



HARMONIZED SYSTEM  
COMMITTEE

-  
32<sup>nd</sup> Session  
-

NC0758E1  
(+ Annexes I to V)

O. Eng.

Brussels, 15 October 2003.

CLASSIFICATION OF THE "PLAYSTATION 2 (PS2)"  
(RESERVATION BY THE JAPANESE ADMINISTRATION)

(Item VI.5 on Agenda)

Reference documents :

42.448 (HSC/22)	NC0389E1, (HSC/27)
42.508 (HSC/22)	NC0430E2, Annex H/6 (HSC/27 – Report)
NC0160E2, Annex G/17, para. 7 (ii) (HSC/24 – Report)	NC0471E1 (HSC/28)
NC0221E1 (HSC/25)	NC0510E2, Annex G/9 (HSC/28 – Report)
NC0250E2, Annex IJ/11 (HSC/25 – Report)	NC0546E1 (HSC/29)
NC0302E1, (HSC/26)	NC0590E2, Annex H/10 (HSC/29 – Report)
NC0340E2, Annex G/19 (HSC/26 – Report)	

I. BACKGROUND

1. At its 29<sup>th</sup> Session, the Committee examined the classification of the "Sony PlayStation® 2" ("PS2"). The Delegate of Japan, in his opening remarks, stressed that (i) the components of the "PS2" were very similar to those of ADP machines currently available on the market; (ii) the only function performed by the "PS2" was data processing; and (iii) the "PS2" was capable of being freely programmed by the user to run word processing, spreadsheet or computation programmes as well as game programmes. As such, the "PS2" satisfied the criteria set out in Note 5 (A) (a) to Chapter 84 and, therefore, was classifiable in heading 84.71 as an ADP machine by application of GIR 1.
2. Another delegate supported Japan, indicating that the "PS2" could not only reproduce data from audio/video files but also process such data with its central processing unit. It could not simply be considered a game player but, rather, an ADP machine.
3. Many other delegates, however, were of the view that the "PS2" was a sophisticated versatile device, capable of performing the functions of an ADP machine (heading 84.71), sound reproducing apparatus (heading 85.19), video reproducing apparatus (heading 85.21) and a video game player (heading 95.04). Nevertheless, any machine having the capability of "being freely programmed" or "processing data" should not automatically be regarded as

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being solely or principally an ADP machine within the meaning of the Harmonized System. The "PS2" was advertised, marketed, imported and presented for retail sale as a video game player in a box containing a console, a game controller and connection cables and was designed to be used with a television receiver. Its main function was playing video games and, thus, it should be excluded from Section XVI by application of Note 1 (p) thereto and be classified as a composite machine in Chapter 95 by application of GIR 1.

4. In response, the Delegate of Japan pointed out that goods should not be classified by reference to conditions governing their advertising or marketing. The "PS2" was an ADP machine fulfilling the provisions of Note 5 (A) (a) to Chapter 84, and not a machine performing a specific function other than data processing, nor a machine which was used for more than one purpose and, therefore, was not subject to Note 5 (E) or Note 7 to Chapter 84. Neither could Note 1 (p) to Section XVI apply, without first establishing that the "PS2" was an article of Chapter 95. Further, GIR 3 (b) was not applicable, due to the fact that the "PS2" was not a "composite good". Even if GIR 3 (b) were applicable, the "PS2" would fall in heading 84.71, because its essential character would be provided by its central processing unit and/or its data processing function. Finally, machines having the capability of being freely programmable within the meaning of Note 5 (A) (a) to Chapter 84 should be classified in heading 84.71 inasmuch as they met the criteria of that provision.
5. Several other delegates expressed their concern about the different rationales provided by the previous speakers in support of their differing views on the classification of the "PS2" and invited the Committee to be cautious in establishing the legal basis for its final decision.
6. When the issue was put to a vote, 39 delegates voted for classification in heading 95.04 (subheading 9504.10) and 5 delegates voted for heading 84.71, by application of General Interpretative Rules 1 (Note 1 (p) to Section XVI) and 6.
7. The Japanese Administration notified the Secretary General in its letter dated the 31 July 2002 of its requests that the decision to classify the "PS2" in HS subheading 9504.10 be referred to the Council under the provisions of paragraph 2 of Article 8 of the Harmonized System Convention. During the 101<sup>st</sup> and 102<sup>nd</sup> Sessions of the Council, held in June 2003, Japan requested that this decision be referred back to the HS Committee for re-examination.
8. On 1 September 2003, the Secretariat received a Note from Japan in support of its reservation entered in respect of the decision at the Harmonized System Committee's 29<sup>th</sup> Session to classify the apparatus mentioned in paragraph 1 above in subheading 9504.10. This note is reproduced below.

