carry. Applicants argued that these new "means" limitations represented "a computer actually implementing these steps" – *i.e.*, a processor programmed with algorithms for implementing the claimed functions. JX-7 at APPHTC-00008188-8189. Further, the Applicants simultaneously pointed the PTO to algorithms in the specification, including "forward::", that enabled and implemented the functions carried out by the claimed "means." JX-7 at APPHTC-00008188-8189, 8017, 8035, 8237. This context does not rebut the presumption of means-plus-function treatment; it confirms that means-plus-function treatment is appropriate.

As to the structure corresponding to the functions, HTC's expert, Dr. Martin Rinard, discussed at length how portions of the patent specification provide structure for the claim 1 functions of "transmitting, using a first processing means, said object oriented

programming language based message to a first proxy in said first process" and "encoding said object oriented programming language based message into an operating system based message at run time." Dr. Rinard explained that the computer system of FIG. 4 is an element of the corresponding structure, but that this computer system and its processor require algorithms to perform the claimed functions. Rinard Tr. 4381-82.

The algorithm for the "transmitting" function is described by elements 501, 502, and 504 of FIG. 5, as well as portions of the patent specification that discuss elements of FIGS. 3A, 3B, and 3C (*e.g.*, JX-1 at col. 11, lns. 8-12), and that discuss relevant elements of FIG. 5 (*e.g.*, JX-1 at col. 14, lns. 59-67), including the step of invoking the "forward::" method. Rinard Tr. 4396-99.

Likewise, Dr. Rinard explained that the algorithm for the "encoding" function is provided by the execution of the "forward::" method, which encodes and transmits the message. Rinard Tr. 4405. The execution of the "forward::" method is described by elements 505, 506, 511, 512, and 507 of FIG. 5, as well as portions of the patent specification that discuss encoding. This included disclosures that "the present invention" was able to determine "how to encode the arguments for each message as it is encountered" so that the encoding algorithm could "'learn' how to talk to another program" during runtime (*e.g.*, JX-1 at col. 12, lns. 21-45). Rinard Tr. at 4400-04.

As Dr. Rinard explained, "forward::" implements a single, general-purpose encoding algorithm that can dynamically learn how to send new messages. It enables a proxy object to obtain the method signature for new and unknown messages, thereby learning how to send those kinds of messages. Rinard Tr. 4403, 4399-4400. As a result, the algorithms used by the "present invention" in the "transmitting" and "encoding" steps

are different than the prior art because they use no "pre-defined set of messages," and require no "code generation step." JX-1 at col. 10, lns. 1-7; Rinard Tr. 4405-07. The prosecution history confirms this. The Applicants specifically explained to the PTO that "forward::" was structure for encoding and transmitting functions: "proxy 904 that ***executes a forward:: method to encode the message and transmit the message to remote object 902***." JX-7 at APPHTC_00008258.

Apple's expert, Ms. Spielman, likewise confirmed that "forward::" is corresponding structure. She admitted that in her own alternative proposal for corresponding structure, "[t]he receiver proxy 904 is an object that ***executes a forward:: method***." JX-1 at col. 11, lns. 9-10 (emphasis added); Spielman Tr. at 2902, 2921 (discussing forward:: method; "I'm including that as part of the structure"). Ms. Spielman further acknowledged that the steps of Figure 5, including elements 502 and 504, are a flow diagram of "forward::" as used in the "present invention" of the '721 patent. Spielman Tr. 2921-22, 2924-25. Apple's expert admitted that the applicants repeatedly directed the PTO to the "forward::" method – both narrative descriptions of the method, and source code illustrating the method's use. Spielman Tr. 2902-03, 2905-06, 2917, 2923-25. These conclusions accord with Dr. Rinard's testimony. *See* Tr. 4405, 4407-08. Thus, the "forward::" method is corresponding structure.

Accordingly, as proposed by HTC and the Staff, the claim terms "first processing means" and "second processing means" are found to be means-plus-function terms and the functions and the structures of those terms are construed as proposed by HTC and the Staff.

As noted, Apple submits that the plain language of the method claims at issue

supports its construction of "a processor," arguing that the Federal Circuit recently held that "claiming a means for processing or processing means 'may simply claim a general purpose computer, although in means-plus-function terms'." Apple Br. at 148, citing *In Re Katz*, 639 F.3d 1303, 1316 n. 11 (Fed. Cir. 2011).

Apple's position that "[t]hese terms are not means-plus-function terms and should be construed to mean: a processor" is unconvincing. Apple Br. at 147. In that regard, *Katz* held that all terms at issue were means-plus-function terms. 639 F.3d 1303, 1315-16. These terms included (1) means-plus-function terms reciting specialized computer-implemented functions that required algorithms, and (2) means-plus-function terms reciting potentially generic functions that hardware alone could perform.[51] Thus, *Katz* does not support Apple's view that these terms are not means-plus-function terms.

Apple next asserts that "invoking means-plus-function treatment in a method claim requires that both a method step and a separate 'function'" be present in the claim. Complainants argue that the only "functions" that HTC identifies are the method steps of the asserted claims. Apple Br. at 150, citing *Epcon Gas Sys. Inc. v. Bauer Compressors Inc.*, 279 F.3d 1022, 1028 (Fed. Cir. 2002).

Apple misreads *Epcon Gas*. *Epcon Gas* addressed "step plus function" claims, ***not*** "means plus function" claims. *Id.* at 1028 (noting distinction between means-plus-function form, which uses "means" language, and step-plus-function form, which uses

[51] *Katz* also held that a "processing" function may still require a particular algorithm, depending on how that function is described in the patent. *Katz*, 639 F.3d 1303, 1317 (remanding to district court for further claim construction, with instruction to "determine whether the functions [of 'processing' 'storing' and 'receiving'] . . . can be performed by a general purpose processor or, instead, constitute specific computer-implemented functions as to which corresponding algorithms must be disclosed.").

"step for" language). The method claim in *Epcon* ***did not include the word "means,"*** and the Court's analysis in *Epcon* related solely to "step-plus-function" format in the context of a method claim. *Id.* at 1025-26 (reproducing claim 2, which contained no "means" term), 1028 (claim 2 not in step-plus-function format where "claim includes no words indicating 'step plus function' form, such as 'step for'").

Apple also contends that "[t]he specification and file history confirm that 'processing means' refers to a general purpose computer, or in other words, 'a processor'. First, the specification explains that the 'invention may be implemented in any type of computer system or programming or processing environment' and that 'any [] suitable microprocessor or microcomputer may be utilized.' Second, the file history demonstrates that both the Examiner and the Applicants understood 'processing means' to refer to 'a computer' or 'a processor' and intended it to have that meaning." Apple Br. at 149 (citations omitted).

As noted above, the presumption of means-plus-function construction can be rebutted if the claim itself recites sufficient structure to perform the recited function entirely. *Sage Prods.*, 126 F.3d at 1427-28. In that regard, Apple argues that the term "processing means" imports sufficient structure to rebut this presumption because the "first processing means" and "second processing means" would be understood as a general purpose computer processor, which Apple asserts is sufficient structure to perform the claimed functions. Spielman Tr. 2868-69, 2872-74 ("transmitting using a first processing means would be understood to be a processor").

Apple's argument is erroneous. A general purpose computer processor, without additional structure in the form of an algorithm, cannot perform the functions recited in

claim 1 of the '721 patent. Rinard Tr. 4377-79. Indeed, Ms. Spielman admitted that a processor, on its own, cannot perform the "transmitting" function in claim 1 because this function requires software containing an algorithm. Spielman Tr. 2885-86 ("Q. [A processor] doesn't transmit said object-oriented programming language-based message? *A.* ***No, that's the software that's doing that.***"). Ms. Spielman further admitted that a person of ordinary skill would need to "infer" the appropriate undisclosed algorithm to implement that function.

