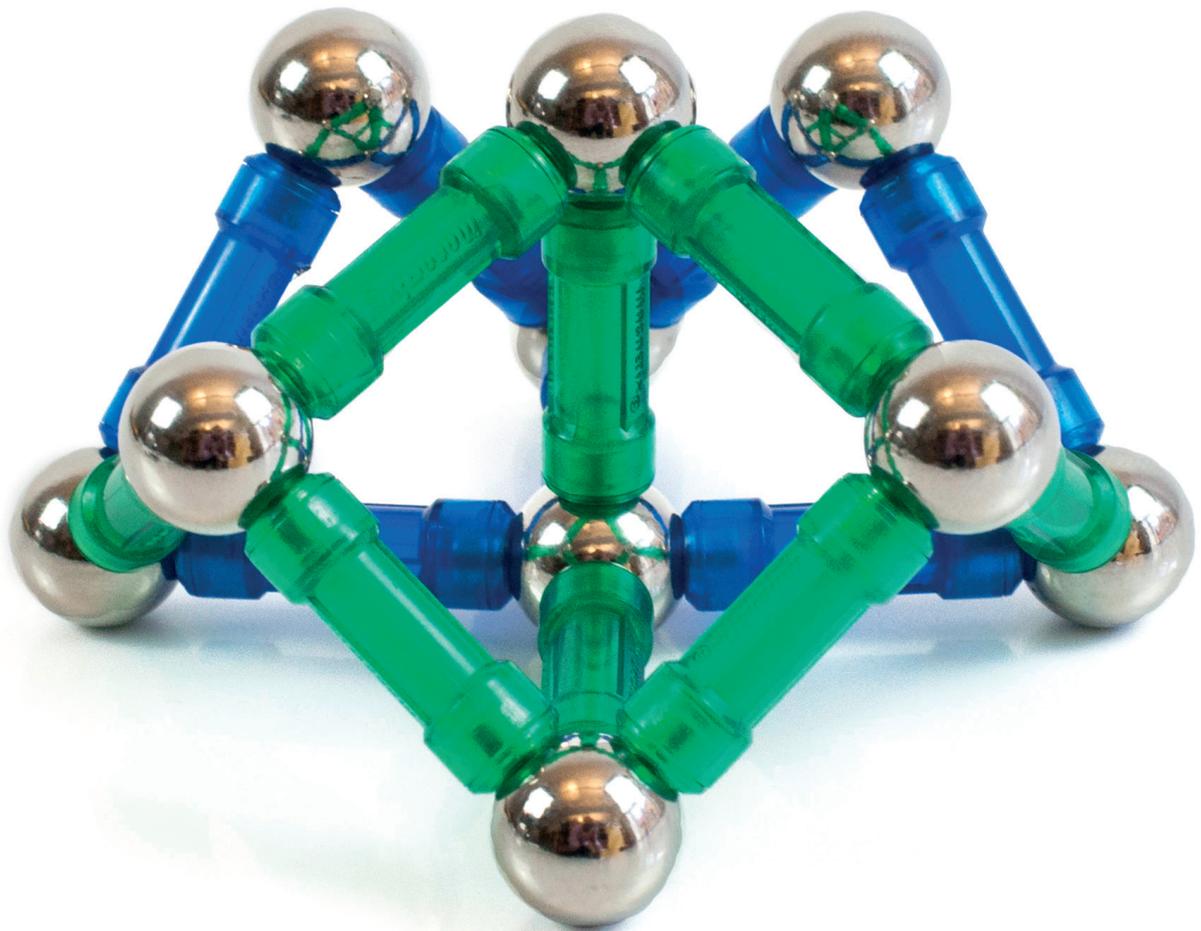


Survival of the fastest
TV's evolution in a connected world



Contents

Foreword	1
Is big data a big deal for the small screen?	3
Sizing up the second screen's impact on TV	9
Digital dividend 2.0: what it may mean for the European television industry	19
Ultra high definition's first year	25
The television gets super-connected	31
About the research	34
Recent thought leadership	38
Contacts	39

Foreword

Television is characterised by constancy and change. It delivers consistently high quality entertainment and information to hundreds of millions of homes in Europe against a background of unrelenting change. Consumer behaviours, business models, underlying technologies and the needs of adjacent sectors such as telecommunications evolve untiringly.

The difference between surviving and sinking hinges on each broadcaster's ability to respond to the multiple concurrent changes affecting it. Executives need to know what to react to, with what measures and when.

This year's report prepared for the IBC Leaders' Summit 2013 looks at five elements of change that have emerged or accelerated in the last year and which we believe the industry should be cognizant of:

- Big data – the raw material of the digital era – provides multiple opportunities for the TV sector. But there are costs, and limitations, to its application. We look at how big data can be used, and with what caveats, to bolster advertising and programme making.
- The second screen is now ubiquitous in Europe: broadcasters need to determine how best to harness the devices' popularity and how their usage might threaten TV's business model. We look at the current impact of second screens on viewing behaviour and the public's reaction to dedicated TV apps.
- A further, post digital switchover, reallocation of spectrum is being planned for, which will result in the TV sector ceding further frequency. We look at the implications of a second digital dividend for terrestrial broadcasters, mobile operators and government.
- Technological evolution has been a hallmark of the industry since the first broadcast, and in the last year one of the most significant progressions has been the commercialisation of ultra-high definition (4K) television. We assess 4K's first year performance.
- Making televisions connected is a key industry dynamic. The cost of this is falling fast, with streaming video peripherals now available from €12. We look at how the proliferation of these devices might change consumption.

The remit for European TV executives is broad; we hope that this report is a useful input into understanding and responding these diverse, inter-related developments.

It may no longer be good enough just to be fittest to win: being fastest is the new imperative.



Jolyon Barker
Managing Director,
Global Technology, Media
& Telecommunications
(TMT),
Deloitte Touche Tohmatsu
Limited



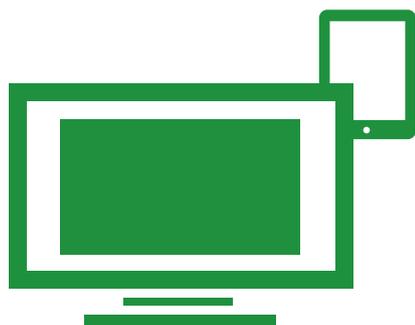
Ed Shedd
Lead Partner,
Global Media Leader,
Deloitte Touche
Tohmatsu Limited



Paul Lee
Technology, Media &
Telecommunications,
Head of Research,
Deloitte Touche Tohmatsu
Limited



Is big data a big deal for the small screen?



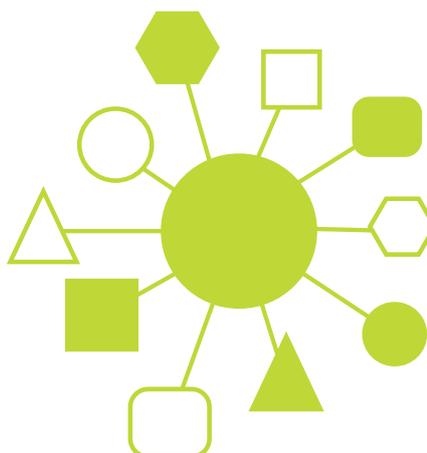
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Is big data a big deal for the small screen?

Big data refers to large, mixed sets of data gathered from different sources that can, through a process of data analytics, yield executable insights.¹

It is a resource that can be exploited across all sectors, and there are many studies of how analysis of multiple, large data sets has been used to improve and occasionally revolutionise industries.

As ever larger volumes of data are being created, analytical tools are becoming increasingly sophisticated, and there is a growing body of specialists who extract insights from large and multiple sets of data. Data sets are various and may include purchasing records, vehicular traffic patterns and comments generated on social networks.

Big data should be a complementary resource for the television industry, adding to TV's existing data sets, such as the audience viewing figures that are a foundation of the \$250 billion global advertising industry. Audience figures are based on small, yet statistically representative, samples of the population. The BARB TV viewing panel in the UK, for example, consists of about 11,000 people living in 5,000 households.²

Big data, used in conjunction with existing industry data, can be used to create more powerful analytics and derive new insights. But how applicable might this be for television? In this chapter, we focus on three out of many possible applications:

- capturing, quantifying and optimising TV's impact on online behaviour;
- as an input into programme making; and
- increasing the value of television advertising through 'addressable advertising'.

Capturing, quantifying and optimising TV's impact on online behaviour

The average European spends about four hours a day watching television, often accompanied by a connected device.³ So it might be supposed that what viewers see on television should drive a significant proportion of online activity. The link between watching TV and online browsing is recognised, and what data analytics can do is monitor this relationship more closely, to optimise the way that it works.

Television, in the form of programmes and adverts, is persuasive. According to Deloitte's research, it is one of the most common drivers of purchasing decisions for new products and services (see Figure 1).

Search is one of the most popular activities on the Web. Television can trigger a search which then leads to a purchase. Television is the shop window; the tablet (or other device) is the till. There is much evidence of the power of television over search.⁴ According to studies, brands typically experience a 60 to 80 per cent jump in searches on brand terms during a TV campaign.⁵ Yet blending of television viewing behaviour data with viewers' browsing behaviour is uncommon. Combining both sets of data would document the link between viewing, searching and buying. It would also explain the paths and timing that link viewing to purchase.

