

Game Consoles Self-Regulatory Initiative Consultation Forum Meeting

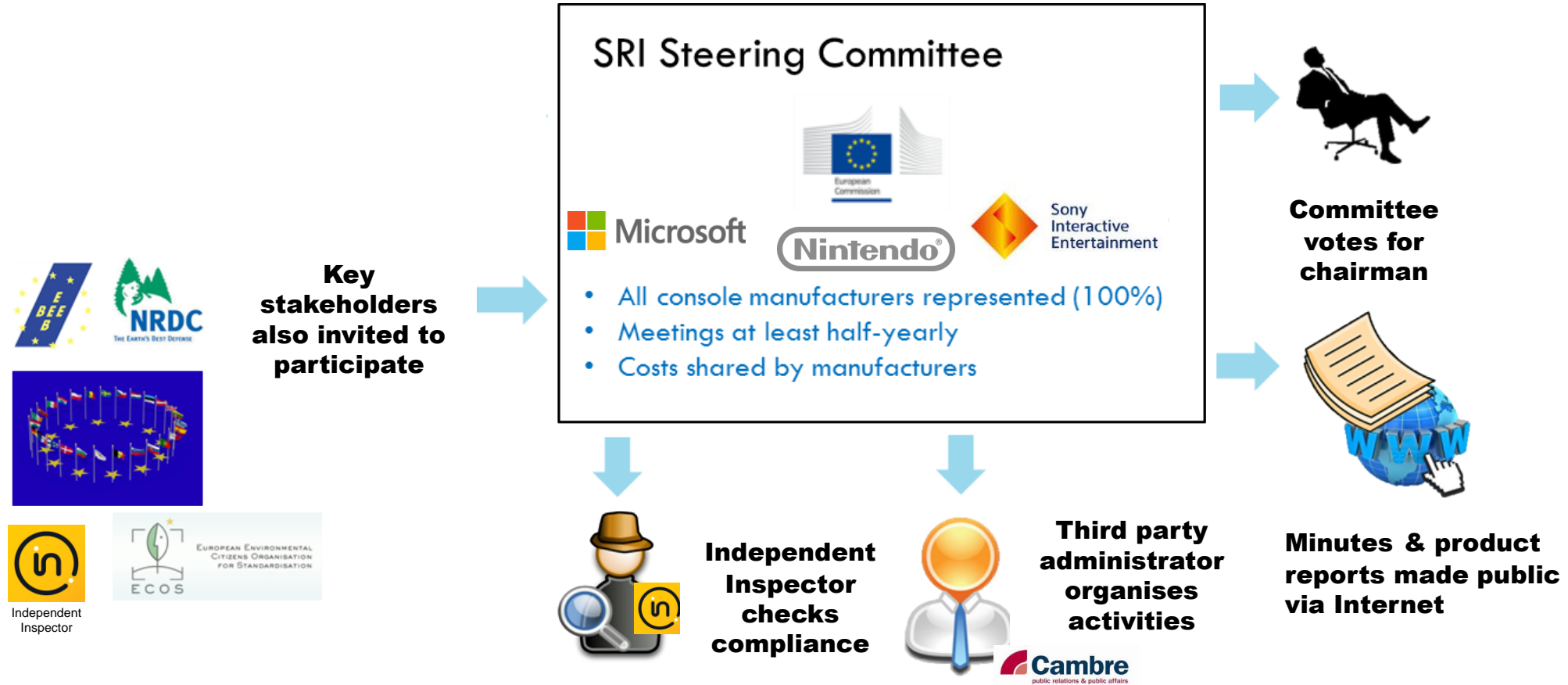
15 November 2017
Brussels



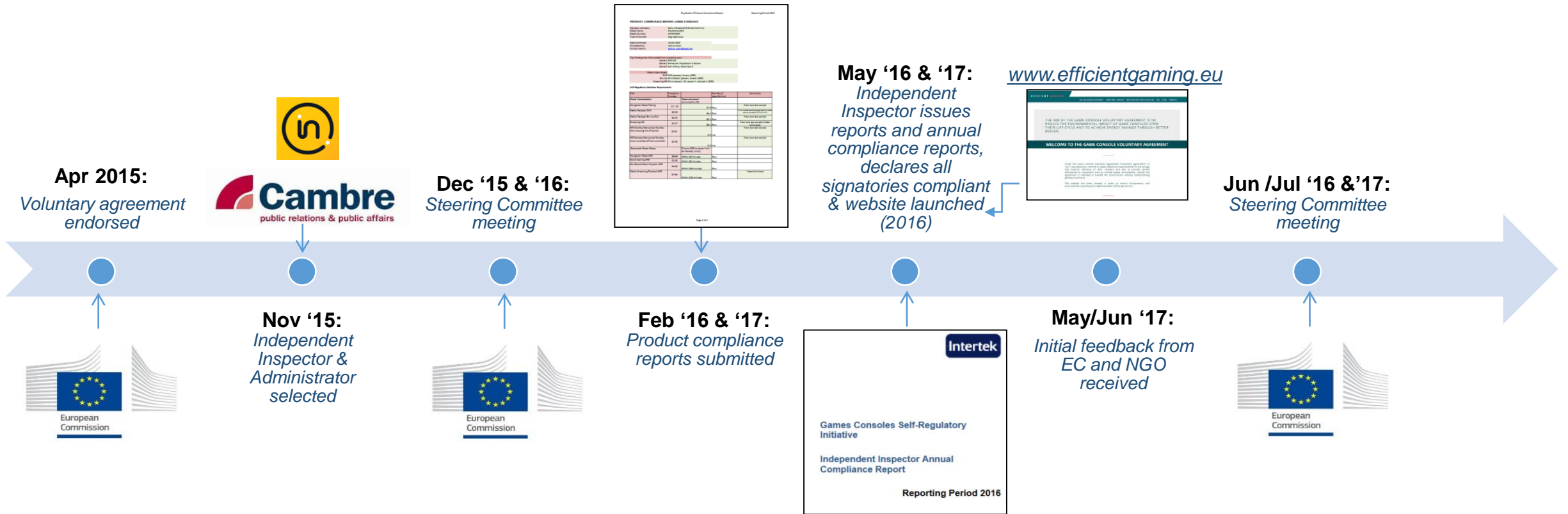
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SRI Process



SRI Timelines



SRI achievements

In 2013, we originally committed to achieving energy savings of **1.1 TWh in the year 2020**



What we are projected to achieve...