## II. NOTE FROM THE JAPANESE ADMINISTRATION

### "PRODUCT

9. The product under consideration is the PlayStation 2 console (hereafter PS2) produced by Sony Computer Entertainment, Inc. (SCE).
10. The structure of the PS2 is identical to standard consumer PCs. The operating system and high performance CPU in the PS2 provide binary data processing capabilities. The PS2, as imported, is capable of :
  - processing video-game software written for the PS2;
  - reading and processing video and audio data files from video DVDs and audio CDs;

- reading and processing other kinds of application software such as word processing and spreadsheet; and
- being programmed by using programming language.

(See Annexes I & II.)

11. Similar to the way the Windows operating system can be executed on a standard PC, the **PS2** is capable of being freely programmed by using operating systems (including the popular Linux system) and programming languages. (See Annex III.) In fact, a wide variety of existing application software for Linux and very high level programming tools can be executed on the **PS2** without modification.

#### CLASSIFICATION DISCUSSION

#### **PS2 is an automatic data processing machine of heading 84.71**

12. Digital machines satisfying the criteria of Note 5 (A) to Chapter 84 are classified under heading 84.71 unless they would be covered by Note 5 (E) to Chapter 84.

#### **PS2 meets the criteria provided in Note 5 (A) to Chapter 84**

13. The **PS2** satisfies all four criteria of Note 5 (A) to Chapter 84 defining an automatic data processing machine (hereafter ADP machine) since :
- (i) the **PS2** stores the processing programs and the data immediately necessary to execute them in its RAM (5 (A) (a) (1));
  - (ii) the **PS2** is capable of being freely programmed by the user, as the user can run operating systems such as Linux to write a variety of programs (see above). Therefore, the user is not limited to choosing among a number of pre-existing applications (5 (A) (a) (2));
  - (iii) complex arithmetical computations specified by the user are performed by the user inputting a sequence of instructions (5 (A) (a) (3));
  - (iv) once the initial run command is entered, no further intervention is required for a program to be processed. (5 (A) (a) (4)).

#### **Note 5 (E) to Chapter 84 is not applicable to the PS2**

14. Chapter Note 5 (E) is not applicable since the **PS2** has no other function than the data processing function, i.e. :
- (i) all data and programs are processed by the **PS2** CPU before being sent to the output device, that is, all the capabilities of the **PS2** on various data are to be considered data processing;
  - (ii) the **PS2** does not incorporate or work in conjunction with another machine performing such specific function other than data processing.

**PS2 cannot be classified under heading 95.04**

**HS Explanatory Note (b) to heading 95.04 confirms that the PS2 is excluded from that heading**

15. The PS2 clearly meets the conditions of Note 5 (A) to Chapter 84, and therefore, cannot be classified under heading 95.04.

**Note 3 to Section XVI is not applicable to the PS2**

16. Note 3 to Section XVI is not applicable to the PS2. First, the PS2 is not “performing two or more complementary or alternative functions”. As said above, the PS2 has no other function than the data processing function. All capabilities such as processing video-game software and reading and processing video and audio data files are just “capabilities” (applications resulting from the PS2’s data processing function) and not “functions”. Furthermore, the PS2 is not a “composite machine consisting of two or more machines fitted together to form a whole”. All capabilities of the PS2 are performed by the same components carrying out its data processing function, that is, the PS2 does NOT contain separate circuits to play video DVDs, to process video game software, and to run LINUX applications. All such data files are processed by the CPU.