> Q. So is it your opinion that someone could infer [an algorithm for "transmitting"], but it is not in there? Or do you think it is actually in the words here?
>
> A. I think it is in the – I think it is in the words ***by inferring*** from someone of ordinary skill.
>
> Q. Which words?
>
> A. What I just stated, 'transmitting using a first processing means,' somebody of ordinary skill would understand that they would be able to implement transmitting from that using a processor.

Spielman Tr. 2880; *see* Tr. 2788, 2872-80.

In addition, Apple's arguments regarding the file history are misplaced. As noted above, the '721 claims were rejected multiple times under § 112. The Applicants responded by adding "means" terms to the claims and in so doing specifically elected to use "means" language. If they wanted to describe a "computer," or a "processor," they knew how to do so. In fact, where the Applicants wanted to claim a computer, they did so explicitly; for example, claim 14 claims "first and second computers." The Applicants did ***not*** use those words in the asserted claims. They instead used the term "means," with the full knowledge of the special meaning and import that a "means" term would carry with an Examiner evaluating a response to a section 112 rejection.

Moreover, Apple's argument that "computer" and "processor" mean the same thing, and that each of these terms is synonymous with "processing means," must fail. Claim 14 uses the word "computer," but claims 1, 5, and 6 do not – further supporting HTC's proposed construction, which differentiates these terms. *See Forest Labs., Inc. v. Abbott Labs.*, 239 F.3d 1305, 1310 (Fed. Cir. 2001) ("Where claims use different terms, those differences are presumed to reflect a difference in the scope of the claims.").

Apple's emphasis on the Examiner's reference to "a computer-implemented action" is likewise unpersuasive. A "computer-implemented action" describes a *function*, not a processor. The Examiner's statements ask for clarity on the *function*, which the Examiner noted was *computer-implemented.* JX-7 at APPHTC_00008205. This discussion of the claims is not only consistent with means-plus-function treatment, but echoes the Federal Circuit's words describing means-plus-function terms. *See, e.g., Aristocrat*, 521 F.3d at 1333 (discussing "a § 112 ¶ 6 claim for a computer-implemented function").

Citing various examples, Apple further claims that "the 'processing means' terms cannot be in means-plus-function form because HTC cannot identify a legally proper structure corresponding to the supposed 'function'." Apple Br. at 150-152.

As discussed above, the evidence shows that HTC and the Staff identified the appropriate corresponding structure. Apple argues that certain elements of HTC's structure are not necessary to perform the claimed functions, including boxes 505, 506, 512, and 513 of FIG. 5. As Dr. Rinard explained, however, these portions of "forward::" are clearly corresponding structure. They represent steps used by "forward::" to determine "how to encode the arguments for each message as it is encountered" so that

the encoding algorithm can "'learn' how to talk to another program" during runtime. JX-1 at col. 12, lns. 21-45; Rinard Tr. 4400-04. Without performing these functions, "forward::" could not "locate code that responds to a variety of different messages, thus avoiding the necessity of having to write a separate method for each selector." JX-1 at col. 14, lns. 50-53. This functionality is not merely useful; the Applicants themselves used it to distinguish the patent over the prior art. JX-1 at col. 10, lns. 1-7 (describing advantages over prior art, which had "no pre-defined set of messages" and "no code generation step"). As a result, this structure is linked and associated with the claims. Rinard Tr. 4405.

Apple further argues that HTC and the Staff cannot propose the same structure for the "first" and "second" processing means. Apple Br. at 151. This argument fails to appreciate the fact that the patent itself states that the "first processing means and said second processing means *are the same processing means*." JX-1 at col. 72, lns. 25-27 (claim 7), col. 76, lns. 1-3 (claim 24) (emphasis added). Moreover, FIG. 5 links "forward::" with *multiple* functions, including functions performed by the first and second processing means. There is no route other than "forward::" to carry out these functions.[52]

Further, Apple ignores the recursive operations required of the first and second processing means. The patent uses "nested, recursive, remote messages," and notes that "messages may be nested arbitrarily deep." JX-1 at col. 11, lns. 21-26. These "nested, recursive, remote messages" are passed using the algorithms executed by the first and

[52] *See* JX-1 at FIG. 5 (illustrating "first processing means" functions of transmitting and encoding, including at boxes 502 and 504, and "second processing means" functions of transmitting to the process and then to the object, including at boxes 507 and 508).

second processing means, including to obtain information needed by remote objects. JX-1 at col. 11, lns. 54-65. Because multiple nested calls may go back and forth, both the first and second "means" must have identical programming; otherwise only one "means" would be able to encode and transmit a message, and the other "means" could not recursively "send other messages back to the local process . . . before providing a reply to the initial message." *Id.*

Apple's arguments regarding claim 5 structure likewise ignore the recursive nature of the claims. A recursive function makes a call *to itself. See, e.g.*, RX-0902 at 109-110. Claim 5 is a recursive call to the structure used in claim 1. Ms. Spielman admitted this during the hearing, noting that the "same mechanism is used" in claims 1, 5, and 6 to perform remote method invocation. Spielman Tr. 2745-48. This comports with the file history, in that the Applicants argued claim 5 was enabled by "the recursive nature of the present invention." JX-7, APPHTC_00008278; *id.* APPHTC_00008237 (claim 5 enabled because "[w]here additional information is needed, the present invention supports nested, recursive, remote messages").

The structure for claim 5 *must* be the *same structure* as for claim 1, because claim 5 recites the *recursive execution of the same structure* used in claim 1. JX-1 at col. 71, ln. 46 – col. 72, ln. 6. This includes the "determining" and "generating" functions of claim 5, which the patent describes as part of this recursive operation. JX-1 at col. 11, lns. 8-20 (disclosing use of "forward::" method to encode and transmit a message), col. 11, lns. 21-42 (describing recursive execution of same method), col. 11, lns. 54-65 (generating and determining explained as part of "recursive nature of the present

invention").[53]

Importantly, the '721 patent illustrates "forward::" as the sole algorithm for the claimed functions. JX-1 at FIG. 5. The prosecution history explicitly states that "proxy 904 that executes a forward:: method *to encode the message and transmit the message* to remote object 902." JX-7 at APPHTC_00008258. The patent claims that "forward::" and its capabilities distinguished it over the prior art (JX-1 at col. 10, lns.1-7), and the patentees repeatedly pointed the Examiner during prosecution to "forward::" as described in the specification and as used in the source code appendix. Even Apple's expert admitted that "forward::" is corresponding structure. Spielman Tr. 2902, 2921. Apple's arguments regarding structure other than "forward::" do not alter the core role of "forward::" in carrying out the claimed functions.

Finally, Apple argues that HTC is trying to "change" its construction, citing testimony regarding the "mouse" in FIG. 4. Apple Br. at 152. Apple's argument is unpersuasive. The entirety of HTC's proposal identifies appropriate corresponding structure. This includes FIG. 4, which is "a block diagram illustrating a general purpose computer system for implementing the present invention." JX-1 at col. 7, lns. 5-6. This computer system is linked and associated with the recited functions. It is what "implement[s] the present invention." *Id.* Neither HTC, nor Dr. Rinard, has ever stated that no other "general purpose computer system" could be equivalent to the system in

---

[53] Additionally, claim 5 is *part of* the steps recited in claim 1 and recites functions that occur *during* "the step of executing" in claim 1, and the "said first processing means" and "said second processing means" in claim 5 refer to the same "first processing means" and "second processing means" in claim 1. JX-1. These "means" *must* contain the structures that they use during the "step of executing" recited in claim 1, including structures for functions that are part of this "step of executing."