Energy savings of 5.1 TWh in the year 2020



4.56x more

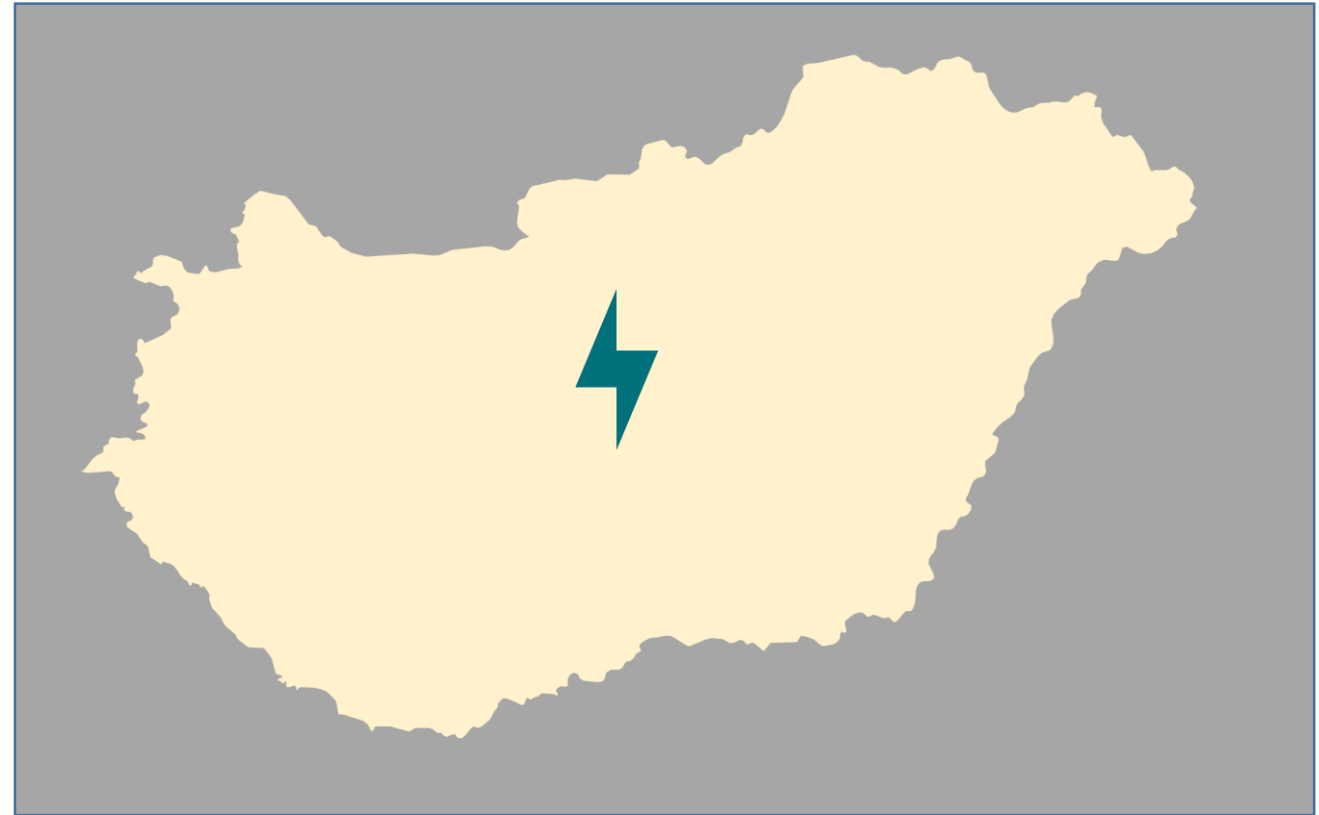
Avoiding electricity use equivalent to 4% of average household energy use



Note: Average UK domestic electricity consumption per household in 2016 was 3,889 kWh

Total savings: 36.3TWh over the life time of PS4 and Xbox One consoles

This is equivalent to the annual electricity consumption of Hungary (36.1 TWh)*



*Data from [Eurostat 2015](#)

2017 Review of the SRI

The game console industry carried out a thorough review of the SRI and produced a report with the conclusions

