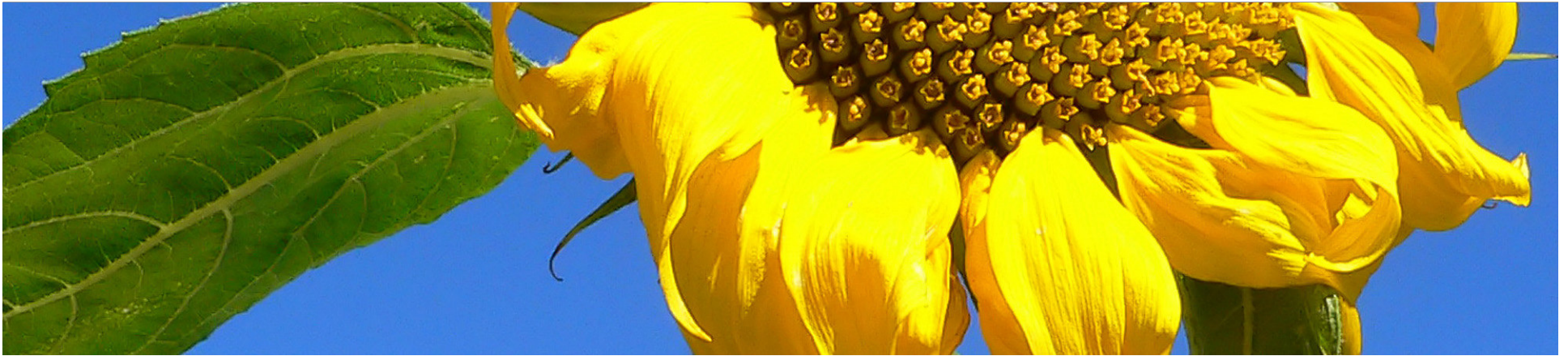


Intertek

M **AEA**



Video Games Machines

Jonathan Wood

Background

Market Context

- Early games machines came to market in the early 1970's
- Historical timeline of games consoles often separated into "generations"
- Seventh generation of games machines now on market
- Market dominated by three main manufacturers
- Worldwide sales of the three most popular games machines reached 100 million units by 2008

Games Machines: Characteristics

A “Game Machine” is a mains powered stand alone device which is marketed as a product providing video game playing as its primary function through an external screen and which has the following features:

Hardware Architecture

- CPU
- System memory
- Video architecture
- Network architecture
- Optical drives (to be defined)
- Hard drives or other internal memory (optional)
- Mains connected internal or external power supply unit

Input devices

- Typically hand held controllers rather than keyboards or mice

Games Machines: Characteristics Cont.

Optional Secondary functions

- Optical disk playback
- Digital picture viewing (via an external screen)
- Digital music playback

Software

- Console specific operating system

Excluded components or functionalities:

- Integrated screens
- Conventional Personal Computing (PC) operating systems
- Internal batteries for powering products over extended periods of time

The excluded components and functionalities serve to distinguish “Game Machines” from other gaming products which are either already covered by EuP preparatory studies (as previously listed), or from products where environmental impacts are likely to be significantly smaller than “true” Games Machines (e.g. battery power devices or thin client devices), or which are primarily commercial devices with low sales volumes.

Draft Definition

“Game Machine”: A computing device whose primary function is to play video games. Game machines share many of the hardware architecture features and components found in general personal computers (e.g., central processing unit(s) (CPU), system memory, video architecture, optical drives and/or hard drives or other forms of internal memory). Games machines typically utilise either dedicated hand hold or other interactive controllers designed for enhancing game playing rather than the mouse and keyboard used by personal computers. Game machines are also equipped with audio visual outputs for use with televisions or video projectors as the primary display, rather than (or in addition to) an external or integrated display. These devices do not typically use a conventional PC operating system but rather have dedicated console operating systems. Games machines may also offer DVD/CD playback, digital picture viewing, and digital music playback. Games Machines are mains powered devices provided by either internal or external power supply units”.






