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1 About the Digital Interoperability Forum

The Digital Interoperability Forum (DIF)¹ was established in 2003 by major companies involved in the pay TV delivery chain. DIF members include manufacturers, platform operators, vendors of software (e.g., conditional access and digital rights management (DRM)) and middleware (e.g., an application programme interface (API) or electronic programme guide (EPG)), and broadcasters.

In 2003 the pay TV industry had already launched interactive TV services which were regarded then as a driver for the take-up of digital television². Several million interactive digital set top boxes (STBs) had already been deployed. Pay TV companies and their suppliers were understandably concerned about a Commission proposal which could lead to the mandation of an API standard developed by DVB – DVB Multimedia Home Platform (DVB-MHP) - which, in the Commission’s view (which was shared by some industry stakeholders) would promote interoperability of interactive TV (amongst other things). The mandation of DVB-MHP would have resulted in the write-off of millions of euros in the STBs already in consumers’ homes. Thus, DIF was created to advocate the case for interoperability achieved by market-led solutions, using different APIs which allowed for innovation, competition and consumer choice.

Following a successful outcome to the DVB-MHP debate, DIF continued to represent the pay TV sector on policy and legislative matters relating to the technology used for the distribution of paid-for content. As the types of platforms and devices used expanded rapidly – from an industry focussed on distribution via STBs to the use of tablets, games consoles and smartphones – so did DIF’s agenda. For example, DIF created and led the implementation of the first self-regulatory approach³ endorsed by the Commission under the Ecodesign Directive⁴. However, at the core of DIF’s remit remains interoperability; a subject which also continues to pervade EU policy discussions. This White Paper is presented as a review of the state of the debate on interoperability.

2 Executive Summary

Interoperability, or rather the lack thereof, has been a persistent feature of policy discussions and proposals within the EU over the last decade – and even further back in time. From the discussion about the possible mandation of DVB-MHP through to current suggestions that a lack of interoperability is hampering the digital economy and completion of the single market, the balance of policymakers’ opinion has been that regulatory intervention, often in the form of the mandatory use of specified standards, could be warranted in order to promote interoperability in the interests of consumers. It is argued that the lack of interoperability results in harmful fragmentation through the loss of economies of scale, limitations on consumer choice, etc.

This can be a politically persuasive viewpoint which looks at the consumer proposition from a very simplified standpoint. Notably, it assumes that consumers do not understand or accept that the content they want to consume will not be available on every device they own. The policymakers’ viewpoint also often ascribes the lack of interoperability to alleged technological shortcomings. It is argued that the use of different (and particularly proprietary) technologies creates avoidable barriers to consumer satisfaction. With 189 million pay TV subscribers in Europe⁵ – enjoying TV via satellite, cable, DTT, IPTV, and using STBs, integrated TVs, smart TVs, tablets, games consoles, and smartphones to access content

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¹ www.difgroup.eu
² Where the technical delivery of interactive services also included the use of a return path, allowing connection to the internet, interactive TV was also seen as a means of promoting digital inclusion and access to online public services.
³ Voluntary Industry Agreement to improve the energy consumption of Complex Set Top Boxes within the EU
⁴ DIRECTIVE 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products
⁵ Source: IHS
– DIF believes that the claim that there is a lack of interoperability due to technological reasons cannot be justified. Indeed, looking beyond Europe’s pay TV industry to arguably the most successful consumer electronics company of the decade, Apple, with over 139 million customers in Europe who enjoy a closed product ecosystem which are seamlessly interoperable with each other but not with third party devices, it is unfathomable that policy papers and debates continue to allege that there is a lack of interoperability which is detrimental to the consumer interest.

The counterarguments tend to be overlooked. Little recognition is given to the fact that fragmentation is a product of competition, driven by innovation and substantial investments made by industry in the interests of serving consumers. Differences in product design, features and functionalities are the norm in the consumer electronics marketplace. They are accepted and welcomed by consumers who are able to make informed choices between competing products. In this respect the digital TV domain is no different. However, the prevailing view of policymakers (which is held also in some Member States) is that for some reason the audiovisual delivery world should be different.

