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ConnectedTV - Business Stakeholders

Fields marked with * are mandatory.

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Glossary

Please download here the Glossary with main terms used in the following Questionnaire.

ConnectedTVSurvey_Glossary.pdf

Objective

The objective of this questionnaire is to collect information about the current situation and trends in connect TV standards with a view to understanding the connected TV ecosystem, the role of standards in the connected TV ecosystem, the main issues and challenges that standardization has to face, reasons and consequences of lack of coordination (i.e. different approach of Connected TV) and stakeholder opinion about vision and trends.

Framing

Nowadays watching television is not a task that has one's exclusive attention anymore. Instead it is an activity that is integrated and used with applications available from other devices. Dedicated applications for second screens, as well as those on the TV set, allow viewers to interact in different ways with the TV show, offering users the possibility to share content or information. They also benefit from other services such as access to audiovisual online content, catch-up services and program related information. In fact, convergence between TV and Internet is manifesting itself through connected TV (HbbTV, MHP, etc.) and OTT TV (platform streaming dongles, iPlayer, etc.). These "new" approaches have created a number of new ecosystems of services and the issue is how far these approaches should be supported by standards.

The regulated history of TV broadcasting standards now blends with the more permissive and dynamic world of Internet, with a mix of standards and proprietary technologies. The standards suite used in Europe for digital video transmission is Digital Video Broadcasting (DVB). In order to enjoy hybrid TV services, TV, or set-top-boxes, need to work with standards that allow users to access online content and exploit digital broadcast content and Internet content offered via the interactive channel.

The open standards of interactivity most commonly used in Europe are Multimedia Home Platform (MHP) and Hybrid Broadband-Broadcasting TV (HbbTV). HbbTV and MHP provide Internet interaction services for smart TV, or second screens through a browser, which merges the access to the broadcast TV content with services, applications and content delivered via Internet.

New elements and "new challenges" are arising in this converged space:

- Data, traffic management for OTT, Content Delivery Network (CDN);
- Future access to platforms;
- An understandable nervousness from incumbent players in a space driven by demand rather than supply-side considerations and whose governance may require services to be universally available on all delivery mechanisms (Public Service Media);
- Tension in the academic literature between standards facilitating markets versus freezing innovation and generating coordination costs.

In relation to responses from the 2013 Green Paper[1] (Preparing for a fully converged audiovisual world) , three positions on future standards can be identified:

- **Pro-innovation**: "let a thousand flowers bloom";
- **Concerns** over "**interoperability**";

- **Fragmentation concerns** over the number of different standards and hybrid options containing standards and proprietary technology - "secret sauce"- that content providers must support to achieve access to the whole audience.

The debate on standards and interoperability is an opportunity to question legacy and to establish new requirements. At the same time openly standardizes solutions are the only way that every market participant can bring in its interest in the technology development, and can also use this technology in his own discretion. Thinking evolved from the full analogical approach to today's much more diverse service environment with a plethora of digital free-to-air and pay TV broadcast services and an ever-increasing number of on-demand OTT and connected services; how far the roles of standards and interoperability have altered under notions of agreed access; what universal availability really means in this new, demand-led environment; also the balance between innovation and certainty and between first movers and second movers. The role of interoperability and therefore of standards must evolve to reflect these new circumstances. Legacy assumptions regarding standards and interoperability need intensive scrutiny in order to establish whether they are fit for purpose going forward in this much more diverse arena and whether any new requirements have emerged.

The purpose of the following questionnaire is to deepen opinion & concerns about the present and the future of Connected TV/OTT scenarios and better understand the role standards play in relation to different public policy objectives within the connected TV/OTT space.

[1] https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/convergence_green_paper_en_0.pdf

Questionnaire

SECTION I – Framing and AS-IS ecosystem

Question #1: Framing Opinion

*[1.1] Do you broadly agree with the framing of this questionnaire, especially the sections related to the ecosystem and the proposed approaches?

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See answer to [1.2]
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*[1.2] In your opinion, are there any missing or incorrect elements?

```
This study should take into account the broader eco-system of devices an
d services beyond Connected TV. Delivery channels used in EU countries v
ary with use and importance given their traditions for the public intere
st (e.g. cable in Germany / DTT in the UK or France). All platforms shou
```

ld receive equal treatment to prevent technical fragmentation from occur
ring. Therefore in our opinion it is of great importance to pursue the p
rinciple of technology neutrality and not do discriminate certain device
s or user interfaces.