Games Machines: Products in Scope




Game Machines

Game Machines		
Hardware Architecture CPU System memory Video architecture Network architecture Optical drives Optional hard drives or other internal memory	Input devices Typically hand held controllers rather than keyboards or mice	Secondary functions Optical disk playback Digital picture viewing (via an external screen) Digital music playback

Games Machines: Products out of Scope

				
Gaming Desktops	Gaming Laptops	Gaming Thin Clients	Hand-Held Games Consoles	Educational Games Consoles with integrated screens
CPU System memory Video architecture Optical drives Conventional Personal Computing (PC) operating systems	CPU System memory Integrated screen Video architecture Optical drives Hard drives Personal Computing (PC) operating systems	CPU System memory Video architecture Personal Computing (PC) operating systems	CPU Battery operation Integrated screen System memory Video architecture	CPU Battery operation Integrated screen System memory Video architecture
Covered by EuP Lot 3 Personal Computers (desktops and laptops) and Computer Monitors	Majority of environmental impacts occur in remote Data Centres	Battery based products where impacts are covered by other legislation.	Potentially covered by EuP Lot 3 Personal Computers (desktops and laptops) and Computer Monitors or are battery based products where impacts are covered by other legislation.	

Games Machines: Products out of Scope

			
<p>Portable DVD player</p>	<p>DVD/HDD player</p>	<p>Blu-ray player</p>	<p>Arcade Games Machine</p>
<p>Optical drive DVD decoding Integrated screen Battery operation</p>	<p>Optical drive Integrated HDD Video encoding and decoding Tuner Video in Video out</p>	<p>Optical Drive Blu-ray/DVD decryption/decoding Ethernet Video out</p>	<p>CPU System memory Integrated screen Video architecture Hard drives</p>
<p>Battery based products where impacts are covered by other legislation. Reduced sales numbers.</p>	<p>Covered elsewhere in Lot 3 Sound & Imaging Preparatory Study</p>		<p>Commercial products with low sales volumes.</p>

Games Machines: Impact Categories

Energy

- Most energy use from processors/video processing
- Power supply units
- Memory
- Network cards

Waste

- Games machines highlighted as one of the fastest growing sources of WEEE in the EU

Hazardous Material Content

- PVC
- Beryllium
- Brominated flame retardants (BFR)

Emissions

- Noise

Others?

Games Machines: Legislative Measures

Energy

- **EuP Standby Implementing Measures**
- **1W Off-mode 2010**
- **0.5W Off-mode 2013**

Hazardous Material Content

- **RoHS**

Waste

- **WEEE**

Others?

Games Machines: Voluntary Measures

Energy

- ENERGY STAR Program Requirements for Computers Version 5.0
- Game Machines specification expected to be included by July 2010.
- Others?

Hazardous Material Content

- Some manufacturers stated commitment to eliminate PVC and some/all BFRs

Emissions?

Waste?

Games Machines: Test Standards

Energy

- ENERGY STAR Test Methodology to be finalised by July 2010
- IEC 62301 – revision in process

Hazardous Material Content

- RoHS

Emissions?

Any other standards?

Games Machines: EU Trade Statistics

Trade

- EU imports all of the main Games Machines –€5.5 billion in 2008
- EU exports some Games Machine consumables

Production Base

- Final consoles manufactured in China or Japan
- Components wider geographical area
- Others?

Estimated EU-27 Stock – 34.1 million units

- Type 1 – 16.3 million
- Type 2 – 9.1 million
- Type 3 – 8.7 million

Estimated EU-27 Sales per year - ? million units

- Type 1 – ? million
- Type 2 – ? million
- Type 3 – ? million

Games Machines: Consumer behaviour

Buying Decisions

- Because they are fun!
- Consumers may procure more than one Games Machine
- Numbers of games procured each year?

Frequency and Characteristics of Use

- Gamers use machines for an average 5.45 hours on game days
- Other use profile information?
- Use not limited to game playing – also DVD playback
- Use expected to grow with downloadable games
- Energy consumption expected to grow with use
- Effect of power management?

End-of-life behaviour

- Expected life time of 5 years
- Machines on the market for over 2 years
- Peak in waste when next generation launched?
- What design features included to aid recycling?

Games Machines: Next Steps

Gaming Industry

- Where and how are major savings possible in Games Consoles?
 - Power Consumption
 - Power Management
 - Hazardous Materials
 - Design for recycling
 - Environmental communication
-
- Which direction is the gaming industry heading in? Games on portable media or downloadable?
-
- When are the next generation of Games Machines due to arrive on the market? Are the manufacturers considering environmental impacts during the design stage?