The arguments for and against interoperability are revisited in this White Paper as a contribution to the continuing debate. It sets out the myths and realities of interoperability, the arguments for and against mandating standards and looks at two cases: DRM, an established technology, and Ultra High Definition TV (UHDTV), a “Greenfield Site”, in the light of the arguments for intervention.

The conclusion of this White Paper is that regulatory intervention to promote interoperability remains unjustified and even the prospect of such intervention is likely to harm the process and rate of innovation and investment.

3 Introduction

Defining interoperability

The issue of interoperability has pervaded policy and regulatory discussions in the EU (and elsewhere) since even before the Digital Interoperability Forum (DIF) was established in 2003. Most recently, at their discussions on the digital economy, the Council concluded that:

“There is also a need to address the bottlenecks in accessing one’s "digital life" from different platforms which persist due to a lack of interoperability or lack of portability of content and data. This hampers the use of digital services and competition. An open and non-discriminatory framework must therefore be put in place to ensure such interoperability and portability without hindering development of the fast moving digital sphere and avoiding unnecessary administrative burden, especially for SMEs’.”

Similarly a report on connected TV for the European Parliament Culture Committee stated that:

“Growth opportunities are hampered by the proliferation of proprietary solutions, lack of common standards, asymmetric levels of infrastructural and technological developments across the EU. The consumer’s increasingly fluid perimeter of content consumption and mobility is at the centre of the battle for the control of the convergence space by the major stakeholders in the rollout of connected TV. The lack of interoperability obliges every operator to develop specific interfaces for different devices. However, the three European standards (HbbTV, Freeview and MHP) embedded in TV sets may be compatible with HTML5 and proprietary systems.”

6 Source: IHS
The extracts above illustrate the common presumption in EU policy discussions that interoperability is somehow lacking and, accordingly, something should be done about it. This “something” could be regulatory intervention in the form of mandation of technical standards or incentives to industry to facilitate interoperability. Over the decade “interoperability” has become a policy mantra with an increasingly fuzzy definition of the concept and lack of substantive evidence to support the alleged deficiency.

Looking to the various policy discussions, DIF would define interoperability within the digital content domain as:

“The capability to deliver content across multiple platforms and devices based on commercial agreements and technological solutions, which recognise the need for content protection”.

The notion of access is key to this definition: rights-holders and distributors should be able to extend their content’s access to different delivery platforms and devices if they wish (subject to commercial agreement and in as secure a manner as they require) and consumers should be able to access such content where, when and how they choose (again, subject to any commercial arrangement and acceptance of encryption).

**The realities of interoperability**

It is often assumed that the main reasons why this kind of interoperability is lacking in practice are technological ones. In fact, the reasons are usually to do with the need to reconcile the interests of different industry players with competing strategic imperatives and business models.

Standards bodies play an active role in defining technical interoperability solutions and companies devote considerable resources to participating in and contributing to this work. This means that the technological means to achieve interoperability usually exist – or at least can be developed\(^7\). It is important to note that standards developed in industry bodies are generally adopted on a voluntary basis.

The fact that such technological solutions for interoperability are not always implemented and that content is not always available “anytime, anywhere” is sometimes deemed to be detrimental to consumers. The market fragmentation which arises is said to impede the achievement of economies of scale, resulting in higher costs. Conversely, however, any requirement to make a device fully interoperable would add cost – a fact that is usually ignored by interoperability protagonists. For example, in order to have a set top box (STB) which could be used on a cable, satellite, IPTV or terrestrial platform, the manufacturers would have to include multiple tuners, multiple conditional access systems (or multiple CA modules) and multiple middleware, and this additional cost would inevitably have to be passed on to consumers.

A good analogy is provided by the French TV-over-ADSL market. Here, consumers have access to broadly the same range of triple-play services, at generally similar prices, but service providers compete against each other by differentiating their (proprietary) receivers through ever-advancing, technology-based innovation.