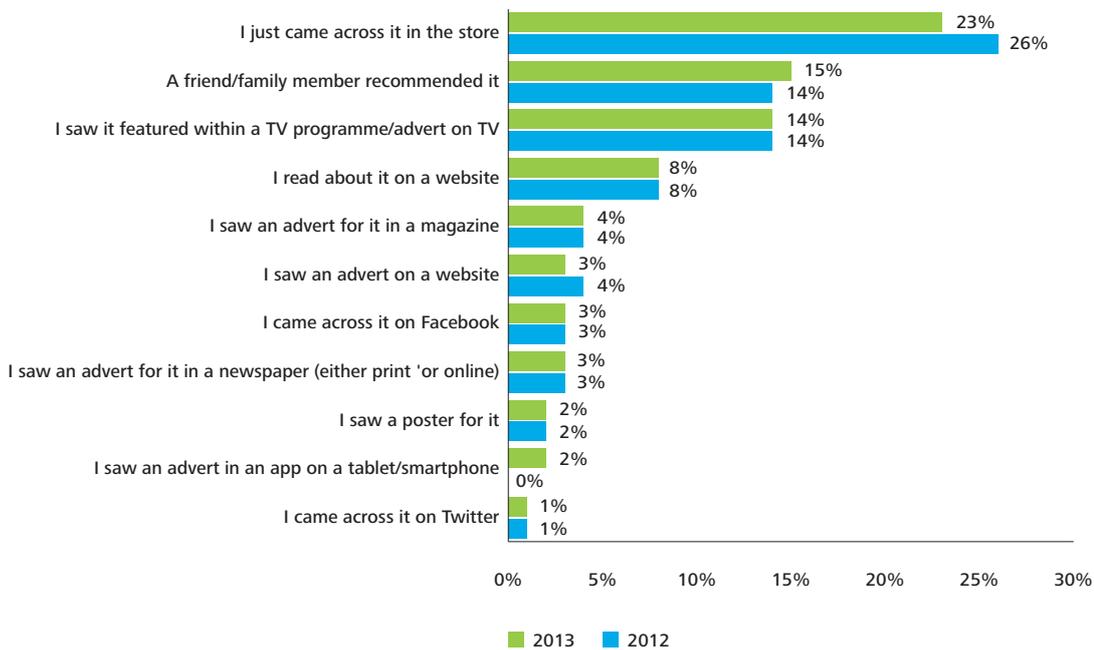
Analysis of viewing behaviour's impact on browsing patterns at the individual rather than household level would show the return on investment from advertising campaigns or product placement. Browsing behaviour might also be used to fine tune elements of TV commercials, particularly when the ads are focused on viewer response.

Not all campaigns may be suitable for this type of analysis. Some TV advertising campaigns may take many years before they result in purchase, and in such instances mapping viewing to online activity may not be helpful.

That said, for TV advertising revenues to grow in Europe, it needs to find new ways to increase price per impact, and documenting the link between viewing and buying online may be one key way of achieving higher prices.

Figure 1. Drivers of purchasing new products and services

Question: Please think about the last product or service you bought that was not a routine purchase. Which, if any, of the following best describe how you found out about this product or service?



Source: Deloitte/GfK, UK, June 2013, June 2012.
 Weighted base: All respondents 2013 (2,517), respondents answering the module 2012 (2,005).

Big data and TV content

Making television shows is an expensive business. The pilot for *Boardwalk Empire* was estimated to cost about \$20 million.⁶ The budget for the first series of *Game of Thrones* was estimated at \$60 million, and close to \$70 million for the second series.⁷ So broadcasters and production houses should want to make sure that every programme they make appeals to their audience.

There are several data sets that the TV industry can draw upon to assist with the making and commercialisation of content, each with its unique opportunities and challenges.

For example data from the billions of users of social networks can be used to track sentiment and indicate how well a new series is being received, how a plot line is resonating, the popularity of a new game show host, or to determine optimum marketing budgets and allocation by channel. But these data should be seen as just one indicator among many others. Deciphering sentiment is a challenging task, as use of language is nuanced, and contextual understanding is required. What some age groups term “bad” may actually mean the opposite.⁸ It may therefore be difficult to use analytics to distil these data into a single algorithm. Additionally, the veracity of the data needs to be checked. For example the music business has also looked at social network ‘buzz’ to identify emerging talent, and has found that on occasion indicators are artificially inflated.⁹

Commentators on social networks may not represent the mainstream viewer: while they may like an aspect of a show, the silent majority may not. In the UK, programme audience sizes are typically a multiple of tweet volumes. A show aimed mainly at a youth audience with an audience of several million typically has a tweet volume of tens of thousands.¹⁰

Online video sites can help in various ways. They can assist with identifying new talent, which historically has been a labour-intensive process, and can undertake some of the initial filtering. The popularity of video clips can be an initial indicator of the appeal of a plot line or an individual. Online video sites can also provide evidence of the buzz around a show and which bits resonated most. The location of views of clips can indicate the foreign markets where a show may be sold.

Paid-for online video sites can be a useful indicator of demand and in some cases may even save a show. For example, the first episodes of the US version of *The Office* had modest broadcast ratings but was a hit on iTunes, occupying four of the top five spots in their first week on sale.¹¹ The sales data showed the level of interest, and also where the interest was coming from.

Testing pilots can also be done online: the potential popularity of new shows can be gauged by assessing the public's reaction.¹² This approach has the advantage of reaching a large potential audience. The online reaction should be blended with a commissioner's instinct: the public does not always know what it wants at first glance. Some of the most successful shows have taken several episodes before they have attained their true potential.¹³

The challenges of addressable advertising

Traditional display advertisements are often considered inefficient because they are viewed by many people who are not being targeted. Traditional TV advertising is considered doubly wasteful – expensive to produce as well as reaching people that are not target customers.

So the challenge is to deliver TV ads to people who really want to see them.

Subject to the requisite technology being in place, big data could be used to enable 'addressable advertising' for TV. In this model each household (and where possible, each viewer), receives an advertisement based on analysis of multiple sets of data for that person.¹⁴ This could be a combination of data (collected by a range of different entities) such as: income levels, age, marital status, spending patterns, creditworthiness. A viewer would only be shown ads for items he or she might want to purchase. For example addressable advertising has been commissioned by an insurance company for a campaign about rental insurance to target renters only.¹⁵

One of the problems with addressable advertising for TV is that rationalising the disparate data sets to identify which categories of users should receive each ad is a resource-intensive process. Each data set may use different metadata tags or field descriptions. For example the parameters for income levels may vary from one data set to another. Aligning metadata across multiple data sets may be so time-consuming that it may be cheaper simply to allow for a proportion of wastage. Rather than deploy a team to analyse data, an advertiser could simply buy more air time.

An additional complexity is the variety of different ways in which viewers receive content. Every network and every video portal has its standards and its ways of collecting user data. A multi-channel video campaign using addressable advertising may need multiple implementation projects to reach the majority of a targeted population.

A major cost of addressable advertising is the need to create multiple advertisements. If car ads were being targeted by the viewer's stage of life, the car manufacturer would need to create a concurrent ad for each model. Each ad may cost hundreds of thousands of euros to produce. Creating and maintaining a suite of ads for each model would be prohibitively expensive. In our research, we only came across one example of an advertiser creating an ad for each of its target markets.¹⁶ This was the US Army, part of the US Department of Defence, which is the largest employer in the world.¹⁷

A further weakness of addressable ads is that advertising can benefit from imprecision. It is hard for even the best retailers to know exactly who their target market may be or which members of a household influence the buying decisions, so a scattergun approach may be preferable. A holiday may have to be sold to multiple members of the family, not just the person who pays the money. Advertisers do not know either at what point in time someone may become a customer: for example car-buying decisions may take years or even decades and someone may learn about the features of nappies for a long time before becoming a parent and a buyer.

Advertising is also about reinforcement. Showing an ad to someone who has just bought a car can justify that decision. Seeing an ad for another model that the viewer considers inferior can further justify the decision.

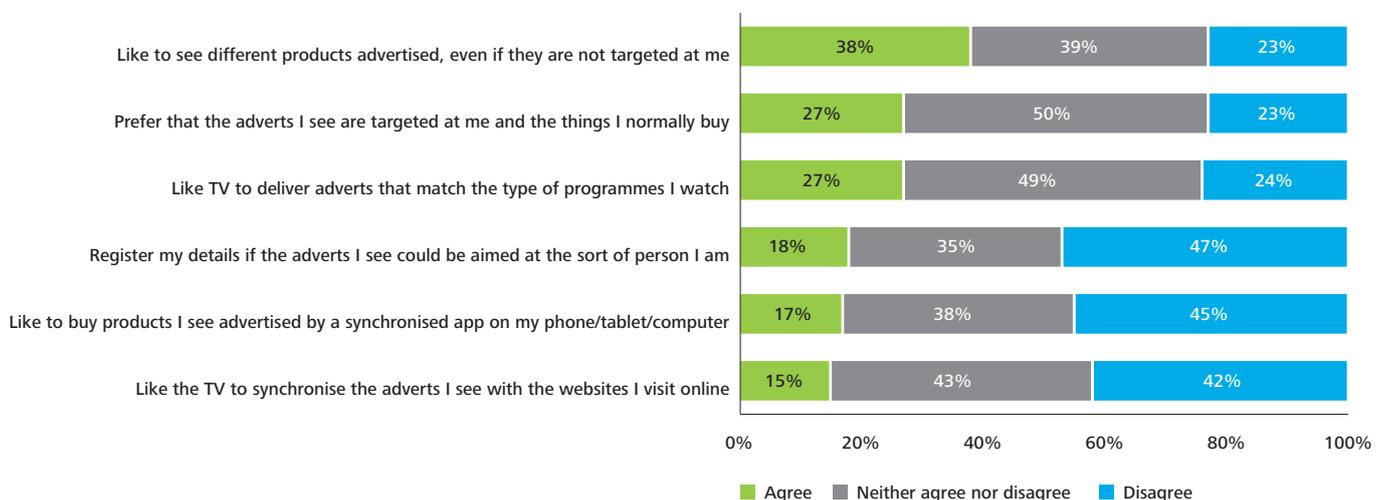
TV ads are already targeted to some extent in the sense that each TV programme can be expected to attract a certain demographic type of viewer in the required numbers. Products targeted mainly at women can be advertised in the breaks of programmes likely to appeal to a female audience. Advertisers may not need any more precision than this.

There are practical challenges to addressable advertising, but what does the public want? Research on the UK market suggests that just over a quarter of respondents would like to see TV advertisements based on their preferences and the products they normally buy (see Figure 2). The same proportion would like these ads to match the programmes they watch. But almost two-fifths of respondents wanted a variety in their TV ads.

The theory of addressable advertising is compelling. The reality is challenging. All things considered, putting addressable advertising into practice is currently sufficiently difficult that, in Deloitte's view, over 99 per cent of TV advertising revenue in Europe will come from conventional ads in 2013.¹⁸

Figure 2. Views on television advertising approaches

Question: how much do you agree/disagree with the following statements about advertising in the future?



