EBU

OPERATING EUROVISION AND EURORADIO

MEDIA TECHNOLOGY PULSE

MARCH / 2017

EUROPEAN BROADCASTING UNION

The European Broadcasting Union (EBU) is the world's foremost alliance of public service media (PSM). Our mission is to make PSM indispensable.

We have 73 Members in 56 countries in Europe, and an additional 33 Associates in Asia, Africa and the Americas.

Our Members operate nearly 2,000 television and radio channels, together with numerous online platforms, broadcasting in more than 120 different languages. They reach audiences of more than one billion people around the world.

We have offices in Brussels, Rome, Dubai, Moscow, New York, Washington DC, Singapore, and Beijing. Our headquarters are in Geneva, Switzerland.

Discover more about the EBU on www.ebu.ch

INTRODUCTION

Public Service Broadcasters need to take a balanced view of the future, based on an open-minded assessment of emerging technologies, their impact, and their relevance for more efficient and diverse content production and delivery. We could recall, for example, that for 20 years, 'media gurus' have claimed broadcasting is 'dead', superseded by the internet, that programme production will use equipment bought at the local discount store, and that YouTube and the like will replace conventional media formats and journalism. This is evidently not the case. We need a degree of open-minded scepticism about the predictions of 'gurus'.

As we see the landscape in EBU Technology & Innovation, there are three main trends for technological change today. In the report, we look into some of the key issues within these trends.

Individual Members will have different circumstances that will influence the actions they could or should take. When deciding policies, always consult your local technical managers.

Simon Fell
Director, EBU Technology & Innovation

FOR ALL NEW CONTENT DELIVERY DEVELOPMENTS, A KEY TO SUCCESS IS OFTEN AN UNDERSTANDING OF WHICH SEGMENTS OF THE PUBLIC WOULD VALUE THE SERVICES, AND WHICH WOULD NOT.

THE MOST CRITICAL MEDIA TECHNOLOGY CHALLENGES FOR EBU MEMBERS

This publication is the second part of a new EBU service, the Media Technology Pulse. The first part, also available, provides a summary of the full text. EBU Technology & Innovation's Media Technology Pulse aims to offer EBU Members' senior non-technical and technical management brief insights into the major technological trends in broadcasting and related technologies in 2017. In this report, EBU Technology & Innovation [1] outlines representative opinions about the best strategies to adopt and the technologies that merit the highest priority. EBU Members may know that the EBU Technical Committee's main activity is to organize a series of 'Strategic Programme Groups' (SPGs), each with a 2-year workplan. They examine the technical and economic aspects of relevant new technologies.

[1] Taking advice from the EBU Technical Committee and the EBU Technical Liaison Officers

THE MAIN TRENDS

Colours are assigned to each of the main trends as shown below.
Each issue in the report has a vertical bar in the colour of the trend concerned.

BETTER IMAGE AND SOUND QUALITY

The Improvement of the “User Experience”, principally ever improving Image and Sound Technical Quality.

GREATER PERSONALIZATION

The Personalization of Media Content for users of broadcast and broadband services.

THE TRANSITION TO INFORMATION TECHNOLOGY IN BROADCASTING

The transitions to the greater use of Information Technology (IT) – IP in Networked Production, software-based production, commodity equipment, and IT in the home. This overall concept is sometimes called ‘Dematerialization’.

UHDTV
THE TELEVISION OF TOMORROW?

WHAT DOES IT DO?

Ultra High Definition (UHDTV) is the family of systems that are next generations of television broadcasting systems with images giving greater detail (resolution, colour depth, contrast, frame rate), and possibly accompanied by better sound.

Studies have shown that providing TV images with additional definition (picture resolution) alone brings very little improvement compared to HDTV – unless the viewer is very close to the screen, and that something more is needed to justify the 'upgrade' to UHD. The catch-phrase used here is: "We need not just more pixels, but better pixels".

UHD-2A (a term used by the DVB Project[2]) adds a technology called 'Higher Dynamic Range (HDR)' to earlier UHD-1. This gives the images more 'sparkle' – the image looks more like a natural image – provided that the viewer has a UHD-2A TV set.

Although the content itself is the main incentive to watch, viewers will watch a programme in UHDTV for a rather longer time (increased 'audience-time') than an HDTV equivalent, and feel more involved in it. The UHD images can look very real, and incur none of the eye fatigue of watching 3D.

UHD-2A gives TV-set makers a new product to make and sell. Although still under investigation, UHD-2A, compared to HDTV, will call for new production equipment, new production grammar, new broadcast channels, and possibly more production staff.

WHY IS IT IMPORTANT TO BE AWARE OF IT?

Consumer sales inertia – the manufacturers of TV sets have flooded the market with UHD TV sets using the older system (UHD 1) – without telling the public of the up-coming '2A'. The new 2A TV sets (the ones with 'HDR') are already appearing on the market in the high-end ranges.