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\(^7\) While interoperability is usually addressed when a specific technology is standardised, this does not ensure interoperability between different standardised technologies, particularly where the standards have been developed by different communities of stakeholders.
Freedom to innovate in this way has meant French consumers enjoy one of the fastest average broadband access speeds and highest rates of IPTV availability in the world, at some of the lowest prices, with some of the most advanced boxes.

More radical arguments include the claim that the inability of consumers to access content anytime, anywhere, encourages them to obtain content illegally. Similarly the alleged lack of interoperability is said to be illustrative of gatekeeping by industry. These are often the justifications for regulatory interest in, and intervention to achieve, interoperability. However, these somewhat simplistic arguments ignore the fact that differences in business models result in innovation, competition and consumer choice; the economic and social benefits of which have to be taken into account.

4 Promoting interoperability

There exists, broadly speaking, a continuum of methods used to promote interoperability that stretches from dirigiste, regulator-led mandation at one extreme to voluntary, industry-led agreement at the other. It is also possible that convergence on interoperability can emerge without any intervention or industry collaboration at all; as a kind of ‘invisible hand’ process.

An example of regulation-led mandation is the US FCC’s decision, taken by an internal FCC advisory group, to mandate the inclusion of ATSC-standard digital TV tuners in new TV sets by 2007. The declared rationale was “to give consumers access to digital programming over television” by ensuring that any type of TV display they purchased would be able to access (HD) digital terrestrial broadcasts; and also to support the country’s digital transition, which was set for 31 December 2006. In the EU there have been numerous attempts over the decades to mandate standards – from D2-Mac and HD-MAC, through DVB-MHP to DVB-H. The EC’s recent Green Paper on convergence falls short of arguing for mandation of a standard but asks what could be done to promote the HbbTV standard for use in “connected TV” devices.

One example of an industry-led agreement is UltraViolet which seeks to allow consumers to watch films and TV programmes they buy on an extended range of devices. Promoted by a group of Hollywood studios, it now has cross-industry participation including DIF members such as Microsoft, BSkyB, NDS a Cisco company, Liberty Global and Nagravision. UltraViolet combines a cloud-based digital rights locker storing content in a Common File Format (CFF) with the use of multiple DRMs; allowing content to be securely streamed or downloaded for offline viewing on a wide variety of connected devices.

Regulatory intervention can lie between these two states, with regulators tending to encourage industry players to come up with an agreed interoperability solution first but then often mandating, supporting or favouring that approach in subsequent legislation or licensing. A good example of this is the inclusion in UK digital terrestrial TV licences of a requirement to use the transmission parameters laid down in the UK’s D-Book, administered by the DTG industry group. In each case, these interoperability standards were first defined and agreed by industry.

5 Arguments for and against imposing standards

DIF accepts that it is desirable that consumers should, if they are entitled to and if they wish, be able to access the content they want on any type of suitable devices (tablets, smartphones as well as TV

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8 French ISP Free recently introduced a plug-in femtocell unit for its Freebox Révolution STB, for example.
10 Green Paper “Preparing for a Fully Converged Audiovisual World: Growth, Creation and Values”
11 http://www.uvvu.com/
screens). But it does not necessarily follow that imposing a standard (whether an industry-generated one or not) is the optimal way to achieve this.

**Arguments in favour of mandating standards**

Regulators argue that mandation of a technical standard can promote competition: otherwise companies could, in time and if left to their own devices, develop *de facto* monopoly standards of their own that might ultimately act against consumers’ interests (e.g., allowing monopoly rents to be extracted, competition to be stifled, etc.). Thus, mandation of open standards is seen as a way to prevent gatekeeper situations from developing. Other arguments for mandation include the claim that a single standard for all devices would deliver economies of scale (resulting in lower costs).

In the context of this regulatory argument the use of the term ‘open’ to describe any standard is notoriously slippery. The UK D-Book, already mentioned, claims to be ‘open’ in that it is derived from open standards, but is neither publicly available nor downloadable, and can only be acquired by paying the UK DTG membership fee. For all that, it is the foundation on the back of which the success of the UK’s DTT platform has been built.