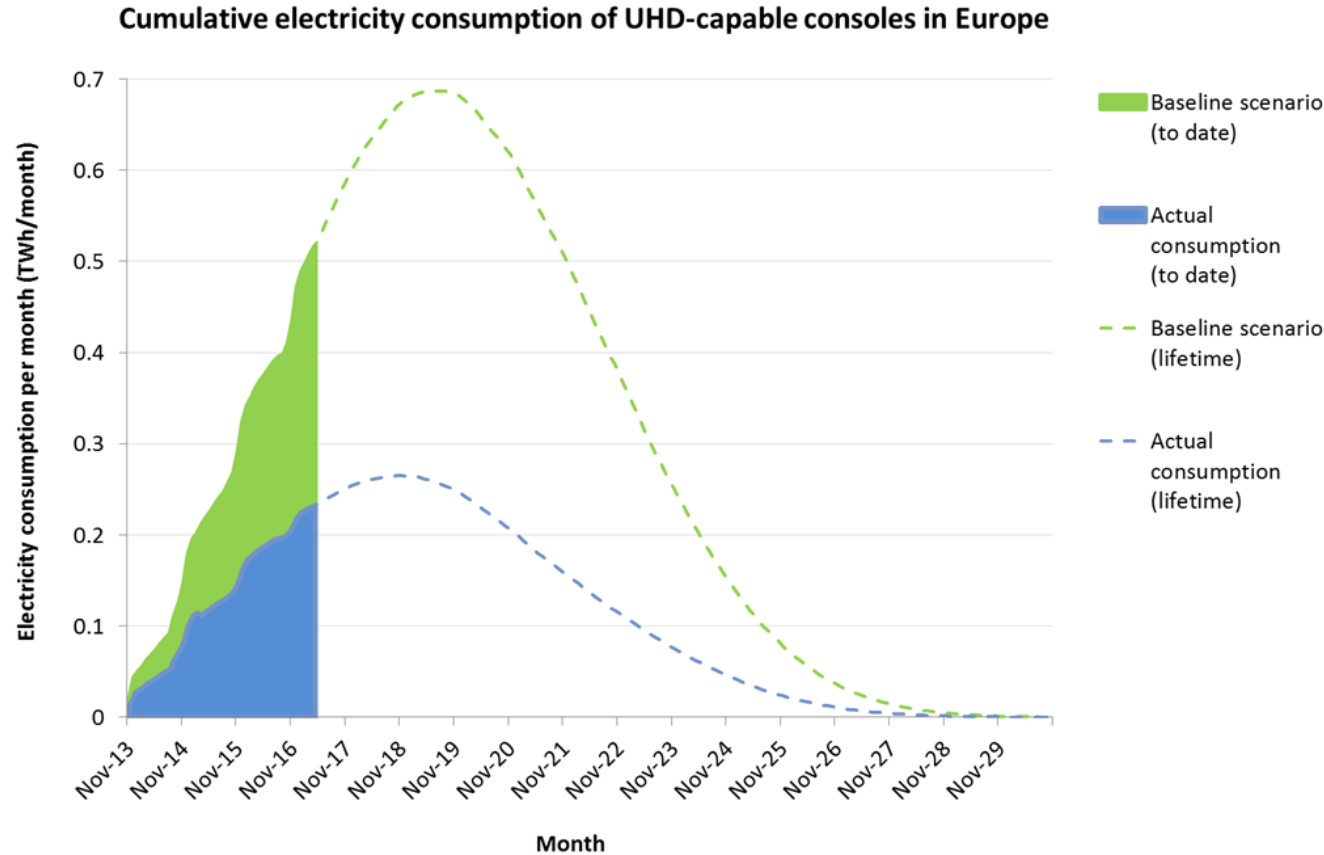
The 2017 Game Console SRI Review Report covers the following topics

- Industry compliance with the SRI
- Calculations of energy savings
- Future technologies
- Review of benchmarking feasibility
- Review of material efficiency
- Future commitments and proposals
- Alignment with the commission's SRI guidelines

Energy efficiency

Calculation of Energy Savings

To date, SRI avoided 5.4 TWh (Nov. 2013- Apr. 2017)



In the year 2020:

At least 5.1 TWh projected savings for consoles under SRI - vs target of 1.1 TWh.

Savings equivalent to the annual electricity supplied by a 850 MW power station.

Over complete lifetime:

36.3 TWh estimated savings – equivalent to the annual electricity production of Hungary (36.1 TWh in 2015).

Consoles use several energy saving technologies

Technology	Study reference						Adopted today?	
	AEA (2010)	ECOS (2011)	Hittinger (2012)	Energy Star (2012)	NRDC (2014)	LBNL (2015)		US EPA (2015)
Separate/additional components to run non-gaming applications (separate video architecture)	✓				✓		✓	No
Efficient power supplies	✓						✓	Yes
Power supply output power reduction							✓	Yes
CPUs based on 32nm architecture	✓							Yes
Die shrink (based on predicted trends in efficiency / performance of PCs per transistor)							✓	Yes
System on a Chip architecture	✓							Yes
Power scaling of CPU and GPU		✓					✓	Yes
Processor performance scaling and power management techniques	✓							Yes
Advanced power management technologies to reduce on-idle power to less than 20% of active mode power	✓							Yes
Default Automatic Power Down features	✓		✓	✓			✓	Yes
APD with saving of in-game progression							✓	Yes

Assessment of technology adoption is based upon ultra-high definition capable console models.

Opportunities for further power savings for current consoles are limited.

