Ex Parte **Meeting Summary**
DTV Converter Box Coupon Program

Date: July 24, 2006

Outside Attendees: Scott Pirdy, Vice-President, Update Logic
Tripp Blair, President and CEO, Update Logic

NTIA Attendees: Meredith Baker
William Cooperman
Eric Stark
Milton Brown

The outside attendees were advised about *ex parte* guidelines and told that we would primarily be listening to their briefing and that we would summarize the meeting as part of the record. They were also told to file their written comments in the formal proceeding. A copy of the presentation is attached to this memo.

NTIA Presentation

July 24, 2006

- UpdateLogic company overview
- Digital television software issue
- UpdateTV solution
- Benefits to consumers
- Benefits to DTA
- Summary
- Next Steps

- UpdateLogic™ Incorporated
  - Formerly known as Broadcast Data Corporation
  - Founded in 2003

- Institutional Investors
  - Core Capital Partners

- Broadcasters
  - Public Broadcasting System (PBS)
  - National Datacast Inc.

- Customers
  - Hitachi, Samsung, Sharp, Sony (Field Trial validation)
  - Mitsubishi, Panasonic (SDK evaluation)

- Cable operators
  - Comcast, Time-Warner, Cox and Insight (Field Trial)

UpdateLogic

C O R E
CAPITAL MANAGEMENT

SONY   SAMSUNG
HITACHI   SHARP

COX   TIME WARNER CABLE
comcast   Insight.

- **Tripp Blair (President and CEO)**
  - Former Entrupreneur-In-Residence at GrandBanks Capital
  - President/CEO of uLocate (Raised $4.5 Series A)
  - Co-founder/COO of WaveMark (sold to Motorola 2000)
  - Vice President of Sales of Advanced Products at SystemSoft (IPO)
  - Cornell University, MBA and University of Vermont, BS MME
- **Steve Hastings (Vice President of Engineering)**
  - Executive consultant for Vibren Technologies (NEC)
  - Co-founder and Vice President of Engineering of Rachis Corp
  - Vice President of Engineering of Advanced Products at SystemSoft
  - Northeastern University, MS Electrical Engineering
- **Scott Pirdy (Vice President of Operations)**
  - Vice President of Engineering of Vibren (NEC)
  - CTO and Vice President of Engineering at Internet Appliance Network
  - Rochester Institute of Technology, BS Computer Engineering
- **Patrick Sansonetti (Vice President, Sales and Marketing)**
  - Vice President of Sales and Marketing of Vibren (NEC)
  - Co-founder and Vice President of Sales and Marketing at Rachis
  - Director of Sales of Advanced Products for SystemSoft
  - College of the Holy Cross, BA Mathematics and Computer Science

- A DTV device is a complex "computing device" very much like a PC in the late 90's
  - A digital television typically has the following components:
    - Microprocessor (anywhere from 200 MIPS- 500MIPS)
    - Up to 1 GB of memory
    - Embedded Linux operating system
      - This software compressed is minimally 4MB and can be as large as 20MB
    - ATSC software programmable tuner
    - A display (typically LCD, CRT or Plasma)
- The Digital to Analog Converter (DAC) has all of these attributes except the display, thus is expected to have a minimum of 4MB of embedded software

- Digital TV devices have a significant firmware stack
    - Integrated software includes system level software, operating systems, and small applications
    - New features are being added and software complexity and size is growing quickly
- Software inherently prone to errors
    - Estimated that there are 6 errors per 1000 lines of commercial quality code.
    - Converter boxes will have 100,000's of lines of code

- Most manufacturers have been forced to update software within sets
    - Japan, Korea, several countries in Europe
    - US uses two manual methods
        - Mail out media (Flash card, Memory stick, SD Card)
        - Send technicians to consumer homes ("truck roll")
    - Average frequency is 2.5 updates available per year