Source: Deloitte/GfK, UK, June 2013.
Weighted base: All respondents 2013 (2,517).

Bottom line

The insights produced by data can be helpful, but not necessarily all the time. The television industry should embrace what big data has to offer, assess the quality and relevance of each data set, and consider which combinations of data sets are likely to generate the greatest insight.

A general caveat for any company planning to use large public data sets is to ensure that the data collected and the approach to data analytics conform to national regulations. Companies should also make sure that their use of data aligns with public opinion.¹⁹

A specific recommendation for the television industry, particularly when it comes to content commissioning, is to remember that data sets are inherently historical. They provide trend data but cannot predict the future as well as humans may be able to. Tastes change, and what viewers have enjoyed watching in the past may not be what they want to watch in the near-term future. It is down to the commissioner to understand viewing tastes and preferences, and this may require instinct, informed but not governed by historical data.

Sizing up the second screen's impact on TV



Sizing up the second screen's impact on TV

The rate of growth in ownership of second screens – which shows little sign of abating – has evoked consternation and excitement in the television sector.

The concern is that multiple screens – the triptych of laptop, smartphone and tablet, in addition to television – will divide the attention of users, with TV losing out. The glee is at the opportunity to exploit the second screen to television's advantage, for example by driving up levels of engagement with TV programmes.

Is TV's golden era in the past?

For half a century the television set ruled the living room in Europe. It was the alpha screen as there were no betas: it enjoyed a monopoly on audio visual content beamed into homes. Books, newspapers, magazines and board games all competed for attention in European households, but television was the only medium that could offer high-quality audio visual entertainment, served live as the occasion demanded.

Television no longer has a monopoly on the live audio visual experience. In the last decade challenges have emerged from other screens, first from the portable computer with Wi-Fi connection and more recently from the smartphone and (since 2010) the tablet.

The laptop threatens as it is the portal to a multitude of distractions away from traditional television, including social networks and alternative providers of video, most prominently YouTube and Netflix.

The smartphone and the tablet are home to the revered, feared, and vaguely defined app. One hundred billion apps, ranging from self-contained programs to short cuts to Internet-based content, have been downloaded to billions of devices.²⁰ Every app has the potential to divert users away from the traditional television experience, by offering a more compelling entertainment experience, or by facilitating access to new content providers.

Using second screens to watch TV could contribute to a decline in aggregate viewing. Television viewing tends to be in the company of others. Watching television on a much smaller second screen tends to be a solitary activity – it can be hard to share a seven inch screen. Lone viewing also tends to be shorter in duration, as does viewing on a smaller screen. So when second screens are used to watch television, the impact can be to reduce an individual's viewing.

Is TV's golden era yet to come, thanks to the second screen?

The second screen can also complement traditional television. For some viewers, commenting about a programme they are watching, relayed via a social network, may encourage them to keep watching through to the end; for others, tweets about a programme might prompt them to turn on the TV set and start watching.

The second screen's potential to bolster TV has initiated the launch of a range of second screen applications, designed specifically to accompany viewing. The range of available apps is wide, but the main functionalities of a second screen app at a TV programme level are: to encourage participation, through voting, playing along or both; to offer additional information about the story and the cast; to reward fans via content exclusive to the app; and to encourage viewers to tune in for the next episode.

Taking stock of the second screen

While second screens have been a feature in European homes for over five years, 2012 was the year in which they became a topic for discussion at almost every industry conference. 2012 was also a year in which many second screen initiatives were launched, aimed at drawing TV and second screens closer together.

Yet despite the buzz, the fear and the excitement, and although the installed base of second screens has widened and deepened, there has been only minimal impact on TV. Few key performance indicators, such as viewing hours, industry revenues, advertising performance and profitability, appear to be directly affected, positively or negatively, by the rise of the second screen.

So what should the industry do about second screens? Doing nothing is a risk: inaction may result in an important threat being ignored or an opportunity overlooked. On the other hand, doing something when nothing is required is a waste of resources.

A stock check is required, to establish the following:

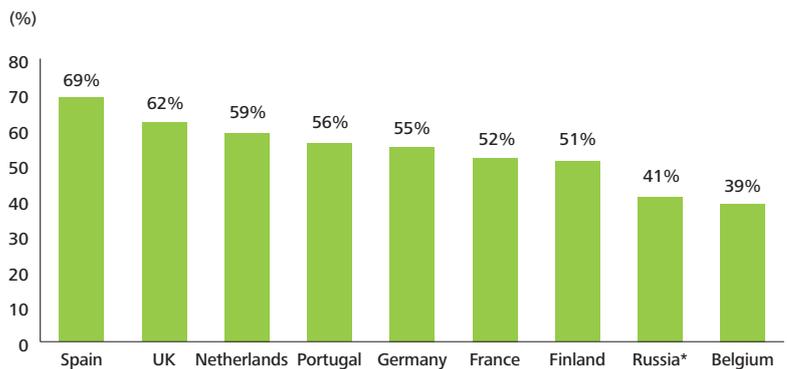
- Understanding the base of second screens in each market, by type.
- Understanding the base of second screens by age of users, which is often a useful proxy for usage patterns.
- Assessing the quality of connectivity: the better this is, the greater the disruptive potential of second screens.
- Identifying how second screens are used: for which applications, and how often – and more specifically, learning the extent to which second screens are used to watch television or interact with programmes and advertising messages.
- Forecasting how the base and usage of second screens may change in the near future, and the impact this could have on TV.

Sizing the base of second screens

The base of second screens is now deep and wide across many European markets. The term ‘second screen’ covers not just one device, but the set of laptops, smartphones and tablet computers. In several European markets, smartphones now represent the majority of all phones (see Figure 3). The tablet is a mere three years old, yet its installed base in the Netherlands has already passed 40 per cent (see Figure 4). The growth in tablets has been particularly rapid, with a doubling in penetration rates in five of the six countries for which we have time series data (see Figure 5).

Figure 3. Smartphone penetration in selected European countries

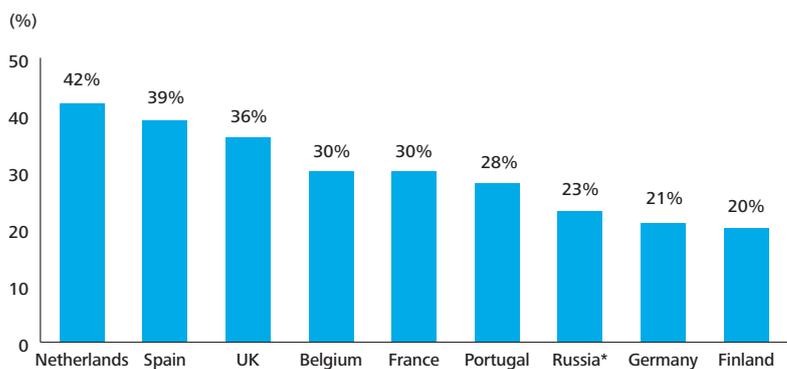
Question: Which of the following devices do you own or have ready access to?



Source: Deloitte Global Mobile Consumer Survey, all European countries surveyed, May/July 2013. Weighted base: Total respondents: Belgium (2,000), Finland (1,000), France (2,000), Germany (2,000), Netherlands (2,000), Portugal (607), Spain (2,000), UK (4,020). * Note: The online research approach in Russia resulted in a higher concentration of urban professionals with higher income.

Figure 4. Tablet penetration in selected European countries

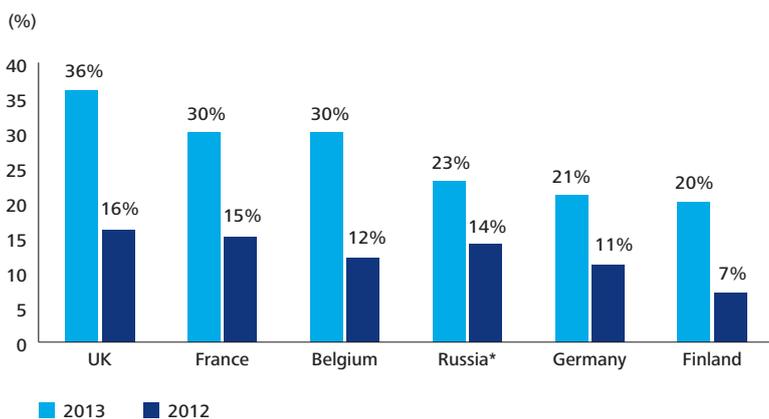
Question: Which of the following devices do you own or have ready access to?



Source: Deloitte Global Mobile Consumer Survey, all European countries surveyed, May/July 2013. Weighted base: Total respondents: Belgium (2,000), Finland (1,000), France (2,000), Germany (2,000), Netherlands (2,000), Portugal (607), Spain (2,000), UK (4,020). * Note: The online research approach in Russia resulted in a higher concentration of urban professionals with higher income.

Figure 5. Year on year tablet penetration in selected European countries

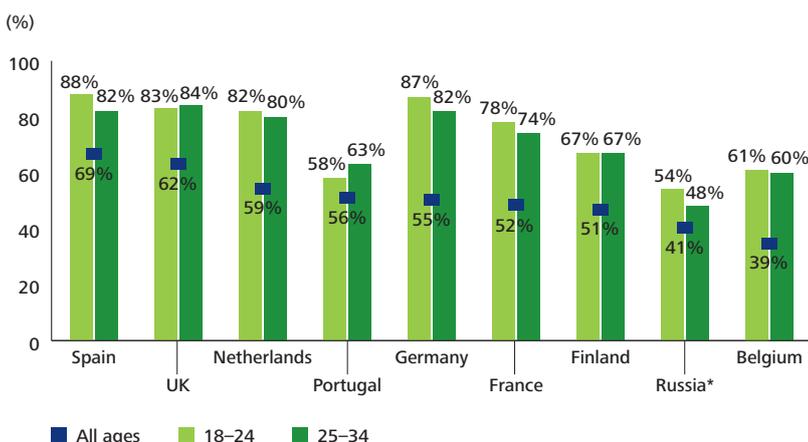
Question: Which of the following devices do you own or have ready access to?