Power Caps Were Sufficiently Ambitious

- Higher performing UHD consoles (PS4 Pro and Xbox One X) are just under current power caps
- Current UHD consoles (PS4 & Xbox One) met tiers 1 & 2 power caps but did not exceed expectations
- With statistical variation in samples, in the peak case some consoles may still be close to power caps

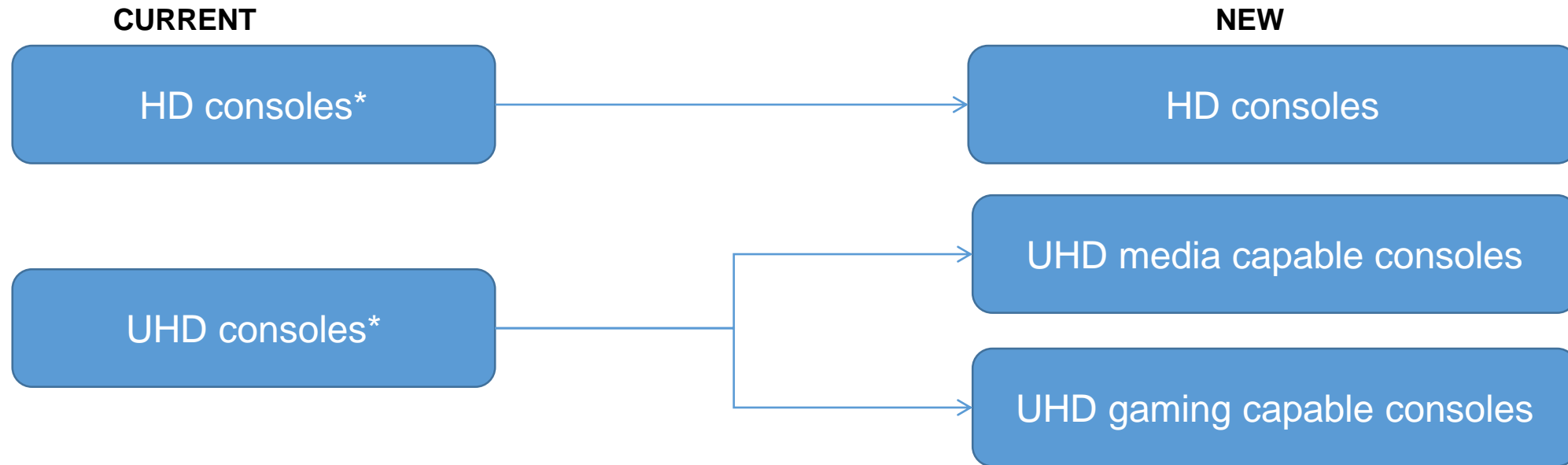
Future Technologies



Future Technologies



New Category for UHD Consoles



* Based on technical capability to render media

New Power Caps for 2019 (Watts)

Reflects improvements achieved in hardware and firmware

x 10 perf

x 2-6 perf

New Category

New Category

NAVIGATION MODE	HD Consoles	UHD Consoles Media capable	UHD Consoles Gaming capable	
Current SRI	70	70 (HD)	70 (HD)	
New SRI	50	50 (HD & UHD)	70 (HD & UHD)	
MEDIA PLAYBACK MODE	HD Consoles	UHD Consoles Media capable	UHD Consoles Gaming capable	
Current SRI	70	70	70 (HD)	no cap (UHD)
New SRI	60	60 (HD & UHD)	70 (HD)	110 (UHD)

Review of Benchmarking

Feasibility of benchmarking consoles Game Play computational performance has been reviewed, in accordance to the SRI

Energy Efficiency of Games Consoles: Self-Regulatory Initiative to further Improve the energy efficiency of Games Consoles:

“...the feasibility of including computation performance in console efficiency benchmarks, where applicable and comparable across devices performing gaming, will be reviewed during the 2017 review of the Self Regulatory Agreement”

Review of Benchmarking

“It’s unlikely that a benchmark for active gaming will ever be good enough”

- × Repeatable
- × Representative
- × Normalized
- × Comparable
- ✓ Stable
- ? Neutral
- ✓ Publicly disclosed



“PERFORMANCE BENCHMARKS FOR CONSOLES”