FIG. 4. Dr. Rinard's testimony on what is "required" by the claims merely notes that computer systems without a "mouse" could still practice the invention. Rinard Tr. 4604-05.

2. "proxy"

Claim Term	Apple Construction	HTC and Staff Construction
"proxy"	plain and ordinary meaning: an object that acts as a local receiver for objects in the local process on behalf of another object	an object created in the same process as a sender object and acts as a local receiver for all objects in the process

Joint Claim Construction, App'x A at 10.

As proposed by Apple, the claim term "proxy" is construed to mean "an object that acts as a local receiver for objects in the local process on behalf of another object."

In general, claim terms are to be given their ordinary meaning to a person of skill in the art. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005). Here, both experts agree on the plain and ordinary meaning of "proxy." Ms. Spielman explained that, as used in the art, the point of a proxy is "to act on behalf of another object." Spielman Tr. 2757-58. Dr. Rinard agreed, admitting that the "general understanding of proxy" is "something that represents something else." Rinard Tr. 4616.

The specification confirms that "proxy" should be given its plain and ordinary meaning, as it repeatedly uses the term to refer to an object that represents, or acts for or on behalf of something else. For example, the specification describes how a "local object communicates with a 'proxy' ***that locally represents the remote object.***" JX-1 at col. 3, lns. 59-61. Likewise, in describing an embodiment of the invention, the specification

states that "[f]or a task to communicate with a 'receiver' object in another address space it must . . . then create a local 'proxy' ***for the object.***" JX-1 at col. 9, lns. 17-20. Further, in when describing how proxies are created the specification notes that "[p]roxies ***for any other objects*** to be communicated are created dynamically as they are encountered." JX-1 at col. 12, lns. 15-17. The relationship between a proxy and an object it represents is illustrated in FIGS. 3A-3C, where each "proxy" is shown aligned with the object for which it is a proxy. JX-1 at FIG. 3A-3C; Spielman Tr. 2758-59.

HTC and the Staff propose a construction for "proxy" that reads out any requirement that a proxy act on behalf of something else and, instead, requires only that a proxy "act[] as a local receiver for all objects in the process." Both experts agree that this is not the term's plain meaning. Rinard Tr. 4616; Spielman 2756. A deviation from a term's plain meaning is only appropriate if the patentee acted as his own lexicographer, by using a "special definition of the term [that] is clearly stated." *Laryngeal Mask. Co. Ltd. v. Ambu A/S*, 618 F.3d 1367, 1372 (Fed. Cir. 2010) (citation omitted). HTC and the Staff have not attempted to show that the '721 patent "clearly state[s]" a special definition for the term "proxy" and have not argued that the patentee acted as his own lexicographer.

The evidence that HTC cites in support of its position is a single sentence from the Abstract (and the Summary of the Invention), which states that a "proxy acts as a local receiver for all objects in the local program." JX-1 at Abstract; col. 6, lns. 56-57. However, this is consistent with the plain meaning as it describes the proxy encoding a message and transmitting it to software in another process so it can be executed there – that is, acting "on behalf of" the receiving object in the second process. JX-1 at Abstract.

HTC cannot show that the '721 patent's use of the term "proxy" deviates from the plain and ordinary meaning of that term.

"Unicity"

HTC and the Staff argue for a revised construction to add a new limitation – "unicity." This term, however, is not related to the claims and is found nowhere in the language of HTC's construction.[54] As explained below, HTC's proposal that the term "proxy" itself, properly construed, required "unicity" was an untimely change of position and is, therefore, rejected. Rinard Tr. 4411-16.

HTC's attempt to inject "unicity" into claim 1 began with its opening expert report. From that point to trial, HTC argued that "unicity" was required by the "decoding" step of claim 1 – a method step that does not use the term "proxy." In fact, HTC's expert explicitly "note[d] that the term 'unicity' is not part of the claim construction for the claim term 'proxy'." Rinard Tr. 4618. Instead, Dr. Rinard stated that this property ***"is ensured by the decoding algorithm disclosed in the '721 patent to perform the decoding function***." Rinard Tr. 4618 (quoting Rinard 2/15/11 Rebuttal Rpt. at 98 n. 43). In keeping with this position, Dr. Rinard admitted that "unicity" was not part of the construction for "proxy." Rinard Tr. 4619 ("Q: And I note that you indicate in the footnote on this page that unicity is not part of the claim construction [of] proxy? A: Yes.").

Moreover, the Staff's examination confirmed that, up until trial, Dr. Rinard's position was that "unicity" was part of the "decoding" step, rather than of the

[54] HTC and its witnesses referred both to "unicity" and a "one-to-one relationship" between proxies and objects they represent. Dr. Rinard agreed these refer to the same concept. Rinard Tr. 4610.

construction for "proxy." Dr. Rinard testified:

> Q: However, you indicate that *unicity is achieved by the decoding algorithm* that's disclosed in the patent *that performs the decoding function*? Do you see that?
>
> A: Yes.

Rinard Tr. 4643.

In any event, HTC's attempt to read "unicity" into the construction of the term "proxy" is inconsistent with the plain language of the claims. Claim 1 recites "a first proxy." Dr. Rinard conceded that the ordinary meaning of "proxy" in computer science does not require a "one-to-one" relationship. Rinard Tr. 4616. The fact that the claim recites "***a*** proxy" supports the conclusion that as a general rule, "an indefinite article 'a' or 'an' in patent parlance carries the meaning of 'one or more'" – not one and only one as HTC proposes. *KCJ Corp. v. Kinectic Concepts Inc.*, 223 F.3d 1351, 1356 (Fed. Cir. 2000). Thus, as long as "a first proxy" exists, the claim is satisfied – the presence of other "proxies" is irrelevant.

While HTC seems to suggest that "unicity" is required by the phrase "for all objects" in its construction, whether a particular object is "a local receiver for all objects in the process," has nothing to do with whether other distinct objects also satisfy that criteria. Significantly, HTC's proposed construction never mentions "unicity," nor does it have any language requiring a "one-to-one" relationship between a proxy and the object it represents.

Importantly, a unicity requirement is inconsistent with the specification of the '721 patent. HTC and the Staff ignore that the single reference in the specification to "unicity" relates only to a specific set of circumstances – "[w]hen an object is [*sic*]

passed by reference is decoded." JX-1 at col. 10, lns. 57-60. The '721 patent, however, explicitly says that an object need not be passed by reference: "***[i]n the present invention***, an implementation of an object class is free to choose to implement a different encoding scheme***, for example one that encodes the object by value***." JX-1 at col. 12, lns. 64-66 (emphasis added). Likewise, the '721 patent states that not all proxies are created in the decoding step: "The creation of the ***first proxy is provided automatically in the present invention.***" JX-1 at col. 11, lns. 66-67 (emphasis added). Notably, these alternative embodiments for passing objects and creating proxies – with no mention of unicity – are described as part of "the present invention." JX-1 at col.11, lns. 66-67; col. 12, lns. 64-66. This undercuts HTC's argument that unicity is required because the single embodiment HTC focuses on is described as "the present invention." HTC Br. at 159. Embodiments with, and without, "unicity" are "the invention."

Additionally, the Staff does not explain why unicity arises out of the construction it proposes. Also, HTC's inaugural effort in its Post-hearing brief is conclusory and unclear, as it must be inasmuch as "one-to-one" and "unicity" are simply not required by the words proposed.