Mandation can also be used to promote public policy objectives, because industry groups seeking to agree standards may develop them behind closed doors, regardless of the requirements of government policy or consumer interests. For instance, in relation to DVB-MHP it was argued that the use of a single (open) API would reduce the cost of authoring content, making content more readily available across platforms and in small Member States which might possibly be unable to sustain an application vendors’ business on their own.

**Arguments against mandating standards**

On the other hand, mandation may have unintended negative (and sometimes perverse) outcomes and ultimately be detrimental for consumers. Opponents of mandation maintain that regulatory authorities are likely to choose inappropriate standards for a number of reasons:

- Regulators may not be the best arbiters of effective technology solutions, and so the ones they choose may not work well in practice;
- Regulators may not be best placed to understand the practicalities of implementation and may adopt standards that are expensive to implement and fail to deliver economies of scale in mass production;
- The mandated standard may only address part of the technical interoperability requirements. For example, mandating a standard at the transmission level would be insufficient where software and middleware are also deployed in a device;
- Mandating a standard after a technology has already been deployed could result in the need to support and maintain two systems where the mandated standard is incompatible with the one previously used;
- Regulators may not be across the latest technology developments, and may choose solutions that could soon be out-dated. Indeed within the EU the regulatory process for mandation which, rightly, allows for consultation, may mean that the proposed standard to be mandated is no longer “best in class” in a fast moving industry

For industry in general, mandating standards may also stifle innovation and competition because:

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12 This is arguably what happened in the case of the failure to mandate a return-path as part of the industry-agreed UK DTT standard defined in the D-Book (already mentioned).
13 For instance, HD-Mac, DVB-MHP, and DVB-H in Europe and (arguably) ATSC in the USA.
• Standards are not a flexible regulatory tool in markets where technology is changing fast;
• They diminish the incentive for new companies to enter a market and launch innovative, disruptive products;
• Once an open standard is mandated there is less reason for companies to invest in R&D and attempt to differentiate their products from the competition;
• Standards can be used by regulators for undeclared political ends to unfairly support local companies and enforce protectionism;
• Mandated standards are likely to have less widespread support than voluntary ones; because they may include technology approaches or solutions that – unwittingly or otherwise – favour one set of market players over another and may encourage players to leave the market or look for ways to mitigate regulatory requirements.

The arguments listed above against mandation broadly summarise DIF’s position in relation to the use of mandatory standards to achieve interoperability.

6 Interoperability of Digital Rights Management – a case study

History has shown that that delivering interoperability is best left to the market. But it has been argued that content security technologies represent a specific case where regulatory intervention is required. This claim is often made in relation to the digital rights management (DRM), where there exist multiple solutions across a highly diversified device market.

The main argument put forward by regulators for a regulatory approach is that proprietary content security technologies constitute in themselves the root cause for consumers being unable to access content on different platforms or in different territories and, thus, encourage piracy. According to this view the use of a common, open DRM would support various policy goals, including the promotion of more content online.

This argument is based on a fallacy. Lack of common access to content across multiple platforms and devices arises from the legitimate business models adopted by distributors and/or rights-holders: it may be enforced through the application of a proprietary technology, whether to protect revenue or to ensure rights contracts are respected, but that technology itself is not the cause of this fragmentation.

For instance, Apple chooses to use its Fairplay DRM to ensure that iTunes content is only available on devices using the Apple operating system. The lack of interoperability with non-Apple based devices is not the result of Fairplay being used: rather, it is because Apple believes a vertically integrated approach best meets its business and strategic objectives, and consumers have adopted this solution in earnest.

Advocating or requiring the adoption of an open and/or a single DRM portrays a lack of understanding of the whole structure and practice of content protection and risks making DRM less effective. For example, whether defined as ‘open’ in this sense or not, DRMs such as Marlin and OMA have the inherent disadvantage that – once published – the only response to a successful hack is the withdrawal of certification, since any necessary counter-measures cannot be made public. This is a very disruptive and costly response to a situation which could be avoided by allowing industry to determine the DRM solutions appropriate for their business models.