Remaining Competitive – UHD-2A services will be offered by broadband OTT services and by Pay-TV broadcast or broadband services from 2017. There may be viewer/listener demand from PSBs, and thus UHD-2A broadcasts may eventually be needed to avoid losing viewers to services with higher quality.

UHD-2B, which will bring yet higher quality than 2A through the addition of the option of a higher number of pictures per second, should be available about two years after 2A. UHD-2B is likely to have larger implications on production workflows than 2A.

UHD-3, with 8K resolution, will bring yet higher quality with four times the detail of the 2A/2B picture. This might be available in Europe some years after 2B.

[2] Consumer manufacturers are considering other more memorable titles such as Premium UHD.

WHAT SHOULD YOU BE DOING ABOUT IT NOW?

You may want to make trial programmes in UHD-2A. It's quite easy to do on a small scale. It could be stimulating for your creative and technical staff, and would demonstrate that your company is forward thinking, and it would 'future-proof' the content.

There are several types of the 'HDR' technical system for 2A, and each broadcaster will need to choose which one to use. You may want to invite your technical colleagues to study the differences, so that you make the right choice for your circumstances.

Although the technology is available in production equipment, no one knows if and when UHD-2A will be used in practice for free-to-air broadcasting, or when 2B TV sets will be available, so possibly the best policy today for 2017 for FTA broadcast plans is 'wait and see', but have in mind the possibility of starting broadcasts in 2019.

WHAT WORK IS THE EBU DOING NOW?

There is a Project Group 'Beyond HDTV' which is studying UHDTV.

For information contact Adi Kouadio (Kouadio@ebu.ch).

IMPACT ASSESSMENT FOR UHDTV AND 3

HOW 'MATURE' IS THIS?

UHD-2A is sufficiently mature technology that can be taken up by set makers from now on. UHD-2B and UHD-3 are 2 – 4 years from maturity. Japan plans full UHD-3 services from their 2020 Olympics, and there is a similar timetable in Korea.

HOW WILL IT CHANGE THE SIZE OR SHAPE OF MY AUDIENCE?

Although UHD-2A, and beyond, may increase 'audience-time' all other things being equal by (guesstimate) 20%, it is unlikely to influence the audience size itself. Broadcasters may be required to eventually launch UHD to retain their premium brand status and thus their current audience. UHD will eventually become just 'TV'.

HOW MUCH WILL IT COST TO PROVIDE THE SERVICE?

In the initial 5 years, it may increase the cost of a production by up to 50%, but this will fall later as UHD equipment becomes 'normal' equipment.

VIRTUAL REALITY:
MEDIA OF THE FUTURE OR JUST A 'FAIRGROUND RIDE'?

WHAT DOES IT DO?

Using a headset (aka head-mounted display or HMD), the viewer is immersed in images (often covering 360 degrees around the camera) and similarly 'immersive' sounds. There are low-cost and high-cost types of headsets with different capabilities.

Gaming will be a major user of VR using the high-cost headsets – although motion sickness may be a negative factor.

VR can be used by broadcasters to give a 'you-are-present-in-the stadium' experience in sports or other events.

VR elements may be stand-alone content, or 'attached' to conventional programme elements, as supplements to create what might be called 'cooperative content'.

Usually the images are 'stereoscopic' (or 3D), but they can also be 'monoscopic' (or 2D) with less sense of reality.

Multimedia (text, diagrams, etc.) can be superimposed on the images that the viewer is watching, to create 'Augmented Reality' or 'Mixed Reality'.

There is some evidence that viewers will want a break from viewing VR after a short time – possibly about 20 minutes, so VR content may need to be of comparatively short length.

WHY IS IT IMPORTANT TO BE AWARE OF IT?

'World Inertia' – Many, largely US, companies are making massive investments in VR development, and, as with Tablets and Smart phones, this will carry over into Europe and the rest of the world.

'Remaining Competitive' – VR services may be offered as part of broadcast and broadband services by Pay-TV and some Public Service Broadcasters. Interest in VR production has already been shown by a number of EBU Members. There may be viewer demand for VR services in future.

We might also consider that PSBs have a 'pathfinder' role. PSBs are important and talented programme and technology innovators.

There are predictions of massive growth in VR and, while they may be somewhat realistic, they are merely predictions not reality.

WHAT SHOULD YOU BE DOING ABOUT IT NOW?

In 2017 don't panic about VR. VR is a very complex issue business-wise, technically and creatively, so nothing is going to happen overnight. There are no common technical standards for VR yet, so you may want to encourage your technical staff to take part in the establishment of the requirements for the standards – a process that will start soon in technical standards' bodies.

You may want to make some trials with VR programmes – it's quite easy to do. It could be stimulating for your creative and technical staff, and would demonstrate that your company is forward thinking.

WHAT EBU GROUPS SHOULD YOU CONSIDER JOINING TO BE PART OF IT?

There is a cross-disciplinary internal EBU group considering possible uses of VR for News.

The EBU Technical Committee has prepared a report on VR use by Public Service Broadcasters.