To visualize the various ways to access audiovisual content please find
the diagram as in the paper linked here (page 3): http://www.digitaleuro
pe.org/DesktopModules/Bring2mind/DMX/Download.aspx?Command=Core_Download
&EntryId=1121&PortalId=0&TabId=353

According to the last Eurobarometer, Digital broadcast television (DTT,
DTH etc.) remains the most popular reception means for reliable mass-mar
ket linear content. However changes in consumer preferences (any time, a
ny content any device) and the analog switch off process have generated
limited migration between broadcast and broadband platform (4% in Euroba
rometer) that may affect their economical balance point in the future. I
n the context of Connected TV, managed IPTV and the over-the-top IP tran
smission of audiovisual content (linear or on-demand) are gaining in sig
nificance with their respective advantages and drawbacks.

For all platforms (Broadcast, Cable and Telco) that deliver content, the
principle of net neutrality must be respected. Any anti-competitive thro
ttling or blocking of individual services represents a significant dange
r to the market entry of small new market entrants. While abuse of anti-
competitive behaviour anywhere in the broadband value chain is undesirab
le (network, device, application or aggregation level) services that pro
vide choice to consumers in the market must be allowed to proliferate.

Where fixed broadband connections are sufficiently performing, also IPTV
gains importance typically requiring dedicated set top boxes so far and
not being integrated into standard TV sets yet.

In general, this study should reflect that Connected TV technology (irre
spective of the devices) opens a broad range of new opportunity for the
audiovisual industry. Online services have created a more open and level
playing field. They allow anyone to reach out online: creators and tradi
tional creative industries can reach a global audience, on multiple devi
ces, in much easier and affordable ways than it was possible with limite
d analogue channels.

More specifically, it is not correct that MHP is ´most commonly used` wi
thin Europe as stated within the initial framing. MHP could not really p
revail within Europe: even if it spread in Italy (but being replaced by
HbbTV) and Austria, MPH completely failed in Germany and also France and
Spain did not introduce it.

Question #2: Legal situation at EU level and regulatory questions
The broadcasting part of the list of standards (voluntary part – the mandatory part being empty)

specified under art. 17 of the Framework Directive 2002/21/EC[1] (FD) includes:

For Application Programme Interfaces:

- Digital Video Broadcasting (DVB); Multimedia Home Platform (MHP) Specification 1.1.1 (ETSI TS 102 812 version 1.2.1)
- Digital Video Broadcasting (DVB); Multimedia Home Platform (MHP) Specification 1.0.3 (ETSI ES 201 812 version 1.1.1, previously TS 101812 v. 1.3.1)
- MHEG-5 Broadcast Profile (ETSI ES 202 184 version 1.1.1)
- WTVML, Specification for a Lightweight Micro Browser for interactive TV applications, based on and compatible with WML (ETSI TS 102322 version 1.1.1)

For digital broadcasting:

- Digital Audio Broadcasting (DAB); A Virtual Machine: DAB Java Specification (ETSI TS 101993)
- Digital Video Broadcasting (Handheld) DVB-H (ETSI EN 302 304 version 1.1.1)

In accordance with art. 17 FD this list is "to serve as a basis for encouraging the harmonised provision of electronic communications networks, electronic communications services and associated facilities and services."; "Member States shall encourage the use of the standards and/or specifications […] for the provision of services, technical interfaces and/or network functions, to the extent strictly necessary to ensure interoperability of services and to improve freedom of choice for users."