In any case, mandating a particular, unitary DRM standard inherently raises the familiar risks involved in ‘picking winners’. The standard may become rapidly outdated, prove to be expensive to implement in practice, or simply fundamentally flawed. Requiring the use of an open, single DRM also raises fundamental questions about where responsibility lies – for robustness, maintenance, revocation, etc. Particularly in the area of DRM, the very process of nominating a single technology solution automatically attracts the attention of the hacker community: so maintenance and upgrades may prove a more costly process than where the risk is spread across multiple competing proprietary (or open) DRMs.
In the content security field, there are already several successful examples where interoperability has been secured through industry co-operation without mandation of a unitary, ‘open’ standard taking place.

A good illustration is provided by the negotiations that resulted in an agreement on interoperability of DVB Conditional Access Systems (CAS) in 1995. None of the technology solutions involved in the eventual compromise – the use of Simulcrypt and Multicrypt approaches facilitated by the use of a common scrambling algorithm (CSA) – were complicated in themselves\textsuperscript{14}. However, the deep importance attached to content protection and sensitivities in this area are illustrated by the intense negotiations within DVB, which involved, among a number of other factors, reconciling industry and sectoral interests, as well as resolving political disagreements between Member States and the European Commission.

The effectiveness of this solution to content protection can be gauged from the fact that it has survived through a number of iterations and improvements, including CSA-3 in 2008\textsuperscript{15}, and, this summer, CISSA\textsuperscript{16}, and the approach remains in use today. Moreover it has stood the test of regulatory longevity, being first introduced in the Advanced Television Standards Directive\textsuperscript{17}, remaining in force today for DVB-S2, DVB-T2, DVB-C2 and is also being used for MPEG-DASH. This demonstrates how competing business models can be respected while still allowing a post hoc regulatory remedy to address consumer interests.

7 Looking ahead - UHDTV

It is often argued that mandating a standard is difficult once a legacy base of devices exists and that the mandation approach is more appropriate to “Greenfield sites”. With Ultra High Definition Television (UHDTV) arousing the interest of industry players, it is useful to ask if there is a case for mandating UDHTV standards while it is in a “Greenfield” state.

Ultra High Definition Television is the next step up from HDTV and promises to offer a significantly more immersive and realistic viewing experience.

Standards and profiles for consumer products are still being defined by industry groups, but for practical purposes UHDTV can currently be divided into two versions:

- UHD-1 (often referred to as ‘4K’) which doubles the horizontal and vertical HD image size of 1920 x 1080 to 3840 x 2160; and
- UHD-2 (often referred to as ‘8K’ and used in NHK’s Super Hi-Vision system) which uses 7680 x 4320 pixels, quadrupling the horizontal and vertical HD image size.

Something resembling UHD-1 will probably be the first profile to become commercially available, although the industry consensus is that, for a multiplicity of different reasons (some of which are elaborated on below), the first UHD-1 services are likely to be two years away in the EU.

**Why UHDTV is a useful case study**

Although industry is still in the process of deciding the precise parameters for UHD-1 and how UHD-1 video will be accommodated within existing contribution, production and distribution chains, ‘4K’ TV

\textsuperscript{14} Simulcrypt essentially involves simulcasting two streams of encryption data alongside a protected broadcast signal instead of just one; while Multicrypt is simply an adaptation of the existing PC-based PCMCIA standard.

\textsuperscript{15} http://www.etsi.org/services/security-algorithms/dvb-csa3-algorithm

\textsuperscript{16} http://www.etsi.org/deliver/etsi_ts/103100_103199/103127/01.01.01_60/ts_103127v010101p.pdf

\textsuperscript{17} Advanced Television Standards Directive 8422/95 of 24 July 1995 on the use of standards for the transmission of television signals.
sets are already being sold at retail\textsuperscript{18}. Display manufacturers are keen to push UHDTV as the ‘Next Big Thing’, given the lower-than-anticipated demand for 3DTV by consumers.