The DVB Project has agreed an extensive report on VR.

The EBU Media Department is consulting EBU Members about their interest in VR, and an internal report is in preparation.

Contact Hans Hoffmann (Hoffmann@ebu.ch) or Adi Kouadio (Kouadio@ebu.ch) for more information on the above.

IMPACT ASSESSMENT FOR VR

HOW 'MATURE' IS THIS?

It is 'immature'. There is still much development work being done in the labs.

HOW WILL IT CHANGE THE SIZE OR SHAPE OF MY AUDIENCE?

It may eventually add about (guesstimate) 10 – 20% to your audience – mainly younger users – when in service as 'cooperative content'.

HOW MUCH WILL IT COST TO PROVIDE THE SERVICE?

If VR is provided as an addition to a normal type of content, it could add about (guesstimate) 5 – 10% to the production costs.

NEXT GENERATION AUDIO

POSSIBLY THE FUTURE OF AUDIO, BUT COULD IT BE TOO COMPLEX FOR BROADCASTING?

WHAT DOES IT DO?

In the past we have seen mono, stereo, and 2D surround sound. Next Generation Audio (NGA) can do all they can, plus a lot more.

Apart from providing '3D sound' (adding a height component), NGA can provide other kinds of sound channels such as alternate languages and additional commentaries or sound tracks. NGA has thus a 'dual role' – better, more immersive, sound, and additional sound source options to select.

Next Generation Audio calls for new loudspeaker configurations in the home. For example, it could be a multiple speaker set-up, with speakers in two or three layers. Alternatively, an NGA 'sound bar' may be a more practical domestic setup. Both can create the illusion of being in the middle of a sound-filled environment. It might be called '3D' sound.

This NGA sound 'image' can tie-in with a very large-screen UHD TV image. The loudspeakers can be placed in the viewing room or be embedded around the TV screen.

Sound listening systems using high-quality headphones, and sound signals tailored for listening on them – Binaural audio – can be used in conjunction with NGA.

WHY IS IT IMPORTANT TO BE AWARE OF IT?

'World Inertia' – several companies have made investments in NGA system development, and this may carry over into Europe and the rest of the world. Dolby has developed an NGA system for the cinema, ATMOS, which may stimulate the use of NGA for television.

'Remaining Competitive' – NGA services may be offered as part of broadcast and broadband services by Pay-TV broadcasters or broadband services. There may be viewer/listener demand for NGA services from PSBs.

Some authorities claim that NGA is not just an addition to the quality of experience of UHD, but a 'multiplier' of the UHD experience.

The earlier audio systems of 'surround sound' were rarely used for broadcasting. Programme-makers argued that the public would never set up their home speaker systems correctly, so there was little point in broadcasting surround sound. NGA may become a 'better controlled' home listening environment. In addition to the low penetration, interoperability issues during programme production in stereo and surround sound meant the costs associated with surround sound were high.

WHAT SHOULD YOU BE DOING ABOUT IT NOW?

Consider NGA at the same time as UHD (see the earlier issue in this document). NGA technology is available, but no one knows when they will be used in practice.

You may want your technical colleagues to examine the two DVB NGA systems, and make a company choice between the alternatives. The DVB Project has been unable to agree just one unique NGA system. The difference between them may be inaudible to the public, but licence fees will go to different companies in each case.

You may want to make some tests with NGA programme making – it's quite easy to do. It could be stimulating for your creative and technical staff, and would demonstrate that your company is forward thinking.

WHAT EBU GROUPS SHOULD YOU CONSIDER JOINING TO BE PART OF IT?

There is an EBU group that shares knowledge about NGA systems.

Contact Hans Hoffmann (Hoffmann@ebu.ch) or Roger Miles (Miles@ebu.ch) for more information.

IMPACT ASSESSMENT FOR NGA

HOW 'MATURE' IS THIS?

Both of the candidate NGA systems are now mature technology, and can be taken up by consumer electronics makers.

HOW WILL IT CHANGE THE SIZE OR SHAPE OF MY AUDIENCE?

It may add (guesstimate) 10% to your audience when eventually in use.

HOW MUCH WILL IT COST TO PROVIDE THE SERVICE?

If NGA is provided as part of a UHD programme, it may add about (guesstimate) 5 – 10% to production costs.

BIG DATA AND MEDIA METRICS:

HOW MUCH USE SHOULD BE MADE OF INFORMATION FROM THE INTERNET ABOUT WHO IS USING THE SERVICE?

WHAT DOES IT DO?

What we term 'big data' in broadcast and broadband today is silently gathering information from users about their online habits. Internet is technically termed an 'addressed' system, unlike broadcasting, which is an 'anonymous' system. It is therefore possible to 'profile' users, and understand their consumption habits. Google does this in order to target advertising, Netflix does it to propose additional content to users. It is readily possible to know who is accessing the stream at any moment, and for how long they nominally watch.