**GIR 3 (b) is not applicable to the PS2**

17. It is clear that the PS2 is properly classified under heading 84.71 by application of GIR 1, and that GIR 3 (b) is not applicable. As said above, all capabilities of the PS2 are performed by the same components carrying out its sole function, i.e., data processing function. Therefore, the PS2 is not “mixtures, composite goods consisting of different materials or made up of different components”.

**Classification of apparatus should not be determined by its accessories**

18. It should be confirmed that classification of apparatus should not be determined by its accessories presented with it but by its own function and capabilities unless otherwise provided in the HS text. The PS2 is properly classified as an automatic data processing machine under heading 84.71 for the reason below. An automatic data processing machine is not necessarily presented with peripherals such as a monitor, a keyboard, or a hard-disk drive to be classified under heading 84.71. It is clear from Notes 5 (A) (a) which only requires a product itself to have “capabilities” as an automatic data processing machine. Though the PS2 is presented with a controller as imported, this has nothing to do with determining the function of the PS2 console itself. Therefore, accessories presented with the PS2 should not be taken into account when considering whether the PS2 is properly classified as heading 84.71 or not, in the same way as other automatic data processing machines are classified under heading 84.71 without considering whether monitors, keyboards, hard-disk drives are presented with them, not software, as imported.

**Classification of apparatus should not be determined by way of marketing or usage**

19. It should also be confirmed that classification of apparatus should not be determined by its way of marketing or usage. These criteria are not appropriate for classification of electric apparatus. Goods are possible to be classified under different headings when they are classified according to “way of marketing” or “usage” because they are affected by the distributor’s or users’ intention.

20. Even though classification of apparatus may be determined by the above criteria, the PS2 is still classifiable under heading 84.71 as computer because it is marketed and used not only to play games, but also widely used as a computer as showed in the attached articles. (See Annexes IV and V.)

## CONCLUSIONS

21. The PS2 is classifiable under heading 84.71; the PS2 satisfies all four criteria in the statutory definition of ADP machines set forth in Chapter 84 Legal Note 5 (A) (a), and Note 5 (E) does not apply, as all capabilities of the PS2 result from its one and only function, i.e., data processing by means of the CPU. Therefore, GIR 3 need not be considered.
22. Moreover, there is no appropriate heading for the PS2 other than 84.71 by application of GIR 1; the Explanatory Notes (b) to Chapter 95 expressly precludes classification under 95.04 for articles meeting the requirements of Note 5 (A) to Chapter 84. Consequently, consideration of GIR 3 is not necessary.
23. For the foregoing reasons, the PS2 is properly classified under heading 84.71."

## III. CONCLUSION

24. The Committee is invited to rule on the classification of the "Playstation 2", taking into account the Note from Japan when it examines this agenda item.