However, hardly any UHD-1 content is yet available, and the small number of titles that do exist are being produced using manufacturers’ own interpretations of what ‘4K’ means. For instance, Sony, which already has a number of ‘4K’ TV sets in the market, bundles ‘4K’ movies with them that are only playable on its ‘FMP-X1 4K Ultra HD Media Player’\textsuperscript{19}. This situation could create potential difficulties for consumers buying a ‘4K’ set today as there is no guarantee that UHD-1 broadcasts, when they start in due course, will be decodable by these early sets.

This is a classic example, in other words, of a new product that could potentially be standardised more quickly in the consumer’s interest because of a current lack of interoperability. The question is: how in the case of UHDTV can interoperability best be procured?

\textbf{Technical issues to be resolved}

This paper does not attempt to cover in any detail the technical issues which industry considers have to be resolved before UHDTV could be introduced successfully. These include:

- **Terminology** – what is meant by ‘4K’; what is UHD-1 and UHD-2;
- **Frame rates** – the superset of parameters for an eventual UHDTV standard is set out in ITU-R BT 2020. This mentions a large range of possible frame-rates (i.e., images or frames per second) that could be adopted for UHDTV: 24, 25, 30, 50, 60, and 120 fps\textsuperscript{20}. This is an example where industry has responded rapidly. In early September, the HDMI Forum announced HDMI 2.0, which offers a significant increase in bandwidth (up to 18Gbps) to support new features such as ‘4K’@50/60. Since the new standard is backwards-compatible, current UHDTV ‘4K’ sets can theoretically be upgraded in due course;
- **Bit-depth**;
- **Colorimetry**;
- **Dynamic range**;
- **Audio**

\textbf{To summarise the current UHDTV situation}

A ‘super-set’ of the parameters required for UHD-1 already exists, but there is as yet no general industry agreement about which sub-set of these might define a UHD-1 standard for consumer devices.

In several cases, the technologies required to meet these parameters in consumer displays do not yet exist (although the speed with which HDMI 2.0 has emerged is encouraging). For these and other reasons, the industry consensus is that the first commercial UHDTV services in the EU are likely to be a couple of years away.

Despite this, TV displays said to be UHDTV or ‘4K’ are already being sold at retail, bundled with ‘4K’ Blu-ray movie titles that rely on the use of manufacturers’ proprietary media players. However, there is no guarantee that any UHDTV or ‘4K’ TV set purchased by consumers today will be interoperable with any future UHD-1 standard.

\textsuperscript{18} A Sony Bravia KDS55X9005 (55 inches) LED ‘4K’ Ultra HD smart TV being sold by John Lewis at £3,299.

\textsuperscript{19} http://www.multichannel.com/distribution/sony-opens-its-over-top-4k-video-store/145260

\textsuperscript{20} This is a slight simplification in the interests of brevity: the full standard is available at http://www.itu.int/dms_pubrec/itu-r/rec/bt/REC-BT.2020-0-201208-I!!PDF-E.pdf
Is the situation, therefore, not ripe for regulators to step in, and ensure, for example, that any UHDTV or ‘4K’ standard observes a defined set of parameters, which would be interoperable with any future UHDTV standard or profiles?

The answer is no. Any regulatory involvement (or even indication of involvement) is premature and, moreover, would undermine industry’s consensual approach to reaching agreement in technical areas. In this respect, it can be observed that industry views on the need for regulatory intervention on technological issues have evolved over the decade and are converging on an approach which is based on collaboration and co-operation. The Forum for Advanced Media in Europe (FAME) and its predecessor, the European High Definition Forum (EHDF) – which is co-chaired by DIF and the EBU and was created at the request of the European Commission to anticipate interoperability issues – has been instrumental in facilitating a more collaborative approach between industry stakeholders.