Source: Deloitte Global Mobile Consumer Survey, all European countries surveyed, May/July 2013. Weighted base: Total respondents (2013, 2012): Belgium (2,000, 999), Finland (1,000, 1127), Germany (2,000, 2,083), France (2,000, 2011), Russia (2,000, 2,046), UK (4,020, 2,060). * Note: The online research approach in Russia resulted in a higher concentration of urban professionals with higher income.

Figure 6. Smartphone penetration for 18–24 and 25–24 year olds in selected European countries

Question: Which of the following devices do you own or have ready access to?



Source: Deloitte Global Mobile Consumer Survey, all European countries surveyed, May/July 2013. Weighted base: Total respondents (all ages, 18-24, 25-34): Belgium (2,000, 217, 323), Finland (1,000, 108,160), France (2,000, 226, 315), Germany (2,000, 197, 286), Netherlands (2,000, 216, 332), Portugal (607, 90, 158), Spain (2,000, 182, 378), UK (4,020, 472, 669). * Note: The online research approach in Russia resulted in a higher concentration of urban professionals with higher income.

Second screen penetration among younger age groups is highest. In four of the countries we surveyed, penetration of smartphones among 18–24 year olds had already passed 80 per cent (see Figure 6). In all nine countries surveyed, the majority of 18–24 year olds had a smartphone. Smartphone penetration among 25–34 year olds was only slightly lower: at over 80 per cent in a third of the nine countries, and at over 50 per cent in eight of them.

Assessing the quality of connectivity

The capability of second screens has been enhanced by a steady improvement in fixed and mobile broadband speeds, and enhancements are likely to continue. In many European countries, speeds for fixed and broadband data services have been increasing by 20 to 40 per cent year-on-year, enabling a bigger quantity and better quality of audio visual entertainment to be delivered to the growing base of connected screens.²¹

An hour’s television requires as little as 250 megabytes; in 2013 the cost of a gigabyte of mobile data is as low as €0.50; and the marginal cost of downloading a movie on some fixed networks is effectively zero for users on an unlimited contract.

Second screens coincide, but don’t necessarily collide with television

The base of second screens in Europe is already in the hundreds of millions. Their impact on television depends on the extent to which viewers have a second screen with them as they watch television and what they use it for.

According to Deloitte’s research on the UK market, about two thirds of smartphone owners, and about half of tablet and computer owners have, at some time, used their devices while watching TV. The extent to which they are used while watching varies, with laptops used most frequently followed by smartphones and then tablets (see Figure 7). For all three devices, half or more of the respondents who use their devices while watching television do so daily.

Although only a minority of respondents admitted to using a second screen regularly while watching television, it is a sizeable minority. About 30 per cent said they used a laptop on a daily basis while watching television, and 20 per cent used a smartphone. These are significant numbers on a national scale, and among younger age groups the percentages are higher. So it is important to understand how using a second screen interrupts TV viewing.

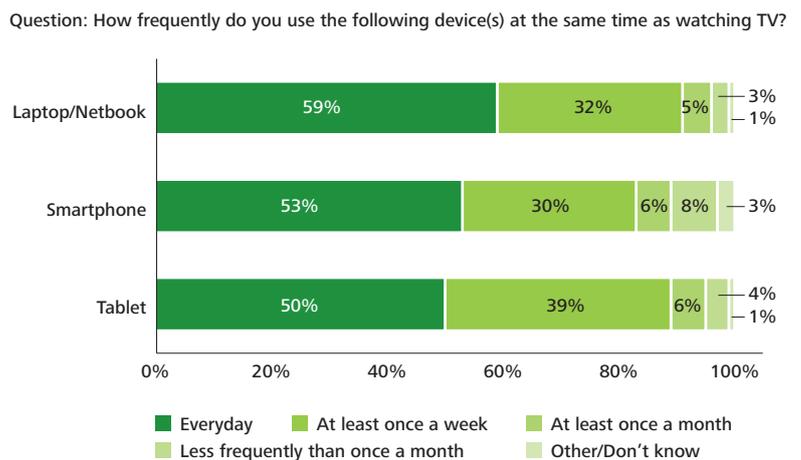
Our research suggests that second screen usage does not compete directly with watching TV. Viewers seem to fall back on their second screen during breaks in programming (see Figure 8), and those using a second screen while watching TV appear to use both screens in a complementary way.

But what about using a second screen to watch TV? The effect of this is to diminish the extent to which TV is a social experience, enjoyed in the company of others, and a key element of the viewing experience.

In several European countries we surveyed, only a quarter of tablet owners had used their devices to watch TV and movies in the previous week (see Figure 9). In only two of the nine countries surveyed had more than one in ten smartphone owners used their device to watch online movies or video.

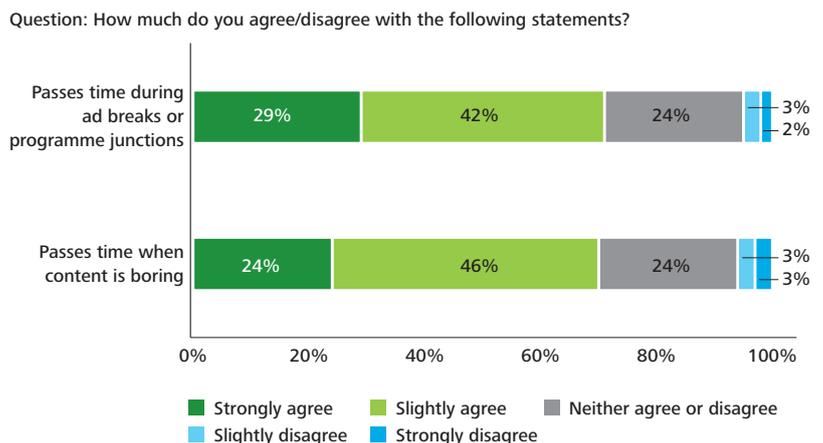
Furthermore watching video is only one reason among many for using either smartphones or tablets. In our survey, respondents selected from 22 different activities. For tablet users, watching video was among the top ten uses in only a third of countries surveyed (see Figure 9). Among smartphones owners, it was at best the 14th most popular use. In one country it was the least-used application.

Figure 7. Frequency of usage second screens while watching television among respondents that use second screens while watching TV



Source: Deloitte/GfK, UK, June 2013. Weighted base laptop/netbook (1,094), smartphone (1,005), tablet (409). Base is of those who normally have device when watching TV; it is not the base of all those who have these devices.

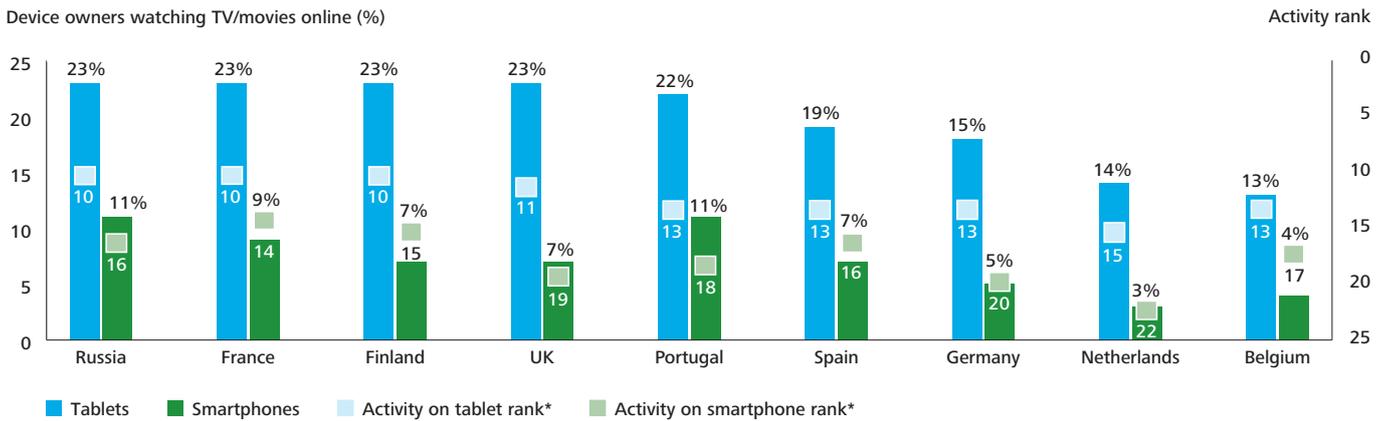
Figure 8. Reasons for using second screen while watching TV



Source: Deloitte/GfK, UK, June 2013. Weighted base (1,532): All those who use a second screen while watching TV monthly or more frequently.

Figure 9. Usage of tablets and smartphones to watch TV or movies online in selected European countries

Question: In the last 7 days, for which, if any, of the following activities did you use your device?



Source: Deloitte Global Mobile Consumer Survey, All European countries surveyed, May/July 2013.
 Weighted base: Total respondents who own (smartphone, tablet) – Belgium (687, 601), Finland (467, 201), France (969, 596), Germany (997, 430), Netherlands (1136, 836), Portugal (324,187), Russia (641, 467), Spain (1242, 776), UK (2382, 1431).
 * Note: The ranking refers to how this particular activity ranks in popularity across a maximum of 22 possible activities.

Age has some bearing on the propensity to watch TV or movies online, but at present it is not significant (see Figure 10). In the countries surveyed, the use of tablets for watching TV or movies online for 18–34 year olds was, at most, higher by five percentage points than the average for all respondents. In all other countries, the difference was either two or three percentage points.

While usage of second screens to watch video may be low, broadcasters should bear in mind that appreciation of this facility may be high. Consumers value the option to be able to watch on another screen, even if they do not exercise this very often.

Viewers are not using second screens to enhance their viewing

The growing ownership of second screens has prompted some broadcasters and producers to consider how best to exploit this trend. One response has been to harness the enthusiasm for apps, by creating apps designed specifically to complement TV consumption.

We are still at an early stage in the development, and in several European markets there are few examples of programme-specific apps.