[1] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32002L0021

* #2.1 Outdated Standard
Providing evidence to support your opinion, do you agree that the entries in the list above are outdated and should be removed?

```
See answer to [2.2]
```

* #2.2 New Standards
Providing supporting evidence, state the new standards or specifications which should be included.

```
Innovation often benefits from standards, either because they provide co
mmon interoperability platforms as a basis for competitive differentiati
on or by making new technology solutions available for exploitation. Suc
h interoperability platforms and solutions stimulate competition and gen
erate mass markets. They can also enable volume scaling effects in suppl
y chains.

Global supply chain efficiencies brought about by interoperability are v
ery much behind the digital industry's ability to provide leading -edge
innovation to consumers at affordable prices. However, in the audiovisua
l sector, new business models and technologies are still emerging rapidl
y and it is not yet clear how they will evolve and whether they will be
successful, which makes it difficult to predict the adoption / spread of
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specific standards in the future.
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* Question #3: Electronic Program Guide (EPG)

There are competences for Member States to regulate presentational aspects of EPGs referred to in art. 6(4) of the Access Directive 2002/19/EC (AccD) and to impose access to EPGs for broadcasters under art 5(1b) AccD.

In your opinion, have these competences been used by the Member State(s) where you operate?

```
We can only refer to the regulation as mentioned above and not to specif
ic national regulation, because it varies between the different member s
tates. To our knowledge, there is only a few regulation within the diffe
rent member states. Generally, we want to point out, that national flavo
rs of EPG regulation rather hinder innovation and lead to fragmentation.
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SECTION II – The role of standards

* Question #4: The role of standards and Accessibility.

Technology plays an increasingly important role in helping people with disabilities (i.e. blindness, deafness, etc.). However, these opportunities could be lost if accessible content, i.e. subtitles, sign language or audio-description, is not produced or not made available to end users.

Considering the different public policy objectives within the connected TV/OTT space, please state your opinion about the role that could be played by standards in relation to accessibility.

```
Existing technical specifications and standards are more than adequate t
o meet current accessibility needs - the major issue in the EU at presen
t is predominantly an operational issue relating to the implementation o
f these existing standards. Determining which accessibility features sho
uld be built in and which are better addressed via a connection or stand
ardised interface to third party assistive technology should remain subj
ect to technical leadership and market driven approaches.

Especially in the audiovisual sector, accessibility of a given product d
epends on a wide array of other inter-dependent products, services and t
echnologies in order to be accessible.  Devices have been capable of rec
eiving and processing subtitles and audio description for many years, ho
wever the transmission and provision of these services has been variabl
e. In many instances these services simply are not made available, and w
hen they are they can be of variable quality. Content providers, broadca
sters and device manufacturers need to cooperate in order to ensure that
an end-to-end service is delivered from the source of the program to the
ir users.
```

DIGITALEUROPE and its members have been leading on voluntary activities for the accessibility of television sets. These include the 2007 industry self-commitment, the development of an International Standard for text-to-speech for Digital TV (IEC 62731) in 2013 and the on-going creation of a new IEC standard on digital TV (IEC 62944).

* Question #5: The role of standards and the Protection of Minors

One of the most relevant innovations introduced by connected TV is the availability of a huge amount of content. However, without proper controls, inappropriate content can be accessed and viewed by minors.

In your opinion, what role can standards play in protecting minors for the purposes of public policy?

Regarding protection of minors in the media the CE industry is very sensitive and has developed numerous tools to control and personalise the use of the devices, interfaces or applications by the user.

However, we recognise that existing possibilities as defined for DVB are not yet fully utilised: not by broadcasters and also due to lack of awareness of parents. We believe that the Commission should allocate funding for targeted awareness campaigns per member state, in cooperation with the local authorities, content providers and manufacturers.

Self-regulatory mechanisms are preferable to normative regulation, because they are supported by stakeholders and offer quicker and less complicated means. The digital industry has signed a number of codes and charters across Europe and at EU level that commit signatories to aggressive action to prevent the spread of child abuse imagery online. This includes the Better Internet for Kids strategy and The ICT Coalition for Children online.

In addition, the majority of popular digital prosumer services have developed sophisticated ecosystem governance, including enforceable 1) "Community Guidelines" which describe the type of content that is prohibited, 2) "Safety Modes" ensuring that age-restricted content is not displayed to minors, and 3) "community flagging" tools which empower the users to help identifying and hiding inappropriate content.

* Question #6: The role of standards regarding Media plurality & diversity.