The objective of gathering the data is to understand what is happening to the audiences 'consuming' their online (internet) content, in the internet distribution, at any moment, and to see how the audience changes over time. This data could be the basis for recommendations for users. From this, steps can be taken to influence programme content to maximize its success with viewers.

The broadcaster uses analytic tools (computer software) to analyse the data and see how consumers react, and thus they can, if valuable, make changes to the programme based on the results.

WHY IS IT IMPORTANT TO BE AWARE OF IT?

Big Data is essentially a market research tool for content providers, and more and more use will be made of it in the coming years in a multi-channel, and online, viewing/listening scenario. By using Big Data to drive recommendations, broadcasters increase the engagement with their platforms, thereby potentially gaining audience share.

Collecting user information may be a delicate balance between the need to respect an individual's privacy, and the wish to improve that user's experience. There may be public concerns about the relationship between the use of Big Data and individual privacy. Broadcasters need to be aware of the scope and depth of the potential use of Big Data. 2018 may see the introduction of European regulation on data privacy.

WHAT SHOULD WE BE DOING NOW?

Broadcasters should investigate the value of 'user authentication', and examine the information it is useful to collect from online users. Those who provide online content in some form – which is virtually all EBU Members – need to investigate the use of Big Data.

As a second stage, broadcasters should investigate how to use this data to provide services such as recommendations to online users, and to tailor better broadcasting offerings.

In the Netherlands and Sweden, the metrics applied to linear broadcasting have been harmonized with the online consumption information. This may be a step to consider.

WHAT IS THE EBU DOING NOW?

There is currently no EBU formal group specifically on Big Data.

For more information contact Bram Tullemans (Tullemans@ebu.ch).

IMPACT ASSESSMENT FOR BIG DATA

HOW 'MATURE' IS THIS?

Products exist today in software for analysing the data about internet audiences.

HOW WILL IT CHANGE THE SIZE OR SHAPE OF MY AUDIENCE?

By using the data it should be possible to increase the audience size by (guesstimate) 5%.

HOW MUCH WILL IT COST TO PROVIDE THE SERVICE?

The cost of analysing the data could amount to (guesstimate) 1 – 2% of the programme costs.

COMPANION SCREENS

A GREAT IDEA BUT WHY IS IT PROVING SLOW TO TAKE OFF?

WHAT DOES IT DO?

The idea behind the 'Companion Screen' is that the viewer interacts with his or her Tablet or Smart Phone at the same time as he or she is watching television. The Tablet plays an 'App' received via the internet, the content of which has some connection with the programme being broadcast. The App can provide programme-related information or allow participation in a social network.

Among other benefits, the Companion Screen removes the annoyance in the family viewing situation of one member wanting to watch multimedia overlaid on the screen while the others do not.

WHY IS IT IMPORTANT TO BE AWARE OF IT?

Remaining competitive with other broadcasters who provide such services

It would mean providing the kind of services that young people could be attracted to, bearing in mind their affinity to 'multitasking'.

WHAT SHOULD YOU BE DOING ABOUT IT NOW?

Several years ago there was great early enthusiasm for the potential of Companion Screens, but this has not yet materialized in practice, and pilot services have not produced the expected enthusiasm from the public.

Broadcasters need to consider whether there is a fundamental limit on the potential attractiveness of companion screens for the public, or whether it is rather that applications prepared so far are not sufficiently attractive.

WHAT IS THE EBU DOING?

There is a DVB group developing standards for Companion Screen systems, though it is having difficulty attracting contributors to the group.

Contact Bram Tullemans (Tullemans@ebu.ch) for more information.

IMPACT ASSESSMENT FOR COMPANION SCREENS

HOW 'MATURE' IS THIS?

The system is available today.

HOW WILL IT CHANGE THE SIZE OR SHAPE OF MY AUDIENCE?

There is mixed evidence about this, but it should help to reach younger viewers provided they are attracted by the content.

HOW MUCH WILL IT COST TO PROVIDE THE SERVICE?

There is a finite cost to providing companion screen services, which could be up to (guesstimate) 5% of the production costs.

OTT AND HYBRID BROADCASTING USING HbbTV 2.0.1.

HOW POPULAR WILL THIS TV ADD-ON BECOME?

WHAT DOES IT DO?

Most new TV sets available today can connect to the home internet and, in this way, offer extra services. Video-on-Demand (VoD) can be delivered by internet (aka OTT – Over The Top TV). Services originally developed in the United States – Netflix, AppleTV, Roku, and others – are gaining audiences throughout the world, although they have only been profitable so far in the United States.

Increasingly, these services adopt scheduling of new content, and deliver them on a schedule, and thus become 'broadcast like'.

Broadcasters in Europe offer time-shifted (Catch-Up TV) content services delivered typically online to different devices: mobile, laptop, TV. For TV sets, these use either the proprietary TV-set hybrid platforms, plug-in modules, or HbbTV. HbbTV is preinstalled, but not always enabled, in internet-connected TV sets sold in Europe. When a viewer's TV supports HbbTV, and the broadcaster makes available a 'broadcast-related application', the viewer will see a button on the screen, informing him or her that an 'App' is available for launch.