Under HTC's and the Staff's construction, an object is a proxy if it is "***a*** local receiver for all objects in the process." While HTC simply assumes that only one object can be "a local receiver" for all other objects in the process, this is wrong. HTC Br. at 158. Likewise, HTC states that "one proxy ('a proxy object') is created to represent a remote object, and that one proxy ('***this***' proxy – which is '***an*** object,' not '***several objects***') represents the remote object." HTC Br. at 158 n.36. Those words do not appear in the claims or HTC's construction.

In sum, whether one proxy object is "a local receiver for all objects" has nothing to do with whether another proxy object is also "a local receiver for all objects." Indeed, Ms. Spielman explained why a system might have multiple objects that act as local receivers for all objects in the local process – to perform "load balancing." Spielman Tr. 2751.

HTC and the Staff also assert that Ms. Spielman believed that unicity is required by the claims, referring to statements made in her opening expert report. HTC Br. at 158; Staff Br. at 81. HTC's and the Staff's argument that Ms. Spielman agrees with their construction is without merit.

In that regard, the Staff's assertion that "Apple's expert[] originally agreed that the claims require 'unicity' of proxies" is based on a reference in Ms. Spielman's opening expert report to a "one-to-one relationship." Staff Br. at 81. This statement was discussed extensively at the hearing, through direct and cross-examination, and Ms. Spielman repeatedly testified that she did not, and had never, believed that "unicity" was a requirement of the claims. *See* Spielman Tr. 2952. Similarly, when asked whether "the concept of unicity was in the claims," Ms. Spielman explicitly stated that "that term [unicity] is not required, nor is the functionality part of the claim." Spielman Tr. 2749.

Accordingly, the claim term "proxy" is construed to mean "an object that acts as a local receiver for objects in the local process on behalf of another object."

3. "operating system based message"

Claim Term	Apple Construction	HTC Construction	Staff Construction
"operating system based	Plain and ordinary meaning:	Plain and ordinary meaning:	Plain and ordinary meaning:

message"	A message that is based, or dependent, on an operating system	Data sent by an operating system	A message that is system-dependent

Apple Br. at 158; HTC Br. at 162;[55] Staff Br. at 82.

As the Staff explains, "All parties originally agreed that this term should be given its plain and ordinary meaning. However, it is clear that the parties' experts disagree on exactly what that plain meaning is." Staff Br. at 82. Indeed, that is the case.

As proposed by Apple (and in accord with the Staff's proposal), the claim term "operating system based message" is construed to mean "a message that is based, or dependent, on an operating system." The plain language of the claim term "operating system based message" indicates a message that is based on an operating system or, in other words, dependent on an operating system.

The specification of the '721 patent describes a Mach message as an example of the claimed "operating system based message." JX-1 at col. 11, lns. 12-16 ("In the preferred embodiment of the present invention, the proxy 904 encodes the message, (which is a language based message such as, for example, an objective C message), as an operating system message, such as a Mach message 907"). Consistent with the specification, Ms. Spielman explained that Mach messages have a specific message format that is based on, and understood by, the Mach operating system. Spielman Tr. 2852, 2855.

[55] HTC states, "HTC proposes that 'operating system based message' is a broad term with a simple plain and ordinary meaning: a message based on an operating system." HTC, however, also inconsistently states that "the operating system based message is data sent by the operating system." *See* HTC Br. at 162.

Moreover, that the claim term "operating system based message" means "a message that is based, or dependent, on an operating system," is supported by the '721 patent's file history. During prosecution, the Examiner rejected certain claims over a reference ("McCullough") relating to a Distributed SmallTalk system. JX-7 at APP_HTC00008203-10 ('721 File History, June 2, 1994 Office Action). In rejecting the claims, the Examiner equated the "operating system based message" with a "system-dependent" form of a message, which he claimed to find in McCullough's use of an "Ethernet packet." *Id*; Spielman Tr. 2783-84.

In responding to this rejection, the Applicants adopted the Examiner's understanding that an "operating system based message" was system based or "system-dependent." The Applicants then argued that the standardized Ethernet packets identified by the Examiner were not, in fact, "system-dependent," as required by the claims:

> Regarding the McCullough reference, ***Applicant contends that it does not teach a system-dependent form of the message. In fact, McCullough teaches away from a system-dependent form of the message. . . . An Ethernet package is not system dependent. Ethernet is a standardized communication protocol.*** It is therefore not system-dependent. There is nothing in McCullough that describes the encoding of an object oriented programming language based message into an operating system based message as provided in claim 1. . . .

JX-7 at APP_HTC00008240 ('721 File History, Aug. 23, 1994 Amendment and Response at 10); *see* Spielman Tr. 2784-85.

The Examiner agreed that this argument overcame his rejection over McCullough. JX-7 at APP_HTC00008269 ('721 File History, Dec. 22, 1994 Office Action at 5);

Spielman Tr. 2785.[56] Thus, the prosecution history shows that both the Applicants and the Examiner agreed that an "operating system based message" must be system-based, or "system-dependent."

Additionally, as Ms. Spielman explained, messages that are based on an operating system have a format that is understood by, or dependent on, that system. Thus, whether a message is understood by an operating system is evidence of whether it is an operating system based message. Spielman Tr. 5066-67.

HTC's attempt to equate a "message" with any "data" that is sent by an operating system is incorrect. As explained by Inventor Avadis Tevanian, one of the developers of the Mach operating system, not all operating systems are message based. RX-6558C, Tevanian Dep. at 281. Message-based operating systems receive data in discrete, well-defined "messages;" non-messaging systems can simply receive unrecognized data with no known beginning or end and undefined contents. Spielman Tr. 5067-68.

HTC's proposed construction of "message" would cover data that is not a message. HTC claims that this term covers generic protocols such as the User Datagram Protocol ("UDP") which, as Ms. Spielman explained, are specifically designed to be system-independent. Spielman Tr. 5069-70. If the Applicants had wanted to claim any "data sent by an operating system," they could have done so. Instead, they used the narrower "operating system based message."

HTC also accuses Apple of changing its claim construction position. HTC Br. at

---

[56] The Office Action stated that this rejection had been overcome by "amendments." However, the Applicants had not made any amendments relevant to the McCullough rejection. The only change to claim 1 – changing the word "providing" to "transmitting" – had nothing to do with the McCullough rejection. See Spielman Tr. 2785.

163-164. This accusation is not supported by the record evidence. What HTC presents as Apple's "self-serving shifting proposals" are various forms of evidence that something is, or is not, based or dependent on an operating system. Thus, the ability of an operating system to understand a message is evidence that a message is an "operating system based message." Spielman Tr. 5066-67. Similarly, that a protocol is "standardized," is evidence that it is not based on, or dependent upon, an operating system. Spielman Tr. 2783-85, 5069-70.

Furthermore, although an operating system based message is not restricted to messages unique to a single operating system, evidence that a particular format is used in a heterogeneous environment, namely one with multiple different operating systems, suggests that the message is not based on an operating system. Spielman Tr. 2973-74, 5079-81. Thus, the evidence shows that Apple has consistently argued that "operating system based message" should receive its plain and ordinary meaning – *i.e.,* "a message that is based, or dependent, on an operating system."

Next, HTC asserts that the file history supports its position because the patent Examiner's multiple rejections over prior art that disclosed operating system based messages emphasized the "primitives" those systems used to send messages. HTC Br. at 162-163. HTC contends that the file history shows that the rejection over McCullough was overcome by amendments, not by arguments, and Apple's proposed construction is therefore inconsistent with the disputed term's plain and ordinary meaning. *Id.* at 164.