Media freedom and pluralism are enshrined in Article 11 of the Charter of Fundamental Rights of the European Union. Through the internet, citizens have access to an unparalleled amount of information and content beyond national offerings and can participate in opinion making. This facilitates freedom of expression and enhances pluralism of opinions. At the same time, the ways in which people relate to information are changing. Filtering mechanisms, including

personalised search results, may make it more likely for people to receive the news in their area of interest, and from a perspective with which they agree.

Considering the different public policy objectives within the Connected TV/OTT space, please state your opinion about any continuing role that could be played by standards at a Regulatory level regarding Media plurality & diversity in terms of discoverability, access, etc.

```
Connected TV extends media plurality and diversity and significantly aug
ments, rather than limits, the richness of access to content. Thus, Conn
ected TV and hybrid devices greatly contribute to the goal of media dive
rsity and the free flow of information in the European Union. In fact, d
evice manufacturers compete by offering access to as many applications a
nd as much content as possible.

In our view, voluntary market-driven standardisation is best suited to u
pdate and improve basic standards as enablers in the converged AV marke
t. A careful approach is required for all EU standardisation activities,
so that the economies of scale offered by new technology developments to
provide services across Europe are not eroded by the risk of technical f
ragmentation coming from local requirements.

Regarding discoverability: Discoverability/ findability of content shoul
d not be forced by legislation, because the concept of "must be found" w
ould carry significant potential for discrimination among content provid
ers and has to be questioned as a whole, also under the perspective of o
ther devices. Privileging specific programmers or content distributors w
ould at the same time disadvantage others. Furthermore, 'must be found'
cannot mean that the user gets dictated what to watch because every cont
ent provider has to face competition regarding the user's attention on i
ts own.
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Question #7: The role of Standards regarding Sustainability

*[7.1] Industrial Sustainability
The current landscape of Connected TV, which refers to the phenomenon of divergent standards as well as the progressive merging of traditional broadcast and internet services, seems to reflect broad diversity in Europe. The current fragmentation of standards, technological solutions and rights management systems in the EU may compromise the general level of interoperability and create barriers to the creation of a single European market for Connected TV.

Considering the different public policy objectives within the Connected TV/OTT space, please state your opinion about the role that could be played by standards to a) reduce fragmentation and/or b) achieve economies of scale. Please give an estimate what factor of additional development and operational costs are caused by deploying services to multiple connected TV and OTT platforms.

```
Voluntary market-driven standardisation is best suited to update and imp
rove basic standards as enablers in the converged AV market and to reduc
e fragmentation.
The HbbTV Standard, is a prime example of this. It has enabled our indus
try to avoid potential fragmentation across borders and to provide devic
es that work with services across national borders in horizontal market
s.


In addition, industry-driven initiatives such as the Smart TV Alliance c
omprising several EU companies, have emerged to develop Connected TV app
lications for content providers on several connected platforms and have
developed multi-platform software development environments. This ensures
that all content is as a matter of principle made available to the same
quality standard on networks and platforms.


In general, we cannot make any comments on specific operational costs, a
s they differ between individual companies, depending on their business
models.
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* [7.2] Environmental Sustainability

During last years, technological/digital evolution has brought the R&D experts to debate about "how technology can support environmental sustainability" in terms of reducing environmental pollution (carbon footprint), energy usage, reduction of paper (digitization), ecc. (e.g. BBC whitepaper Understanding and Decreasing the Network Footprint of Catch-up TV http://www.bbc.co.uk/rd/publications/whitepaper258).

In this context, please state your opinion about 1) how connected TV can contribute to sustainability; 2) the role that could be played by standards at a Regulatory level to support this process.

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No answer.
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* Question #8: The role of standards regarding Privacy

The selection of contents for connected TV is focused on the possibility of making content available to the profile of each single user. Furthermore, the social network platforms integrated in Connected TV (i.e. OTT App) allow for the sharing of personal information. In this context it may be necessary to reconsider privacy protection.

Considering the different public policy objectives within the connected TV/OTT space, please state your opinion about the role that could be played by standards regarding privacy in terms of data protection issues (related to the connected TV/OTT space).