The App might provide extra information on a programme such as sports statistics, show a programme guide with the option to switch channels, or provide a menu with access to additional video programming (OTT) and Catch-Up TV. Other options include social networking and multi-user quizzes, where the user plays against other HbbTV viewers. The user interacts with the screen using a variety of buttons on the remote – the coloured buttons, the cursor buttons, and the numbered buttons. HbbTV 2.0, the latest version of the system, also supports interaction through a mobile device such as a Smart Phone or a Tablet.

WHY IS IT IMPORTANT TO BE AWARE OF IT?

The US OTT companies use the same successful formula wherever they are offered – a very large content offer and a low subscription or item price. By using internet delivery, they minimize distribution costs, avoid regulatory pitfalls in some cases, and can operate in this way throughout the world.

Although their offering is based on movies, and serialised drama, their success has shown that there may be a public demand for OTT services with a large VoD content offer, and a user-friendly user interface. A Public Service Broadcaster's responsibility is to try to meet public media demand with high quality and innovative content. It can thus be argued that PSBs also need to provide such services. With HbbTV installed in TV sets, PSBs can offer OTT and content linked to linear broadcasts.

WHAT SHOULD YOU BE DOING NOW?

Strategic positioning: with ever-increasing competition for audiences, offering a set of HbbTV services, derived from existing online content, could help to 'position' a broadcaster in the OTT space.

PSBs have a history of innovation, and a combination of linear TV and HbbTV provides a platform to achieve OTT success. However, recent history in France (where the service has been closed) highlights the need for careful planning and study of audience demands, for the development of innovative content that meets public needs and wishes, and for the creation of public awareness of the service.

WHAT IS THE EBU DOING NOW?

The EBU is a principal partner in the HbbTV project.

For more information contact Peter McAvock (Mcavock@ebu.ch).

IMPACT ASSESSMENT FOR HYBRID BROADCASTING

HOW 'MATURE' IS THIS?

HbbTV 1.5 is available in European TV sets today, HbbTV 2.0 will launch in 2017. UK and Italy will migrate from their existing systems (MHEG & MHP) to HbbTV from 2017 to 2019.

HOW WILL IT CHANGE THE SIZE OR SHAPE OF MY AUDIENCE?

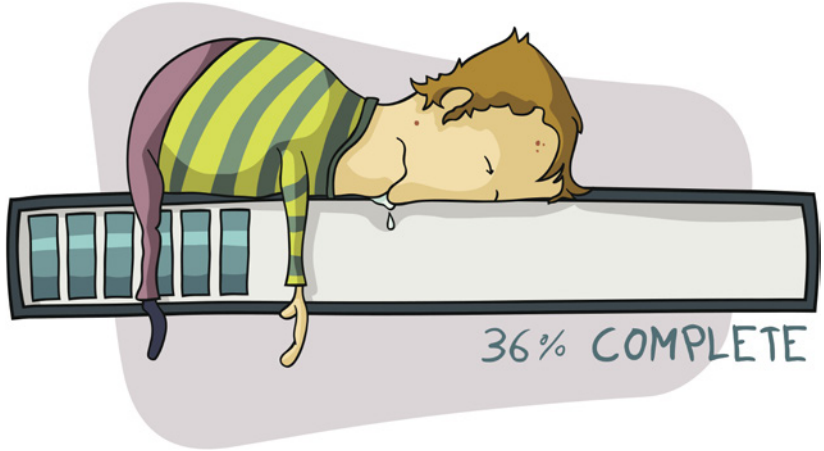
It could increase the audience size by (guesstimate) 5%.

HOW MUCH WILL IT COST TO PROVIDE THE SERVICE?

The costs of providing an HbbTV services could amount to (guesstimate) 2% of the overall budget.

CONSISTENT QUALITY TELEVISION VIA INTERNET

A SOLVABLE ISSUE OR A DIFFICULT AND COSTLY TECHNICAL CHALLENGE?



WHAT DOES IT DO?

Delivering a broadcaster's content by internet can be extremely attractive. But it is technically very different to delivering via a terrestrial, satellite, or cable network. Internet is like posting an electronic 'letter' to those who contact you. When the postman's sack (or the parallel internet trunk network) is full, you can't send any more letters. You also need to provide many different types of (internet) 'letter', depending on the type of receiving terminal. But, on the other hand, unlike broadcasting, you know who is receiving the 'letters' – and it can be very convenient for viewers and listeners.

A major internet service, Catch-Up TV, allows viewers to watch TV programmes for given periods after they have been broadcast, and series stacking (the 'box set') is popular.

Making programmes available via internet at the same time as they are broadcast can give viewers a 'start-over' service that combines the benefits of broadcasting and internet.

TV and radio channels can be offered on internet alone rather than via broadcast.