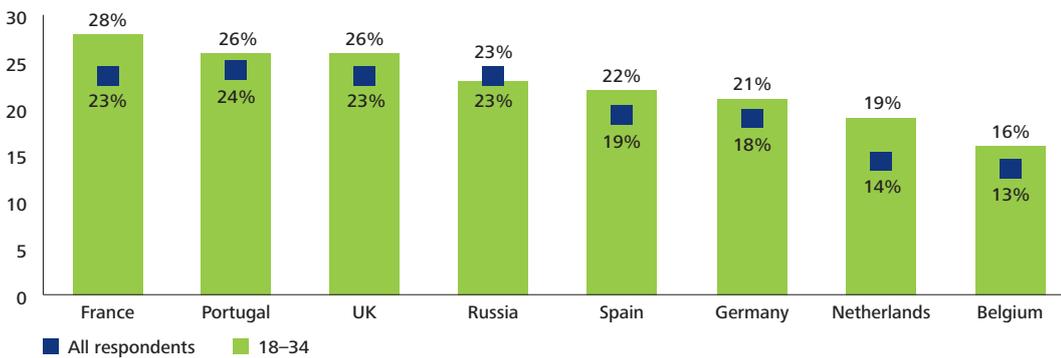
Of the TV apps on offer, there are four broad types: programme-specific apps; function-specific apps, such as those designed to synchronise with TV advertising; channel-specific apps and apps designed to accompany all TV viewing.

These apps create a dilemma for the television industry: while they can complement the TV experience, and possibly improve revenues (for example by driving audiences higher) each programme app consumes financial and creative resources.

Figure 10. Respondents that use their tablet to watch TV or movies online

Question: In the last 7 days, for which, if any, of the following activities did you use your device?

% of respondents that use their tablets to watch TV or movies online



Source: Deloitte Global Mobile Consumer Survey, All European countries surveyed, May/July 2013.

Weighted base: Tablet owners & those that are aged 18-34 – Belgium (601,198), France (596,198), Germany (430, 147), Netherlands (836, 209), Portugal (187, 104), Russia (467,218), Spain (776, 236), UK (1431, 489).

* Note 1: The ranking refers to how this particular activity ranks in popularity across a maximum of 22 possible activities.

* Note 2: The sample size for Finland for the 18-34 age group was below the threshold of 75 respondents and so was excluded from the analysis.

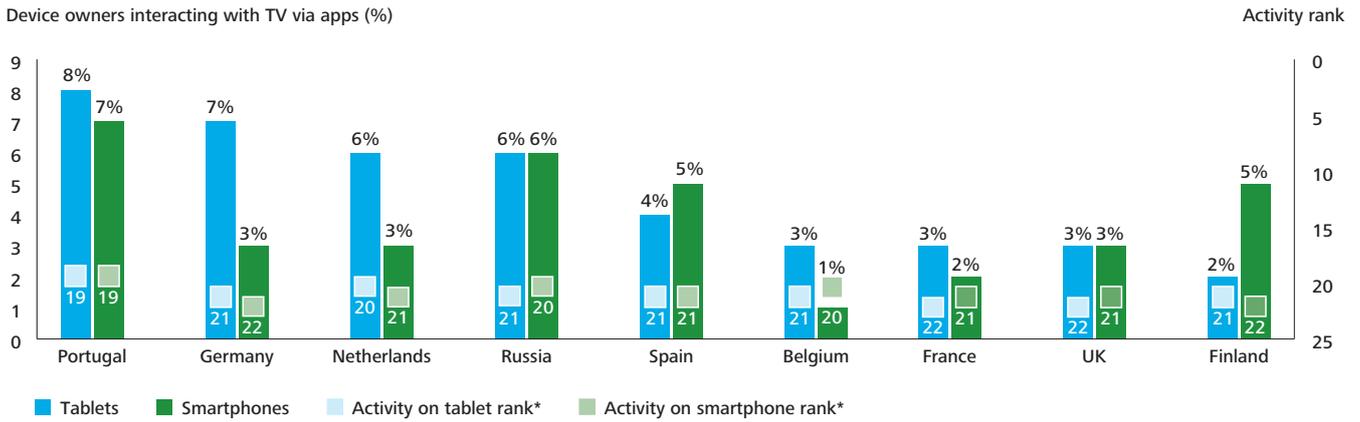
Currently, user engagement with second screen apps is low (see Figure 11). Few respondents to our survey wanted to use their smartphone or tablet to interact with TV programmes via an app.

Arguably it is still early days for the TV app, and there are still many mistakes to make – and rectify. The lack of impact in Europe could be due to the shortage of TV-specific apps, particularly at the programme level. New software platforms may enable the incremental cost of creating an app to fall to a few thousand euros.

The TV industry should also consider that using second screens to drive engagement and interest in TV programming may not require bespoke apps. The biggest impact on viewing may simply result from second screen owners using their devices to send a message to their friends to recommend watching a programme, or to engage in conversation about a programme that two friends are currently watching.

Figure 11. Respondents that use their device to interact with the TV programmes via a specific app

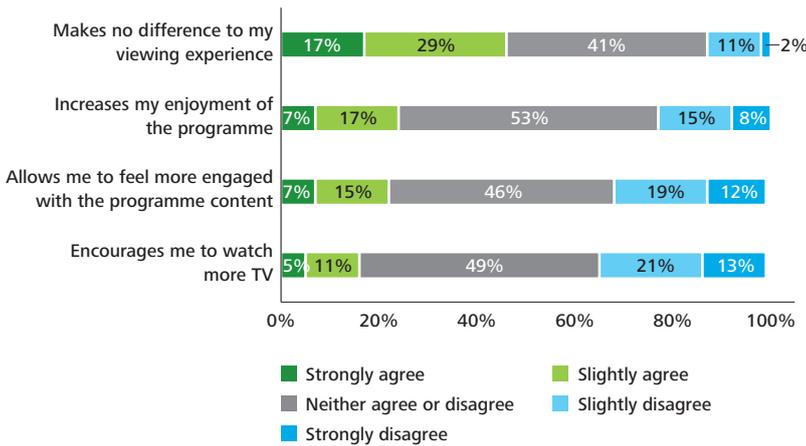
Question: In the last 7 days, for which, if any, of the following activities did you use your device?



Source: Deloitte Global Mobile Consumer Survey, All European countries surveyed, May/July 2013.
 Weighted base: Total respondents who own a smartphone, tablet – Belgium (687, 601), Finland (467, 201), France (969, 596), Germany (997, 430), Netherlands (1136, 836), Portugal (324, 187), Russia (641, 467), Spain (1242, 776), UK (2382, 1431).
 * Note: The ranking refers to how this particular activity ranks in popularity across a maximum of 22 possible activities.

Figure 12. Spectrum of views on second screening while watching TV

Question: How much do you agree/disagree with the following statements?



Source: Deloitte/GfK, UK, June 2013.
 Weighted base (1,532): All those who use a second screen while watching TV monthly or more frequently

Television consumption peaks at the end of the day, when viewers are typically tired and in need of relaxation. Even the simplest call to action from a television presenter – to vote from a multiple choice panel – may be considered too much effort.

According to Deloitte’s research on the UK market – one of the countries in which there has been most second screen app development in the last year – there is so far only lukewarm appreciation of the benefits of second screening for TV viewing (see Figure 12).

The outlook for the second screen

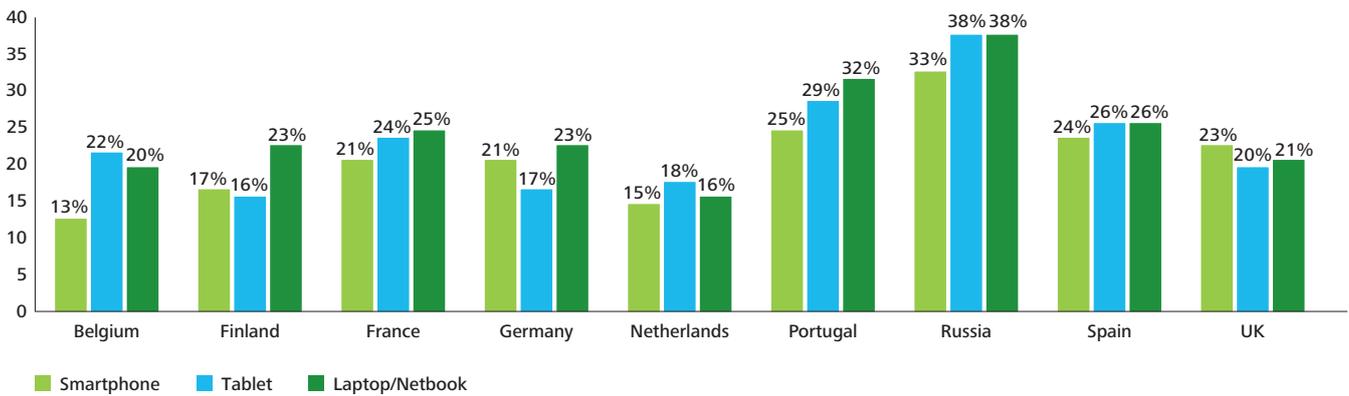
It may be the case that the full impact of the second screen is yet to be felt. Given a greater installed base of second screens, their potential to disrupt the TV market, positively or negatively, may eventually manifest itself.

Indeed the base of second screens still has plenty of room to grow. In all European countries surveyed, the smartphone was the device most likely to be purchased over the next year, with 20 per cent or more respondents in five of the survey countries intending to buy a smartphone (see Figure 13).

Figure 13. Claimed purchase intent of smartphones, tablets and computers over the next 12 months

Question: How likely are you to buy the following mobile devices in the next 12 months?

Respondents that are likely to buy (%)



Source: Deloitte Global Mobile Consumer Survey, All European countries surveyed, May/July 2013.

Weighted base: Total respondents – Belgium (2,000), Finland (1,000), France (2,000), Germany (2,000), Netherlands (2,009), Portugal (607), Russia (2,000), Spain (2,000), UK (4,020).

The majority of these purchases are likely to be replacements, but we would still expect the base of smartphones to increase in Europe. As only a minority of Europeans own or have access to a tablet, we would also expect the base of tablets to rise over the next year.

Will a higher base of connected devices have a marked impact on the TV market? It may be that among those individuals whose use of second screens is most likely to distract from TV viewing, the majority already own a connected device. Adoption of second screens among 18–34 year olds is already well advanced; Gen C, or the connected generation, many of whom are in younger age groups, is already second screening and has been doing so for a while. TV may already have felt the impact from second screens, and that impact has so far been modest.

The age group most likely to acquire a smartphone for the first time over the next 12 months is the over 55s. Deloitte’s expectation is that this group of new smartphone owners will have quite different usage patterns for their newly-acquired smartphones.