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When it comes to transparency, Europe's current and future data protecti
on framework lays down strict requirements for data controllers to provi
de a variety of information to data subjects when their personal data is
collected.
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This includes the identity and contact details of the data controller, t
he contact details of the data controller's data protection officer (if
applicable), the purpose of the processing, the legitimate interests pur
sued by the data controller, the recipients or categories of the persona
l data (if applicable), any intention to transfer the data to a third co
untry or international organisation (including the safeguards taken), th
e period for which the data will be stored, the existence of the right t
o request access/rectification/erasure of the data, the right to object
to further processing, the right to data portability, the right to withd
raw consent (when the data processing is based on consent), the right to
lodge a complaint to a supervisory authority, and the existence of autom
ated decision making including profiling.

When it comes to the ability to move from one platform to another, the E
uropean Union's current and future data protection framework provides da
ta subjects with the right to data portability, so that all data subject
s have the right to receive the personal data they have provided a data
controller in a structured and machine-readable format for the transmiss
ion to an alternative data controller.

This current framework provides data subjects with the flexibility neede
d to efficiently change providers without the need for further technical
requirements. The imposition of sector specific formats for the transfer
of data would stifle innovation and become costly for businesses. Moreov
er, a 'commonly used' format leaves open the potential for a less secure
mechanism.
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SECTION III – Issues and Challenges

Question #9: Fragmentation and diversity

In the current EU environment there are different approaches and standards related to the Connected TV/OTT space (HbbTV, DVB-T/S/C channels, etc.),. As a consequence, technical fragmentation increased with the diffusion of different standards and proprietary technologies. This could equally be perceived as a testimonial to a more diverse environment for service provision.

* [9.1] According to your point of view, are business opportunities limited by this fragmentation?

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No answer.
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* [9.2] According to your point of view, are there barriers to innovation?

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No answer.
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* [9.3]Please provide practical examples.

> No answer.

***** Question #10: Proprietary/new standards vs existing standards

A good number of connected TV or OTT platforms do not implement existing standards, which are well implemented in other market segments.

Please state your opinion about the reason to develop a proprietary/new standard instead of adopting an existing standard.

> No answer.

***** Question #11: Lack of co-ordination

In the Connected TV context, there may be a lack of co-ordination of regional/national implementation measures which means that devices/platforms typically still have to be configured for regional or even national markets. In addition, end-user devices are in most cases not (or not fully) interoperable with services globally provided and/or within the single market.

Please state your opinion.

> DIGITALEUROPE strongly believes that any technical fragmentation should be avoided in order to ensure a truly functioning single market for devi ces and services, which will ultimately benefit the consumers in terms o f price and in terms of cross-border functioning of their devices and se rvices.
>
> As far as technical coordination is concerned, DIGITALEUROPE has some sp ecific concerns around the HbbTV specification. In particular, DIGITALEU ROPE members observed that technical requests for HbbTV specifications m ay differ according to service providers. This creates considerable chal lenges to ensure that these technical requests are not incompatible betw een themselves and can therefore be technically implemented on the same device across Europe. Therefore a real risk of technical fragmentation e xists, which would create considerable barrier for the Single Market for electronic devices.
>
> In addition, there is currently a high level of service fragmentation wh ere audiovisual services are not available cross-border. In contrast wit h what the wording of this question suggests, it should be clearly under stood that device manufacturers are not blocking the availability of app lications and services cross-border.
>
> There is a real interest from manufacturers to have a competitive and vi brant selection of applications and services. Connected TV offers opport unities to tackle this issue by offering the same application and servic

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es in the 28 EU countries (and even beyond). It is currently for the ser
vice providers to decide in which countries they make their services ava
ilable. As identified by this question, further coordination would be we
lcome to avoid technical fragmentation (as per the HbbTV example) as wel
l as regulatory fragmentation (e.g. local requirements for specific init
ial configuration of TV devices – like LCN settings: some countries impo
se some mandatory requirements while others don't address LCN at all.


Even between UK horizontal platforms (Freeview and Freesat) there are di
fferences in LCN allocations, including regional variations (especially
regarding England, Wales, Scotland and Ireland). There are also differen
ces regarding the prioritisation between HD and SD channels across platf
orms and regions.