FAME is one of a number of venues where UHDTV issues are being discussed and resolved. This summer alone has witnessed a slew of initiatives in this area:

- **September 2013.** The HDMI Forum delivered HDMI 2.0 in direct response to industry requests for a higher bandwidth version which could support UHDTV frame-rates;
- **August 2013.** The Digital TV Group (DTG) launched a UK UHD Forum, co-chaired by the BBC and DIF member, BSkyB, to build a knowledge base for the future interoperability of UHDTV, and to work with other European standards organisations. The DTG aims to bring together “all relevant stakeholders to work towards the managed delivery of interoperable Ultra-HD services, networks and devices”;
- **July 2013.** FAME brought together a cross-industry group of executives and specialists from across the sector in Geneva to plot a course for UHDTV in Europe, which included the US CEA. Concrete actions set in place include collaborating with Digital Europe on the definition of a logo for UHDTV displays and to engage more closely with the European Commission on UHDTV matters;
- **June 2013.** Digital Europe (which under the name EICTA introduced the HD certification program in 2005) announced the start of its work on the formation of a label family for UHDTV equipment, saying it wanted to give consumers “clarity and assurance when purchasing a UHDTV and to ensure market harmonization for the next generation of television displays”. Digital Europe announced its initial findings on 30 September 2013;21
- **May 2013.** The DVB and the EBU held a fact-finding meeting on UHDTV in London, which outlined a three-phase approach to UHDTV, and whose findings are expected to be taken into account by organisations such as the EBU, MPEG/ITU, the Blu-ray Disc Association, HbbTV, FAME, ATSC and FoBTv. Specific standardisation actions were also requested from SMPTE, ITU-R, DVB and Digital Europe. The IBC exhibition in Amsterdam in September 2013 and similar demonstrations at IFA showcased some early results of these efforts, for instance, in the demonstrations from DIF members Sky Deutschland and Pace, which will further help to embed early findings.

21 Digital Europe press release 30 September 2013
8 Conclusions

The past decade has been characterised by relentless innovation and investment which has delivered unprecedented consumer choice— and more is to come with UHDTV in the next few years. Content is now available “anywhere, anytime”. This has been achieved as a result of industry initiative and competition.

With 189 million pay TV subscribers in the Europe\(^2^2\) – enjoying TV via satellite, cable, DTT, IPTV, and using STBs, integrated TVs, smart TVs tablets, games consoles, smartphones to access content – DIF believes that the claim that there is a lack of interoperability cannot be justified. Indeed, looking beyond the Europe’s pay TV industry to arguably the most successful consumer electronics company of the decade, Apple, with over 139 million customers in Europe\(^2^3\), enjoying closed, non-interoperable products, it is unfathomable that policy papers and debates continue to allege that there is a lack of interoperability which is detrimental to the consumer interest.

This policy position not only ignores the facts but it has failed to recognise the counter-arguments set out below:

- The technological means to achieve interoperability usually exist – or at least can be developed when there is market or business demand;
- Standards developed in industry bodies are generally adopted on a voluntary basis;
- Interoperability needs to reconcile the interests of different industry players with competing strategic imperatives and business models;
- Differences in business models result in innovation, competition and consumer choice - the economic and social benefits of which have to be taken into account;
- Any requirement to make a device fully interoperable would add cost;
- Mandating a particular standard inherently raises the familiar risks involved in ‘picking winners’. The standard may become rapidly outdated, prove to be expensive to implement in practice, or simply fundamentally flawed;
- Standardising a technology does not mean it will be able to be used free of charge: such standards are usually based on proprietary technologies and intellectual property inserted by companies participating in the development of the standard;
- Mandation may have unintended negative outcomes and ultimately be detrimental for consumers;
- Regulators may not be across the latest technology developments and may choose solutions that could soon be out-dated.

While it is perfectly legitimate for policymakers to continue to challenge industry about interoperability, it is only reasonable to do so when the facts of a situation have been fully analysed. Policymakers and regulators should be alert to the uncertainty and instability caused by unsubstantiated statements about lack of interoperability and by suggestions (which can fall short of proposals) to intervene, as well as to the resources which have to be deployed by industry to correct mistaken assertions. It is regrettable that policy thinking at EU and at some Member State level has not evolved as rapidly as the consumer landscape. Policymakers are invited to start from a new premise: that the desired level of interoperability is delivered by the marketplace and fragmentation represents competition and choice.

\(^{22}\) Source: IHS

\(^{23}\) Source: IHS