HTC's file history argument is without merit. HTC's contention that the "file history shows that the rejection over McCullough was overcome by amendments, not by arguments" is wrong because (as noted earlier) there were no amendments made to

overcome the rejection. Indeed, the response in question made only two changes to claim 1 – both swapping the word "transmitting" for "providing." JX-7 at APPHTC_00008231-32. These changes explicitly responded to an indefiniteness rejection that "the steps involving 'providing' are unclear" and had nothing to do with the prior art rejection over McCullough. JX-7 at APPHTC_00008205, 8238.

Likewise, while HTC focuses on a sentence in the file history that "Applicant's arguments … have been fully considered but they are not deemed to be persuasive," was not directed at the McCullough reference. JX-7 at APPHTC_00008286. The "not deemed to be persuasive" remark related to the arguments with respect to the Bennett reference. *Id.* at APPHTC_00008270. It cannot reasonably be disputed that the Applicant's response to the McCullough rejection was "persuasive," as the Examiner concluded that the rejection "has been overcome." *Id.* at APPHTC_00008269.

Accordingly, the claim term "operating system based message" is construed to mean "a message that is based, or dependent, on an operating system."

4. "dynamic binding"

Claim Term	Apple Construction	HTC Construction	Staff Construction
"dynamic binding"	Permitting messages to be bound to the actual methods to be invoked during runtime	Binding messages to the actual methods to be invoked depending on the class of the receiver, allowing objects of any class to be substituted for the target object at runtime	Permitting messages to be bound to the actual methods to be invoked depending on the class of the receiver during execution of a program

Joint Claim Construction, App'x A at 10.[57]

Similar to the construction proposed by HTC, the claim term "dynamic binding" is construed to mean "permitting messages to be bound to the actual methods to be invoked depending on the class of the receiver, allowing objects of any classes that implement a given method to be substituted for the target object at run time."

The specification of the '721 discloses the following with respect to "dynamic binding" of messages:

> One feature of objective C is "dynamic binding" of messages to the actual methods to be invoked, depending on the class of the receiver. A programmer writing code in objective C can create code that sends a message "doSomething" to an object. The actual method corresponding to the class of the target object does not need to be determined until the message must be sent. This allows objects of any classes that implementing the doSomething method to be substituted for the target object at run time without having to modify the part of the program that sends the message. Also, in objective C, programs have run time access to method "signatures," that encode a method's argument and return types for each class. The method signature provides a way for two programs to agree on the format of messages. Moreover, there is a way to extract arguments from the stack using the signature.

JX-1 at col. 8, lns. 29-45 (emphasis added).

Thus, the specification shows that "dynamic binding" of messages is integrally linked to "the actual methods to be invoked." The specification confirms the "actual method corresponding to the class of the target object does not need to be determined until the message must be sent." The specification also shows that this delayed determination of the actual method "allows objects of any classes" that implement a

[57] The Staff did not address this claim term in its briefs.

given method "to be substituted for the target object at run time."

Additionally, a technical treatise cited in the '721 patent also discusses when the binding is done in dynamic binding. Immediately before its only discussion of the term "dynamic binding," the specification references a textbook by Brad Cox:

> The preferred embodiment of the present invention implements an object-oriented programming system using objective-C language. . . . This language model is partially derived from SmallTalk and has been described in "Object-Oriented Programming: An Evolutionary Approach," Brad J. Cox, Addison-Wesley 1986.

JX-1 at col. 8, lns. 18-27 (emphasis added).

The Cox textbook provides insight into the meaning of the claim term "dynamic binding." The textbook states: "[d]elayed binding (also known as late binding or dynamic binding) means that binding is done later than compile-time, generally when the program is running." CX-780 at 13; Rinard Tr. 4621.

Additionally, statements by NeXT (the assignee of the '721 patent and a party to this investigation) provide further guidance relating to the claim term "dynamic binding." A NeXT publication explained the distinction between "late binding" systems, which use constrained languages, and "dynamic binding," which uses unconstrained languages. RX-84 at BOYNTON000001159 (NeXTSTEP Object-Oriented Programming and the Objective C Language (Release 3, 1990) at 21).

Specifically, NeXT defined "dynamic binding" as an "unconstrained" form of binding that was free of "strict compile-time type constraints." *Id.* This is distinct from

"late binding" that "carries with it strict compile time type constraints." *Id.*[58] NeXT's definition of "dynamic binding" is consistent with the '721 patent specification, which similarly describes an unconstrained binding system that "allows objects of any classes" that implement a given method "to be substituted for the target object at run time." JX-1 at col. 8, lns. 29-45; Rinard Tr. 4452-55.

Apple argues that "the NeXTSTEP book actually provides a definition for dynamic binding in its glossary, where it defines 'dynamic binding' nearly identically to Apple." Apple Br. at 162. The NeXTSTEP book defines "dynamic binding" in its glossary as follows: "Binding a method to a message – that is, finding the method implementation to invoke in response to the message – at runtime, rather than at compile time." RX-84 at 229.

Apple's argument falls short, however. This definition in the NeXTSTEP glossary does not negate what the very same book states on page 21: "As discussed here (and implemented in Objective C), 'dynamic binding' is unconstrained." As noted above, this explanation by NeXTSTEP is consistent with the '721 patent specification, which similarly describes a "dynamic binding" system that "allows objects of any classes" that implement a given method "to be substituted for the target object at run time."

---

[58] As seen from the discussions in the Cox and the NeXTSTEP publications, there is a conflict between the two publications. On the one hand, Cox states that "late binding" is synonymous with "dynamic binding." NeXTSTEP, however, explicitly states that while "late binding" is "'dynamic' in the sense that it happens at run time, it carries with it strict compile time type constraints. As discussed here (and implemented in Objective C), 'dynamic binding' is unconstrained." Thus, NeXTSTEP makes clear that "dynamic binding" is unconstrained.

Accordingly, the claim term "dynamic binding" is construed to mean "permitting messages to be bound to the actual methods to be invoked depending on the class of the receiver, allowing objects of any classes that implement a given method to be substituted for the target object at run time."

B. Infringement

The accused HTC devices do not contain the required limitations "first processing means" or "second processing means" or "dynamic binding" of independent claim 1, as properly construed. Thus, the devices do not infringe claim 1. The devices likewise do not infringe claims 5 or 6, which depend from claim 1, and which likewise require these limitations.

The preamble of claim 1 recites:

> **A method for sending an object oriented programming language based message having dynamic binding from a first object in a first process to a second object in a second process, said method comprising the steps of:**

Apple has not satisfied the preamble because accused HTC devices do not support the required "dynamic binding."

Android does not support the "dynamic binding" required by claim 1. Android is based on the Java and C++ programming languages, which do not support dynamic binding, unlike Smalltalk or Objective C. Rinard Tr. 4478-79. At compile-time, these languages constrain the types of messages that can be sent to a given object while a program is running to a predefined set. Rinard Tr. 4450-52, 4478-79.