These fragmentation challenges are fast-moving as the technology and mar
ket demand evolve at a fast pace. Therefore, DIGITALEUROPE believes that
potential future challenges should continue being solved by industry dia
logue. The market will continue identifying the successful specification
s and EU intervention is not required.
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Question #12: Interoperability

As explained in the framing, several approaches have been proposed. They usually involve two different ways of accessing channels: Broadcast (e.g. DVB-C/T/S) and Broadband (e.g. OTT App, Apple TV, etc.), both used as vehicles for content delivery. When choosing a channel, one of the major issue for Stakeholders of the digital chain is Interoperability: Content Providers (e.g. RTL Group, Magnolia, etc.), Content Distributors (e.g. Netflix, HbbTV, etc.), Network Operators (Vodafone, Telecom, etc.), SW Manufacturing (Samsung, Panasonic, etc.) need to co-operate to guarantee the fulfillment of end-users' needs. This co-operation is not only related to technological aspects but also to operational procedures (communication, contracts, testing procedures, etc.), placing of your offering (how good can your service be found, etc.) and commercial terms (rights, costs, etc.), which are all relevant to reach Interoperability.

Considering the mission of your company, which has been the biggest challenge in order to reach interoperability? How did you overcome it? What kind of support might have helped in this context?

* [12.1] Technological aspects

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DIGITALEUROPE believes that interoperability is taking an ever increasin
g importance in our connected and mobile society.  DIGITALEUROPE also re
cognises that the interoperability needs can take different aspects, as
it is often recognised that interoperability challenges can appear at te
chnical, semantic, organisational or legal levels. In that context, stan
dards form a very important foundation for enabling interoperability.


The ICT industry is characterized by rapid technological change, ever sh
orter product cycles, and continuous waves of innovation. Voluntary stan
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dards support these characteristics, by allowing for evolutionary and re
volutionary changes to be adopted by industry and markets - with new sta
ndards, new technologies - and by allowing standards themselves to evolv
e. Technical regulations and mandates, even when well--intended and care
fully crafted, typically take much longer to develop and risk locking in
technologies that may be suboptimal, or obsolete by the time the regulat
ion is enacted.

We've recently seen changes being proposed to existing OTT services whic
h are included as part of hybrid platforms (Freetime and Freeview Play).
These changes may result in legacy devices (only 1 or 2 years old) no lo
nger being able to support these services, or severely limiting the cont
ent available through them, without significant software upgrades. This
is a good example of the rapid changes in technology and the lack of fut
ure proofing in some interoperability specifications which are supported
by devices at the time of manufacture. Ultimately the end user will blam
e the manufacturer for the service no longer working on their device, re
gardless if the service itself has changed.

* [12.2] Business aspects (operational procedures, contractual or commercial terms, etc.)

Device manufacturers and digital service providers compete by offering a
ccess to as many applications and as much content as possible. DIGITALEU
ROPE recommends that it should be left to market forces (both the supply
and demand side) to deliver an increasingly diverse and vibrant market f
or audio-visual content and services in Europe.

However, we have seen tendencies from broadcasters to select preferred m
anufacturers, to charge for apps' adaptation for specific portals and de
vices, and/or to refuse to make their applications and content available
to other manufacturers for business and contractual reasons, not for tec
hnical ones.

This has certainly hindered uptake of certain services from PSBs in the
past. The introduction of managed hybrid platforms (such as Freetime and
Freeview Play in the UK) has created a much more level playing field for
manufacturers. Public service broadcasters operate under the public serv
ice remit that justifies the intervention in the European Audiovisual ma
rket with the aim of assuring media plurality, strengthening democracy a
nd furthering European integration. Such an important mandate in todays'
world cannot be limited solely to first-linear distribution given toda
y's changing consumption patterns.

Furthermore, as the obligation under the public service remit is targete
d at public service broadcasters, it is natural that they fulfil their o
bligations and secure necessary rights for all mandatory linear and non-
linear redistributions of their content to assure that all citizens can
enjoy the benefits of public service broadcasting. In this context, the

European Commission should consider introducing a related 'must-offer' o
bligation.

The public service remit comes with some vital overarching political obj
ectives of democracy, media plurality and European integration. This is
the key foundation for the intervention in the European TV market and th
e justification of public service broadcasting. Furthermore, these vital
objectives are financed already by the public through taxes and/or manda
tory licenses. In addition, some content classes such as current affairs
reporting (news, documentaries and etc.) are distinctly different from o
ther content classes such as Film, TV- serials, Entertainment, Shows et
c.