Many other services of news, information, and entertainment can be offered by internet.

The 'quality of experience' for internet users is far from a 'given'. It requires planning and expertise. It depends, not just on what the broadcaster and internet operator do, but also on the viewer's circumstances. Ensuring the public has a consistent, high-quality service is a new complex task that broadcasters must undertake.

WHY IS IT IMPORTANT?

The use of internet services continues to grow, and generally 'adds' to the broadcast audience, rather than superseding it.

The PSB role can be seen as being present on 'all significant platforms' that the public finds it convenient and practical to use. Although national, regional, and local internet services to the home vary across Europe, providing internet services, to the extent that resources allow, can be seen as a mandatory part of the PSB service.

Broadcasters must develop their applications and web services across many different platforms, as delivery options continue to multiply and fragment. To maintain 'reach', and be relevant to younger demographics, broadcasters need to consider serving the following:

- Major 'Smart TV' manufacturer's portals often subject to commercial arrangements
- HbbTV connected TV Services under the control of broadcasters
- Cable TV operator portals
- Satellite operator portals
- Games' platforms typically Xbox and PS4
- Mobile devices, Smart Phones and Tablets.

Such multiple forms of content delivery are complex. To reach viewers via different broadband suppliers or ISPs, the broadcaster needs to make a contract with CDNs (aka Content Delivery Networks) in their own territory that can distribute and scale up or down the delivery as demand grows, across fixed broadband and mobile services.

WHAT SHOULD YOU BE DOING NOW?

All of the above require constant attention and continuous development in order to maintain a good service. This is costly and does not match the conditions that broadcasters typically find where transmission costs and distribution costs are fixed and known for the long-term.

Join the EBU activities to give greater certainty to development and distribution costs in the future.

Have a long-term strategy for investment to support multiple platforms versus traditional distribution costs.

WHAT IS THE EBU DOING?

There is an EBU Broadcaster Internet Services Group as part of the Television and Radio Committees.

Contact Peter MacAvock (MacAvock@ebu.ch).

There is an EBU Future Distribution Strategies group of the EBU Technical Committee.

Contact Darko Ratkaj (Ratkaj@ebu.ch).

There is an EBU Project to collectively purchase internet delivery capacity ('CDN') at lower costs.

Contact Bram Tullemans (Tullemans@ebu.ch).

IMPACT ASSESSMENT FOR CONSISTENT QUALITY VIA INTERNET

HOW 'MATURE' IS THIS?

The EBU Project to collectively purchase internet delivery capacity – the CDN or Content Distribution Network – is beginning and it will be several years before it is in service.

HOW WILL IT CHANGE THE SIZE OR SHAPE OF MY AUDIENCE?

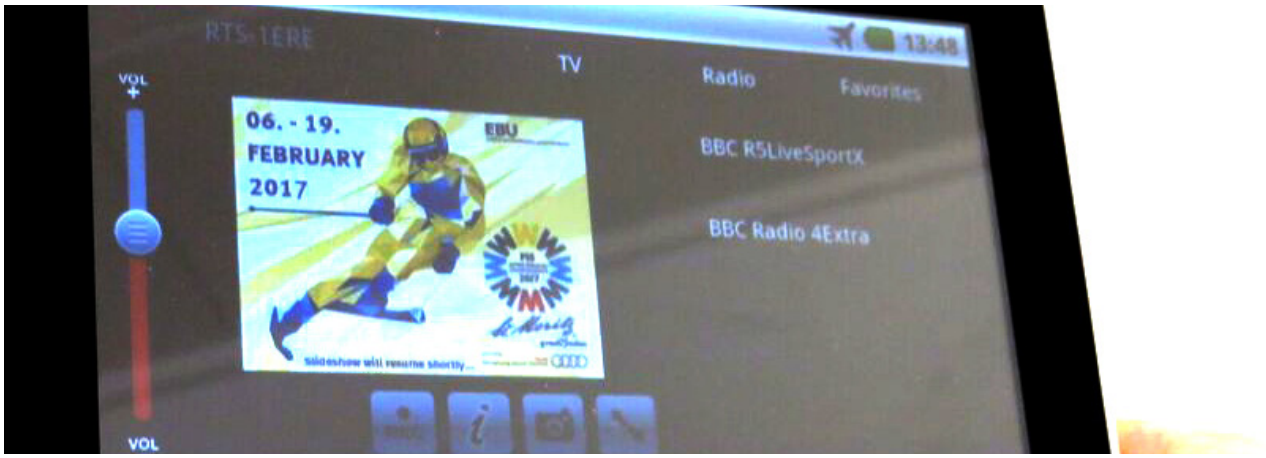
If the internet service is universally of consistent quality, it could increase the internet audience by (guesstimate) 50%.

HOW MUCH WILL IT COST TO PROVIDE THE SERVICE?

The cost of delivering content by internet to a viewer is (taken overall) about four times the cost of delivering by broadcast.