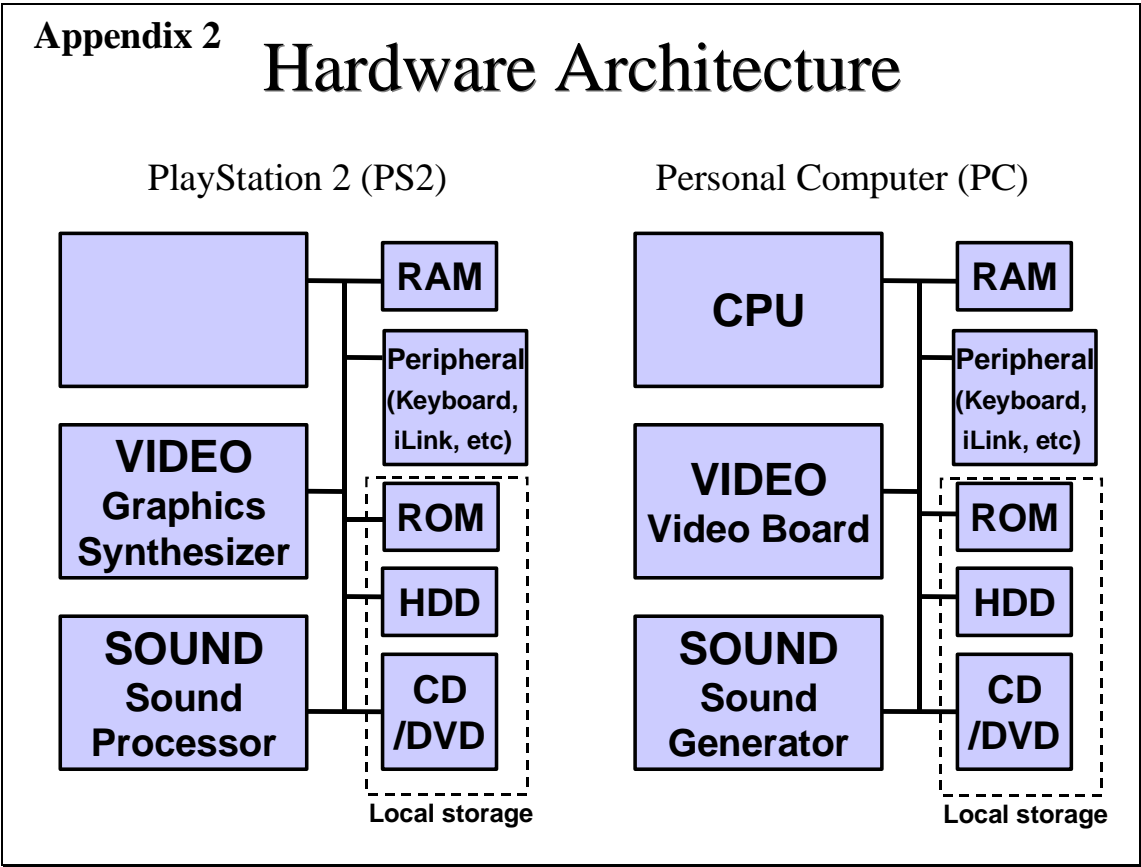
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## Comparing PlayStation 2 with a PC

	<b>PlayStation2</b>	<b>PC (VAIO)</b>
<b>CPU Core</b>	128 bit CPU	32 bit CPU
<b>System Clock</b>	300MHz	333MHz
<b>Display</b>	TV/VGA	VGA
<b>Image Processor Unit</b>	MPEG2	MPEG1
<b>Sound Processor</b>	32 bit	16 bit
<b>RAM</b>	40 MG	64 MB
<b>Interfaces</b>	i.Link, USB	i.Link, USB
<b>Storage</b>	DVD/CD	DVD/CD
<b>Software (example)</b>	LINUX GAMES DVD Movies Audio CDs	MS Windows, LINUX GAMES DVD Movies Audio CDs