Paper by: Jonathan Koomey, Kieren Mayers, Joshua Aslan, and James Hendy

PRESENTED TO GREEN ICT WORKSHOP, IEEE, Paris, May 25th 2017

*“The dynamic nature of consoles creates extreme complexity. It is unlikely that meaningful metrics for comparing gaming performance can ever be developed for game consoles and gaming PCs. **The complexity of these devices makes it difficult to define computational output in a way that can be accurately, consistently, and correctly compared** across game consoles or between consoles and PC gaming machines. Without consistent computational benchmarks, it’s unlikely that a benchmark for active gaming will ever be good enough on which to base efficiency regulations or utility incentives to promote more efficient products.”*

Similar observations were made by Lawrence Berkley Labs following their recent benchmarking tests on gaming PCs.

Energy reporting requirements

- **Existing requirement:**
We also report average power consumption of gaming mode in operating instructions
- **New proposed requirement:**
Following stakeholder feedback, we will also report power consumption of low power modes for each console (low-power functions different between consoles)

Material efficiency

Material Efficiency Requirements Already Included in the SRI



Out of warranty repair service must be available to consumers

- Technical documentation available to authorised repair centres
- Spare parts shall be made available to authorised repair centres



Maintenance of consoles must be possible by non-destructive disassembly (parts must be removable)



Inform consumers of end-of-life processing and out-of-warranty repair options available within the operating instructions

>ABS<

Plastics parts >25g must be marked showing their composition

Exceptions:

- The part has <1cm² level surface available for marking
- The performance or function of a part is compromised e.g. buttons with tactile surface, plastic lenses, or display screens.
- External transparent parts
- Marking is not technically possible due to the specific production method of the plastics used in the part e.g. extrusion moulding.

Review of Material Efficiency

Various material efficiency standards & initiatives were reviewed

JRC Technical Report: Feasibility study for setting-up reference values to support the calculation of recyclability / recoverability rates of electr(on)ic products – DRAFT REPORT	Technical report: Application of environmental contribution modulation criteria
NL Ministry Environment/Eco-design - Marking requirements for EEE items (relevance and feasibility)- Recycled content- Strategic metal recycling	EuroVAprint: Industry voluntary agreement to improve the environmental performance of imaging equipment placed on the European market, SRI V.5.2, April 2015
CEN-CENELEC-ETSI work programme in response to M/543 on material efficiency - BT154/DG10216/INF	JRC Technical Report: Analysis of durability, reusability and reparability -Application to dishwashers and washing machines
Communication from the commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Closing the loop - An EU action plan for the Circular Economy	EU GPP guidance for the purchase of Computers and Monitors
IEEE1680.1, 4.3.1.6 JRC Science and Policy Report: Environmental Footprint and Material Efficiency Support for product policy	Directive 2009/125/EC of the European Parliament and of the Council with regard to eco-design requirements for electronic displays
Draft Commission Regulation (EU) Implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to eco-design requirements for electronic displays and repealing Regulation 642/2009 with regard to eco-design requirements for televisions	Austrian Standard ONR 192102 Label of excellence for durable, easy to repair electrical and electronic equipment
OCAD3E Waste Electrical and Electronic Equipment Authorised Coordinator Agency	Working Document: Potential Eco-design requirements for servers and data storage products

New Removability Requirements (*recyclability*)

- Signatories shall ensure that joining or sealing techniques do not prevent the removal of the components, applicable to games consoles, listed in point 1 of Annex VII of Directive 2012/19/EU, when present
- Exemptions apply where non-removable joining and sealing techniques may be used to ensure either user safety necessary to comply with safety-related EU legislation or product quality necessary to avoid wear and tear that would otherwise shorten the product's useful life. For batteries, exemptions in the Battery Directive 2006/66/EC amended by Directive 2013/EC/EU apply
- Accessing components shall be enabled by documenting the dismantling operations needed to access the targeted components,* including for each of these operations: type of operation, type of fastening technique(s) to be undone, and tool(s) required

* *Components, applicable to games consoles, listed in point 1 of Annex VII of Directive 2012/19/EU.*

MAIN CHANGES:

- Align with Lot 3, 5, & 9 proposals
- More specific list of 'removable' components
- New information requirement added

New Removability Requirements (*reparability*)

- Maintenance and refurbishment of each games console shall be possible by non-destructive disassembly *of the following key components: the motherboard, hard disk drive, optical drive, and internal power supply.*

New Recyclability and Durability Requirements

Additional information provided for manual disassembly to improve recyclability:

- Whether plastic casing contains brominated flame retardants;
- Whether LCD displays contain mercury*

Additional information to consumers to extend product life:

- Information on how to keep products in good working condition e.g. how to keep the product dust free, how to install system updates, how to remove trapped disks?
- How to delete personal data before selling second hand
- Options available (if any) to upgrade the performance of their console e.g. installing a bigger hard drive

* 'Mercury Free' means a product in which concentration values of mercury (Hg) by weight in homogeneous materials do not exceed 0.1% as defined in Directive 2011/65/EU of June 8, 2011

MAIN CHANGES:

- Additional proposals unique for games consoles

Other Material Efficiency Options

- **Use standardised plastics polymer to facilitate recycling:**
We will consider removability and use of compatible polymers for plastic components > 100g during the next SRI review.
- **Provision of schematics and repair instructions:**
Problematic as console technology is proprietary and complex; we will provide FAQ instructions to consumers for minor faults.
- **Provision of information on average product lifespan:**
PCB lifetime cannot be measured by accelerated testing; console quality improves with feedback from repair over product lifecycle.
- **Information on location and amount of critical metals and BFR to recyclers:**
This information is not useful for recycling; we will provide information on BFR, type of plastic polymer, & Hg in screens used in games consoles.
- **Provision of access to system software ‘service modes’:**
Consoles include highly specialised & proprietary technology – there is a real risk of hacking/piracy.
- **Making spare parts available to third party repair companies:**
Most parts are proprietary design and controlled to avoid counterfeiting. We provide out-of-warranty repair.

Governance

Alignment with the Commission's SRI Guidelines

Overview of key modifications made to meet the new SRI Guidelines:

New responsibilities for the Independent Inspector	Triggering product testing Triggering on-site inspections Receiving & reporting allegations to the Steering Committee
Stakeholders have a number of options to participate	Raising complaints directly to Independent Inspector Possibility to speak at Steering Committee meetings Member States may request technical compliance documentation
Changes to deadlines and schedules	Signatories must address non-compliance within six months, other than in exceptional circumstances where substantial redesign of product hardware or firmware is required, in which case non-compliance must be resolved within 12 months

Stronger system of checks and balances

Alignment with the Commission's SRI Guidelines

Checks and Balances - New Responsibilities for the Independent Inspector:

Triggering product testing	<ul style="list-style-type: none"> • When a new type or model of console is first placed on the market by a Signatory • If an allegation of non compliance cannot be resolved via communication with the Signatories
Triggering on-site inspections	<ul style="list-style-type: none"> • If Signatories are using onsite power testing facilities and their results are inconsistent with either the Independent Inspector's or other stakeholder test results.
Receiving & reporting allegations to the Steering Committee	<ul style="list-style-type: none"> • The Independent Inspector can receive allegations from third parties through the SRI website • The Independent Inspector has to report to the Steering Committee all allegations received

Alignment with the Commission's SRI Guidelines

New Timescales for the Next SRI Review

New timescales	<ul style="list-style-type: none">• Agreement would be reviewed again in 2019, or• after new console announced with significant improvement in computing performance (future improvement may not be due to higher resolution)
Main changes to ensure timely review	<ul style="list-style-type: none">• SRI Signatory can request for a new category of console to be added based on performance• Proposal to be presented to SRI Steering Committee• If accepted by the Commission, new category is added and review starts• Once accepted, a new category of console with new requirements will be created within the SRI• The aim is for the review process not to exceed one year

Summary

Summary of proposed new commitments

For the updated SRI, the games consoles industry proposes the following changes:

- New categories for UHD consoles
- New Tier 4 (2019) requirements
- New removability requirements
- New recyclability / durability rules
- New responsibilities for the Independent Inspector
- New timescales for the next SRI review