SMART RADIO

A KEY TO THE FUTURE GROWTH OF RADIO OR AN UNNECESSARY RADIO DELIVERY FORM?



WHAT DOES IT DO?

Smart Radio is the general name for the inclusion of digital radio capability in a Tablet or Smart Phone. They become a 'digital radio', and the user can access the digital radio services free of charge, making it an attractive alternative to the pay-per-use services of the Smart Phone services.

The Smart Radio can provide a range of accompanying multimedia for the listener, either via data that is broadcast along with the DAB radio station signal, or via internet from a site connected to the radio station.

There are two technologies available for digital radio – DAB/DAB+ and DRM. They have somewhat different strengths, but DAB+ is the more widely used.

WHY IS IT IMPORTANT?

Apart from in a few countries, digital radio has been slow to be adopted in Europe via discrete DAB radios. Most European countries do not have a formal plan for switching over radio to digital (unlike for television).

The eventual transition of radio from analogue to digital is inevitable.

WHAT SHOULD YOU BE DOING NOW?

If digital radio is seen as the future of radio, the availability of Smart Phones and Tablets with DAB capability should be monitored.

WHAT IS THE EBU DOING?

The EBU is making concerted efforts to encourage the makers of Smart Phones to include the DAB facility in them.

Contact Peter MacAvock (MacAvock@ebu.ch) for more information.

The EBU Digital Radio Report is available from the EBU web site: **www.ebu.ch**

IMPACT ASSESSMENT FOR SMART RADIO

HOW 'MATURE' IS THIS?

Making Smart Radios with DAB capability is technically possible today, given the intention of the set manufacturers to do so.

HOW WILL IT CHANGE THE SIZE OR SHAPE OF MY AUDIENCE?

Smart Radios (Phones and Tablets) with DAB capability could increase the audience size for radio in areas where there is DAB coverage by (guesstimate) 50%.

HOW MUCH WILL IT COST TO PROVIDE THE SERVICE?

There are no increases in cost for the DAB broadcaster.

LIVE AND IP PRODUCTION INFRASTRUCTURE

THE INEVITABLE MODERNIZATION OF PRODUCTION TECHNOLOGY

WHAT DOES IT DO?

The change from (as it's called) 'SDI' to 'IP' production infrastructure is a little like the change from mechanical telephone exchanges to electronic exchanges, this time for the equipment in your television (or radio) production centre. It means replacing much of the 'production infrastructure' equipment and wiring with a more modern system.

It is not expected to save capital or operating costs, especially for the first generations.

Leveraging the huge R&D investment in the IT industry will bring the broadcasters back 'up to speed' in technology.

It will improve your ability to quickly adapt workflows to create new types of content and for different delivery means.

WHY IS IT IMPORTANT?

The eventual growth of IP production is as inevitable as was the replacement of mechanical exchanges by electronic exchanges – sooner or later it will be happen.

Over time, programme production equipment will only be available in IP form, so it will become more difficult and expensive to replace worn-out SDI equipment.

WHAT SHOULD YOU BE DOING NOW?

If you are planning to build a production centre from scratch, it will be most efficient to develop an IP production centre. It will not be easy being a pathfinder, but there are fellow broadcasters who are also taking this direction, and can help you.

If you have an existing production centre that is still relatively new, do not change the infrastructure you have for the time being. Wait for IP equipment be developed and the likely reduction in costs.

In order to build the know-how of your system design and operational and support teams, as well as identify improved ways of organizing the work, it is advisable to already start small by 'Proof of Concept' tests and trial productions.

WHAT IS THE EBU DOING?

The EBU has a major activity in IP production systems, and arranges extensive sharing of information and experiences.

The EBU flagship Network Technology Seminar (NTS) is the annual opportunity for keeping up to speed on the topic.

We also accompany ('hand-holding' and advice) Members in their early experiences and contribute to the international standardization.

Contact Hans Hoffmann (hoffmann@ebu.ch) for more information.

In order to build the know-how of your system design and operational and support teams, as well as identify improved ways of organizing the work, it is advisable to already start small by 'Proof of Concept' tests and trial productions.

IMPACT ASSESSMENT FOR DEMATERIALIZATION

HOW 'MATURE' IS THIS?

First-generation equipment is available now.

HOW WILL IT CHANGE THE SIZE OR SHAPE OF MY AUDIENCE?

Eventually the broadcaster's service will be more competitive, making it easier to maintain existing audiences

HOW MUCH WILL IT COST TO PROVIDE THE SERVICE?

Initially capital budgets will need to be increased by about (guesstimate) 20%.

THE CLOUD:
MORE EFFICIENCY OR JUST A COMPLICATION FOR PRODUCTION AND DISTRIBUTION?

WHAT DOES IT DO?

Using the 'Cloud' is a broad term for the use of 'other people's' IT resources, rather than your own, for storing content, for processing images and sound, and for play-out. Cloud services are commercially available.