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Slide 1

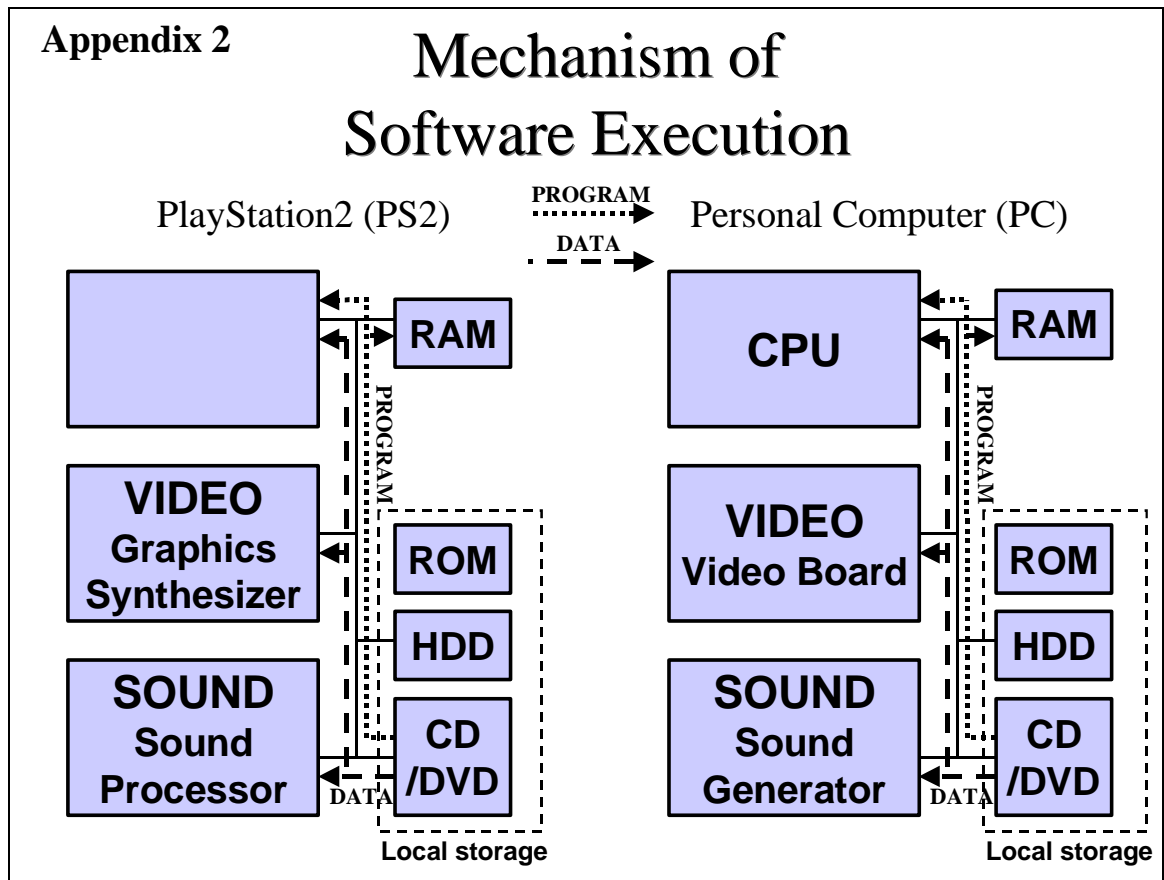


The following diagrams and descriptions show that both PlayStation 2 and Personal Computer are identical on the following points:

- Hardware Architecture
- Software Architecture
- Software Execution Mechanism
- Software Development Process

These points are only a small fraction of the various functions which both PS2 and PC hold, and are very general covering anything from games, DVD videos, word processing, network browsing, data bases, programming, and much more, but these are representative of basic functions and thus have been used.

This comparative diagram shows that the hardware architecture of both PlayStation 2 and Personal Computer are identical. Both consist of CPU, VIDEO chip, SOUND chip, RAM, peripherals, and Local Storages which include ROM, HDD (harddisk) and CD/DVD. Functions can be expanded through input/output from peripherals such as keyboard, game pad/controller, iLink, mouse, etc which are common to both PS2 and PC.



When software is executed, both PS2 and PC work identically by mechanism. Software such as computer programs including games and DVD videos, is stored in the Local Storage (ROM, HDD or CD/DVD-ROM).

- (1) When User executes software, the CPU runs the program in Local Storage on RAM, and loads necessary data from Local Storage.
- (2) The program processes the data, and generates video and audio signals with VIDEO and SOUND chips, and converts them to text, images and sound on Display and Speaker.

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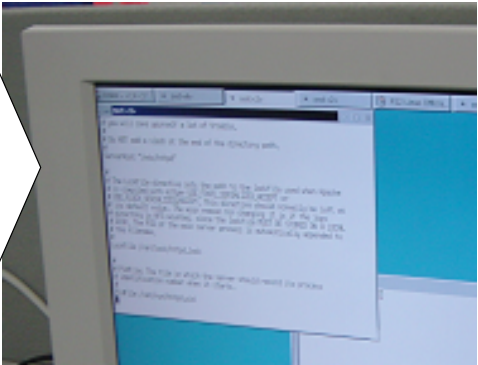
# Linux on the PS2



**PS2 console and optional "Linux kit"**



**Enlarged photo of the monitor**



**Programming on the PS2 by using "Linux kit" for the PS2**

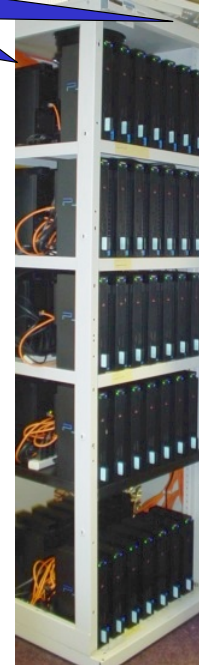
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**PS2 is used not only to play games,  
but is also widely used as a computer**