For example, if a programmer writes code that specifies that it will send a "fly" message to an airplane, the compiler will not allow a bird object to be substituted for the

airplane object while a program is running, even though the bird object can understand the "fly" message. For the compiler to accept such a substitution, the programmer would have to modify and recompile the source code to specify that the "fly" message could be sent to a bird object. With dynamic binding, while a program is running, the program could send the "fly" message to any object that implements the "fly" message, including a "bird" object, with no need for a programmer to modify the code. *Id.*

[

]

In addition, Apple failed to show that Android meets the "dynamic binding" limitation under the doctrine of equivalents. Constrained languages such as Java and C++ are substantially different from unconstrained languages that support dynamic binding. Rinard Tr. 4479-80. Programs written in languages with strict compile-time constraints are not interchangeable with those written in unconstrained languages. *Id.* A compiler designed for a language that uses type constraints would not be able to properly type check a program written for an unconstrained language. *Id.*

Moreover, the function of the dynamic binding of these unconstrained languages is substantially different from the constrained binding in Android. Unconstrained languages allow a first object being sent a message to be substituted with any other object that implements a method corresponding to that message (*e.g.*, having a compatible method signature). Android's substitution is constrained by the compile time

requirement that the substituted object be in the same class hierarchy or declare the same Java interface as the target object. The way in which the binding occurs is substantially different because in unconstrained languages, the compiler is not involved in the binding of these messages to the target object. The result is substantially different because with unconstrained languages that support dynamic binding, the programmer is afforded more flexibility, but there is an increase in overhead and a higher chance for errors. *Id.*

The first, second, and third elements of claim 1 recite:

> **transmitting, using a first processing means, said object oriented programming language based message to a first proxy in said first process;**
>
> **using said first proxy and said first processing means, encoding said object oriented programming language based message into an operating system based message at run time;**
>
> **transmitting said operating system based message to said second process in said second processing means at run time;**

Apple has not satisfied these claim elements because accused HTC devices do not contain the required "first processing means" and "second processing means."

The accused HTC devices do not contain the "first processing means" or the "second processing means." The accused Android devices lack structure that is identical or equivalent to the required "forward::" method. Dianne Hackborn, the Google engineer who first developed Binder, confirmed that Android lacks the features that "forward::" provides – *i.e.*, no code generation and no predefined set of messages. Android's Binder implementation generates code to create predefined interfaces that only handle predefined messages. Hackborn Tr. 4263-64, 4277-78, 4288-89. These generated pieces of code are

called "stubs." *Id.*, Tr. 4280-81. Android "stubs" assign a number to each type of message they understand, and the "stub" Android generates can only understand messages corresponding to the numbers assigned when that "stub" was first generated. *Id.*, Tr.4286

Thus, Android's Binder implementation cannot dynamically learn how to send new types of messages. *Id.*, Tr. 4288-89. Ms. Hackborn illustrated this "stub" approach to predefining a set of messages; Android offers an AIDL tool that takes an input file defining a protocol for communication, uses that protocol to assign numbers to each type of message in the protocol, and then generate "stubs" that use the assigned numbers to identify specific methods. RX-5806. Ms. Hackborn's testimony shows that Android uses the very "prior art approach" for IPC that the patent specifically teaches away from; Android "specif[ies] protocols" that identify a fixed set of messages that will be sent between processes, and then "generat[es] . . . stubs" that will send and receive that fixed set of messages. JX-1 at col. 3, lns. 41-51.

Dr. Rinard concurred with Ms. Hackborn's testimony, concluding that Android lacks the features of "forward::" described in the patent. Rinard Tr. 4462-63, 4456-57. In Android, there is no single general-purpose encoding algorithm equivalent to "forward::" that can learn new messages. Android generates multiple pieces of "stub" code that can only encode the messages predefined in a particular interface. *Id.*, Tr. 4458-61; RX5806 at 1, RX6454 at 5-6.)[59]

[59] Moreover, Android has no test to determine whether a proxy implements a method, and therefore does not use this test to trigger an all-purpose encoding algorithm for every message that a proxy receives. That mechanism is described at element 502 of FIG. 5 and is used in the patent to forward all messages that the proxy receives. In contrast,

Apple's expert, Ms. Spielman, agreed that Android does not use a forward:: method or its equivalent, because it has no general-purpose algorithm to encode and transmit arbitrary messages, but instead uses predefined message interfaces. She testified:

> Q. Now, you don't have a view on whether Android performs steps 502 or 504 [invoke "forward::"], do you?
>
> A. From the code I have examined, ***it does not perform those because the interfaces are predefined.***

Spielman Tr. 2929; *see id.* at 2930 ("If you are talking about the invoke forward::, that's not a method that is implemented in Java."). Ms. Spielman likewise agreed that Android does not test for whether an object implements methods in the manner described in FIG. 5, element 502 – a test that is not necessary in constrained language like Java and C++. Spielman Tr. 2929-31; Rinard Tr. 4462-63.

Dr. Rinard concurred with these conclusions. Dr. Rinard testified that his noninfringement opinions were based on Android's lack of structure for "forward" – related functions performed by the "first processing means" in claim 1. Rinard Tr. 4564-65, 4591. Thus, the evidence establishes that the accused devices do not infringe.

Accordingly, Apple has not satisfied the "first processing means" or the "second processing means" limitation of the first, second, or third element of claim 1. Additionally, Apple has not satisfied the "second processing means" limitation of the fifth element of claim 1 for the same reasons.

In sum, the accused HTC devices do not infringe claim 1 because Apple cannot

---

Android's proxies implement every message they receive, and Android's complier guarantees that an implementation of the message will exist in the proxy. Rinard Tr. 4461-63.

show that (1) the accused HTC devices support the required "dynamic binding, and (2) the accused HTC devices satisfy the "first processing means" or the "second processing means" limitation as required by multiple elements of claim 1. Dependent claims 5 and 6 depend from and contain all the limitations of claim 1. Inasmuch as Apple is unable to show that the accused HTC devices infringe independent claim 1, it cannot show that accused products infringe dependent claim 5 and 6. *Jeneric/Pentron, Inc. v. Dillon* Co., 205 F.3d 1377, 1383 (Fed. Cir. 2000); *Becton Dickinson*, 922 F.2d at 798; *Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1553 (Fed. Cir. 1989).

C. Technical Prong of the Domestic Industry Requirement

Apple argues that "[t]he undisputed evidence establishes that a MacBook Pro running Mac OS X v10.6 ('OS X') practices claim 1, using the preferred embodiment of the '721 patent: Objective-C and Mach messages." Apple Br. at 177.

HTC did not brief the technical prong of the domestic industry requirement.

The Staff submits that "Apple did not prove that the technical prong is met under Staff's constructions" and that "Apple did not even put forth evidence on this point." Staff Br. at 89.

As argued by the Staff, Apple has not satisfied the technical prong. Inasmuch as the undersigned has adopted HTC's and the Staff's proposed construction for the "first processing means" and the "second processing means" limitations, Apple has failed to prove that it practices any of the asserted claims of the '721 patent.

For example, Apple argued that "under Apple's claim construction, a MacBook Pro has the claimed 'processing means', a processor." Apple Br. at 178, citing Spielman Tr. 2845-46; *see* CX-802. The evidence cited by Apple shows that Apple indeed relied

on a "processor" to meet the first and second "processing means" limitations rather the properly construed structures for the means-plus-function term.

Accordingly, Apple failed to prove that it practices any of the asserted claims of the '721 patent.

D. Validity

HTC asserts that under Apple's claim constructions, claim 1 is invalid as anticipated by the Bennett Thesis and that claim 1 is also invalid as obvious under Apple's construction over the Bennett Thesis in light of Mach (as described in the Jones and Anderson references). HTC Br. at 179. HTC further asserts that dependent claims 5 and 6 are obvious in light of the Bennett Thesis in combination with additional references, including the Nelson Thesis and ANSA, as well as invalid as obvious separate from any specific combination under *KSR Int'l.*, 550 U.S. 398. *Id.*; HTC Reply at 114 (arguing that Bennett discloses "a first and second processing means under Apple's construction—*i.e.*, a processor" but presenting no arguments under HTC's and Staff's construction of first and second "processing means").