- Current US situation has limitations
    - Reactive and slow distribution
    - Generates negative customer satisfaction
    - Unreliable due to user involvement
    - Costs skyrocket with volume growth or high frequency
    - Not standards based
- CE Manufacturers have already experienced software problems and update issues
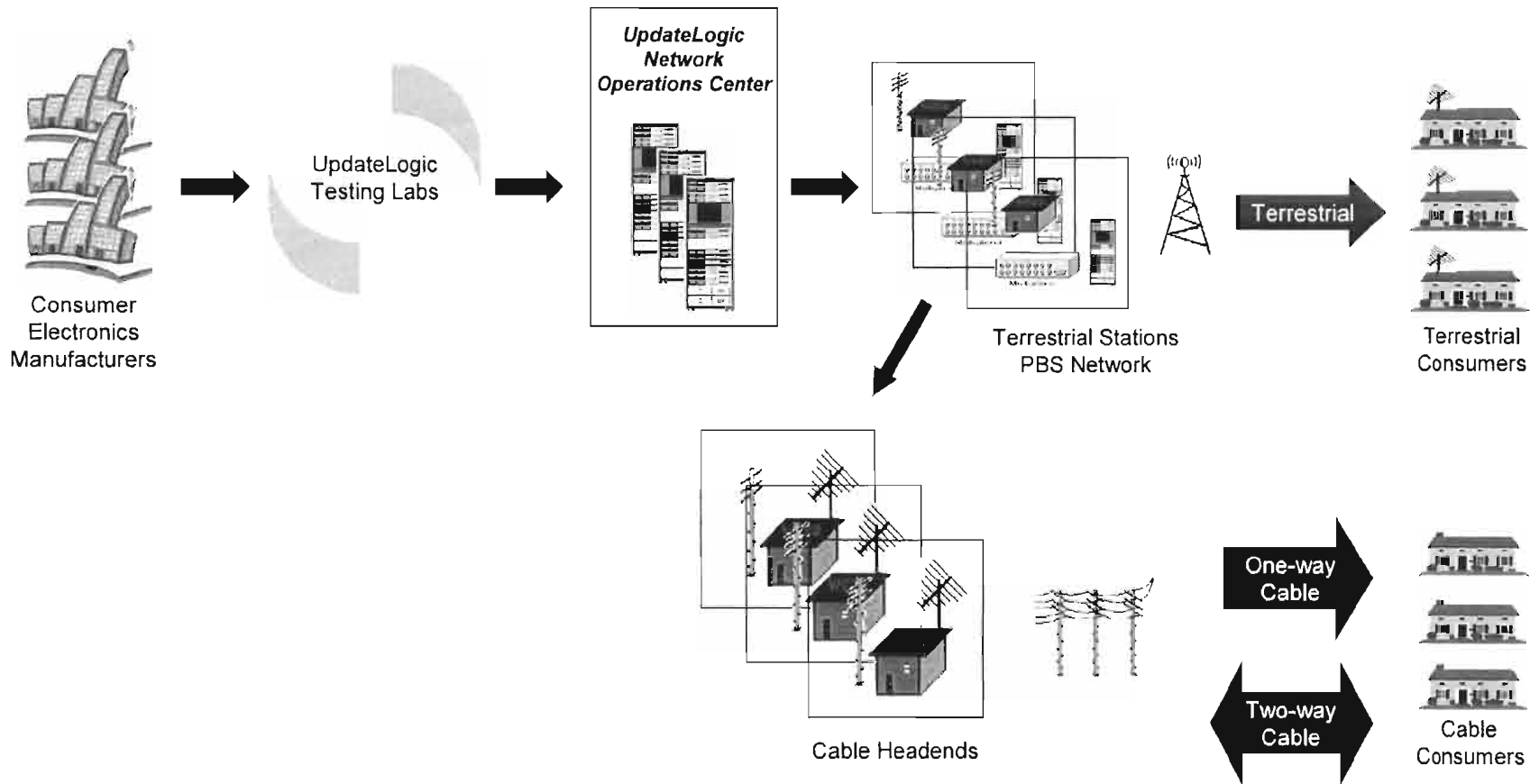
- UpdateTV is a comprehensive solution for distributing software and firmware updates to DTVs and DACs
    - Delivers updates to ATSC receivers
        - Available as early as January 2007
        - Reaches terrestrial, one-way cable and two-way cable sets
    - Built upon many industry standards and protocols
        - ATSC A/97 (Software Data Download Service)
        - A/90 (Datacasting Standard)
        - MPEG (Motion Picture Entertainment Group)
    - Leverages PBS Network infrastrucure

Consumer Electronics Manufacturers → UpdateLogic Testing Labs → *UpdateLogic Network Operations Center* → Terrestrial Stations PBS Network

Terrestrial → Terrestrial Consumers

Cable Headends

One-way Cable / Two-way Cable → Cable Consumers

- ## UpdateTV protects consumers by;
  - ### Permitting CEMs to inexpensively provide updates that:
    - Improve the likelihood that the converter works correctly in all environments and in all modes
    - Permits new firmware functionality to be added to the converter as it is developed by the manufacturer
    - Reduces the inconvenience of updating the converter manually or scheduling a technician visit to the home
    - Insurance policy in the event that standards evolve (or are enhanced) or there is a Category 1 software issue
    - Assures the converter can receive emergency alerts even if standards change or evolve

- ## Lowers the overall cost of support which should enable CEMs to lower pricing.

- UpdateLogic helps the Digital Transition Act by:
  - UpdateTV allows manufacturers to fix software mistakes painlessly and efficiently
  - UpdateTV is a safety net in the event that requirements change and or standards change
  - UpdateTV is a low cost solution that leverages the PBS network and shares revenue with PBS stations adding value to the PBS network
  - UpdateLogic is uniquely focused on software updates for the benefits of consumers
  - UpdateTV is not a big cost driver
  - UpdateTV is based upon the ATSC software download standard
  - UpdateLogic is a small business

Next Steps

- Consider making software download capability mandatory when specifying DTV converter boxes
  - Small incremental cost
  - Big potential impact if software changes are required or additional software functionality needed

- UpdateLogic is prepared to work with NTIA facilitate this

- UpdateLogic is prepared to work with the DTV converter box manufacturers to quickly integrate solution for 2007 production