In many cases they will limit smartphone usage to calls and photos, the same as their historical use of mobile phones. Deloitte does not anticipate that this group will abandon their TV sets, or change viewing habits that have ingrained themselves over decades.

The tablet market should grow strongly over the next few months and years, as the range of devices increases and average selling prices decline. One key driver for tablet sales is likely to be growth in the range of smaller tablets, with 7–8 inch screen sizes. While such tablets can be used to watch television, they are not ideal. Manufacturers are making televisions with bigger screens, and the average size of TV screen in European households will increase steadily over time. It is likely that television programmes will be produced for thirty inch screens and larger, not for small screens. Content produced for a larger screen may not work well on a smaller screen, even when consumed close up.

Bottom line

The increase in second screens across Europe has caused barely a ripple in TV behaviour, at least so far. Second screens – which currently number hundreds of millions in Europe and which in the medium term are likely to exceed a billion – have not dented TV viewing, have not blunted TV advertising and have not damaged pay TV. There have been occasional setbacks for the TV industry in every market during the past decade, but the second screen does not appear to have been responsible.

Television and second screens share one fundamental attribute: glass. But in most other respects they are distinct, and not just in screen size. They are used in different ways, and have differing optimal applications.

Each broadcaster should evaluate the scale of the threat and opportunity that second screen represents for its audience and its range of programmes, based on measured user data and not solely on self-reported surveys.

Digital dividend 2.0:
what it may mean for the European
television industry



Digital dividend 2.0: what it may mean for the European television industry

Europe is nearing completion of digital switchover. All parties involved – TV and mobile industries, and governments – are benefiting. Switchover involves converting terrestrial television transmission from analogue to digital, TV broadcast giving up a slice of spectrum, and the government auctioning off some of the freed up spectrum. This complex process might have been expected to be a one-off. But this may not be the case. A further transfer of spectrum is planned, commonly referred to as a second “digital dividend”, implying a further squeeze on TV’s spectrum allocation, and a further transfer to mobile.

Spectrum is an intangible, finite and highly valuable resource via which content can be communicated wirelessly. Historically it has been used by a range of sectors around the world, with media and military predominating. It exists over a range of frequencies with lower ranges generally considered more valuable. Spectrum allocation is typically managed by governments and their appointed regulators. Television has historically occupied the 470 MHz to 862 MHz range; digital switchover has so far entailed television leaving the 800 MHz band, and becoming concentrated into the remaining frequencies.

The switch to digital transmission, and its greater efficiency in usage of spectrum, enables significantly more TV channels to be broadcast, in higher quality and over a smaller amount of spectrum. Switchover enables terrestrial broadcasters to keep pace with, although not necessarily emulate, the range and quality of channels offered via cable, satellite and broadband. The freed-up spectrum can then be licensed by the authorities, with all buyers in the recent round of sales being telecommunications operators, and with mobile operators predominating.

While the benefits of switchover are clear, the process of reallocation of spectrum is inevitably complex and lengthy. It has a significant impact on suppliers and consumers. It requires intense government oversight and cross-border collaboration to ensure a harmonised progression in countries sharing borders. It can necessitate the replacement or upgrade of television sets, a customer education campaign, and for a minority, subsidised upgrades.

Nearly everyone uses television so a switchover process needs to be universal. Switchover requires the upgrade of broadcast towers. It can also require additional fill-in sites due to differences in how far analogue and digital signals can reach.

The reallocation process is generally considered to require about five years, although in some markets, where terrestrial transmission is less significant, reallocation can be completed more rapidly.

A second dividend may be on the horizon

Given the complexity of reallocating of spectrum, one might have expected a diminished appetite for a second digital dividend. Yet a further dividend is planned to open up the 700 MHz band, currently used in Europe solely by terrestrial television, for sharing with mobile operators, who are expected to use the frequency to offer broadband services.

After a second reallocation, there might be a third, focused on the 600 MHz band. Again this would entail a transfer away from television to mobile. In the US, the Federal Communications Commission (FCC) has been examining options for releasing the 600 MHz band from terrestrial broadcasters in the US so that it can be offered to mobile operators.²²

While switchover originally offered benefits to both television and mobile industries, a further dividend would see television transmission being squeezed into a smaller range of spectrum. Currently the 700 MHz band represents about a third of terrestrial broadcast spectrum. Every channel requires a certain quantity of spectrum, depending on the exact network configuration. All other factors being equal, if digital terrestrial gets a smaller allocation, this would reduce the number of channels that could be broadcast. This mooted change comes at a time when terrestrial broadcasters would like to have more capacity to address rising demand for high definition TV content. Furthermore, ultra high definition (UHD) is on the horizon, and this requires at least four times the capacity of HD.

As yet there is no formal timetable for a further transfer but there are indicative timings. A key step was the decision at the World Radio Conference (WRC) in 2012 to allow mobile operators to share the 700 MHz band. This decision is due for ratification in 2015.²³ Regulators such as Ofcom consider 2018 to be a practical target date for reallocation.²⁴ The view is that this would allow sufficient time for re-planning and international coordination on a new terrestrial television plan, and a reasonable lead time for TV manufacturers and consumers to upgrade equipment.

Digital dividend 2.0: what it means for the television industry

Switchover was a resolute win-win-win, benefiting television (more channels in greater quality), mobile (more capacity to offer data services) and government (greater revenues from a fixed asset). While a second dividend may appear to affect television most, the consequences for government and mobile operators, positive or negative, are not yet clear cut.

If terrestrial television is left with less capacity, this does not necessarily imply fewer channels. Improvements in compression technologies continue, and there are ways of squeezing more capacity out of existing broadcast multiplexes and also transmitting a television channel at a lower data rate, with no impact on quality. These newer technologies already exist, and are already deployed in some markets.

There are currently two main generations of digital terrestrial transmission technology. In some countries, mainly those first to start the switchover program, the transmission technology is DVB-T (Digital Video Broadcasting – Terrestrial).²⁵ In countries that started switchover later, or with multiplexes that have been licensed more recently, the technology is the more advanced DVB-T2 (Digital Video Broadcasting – Second generation Terrestrial), and this improved modulation scheme enables each multiplex, or transmission signal, to operate at a 65 per cent lower data rate. Upgrading the video coding and compression scheme from MPEG 2 to MPEG 4 would also enable channels to be transmitted using a lower data rate. The combination of DVB-T2 and MPEG 4 enables a standard definition channel to occupy approximately two thirds less spectrum; and an HD channel to be carried in the place of an SD channel.²⁶

In the long term, assuming a successful transition, a second reallocation may have little negative impact on terrestrial TV. By prompting an upgrade to DVB-T2, it may even enable service to be enhanced, with more channels, and at higher resolution.

While the overall outcome may be positive in some markets, significant costs would be involved. The aggregate cost of transition in Europe might be billions of euros. The major costs would include:

- Changing the pattern of frequencies that are used at each transmitter. This is not just a physical equipment upgrade. Major preparation would also be required, including negotiated coordination with regulators in neighbouring countries, and a complex field engineering programme to change transmitter and antenna configurations.
- Requiring some homes to replace or adapt their roof-top aerials so that they can tune into new sets of local transmitter frequencies. Some of the existing antennae can only receive certain bands. The cost of purchasing or adapting an aerial may reach hundreds of euros per household.²⁷
- Upgrading television receivers in homes that are not DVB-T2 compatible. An increasing number of TV sets sold in all markets may come with DVB-T2 capability by default, but TV lifecycles are currently about seven years, so replacing existing TV sets would take time. Ofcom, the UK regulator, estimates that, by 2018, a fifth of homes who access television primarily via terrestrial broadcast may still be using older DVB-T receivers. Upgrading receivers would probably cost €50 to €200 per device, and in some cases, a professional installer may be required to undertake the upgrade.²⁸
- Maintaining two sets of transmission equipment during the key reallocation period. Viewers would be given one to two years to upgrade their equipment, and in that time content would be simulcast. This would increase transmission costs but result in no uplift in revenues.

Deloitte estimates that a second reallocation programme might cost in the region of several hundred million euros for larger countries in Europe. As an example of costs, the digital switchover programme in the UK cost £700m.²⁹ Governments would probably be expected to fund transitions costs out of receipts from spectrum auctions.

Dividend 2.0: what it means for the mobile industry

In the 1980s and 1990s, mobile was predominantly a voice service, with data usage constrained by network speeds and device capability. Since then, speeds have increased and the ability of the smartphone to handle data-centric applications has improved. Traffic has surged in response. Mobile data traffic is forecast to grow at a compound annual growth rate of 12.4 per cent over 2012-2017 in Europe.³⁰ A rising base of smartphones, greater use of video, and ever-higher resolution content are all likely to contribute to growing demand for network capacity.

There are several ways of meeting demand for rising capacity. One is to increase network capacity through additional spectrum. Providing additional spectrum at a low frequency, such as 700 MHz, confers two significant, additional benefits for operators.

First, the 700 MHz range is well-suited to delivering national coverage for mobile data. It is the spectral equivalent of the beachfront property. Higher ranges are more akin to industrial estates. The premium for lower frequencies is evident from the recent UK auction: spectrum at 800 MHz sold at over four times 2.6 GHz spectrum.³¹ The lower the frequency, the greater the reach of each base station signal, the better the indoor penetration and the lower the cost of network roll out. A cellular network tower working at 700 MHz has a radius of up to 30 kilometres. A high frequency tower, operating above 2 GHz, may reach less than 500 metres.³² The 700 MHz band can make reaching rural areas – a requirement of some licences – significantly less expensive.

Furthermore, providing spectrum at 700 MHz would make Europe more aligned with other regions around the world which are standardising on 700 MHz.³³ If European markets follow suit, this could benefit operators and consumers, particularly for 4G services, which currently operate at a range of frequencies within Europe and abroad.³⁴ Each 4G-capable smartphone supports a limited set of frequencies, which can frustrate roaming between networks, or changing operator. A consumer's 4G phone may not be compatible with the 4G network of another operator, or with a foreign network roamed on to. Creating 4G chipsets that can work on multiple frequencies is challenging, and increases the price of handsets.³⁵ Harmonising frequencies for 4G could make phones cheaper, as chipsets could be produced in greater scale.