The Staff submits that "[b]ased upon the Staff's claims constructions, the asserted claims of the '721 patent would not have been obvious in light of the Bennett Thesis (or "Distributed SmallTalk")." The Staff explains that "HTC does not argue that any references anticipate the '721 patent under the Staff's constructions" and that "the Bennett Thesis, alone or in combination, does not disclose a first or second 'processing means' under Staff's construction." The Staff states that "HTC's expert never performed an analysis of whether the first and second processing means, as defined by the Staff, would have been obvious based on Bennett." Staff Br. at 89-90.

Based on the arguments presented by HTC and the Staff, it is clear that HTC is not asserting invalidity under HTC's claim constructions. The undersigned agreed with HTC's and the Staff's proposed construction for the "first processing means" and the "second processing means" limitations.

Accordingly, HTC has not shown by clear and convincing evidence that the Bennett Thesis anticipates asserted independent claim 1 of the '721 patent. For the same reason, HTC has not shown by clear and convincing evidence that the combination of the Bennett and Mach references renders obvious independent claim 1 of the '721 patent. Finally, for the same reason, HTC has not shown by clear and convincing evidence that the combinations of (1) Bennett in view of ANSA; (2) Bennett in view of Nelson; and (3) Bennett in view of "common sense" renders obvious dependent claims 5 and 6 of the '721 patent.

XI. Remedy and Bond

A. Limited Exclusion Order

The Commission has broad discretion in selecting the form, scope, and extent of the remedy in a section 337 proceeding. *Viscofan, S.A. v. United States Int'l Trade Comm'n*, 787 F.2d 544, 548 (Fed. Cir. 1986).[60] A limited exclusion order ("LEO") directed to respondents' infringing products is among the remedies that the Commission may impose. *See* 19 U.S.C. § 1337(d). In this investigation, Apple seeks a limited

[60] In determining whether to issue an exclusion order or a cease and desist order, the Commission must consider statutory public interest factors. *Certain Ground Fault Circuit Interrupters and Products Containing Same*, Inv. No. 337-TA-615 ("*GFCIs*"), Comm'n Op. at 21 (Mar. 26, 2009).

exclusion order.

Apple asserts that the Commission is required to issue limited exclusion orders against respondents if they are found to have imported, sold for importation, or sold after importation infringing articles and should cover all such infringing articles and that the orders should also apply to respondents' "affiliated companies, parents, subsidiaries, or other related business entities, or their successors or assigns." Apple Br. at 194.

The scope of an ITC investigation is defined by the notice of investigation. *Certain Chemiluminescent Compositions*, Inv. No.337-TA-285, Commission Order (Jan. 13, 1989). Thus, any exclusion order may cover all products within that scope, *i.e.*, "the articles concerned." 19 U.S.C. § 1337(d)(1). Moreover, Commission remedial orders cover all products that infringe and are not limited to specified models or products. *Certain Optical Disk Controller Chips and Chipsets and Products Containing Same, Including DVD Players and PC Optical Storage Devices*, Inv. No. 337-TA-506, Commission Opinion at 56 (August 7, 2006) (public version).

As noted, the Commission instituted this investigation "to determine whether there is a violation of subsection (a)(1)(B) of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of *certain personal data or mobile communications devices or related software* that infringe one or more of claims [of the asserted patents] and whether an industry in the United States exists as required by subsection (a)(2) of section 337." 75 Fed. Reg. 17434 (2010) (emphasis added).

It is, therefore, recommended that the Commission issue a limited exclusion order in the event that a violation of section 337 is found. Such a limited exclusion order

should be directed to *certain personal data or mobile communications devices or related software* of this investigation which have been found to infringe the '263 and '647 patents. This limited exclusion order remedy, of course, is not limited to any representative list of accused products. Rather, it encompasses all personal data or mobile communications devices or related software that infringe the '263 and '647 patents. Additionally, in order to facilitate the limited exclusion order's proper enforcement, it should contain a certification provision.[61]

B. Cease and Desist Order

Section 337 provides that in addition to, or in lieu of, the issuance of an exclusion order, the Commission may issue a cease and desist order as a remedy for a violation of section 337. 19 U.S.C. § 1337(f)(1). The Commission "generally issues a cease and desist order only when a respondent maintains a commercially significant inventory of infringing products in the United States." *GFCIs*, Comm'n Op. at 24. The fact that a respondent is a foreign entity does not prevent the issuance of a cease and desist order against it. *See Certain Abrasive Products Made Using a Process for Powder Preforms, and Products Containing Same*, Inv. No. 337-TA-449, 67 Fed. Reg. 34728, Comm'n Notice (May 15, 2002) (issuance of limited exclusion order, and cease and desist order against Taiwan respondent) (vacated on other grounds, 69 Fed. Reg. 35675 (2004)).

[61] An exclusion order may contain a provision that permits entities whose products are potentially excludable under the Commission's order to certify, pursuant to procedures to be specified by U.S. Customs and Border Protection, that they are familiar with the terms of the order, that they have made appropriate inquiry, and thereupon state that, to the best of their knowledge and belief, the products being imported are not excluded from entry under the order. *Certain Semiconductor Chips with Minimized Chip Package Size or Products Containing Same*, Inv. No. 337-TA-605, Comm'n Op. at Section II.D.2. (July 29, 2009).

Apple submits that a cease-and-desist order should also issue against HTC because it maintains a commercially significant level of inventory within the U.S. Apple Br. at 194.

HTC contends that "HTC's inventories of accused products in the U.S. are for testing purposes only, are not approved by the U.S. government, are not for sale, and therefore cannot by definition be 'commercially significant'" and that "HTC surrenders all title and interest to its commercial products when they arrive and are warehoused in the United States." HTC Br. at 189.

The Staff agrees with HTC, asserting that "[t]he evidence fails to support that HTC maintains commercially significant inventory in the United States" and that "HTC does maintain a small number of Android devices in the United States, which it uses for testing and marketing purposes, but does not store thousands of devices as Apple has implied." Staff Br. at 98.

The record evidence establishes that HTC's inventories of accused products in the U.S. are for testing purposes only, are not approved by the U.S. government, and are not for sale. Mackenzie Tr. 938-39. Moreover, the evidence shows that HTC surrenders all title and interest to its commercial products when they arrive and are warehoused in the United States. *Id.* at 924. Apple has failed to carry its burden of proof on this issue.

Accordingly, in the event that a violation of section 337 is found, it is not recommended that the Commission issue a cease and desist order.

C. Bond

The administrative law judge and the Commission must determine the amount of bond to be required of a respondent, pursuant to section 337(j)(3), during the 60-day

Presidential review period following the issuance of permanent relief, in the event that the Commission determines to issue a remedy. The purpose of the bond is to protect the complainant from any injury. 19 U.S.C. § 1337(j)(3); 19 C.F.R. 210.42(a)(1)(ii), 210.50(a)(3).

When reliable price information is available, the Commission has often set the bond by eliminating the differential between the domestic product and the imported, infringing product. *Certain Microsphere Adhesives, Processes for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, Comm'n Op. a 24 (1995). In other cases, the Commission has turned to alternative approaches, especially when the level of a reasonable royalty rate could be ascertained. *Certain Integrated Circuit Telecommunication Chips and Products Containing Same, Including Dialing Apparatus*, Inv. No. 337-TA-337, Comm'n Op. at 41 (1995). A 100 percent bond has been required when no effective alternative existed. *Certain Flash Memory Circuits and Products Containing Same*, Inv. No. 337-TA-382, USITC Pub. No. 3046, Comm'n Op. at 26-27 (July 1997) (a 100% bond imposed when price comparison was not practical because the parties sold products at different levels of commerce, and the proposed royalty rate appeared to be *de minimis* and without adequate support in the record).