The Cloud can provide facilities that your company does not have, and sometimes save money compared to doing things yourself. This efficiency arises because the Cloud facilities can be used '24/7', by combining different users' needs.

The Cloud can be used for 'playing-out' programmes from part or complete channels, for internet or broadcast.

Using the Cloud can have other advantages such as allowing an editing team to meet and work anywhere around the world.

WHY IS THIS IMPORTANT?

The 'Cloud' – taking advantage of other people's resources – will probably become normal practice, once users establish that it is safe, reliable and secure.

It may add to the flexibility of your operation, and may save you money. The savings could range from 0% to, say, 70%.

WHAT SHOULD YOU BE DOING NOW?

How much use is made of the Cloud is probably a decision for the company's technical management, and they will take into account how much it costs, where the Cloud is located, and possibly who owns it.

Programme staff who have specific requests that would be helped by the use of the Cloud should discuss them with their technical management.

WHAT IS THE EBU DOING?

There is a technical group sharing knowledge and experiences on the use of the Cloud.

Contact Hans Hoffmann (hoffmann@ebu.ch) for more information.

IMPACT ASSESSMENT FOR THE CLOUD

HOW 'MATURE' IS THIS?

Cloud services are available today.

HOW WILL IT CHANGE THE SIZE OR SHAPE OF MY AUDIENCE?

Eventually, the broadcaster's service will be more competitive, making it easier to maintain existing audiences.

HOW MUCH WILL IT COST TO PROVIDE THE SERVICE?

All things being equal, eventually there should be significant cost saving for programme production.

GREATER SECURITY MEASURES

HOW MUCH PROTECTION DO WE NEED?

WHAT DOES IT DO?

Broadcasters have large sophisticated infrastructures that rely on information technology. Security measures, such as firewalls and other systems, prevent hackers from accessing internal IT systems, threatening the broadcaster's operations.

Viewers have home units that include television sets and recorders that increasingly have IT elements. Security measures prevent hackers from accessing home IT systems.

Broadcasters need satellite contribution networks, which can be subject to deliberate jamming. Security measures can mitigate the effects of such jamming.

WHY IS IT IMPORTANT TO BE AWARE OF THIS?

The cost of computational capability continues to decrease and knowledge of hacking processes continues to become more widely available.

The implications for broadcasters of hacking and piracy will become more severe as greater use is made of IT systems for programme production and distribution.

WHAT SHOULD YOU BE DOING ABOUT IT NOW?

Members should actively participate in the EBU group on security measures.

For more information on the EBU activities contact Adi Kouadio (Kouadio@ebu.ch).

IMPACT ASSESSMENT FOR SECURITY ISSUES

HOW 'MATURE' IS THIS?

The discussion in the EBU is well developed.

HOW WILL IT CHANGE THE SIZE AND SHAPE OF MY AUDIENCE?

There are no issues concerned with audience size.

HOW MUCH WILL IT COST TO PROVIDE THE SERVICE?

There are some additional costs associated with security.

THE 5G MOBILE BROADBAND SYSTEM

WHAT WILL IT OFFER AND HOW SOON?

WHAT DOES IT DO?

Mobile phone systems have evolved over the years in 'generations', and currently European consumers use what are termed 3G or 4G systems. Each generation essentially provides greater bit rates for consumers, thus allowing more sophisticated media and communication tools.

Proponents claim that a new generation, 5G, will be available from 2020 or sooner. 5G is claimed to be dramatically better than current technologies in terms of the costs and capabilities of the system.

However, there are sceptics who feel that this timetable will not be met nor will the features of the system be as impressive as claimed.

WHY IS IT IMPORTANT TO BE AWARE OF THIS?

If the claims of 5G are fulfilled, and the system is widely used, it may have dramatic effects on society, not least because of the widespread use of the 'Internet of Things'.

If 5G really does provide very high data rates, universally available, at much lower costs than mobile phone services today, it could become a way to deliver what are today broadcast services.

WHAT SHOULD YOU BE DOING ABOUT IT NOW?

At the moment there is very little action that can be taken about 5G except to follow developments.

WHAT WORK IS THE EBU DOING NOW?

The EBU is actively following developments in 5G, and is participating in the early discussions of prospective future convergence of broadcasting and 5G.

Contact Darko Ratkaj (Ratkaj@ebu.ch) for more information.

IMPACT ASSESSMENT FOR 5G

HOW 'MATURE' IS THIS?

It is difficult to assess currently how realistic the claims for 5G are, but it seems more likely that widespread use will happen later rather than sooner in the next decade.

HOW WILL IT CHANGE THE SHAPE AND SIZE OF THE AUDIENCE?

If 5G becomes a means for delivering broadcasters' content, this may have major implications for broadcasters and the services they offer.

HOW MUCH WILL IT COST TO PROVIDE THE SERVICE?

This is currently unknown.

Thanks for reading!

Don't forget to consult your senior technical colleagues for advice on strategy!

To contact the Director of the EBU Technology & Innovation Department, Simon Fell, fell@ebu.ch.

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