However there are variations between regions and markets in the use of the 700 MHz band. For example there are differences in the frequencies for transmitting data versus those for receiving data, which constitute the 'band plan'. So at best there would be overlapping use rather than full global harmonisation. Full roaming at 700 MHz may never be possible.³⁶ The GSMA has recommended a band plan for Europe that would result in 60 MHz of the 96MHz of spectrum being used for mobile services, with the remainder being used as guard bands.³⁷

Given the benefits of the 700 MHz band, it might seem certain that operators would gladly acquire more capacity. But operators' appetite is uncertain; some carriers might decline the offer. Operators need to forecast expected increases in data usage per subscriber against likely falls in average revenue per gigabyte.³⁸ Carriers' assessments would need to balance incremental revenue from additional spectrum with the cost of acquiring further frequency, related spending on upgrading infrastructure, and funding digital switchover costs incurred.

The outlook for mobile operators in Europe is for a modest, consistent decline in revenues.³⁹ Mobile data revenues should increase, but falling voice and text message revenues point to declining revenues overall.

Would the allocation of 700 MHz be an inflection point? Or would European mobile users continue to pay on average the same nominal amounts for their mobile service, despite improvements to the underlying network?⁴⁰

In answering this question, operators should consider the extent to which alternative services will be used to provide data connectivity to phones and tablets. Owners of smartphones and tablets have already shown their willingness to use Wi-Fi to connect their devices, a practice known as off-loading.

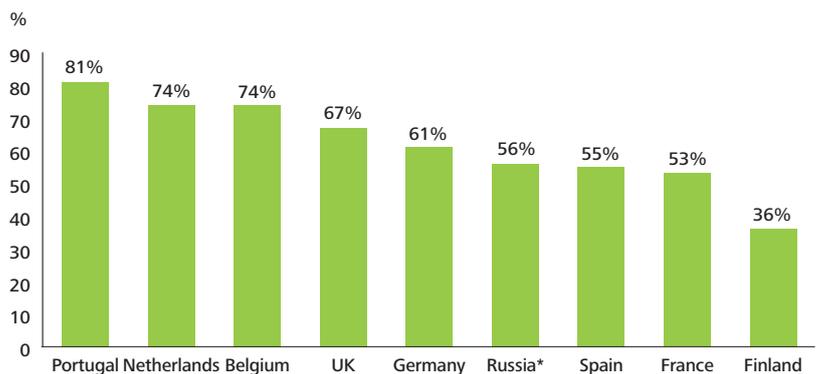
The vast majority of traffic generated by tablets is carried over private and public Wi-Fi networks. In many countries smartphones already connect predominantly to Wi-Fi networks (see Figure 14).⁴¹ The price per gigabyte over a cellular mobile network in most markets is higher than for Wi-Fi networks connected to fixed broadband networks, and speeds are typically higher over Wi-Fi too. This price differential is likely to remain, and might increase.

Operators should also consider the impacts of other new connectivity technologies, such as white space technology.⁴² If these offer mainstream access to faster, cheaper connectivity, mobile data may become further marginalised.

While the installed base for smartphones and tablets in Europe should rise through 2018, and traffic per device is likely to increase, operators may struggle to calculate with certainty what incremental revenue this would generate, and at what margin, even with additional spectrum being available.

Figure 14. Respondents using Wi-Fi most often to connect smartphones in selected European countries

Question: Which type of connectivity do you use most often for your smartphone?



Source: Deloitte Global Mobile Consumer Survey, All European countries surveyed, May/July 2013. Weighted base: Total respondents who own a smartphone – Belgium 687, Finland 467, France 969, Germany 997, Netherlands 1136, Portugal 324, Russia 641, Spain 1242, UK 2382. * Note: The data for Russia is representative of the online population which results in a higher concentration of urban professionals with higher income.

Digital Dividend 2.0: what it means for governments

Governments need to maximise the public benefit, which encompasses a wide range of public service obligations, some of which conflict. The spectrum management requires maximising revenue from a finite resource, optimising producer and consumer surplus, and providing core public services, some of which are provided by television (such as news) and some by mobile operators (such as rural connectivity).

A complexity with reallocation of spectrum in digital switchover is that it entails the migration of resource from a sector whose organisations may be non-commercial and funded by licence fee, and which have public service obligations. By contrast, most mobile operators in Europe are run entirely on commercial grounds. Relying on the market to allocate spectrum might be compromised by some terrestrial broadcasters' inability to fund spectrum acquisition via conventional corporate financing arrangements. The management teams of some public service broadcasters may lack capital raising skills due to their public service remit.

Governments should also consider the needs of other groups that use the ultra high frequency (UHF) band, besides national broadcasters. These include organisations using wireless devices such as radio microphones, local television services and emergency and disaster recovery services.

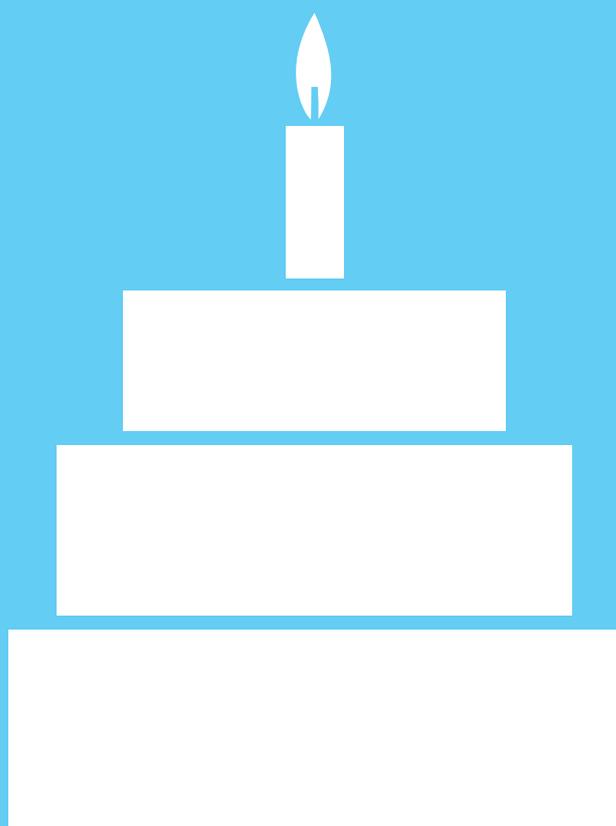
Bottom line

Technological advance makes possible a further transfer of spectrum from terrestrial television broadcasters to mobile operations; the range and quality of the terrestrial TV offer need not be adversely affected. However, a transfer would be disruptive. The transition process is complex and presents significant risks and costs for transmitter network operators, broadcasters and audiences. A poorly managed and inadequately funded process could have a major negative impact on free-to-air broadcasting in Europe.

All parties involved need to review carefully all assumptions and projections made in the business cases presented so far. The economic benefit of spectrum by application varies over time. Any assumptions made about the price consumers are willing to pay for mobile broadband, given the existence of alternative connectivity options, should be carefully scrutinised.

Broadcasters need to understand the likely process and costs involved of a second transfer, and take an active role in the development of a fully-costed and funded industry-wide plan for migration, in which all resulting costs are identified and allocated appropriately.

Ultra high definition's first year



Ultra high definition's first year

A concept car is an expression of the technologically and stylistically possible. It may not be commercially viable.

Ultra high definition (UHD) has at times felt like television's concept car. It has been wheeled out at successive trade shows since 2003, showcasing its awesome, but to some commentators far from real world specification: up to 8,000 line resolution, 22-channel sound, 68 billion colours and two dozen audio channels.⁴³

The specifications for some concept cars mean that they never make it to production: a battery-powered limousine is one such example, due to the slow advance in battery technology. But with each outing, UHD has demonstrated significant progress.⁴⁴ For example between two successive demonstrations in 2006, the bandwidth required to transmit UHD plummeted from 24 Gbit/s to 180 Mbit/s, thanks to a new video codec. Outside the exhibition halls, there have also been tests of the technology to film events such as the Rio Carnival in 2012 and last year's French Open.⁴⁵ These have contributed to the learning process.

Customer expectations of picture quality have risen considerably, since UHD was first demonstrated and the average size of the TV screen has increased markedly. In 2004, three per cent of TV sets sold in the UK had a screen size between 33 and 42 inches. By early 2013 this size represented a quarter of all sales, and one in six sets sold were larger than 42 inches.⁴⁶ Screens offering resolution so sharp that individual pixels cannot be seen have become standard in many tablets, smartphones and laptops.

While customer expectations of screen quality have risen, there has been a moderation in the specifications for UHD. From 2012, these have included a 4K (4,000 line) variant that is similar to the 4K system used in tens of thousands of cinemas around the world.

Just over a year ago, UHD made the transition from technology demonstrator to ratified standard, and has since then embarked on the road to commercialisation.⁴⁷ The first test homes (at the time of writing, just six in South Korea) now have 4K UHD TV service.⁴⁸ Limited commercial services are due to start in 2014 in other countries and the first commissions have already been made.

Yet many in the industry remain sceptical of UHD, questioning its technological viability and its business model.

Deloitte agrees that the path to UHD – as is the case with introducing any new major technology – is hazardous and lengthy. Multiple obstacles need to be overcome, and although UHD has passed many milestones in the last year, it still faces key challenges. However overall we believe that UHD's challenges will be addressed, and we are optimistic about 4K UHD's momentum.

In this chapter, we review UHD's progress in five key aspects: content, home technology, production, transmission and consumer demand.

UHD content: more than you may think

The annual Consumer Electronic Show (CES) held in Las Vegas every January showcases the brightest and best new technology products – as well as a fair number of duds. This year 4K was one of the show's key themes. Dozens of 4K televisions with vast screens were showcased at the event by all the major manufacturers. This large number of 4K TV launches prompted the question: "But is there anything to watch on these screens?"⁴⁹

The answer in January was yes. And the answer today is an even more resounding yes.