<ARTICLES>

- ? A supercomputer was made by simply linking 70 PS2's together without making any changes to the hardware.
  - From Play Station to Supercomputer for \$50,000*
  - Linux-based PlayStation grid is no game*
  
- ? A software package containing over 1,200 software is available for PS2
  - Black Rhino HP*
  - <http://blackrhino.xrhino.com/>*
  
- ? A Master's degree course for programming the PS2 will be available from an English University
  - Adopting the Penguin – PS2 coding through Linux*
  - The Sheffield Hallam University HP*
  - <http://www.shu.ac.uk/>*



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**New developments :**

1. **The National Center for Supercomputing Applications at the University of Illinois connected 70 PlayStation 2's to make a Supercomputer**  
<http://news.zdnet.co.uk/story/0,,t271-s2135301,00.html>  
<http://query.nytimes.com/gst/abstract.html?res=F20712F839550C758EDDAC0894DB404482>
2. **A package containing over 1200 software for use on the Linux kit for PS2 is distributed for free**  
<http://blackrhino.xrhino.com/main.php?page=home>
3. **An English University offers a Master's Degree in programming the PS2**  
[http://www.shu.ac.uk/cgi-bin/news\\_full.pl?id\\_num=PR415&db=03](http://www.shu.ac.uk/cgi-bin/news_full.pl?id_num=PR415&db=03)
4. **From PlayStation to Supercomputer for \$50,000 (NY Times)**  
**Linux-based PlayStation grid is no game (ZDNet UK)**

On May 27, 2003, the National Center for Supercomputing Applications (NCSA) at the University of Illinois announced that it has assembled 70 PlayStation 2's (PS2) into a supercomputer. The PS2 supercomputer runs on the Linux operating system which was included as part of a Sony Linux kit for PS2.

The only hardware engineering involved in making this supercomputer was placing 70 of the individual game machines in a rack and plugging them together with a high-speed Hewlett-Packard network switch. Regardless, it is capable of a half trillion operations a second, which is not only well within the definitions of supercomputer, but will also rank it amongst the world's top 500.

This computing power was enabled by the Emotion Engine, a standard component of the PS2. It is a graphics processor capable of producing up to 0.5 billion mathematical operations a second.

The supercomputer is already running useful calculations on quantum chromo dynamics, or QCD simulations. QCD is a theory concerning the so-called strong interactions that bind elementary particles like quarks and gluons together to form hadrons, the constituents of nuclear matter.

**5. Black Rhino GNU/Linux**

A software package for PlayStation 2, containing over 1,200 software ranging from simple games to text editors, compilers, web servers, windowing systems, database systems, graphics packages, mail servers, and a variety of other tools and utilities are available from xRhino. This free package is called BlackRhino, and will aid users in using and creating programs for the PlayStation 2 Linux Kit.

**6. Adopting the Penguin – PS2 coding through Linux**  
**The Sheffield Hallam University HP**

Many universities have purchased the Linux Kit for PS2 to offer students the chance to work on interesting individual graphics projects. Sheffield Hallam University is distinct from these universities, as it offers a Master's Degree in Entertainment Software

Development in association with Sony Computer Entertainment Europe. The university is currently establishing a new console laboratory equipped with 20 kits in preparation for this course, which will start in October 2003.

The course will consist of a rich mix of academic study and practical programming experience in a challenging and interesting area of application. According to Bob Steele, the developer of this course, "(the course) is not about playing the games but developing new games and interactive programs for what is a huge industry with huge potential."

Two other universities in the UK have purchased the Linux Kit in large numbers to offer their students some invaluable experience on hardware other than the PC. One is Abertay University, which will create a PS2 Linux lab to give their students experience on the very different architecture of the PlayStation 2. The other is the Teeside University, which is building a new console laboratory, much like the one at Sheffield Hallam University for use in their Bachelor course in Computer Games Programming. Furthermore, European and Australian Universities have also been adopting the kit in small numbers with a view to expanding their facilities for students.

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