Put differently, there is little ambiguity where to draw the boundary be
tween the former and the latter content classes. Based on the above, cur
rent news reporting produced by public service broadcasters should fall
under the scope of open government data. The benefits associated with op
en government data have been recognized in many other areas and constitu
te a significant imperative for public services' contribution in enablin
g data-driven innovation economy throughout Europe.

The question that has been left unanswered is why to exclude public serv
ice broadcasting and in particular some specific content class? Opening
up some public service content as open government data is an interventio
n that could open up for new innovations and aggregation of pan-European
current affairs reporting, creating a Digital Single Market for European
public service Current Affairs reporting available to all EU citizens. T
his would positively contribute to furthering European integration and r
einforcing media plurality and democracy at pan-European level.

Question #13: Implementation process of standards

State-of-the-art standards typically follow a toolbox approach to integrating various complementary
and supplementary functionalities. Implementing such standards enables economies of scale to be
achieved (i.e. in manufacturing) or in establishing a platform, but it is no longer sufficient to
guarantee interoperability for end users when they use their equipment (e.g. the different national
implementations of HbbTV).

In this context:

[13.1] Integration of functionalities
Are there any difficulties for integrating functionalities to the standards? If yes, what kind?

It is not true that "state-of-the-art standards typically follow a toolb
ox approach", if toolbox is understood to mean a standard that includes
multiple options to fulfil the same function. In fact, toolbox standards
will tend to increase costs and create extra difficulties for integratio
n on the manufacturers' side, while harming interoperability for consume

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rs. We note the HbbTV did not adopt a toolbox approach.

As the HbbTV specification evolves so does its support by OTT operators.
However the underlying hybrid platforms that these OTT services are inte
grated with do not always change at the same rate. As a result we see th
at some OTT services are changing their requirements out of sync with th
e platform specifications implemented on devices (see response to 12.1 a
s an example).
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[13.2] National requirements
Is the implementation process influenced by national specifications and/or limitations?

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It is preferred that national requirements are taken up in a common stan
dards process (such as DVB or HbbTV), so common solutions can be develop
ed and adopted address all requirements, and avoiding divergence between
national markets.

Platforms using HbbTV as a baseline specification often include addition
al bespoke requirements, resulting in ongoing fragmentation (Freetime is
a good example which has defined additional software APIs in addition to
HbbTV1.5 which it's based on).
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[13.3] Standards integration
Can the implementation process of standards/functionalities be properly integrated with the standards already present on the market (DVB, MHP, etc)?

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Yes. Newer standards such as HbbTV build on delivery mechanisms provided
by DVB, and can co-exist with MHP, while offering a transition path. But
this may come at a cost where technologies must coexist. In this case th
ere is a development/testing/approval overhead involved, which invariabl
y results in increased complexity and financial cost. A good example is
the coexistence of HbbTV and MHEG which are both mandated in the Freevie
w Play spec.
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[13.4] Open/Proprietary standards
Do you think that the contemporary presence of open and proprietary standards can make the process of implementing standards more difficult?

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In general, the frameworks defined by DVB allow standardised and proprie
tary systems to co-exist, as long as those systems build on the underlyi
ng standards. However, especially if there is a financial barrier to sup
porting a proprietary technology (license cost), proprietary technologie
s can also be subject to changes which can be less rigorously controlled
compared to open standards which usually go through committee managed pr
ocesses.
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SECTION IV – Vision e Trends

* Question #14: Incentives

According to your stakeholder perspective, and your role in the Connected TV/OTT space, are there – or will there be – weak areas where public policy can help stakeholders with incentives?

> No answer.

* Question #15: HbbTV

Knowledge of open standards for hybrid services based on OTT/broadcast convergence at the device level is however relatively easily available. As anticipated in the framing, HbbTV is an open standard developed by the HbbTV Association and published by European Telecommunications Standardization Institute (ETSI). The standard is constantly evolving; the latest version, HbbTV 2.0, was published in February 2015.

Please state your opinion about the utility and prospects of the HbbTV standard.

> As stated above, HbbTV has enabled our industry to avoid potential fragmentation across borders and to provide devices that work with services across national borders in horizontal markets.