Apple asserts that "[a] bond of 100% of the entered value of the infringing articles is appropriate with respect to all Respondents because a direct price comparison between Complainants' domestic products and the Respondents' infringing products is impractical, and no reliable royalty rates from licenses are available." Apple Br. at 194-195.

HTC contends that Apple bears the burden of proof and that Apple presented no evidence on the method of bond calculation. Thus, HTC submits that the bond should be set at zero. HTC Br. at 189-190.

The Staff agrees with HTC, arguing that "it does not appear that Apple presented any evidence that there is no adequate royalty information or that due to the varying prices of the Accused HTC [ ] Products a price comparison is not practical." The Staff states that "in such cases, the Commission has not imposed a bond." Staff Br. at 99.

As HTC and the Staff argued, Apple has failed to carry its burden of proof on this issue. Apple states that "reliable price differentials cannot be calculated as numerous handset models are accused for [ ] HTC [ ], all of which are sold at varying prices through multiple sales channels" and that "HTC's accused handsets are sold at various prices ranging from $270 to $430." Apple Br. at 195. Apple cites to *Unified Comm. Sys.*, 337-TA-598, Initial Determination, 2008 WL 683369 (Jan. 28, 2008), in which Chief Judge Luckern recommended a bond in the amount of 100% of entered value "in view of the wide ranges of prices for infringing products."

Apple's argument is rejected. This is not a case where "it is impossible for the Commission to calculate what level of bond based on price differentials will protect a complainant from any injury." *See* Apple Br. at 195 n.56. For example, the maximum price differential can be calculated as 37% (using the price range of $270 - $430) in this investigation. Instead, this is a case where Apple did not put in evidence on the bond at the hearing and is attempting to remedy this failure by citing (post-hearing) to a different

investigation (*Unified Comm. Sys.*) whose facts are different from the circumstance of the present investigation.[62]

Accordingly, in the event that a violation of section 337 is found, it is recommended that respondents not be required to post a bond during the Presidential review period.

XII. Conclusions of Law

1. The Commission has subject matter, personal, and *in rem* jurisdiction in this investigation.

2. The importation requirement is satisfied as to all respondents.

3. Respondents' accused products infringe asserted claims 1, 2, 24, and 29 of the '263 patent and asserted claims 1, 8, 15, and 19 of '647 patent.

4. Respondents' accused products do not infringe claim 3 of the '647 patent or the asserted claims of the '983 and the '721 patents.

5. It has not been shown by clear and convincing evidence that any asserted claim of the '263, '647, '983, and the '721 patents is invalid.

6. The domestic industry requirement is satisfied with respect to the '263 and the '647 patents.

7. The domestic industry requirement is not satisfied with respect to the '983 and the '721 patents.

---

[62] In that regard, the complainant in *Unified Comm. Sys.* had questioned a fact witness regarding product pricing. Apple, in contrast made no such attempt here. *See Certain Liquid Crystal Display Devices and Products Containing the Same*, Inv. No. 337-TA-631, Comm'n Op. at 28 (July 15, 2009) (complainant "should not benefit from a lack of any effort" and "is required to do more than just assert a lack of 'meaningful price comparison'.").

8. There is a violation of section 337.

XIII. Initial Determination and Order

Accordingly, it is the INITIAL DETERMINATION of the undersigned that a violation of section 337 (19 U.S.C. § 1337) has occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain personal data or mobile communications devices or related software with respect to asserted claims 1, 2, 24, and 29 of U.S. Patent No. 6,343,263 and asserted claims 1, 8, 15, and 19 of U.S. Patent No. 5,946,647. A violation of section 337 has not occurred with respect to asserted claim 3 of the '647 patent or the asserted claims of U.S. Patent Nos. 6,275,983 and 5,481,721. Finally, it is the initial determination that U.S. Patent No. 6,343,263, U.S. Patent No. 5,946,647, U.S. Patent No. 6,275,983, and U.S. Patent No. 5,481,721 are not invalid.

Further, this Initial Determination, together with the record of the hearing in this investigation consisting of:

(1) the transcript of the hearing, with appropriate corrections as may hereafter be ordered, and

(2) the exhibits received into evidence in this investigation, is CERTIFIED to the Commission.

In accordance with 19 C.F.R. § 210.39(c), all material found to be confidential by the undersigned under 19 C.F.R. § 210.5 is to be given *in camera* treatment.

The Secretary shall serve a public version of this ID upon all parties of record and the confidential version upon counsel who are signatories to the Protective Order (Order

No. 1) and the Amended Protective Order (Order No. 12) issued in this investigation, and upon the Commission investigative attorney.

To expedite service of the public version, each party is hereby ORDERED to file with the Commission Secretary by no later than July 27, 2011, a copy of this Initial Determination with brackets that show any portion considered by the party (or its suppliers of information) to be confidential, accompanied by a list indicating each page on which such a bracket is to be found. At least one copy of such a filing shall be served upon the office of the undersigned, and the brackets shall be marked in red. If a party (and its suppliers of information) considers nothing in the Initial Determination to be confidential, and thus makes no request that any portion be redacted from the public version of this Initial Determination, then a statement to that effect shall be filed in lieu of a document with brackets.

Pursuant to 19 C.F.R. § 210.42(h), this Initial Determination shall become the determination of the Commission unless a party files a petition for review pursuant to § 210.43(a) or the Commission, pursuant to § 210.44, orders on its own motion a review of the ID or certain issues herein.

Carl C. Charneski
Administrative Law Judge

Issued: July 15, 2011

CERTAIN PERSONAL DATA AND MOBILE COMMUNICATIONS DEVICES AND RELATED SOFTWARE **337-TA-710**

PUBLIC CERTIFICATE OF SERVICE

I, James R. Holbein, hereby certify that the attached **INITIAL DETERMINATION** has been served by hand upon the Commission Investigative Attorney Erin D. E. Joffre, Esq, and the following parties as indicated, on AUG 24 2011.

James R. Holbein
U.S. International Trade Commission
500 E Street, SW, Room 112A
Washington, D.C. 20436

FOR COMPLAINANTS APPLE INC., f/k/a APPLE COMPUTER INC., AND NEXT SOFTWARE, INC. f/k/a NeXT COMPUTER:

F. Christopher Mizzo, Esq.
KIRKLAND & ELLIS LLP
655 Fifteenth Street, N.W.
Washington, D.C. 20005-5793

( ) Via Hand Delivery
(✓) Via Overnight Mail
( ) Via First Class Mail
( ) Other: _____

FOR RESPONDENT HIGH TECH COMPUTER CORP. a/k/a/ HTC CORP., HTC AMERICA INC. AND EXEDEA, INC.:

James B. Coughlan, Esq.
PERKINS COIE LLP
700 13th St., N.W.
Suite 600
Washington, D.C. 20005

( ) Via Hand Delivery
(✓) Via Overnight Mail
( ) Via First Class Mail
( ) Other: _____

CERTAIN PERSONAL DATA AND MOBILE COMMUNICATIONS DEVICES AND RELATED SOFTWARE **337-TA-710**

PUBLIC MAILING LIST

Heather Hall
LEXIS-NEXIS
9443 Springboro Pike
Miamisburg, OH 45342

Kenneth Clair
Thomson West
1100 Thirteen Street, NW, Suite 200
Washington, D.C. 20005