* Question #16: Vision 5-10 years

Considering the recent rapid revolution of technologies related to Connected TV, and the growing need for customers to have interconnected products/services (with particular focus on accessibility), how, in your opinion, will customers' needs evolve over the next years? Which will be the most widespread approach to accessing content in the future? (HbbTv, OTT App, Second Screen, etc.).

Please provide evidence to support your answer.

> Consumers' media usage continues to grow at a four percent rate annually across a majority of EU Member States. A recent study found that of the approximately seven hours per day the average European consumer has available for activities other than work, meals, sleep and household chores, more than 60 per cent are spent consuming creative industry products (including TV, newspapers, etc.). The consumer surplus resulting from the provision of online media ranges from 1 557 Euros per consumer (Sweden) to 842 Euros (Ireland).
>
> EU citizens have been accessing the Internet for many years and have been consuming services from providers that do not fall under the definition of the AVMS-D providers – including radio or news publishing content – over that time. Trends are mobility, flexibility and personalization: we

believe that both technology-driven innovation and user demand drive the
development of new, personalised audiovisual services in Europe. Europea
n users should be placed at the centre of the audiovisual and media expe
rience - with full control over the content they access, where, when and
how.

There is also an increasing use of linear TV content on mobile devices w
hich is fuelled by the capabilities of new mobile devices such as smart
phones and tablets and the capabilities of LTE. As this can quickly chal
lenge the available mobile networks capacities, first implementations of
the broadcast mode called evolved Multimedia Broadcast Multicast Service
(eMBMS) are announced for 2014 to provide for efficient means to serve m
ultiple users in a location, e.g. a stadium, with linear content.

Online services have created a more open and level playing field. They a
llow anyone to reach out online: creators and traditional creative indus
tries can reach a global audience, on multiple devices, in a much easier
way than it was possible with limited analogue channels. New creators an
d entrepreneurs compete with traditional or legacy players, as they avai
l themselves of those opportunities. Consumers and content producers are
the beneficiaries of these developments. The market is very dynamic and
provides users a wealth of choice. Many new European and global Internet
services (e.g. Netflix, DailyMotion Vimeo, ClipFish, MyVideo) have creat
ed new user experiences on a wide range of devices. Many broadcasters su
ch as Arte or the BBC take advantage of these new opportunities with app
lications for connected devices.

Evidence:
•   PWC, The digital Future of creative Europe http://www.strategyan
d.pwc.com/global/home/what-we-think/reports-white-papers/article-displa
y/the-digital-future-creative-europe
•   BCG, 'Follow the Surplus' (2013), available at https://www.bcgpe
rspectives.com/content/articles/media_entertainment_digital_economy_foll
ow_surplus_european_consumers_embrace_online_media/)

* Question #17 Future development of technologies/standards:
European standards are adopted by a European standardisation organisation (CEN,
CENELEC, ETSI, etc...).

In your opinion, in which areas of development should technologies/standards focus upon?

Experience shows that wherever there is a strong market need projects fi
nish timely; where there is limited market need or a longer horizon, pro
jects also tend to take longer. Regardless of the type of standard or it
s origin, a standards process needs to have a reasonable prediction of b
road market adoption.

```
Voluntary, industry - driven standardisation guarantees that the pace of
standards development is adapted to market needs and that standards to c
ater for those market needs become available in a timely fashion. The di
gital industry is characterized by rapid technological change, ever shor
ter product cycles, and continuous waves of innovation.

Voluntary standards support these characteristics, by allowing for evolu
tionary and revolutionary changes to be adopted by industry and markets
- with new standards, new technologies - and by allowing standards thems
elves to evolve. Technical regulations and mandates, even when well - in
tended and carefully crafted, typically take much longer to develop and
risk locking in technologies that may be suboptimal, or obsolete by the
time the regulation is enacted.
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Background Documents

EC endorsement Letter (/eusurvey/files/457707ea-a33e-479f-9e2b-e4324c966a00)

GREEN PAPER, Preparing for a Fully Converged Audiovisual World: Growth, Creation and Values (/eusurvey/files/5c22c84b-e146-4563-8530-cfc68ff44ed9)

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