Back in January a single 4K movie channel would have been possible, as a significant range of 4K content already existed. Most blockbuster movies over the past few years have been shown in 4K at the cinema. *The Hobbit: An Unexpected Journey* was shot in 5K.⁵⁰ At the start of 2013 there were already tens of thousands of cinemas around the world with 4K projectors.⁵¹

And it's not just new films that are available in 4K: any movie shot in 35 mm or higher can be converted into 4K. Unlike 3D, converting existing films into the 4K format would not require reshooting. It would just require scanning and remastering of the negatives, as film in 35 mm and higher offers equivalent resolution to 4K. *Lawrence of Arabia*, for example, was filmed in 65 mm half a century ago and was downscaled to get to the 4K version shown in cinemas at the end of 2012.⁵² There are currently dozens more conversions in progress.

For television programmes rather than movies, the choice is smaller but expanding rapidly. Some shows are already shot in 4K, but broadcast in HD. For example UK broadcaster Sky filmed the latest series of *Got to Dance* in 4K. Drama is also being shot in UHD. Netflix filmed *House of Cards* at this resolution, and plans to make the 4K version available via streaming in 2014. Some TV shows originally shot in HD are being converted to 4K.⁵³

Other genres being filmed in 4K include sports, nature and comedy. Combining exclusive sports rights and the best possible screen resolution can provide a powerful differentiator for pay TV channels. Several matches at the 2014 World Cup will be filmed in 4K.⁵⁴ The recent Wimbledon tennis tournament was filmed, but not broadcast, in 4K.⁵⁵ A few Champions League matches last season were also shot in 4K.⁵⁶ There have been 4K commissions for natural history programmes, with pandas and meerkats among the first creatures to be captured in UHD.⁵⁷ As for comedy, *Saturday Night Live* is planning to pre-produce programme segments in 4K.⁵⁸

UHD televisions: accessible, but still premium

At the start of this year, Deloitte predicted the launch of 20 different models of 4K UHD TV sets by year-end 2013, and that just ten 4K TV sets would be available for under \$10,000 (€7,500).⁵⁹

We were pessimistic on both counts. There were 50 models of 4K TV set by the end of January 2013 although at a cost of €25,000. By July 2013, a branded 4K TV set in Europe cost £5,000.⁶⁰ In the US, the price was as low as €1,000.⁶¹ So over the course of just half a year, the delta between 4K and 2K TV sets has fallen to just a few thousand euros, and is likely to fall further still.

A UHD TV set is one element of a home 4K experience. Other elements, such as storage need to be upgraded. Blu-Ray discs hold 25 GB per layer and currently only double-sided discs are available, but a compressed 4K film needs up to 100 GB per disc. Prototypes of Blu-Ray discs with up to eight layers have existed for close to a decade, and recently several vendors announced plans to launch players capable of handling discs with up to 300 GB capacity.⁶²

Another requirement is for cables to connect players to displays. The assumption has been that HDMI lacks sufficient capacity to carry 4K. A new cable standard with greater capacity, HDMI 2.0, had been expected for the first quarter of this year, but at the time of writing there has been no news on this. However some tests of the first 4K TV sets have found that good quality HDMI cables can carry 4K.⁶³

Production

Both 3D and 4K are new display technologies. As 3D has struggled, some have questioned whether UHD would face similar challenges.⁶⁴ Recently several broadcasters announced that they would cease or suspend 3D activity.⁶⁵

Any new technology carries risk, but there are different scales of risk. Deloitte's view is that 4K's trajectory is different to 3D. UHD is part of a steady, decades-long evolution of the television experience, which started off with modestly sized black-and-white screens and evolved into ever-larger, ever-flatter colour televisions. Throughout, the essential viewing experience has been largely the same: lean-back, social viewing in the company of friends and family.

UHD is like HD, but superior. 3D is like HD but different, requiring glasses and often tiring after a few hours, due to the way in which 3D images are perceived by the brain.⁶⁶

The similarity of consumption also enables a similarity in production and that is why, despite the costs of replacing HD cameras with 4K UHD cameras, the upgrade process is already under way.

An increasing quantity of content with a long expected shelf life is likely to be captured in 4K. According to one survey of the UK TV industry in Q1 2013, a third of respondents expected to start filming in 4K over the next twelve months.⁶⁷ Over the next few years high-end content may be filmed by default in 4K, with standard HD and SD versions being created from the 4K master.

Capturing in UHD has an additional benefit when broadcasting in HD. For zooming in on specific areas of interest, HD resolution is maintained at up to four times magnification, providing a more consistent quality of picture.⁶⁸

Transmission: target 20 Mbit/s

The first HD broadcasts in Europe needed 20 Mbit/s capacity. It was the rate at which 3D HD launched, and it is the target bit rate for the first commercial broadcasts of 4K UHD.

Capping the required capacity at this level is critical; higher bit rates could make the service uneconomical. To get under 20 Mbit/s requires a new compression standard, known as High Efficiency Video Codec (HEVC). Most installed set top boxes do not support HEVC. So pay TV providers, which are likely to be the first companies to offer UHD transmission, will have to subsidise the roll out of the new boxes. Pay TV companies will be reluctant to pay for both new receiving equipment and additional capacity.

One way of keeping transmission speeds under 20 Mbit/s is to lower the frame rate. But sport, one of the genres best suited to 4K, requires a high frame rate (at least 60 frames per second) to cope with fast-moving action.⁶⁹

Every trial of 4K will focus on getting the right balance between capacity and quality, and this is one of the major challenges the technology faces in the near term. Most of the show reels so far seen by Deloitte have featured static or slow-moving objects (such as buildings, pedestrians and waves) in spectacular detail; this impresses initially, but slow pans of static items are not the basis for a commercial service.

Consumer demand: the logic of irrational demand

There is an existing library of 4K content, TV sets are becoming more affordable, new TV programmes are being shot in 4K, and tests of 4K transmission have been successful.

Yet there remains one further obstacle: will consumers buy it? The main challenge is that the much higher resolution afforded by 4K is immaterial, as viewers cannot appreciate it. The further the distance from the TV, and the smaller the screen, the less the perceptible difference between 4K and standard HD. Considered rationally, few people may need 4K.

But this is to ignore a key feature of consumption, which is that purchases are not always rational.

Promotional shots of fast cars are often of a stationary car; ads for TVs sometimes show a blackened screen. On occasions, a good part of the ownership utility is the thrill of owning something that is at the high-end of the scale, and which friends and family desire.

Deloitte's expectation is that the first owners of 4K TVs in 2013 – 2015, shortly after purchasing their set, are likely to invite friends and family to view some 4K footage from close proximity – about a metre away. They may be asked to try and spot pixels. This experience – should individual pixels prove impressively elusive – is likely to provoke admiration and envy, and possibly catalyse further sales.⁷⁰ Thereafter the set will be watched from normal distance, but the memory of the quality of that close encounter will likely linger. This ritual is likely to resemble that taking place when new owners of high resolution tablet computers and smartphones take ownership of their new devices.⁷¹

So while 4K TV sets may not strictly be needed, they may regardless be desired. There are many purchases we make that could be logically considered unnecessary.⁷²

Bottom line

Every new technology is a risk. The successful adoption of UHD faces many challenges. Advances are needed across all aspects of the television value chain, from cameras through to living room cables. Betting on UHD may seem particularly risky following the recent setbacks to 3D.

The history of television is filled with technological advances, all of which involved risk. The progress to colour from monochrome was daunting, and the launch of satellite-services for transmission was a major financial commitment.

New technologies succeed when they satisfy demand: UHD should be able tap into the seemingly insatiable demand for ever higher production values in television content.

Initially, UHD will be for niche markets, and in the medium term UHD may still be largely confined to pay TV customers, in much the same way that HD content remains scarce on terrestrial-only TV stations. But this reflects the evolution of television from a largely singular service, funneled via a few channels, into a multi-faceted industry, with multiple business models, and many ways of distributing content.

The television gets
super-connected



The television gets super-connected

Connected TV was one of the hottest topics at industry conferences and in boardroom discussions during 2012. Streaming TV peripherals – low cost, easy-to-use devices that connect TVs to the Internet – are likely to have that distinction for the remainder of 2013.

Connected TV intrigued because of its built-in two-way Internet connectivity. What would this do to television consumption? Would broadcasters be by-passed, with viewers obtaining their content straight from production houses? Might the television become a large Internet browser?

These discussions overlooked the fact that tens of millions of households around Europe already had the ability to connect their TVs, despite not having acquired a set with built-in Internet access. They could connect their TV via any device in their home that featured in-built connectivity, such as a games console, a laptop, a Blu-Ray player, a dedicated streaming device or, with a bit more difficulty, a smartphone or tablet.

For households owning one or more peripherals with in-built two-way connectivity, the marginal cost of making a TV connected was zero, or perhaps just the €1 cost of a HDMI cable. Households that did not already own a connected peripheral would need to invest up to several hundred euros on a PC, games console, smartphone or tablet, or just over €100 for a dedicated streaming device such as Apple TV. Deloitte's estimate was that last year, between 40 and 50 per cent of European households could use their TV sets in a connected manner.⁷³

Enter the low-cost streaming peripheral, which receives content via Wi-Fi and connects to the television set in the form of a dongle (such as Google's Chromecast) or an HDMI-connected box (such as Sky Now's TV Box or Apple TV). Currently these devices start at a subsidised price of €12, which includes the box, HDMI cable, remote control, postage and packaging.⁷⁴

Over the remainder of this year, Deloitte expects a growing number of low-cost streaming devices to become available. Many of these devices will provide access to a specific range of services. Google's Chromecast device accesses YouTube, Google Play and Netflix. Apple TV owners have the iTunes store, Netflix and Vimeo.⁷⁵ Owners of the Sky Now TV Box have Now TV, Sky News, BBC iPlayer, BBC News and Demand 5, and can download further services from the Roku channel store.

Take-up of these access devices may extend beyond those currently with non-connected TVs. Some households that already have the means to connect their TVs may purchase a streaming peripheral to gain access to additional content not available via their current set-up. For example, a pay TV home with satellite access may acquire a dongle to get occasional access to content: the household may subscribe to movies but not to sports. A streaming device would be used to access the occasional football match.

Some households may acquire multiple dongles, to get access to all content, similar to the way in which pay TV households also purchase subscription streaming services, to augment their content choice.

In some cases, the justification for acquiring a streaming peripheral would be to free up a laptop or other connected device that was habitually being tied up whenever someone wanted to watch video-on-demand.

Over time, streaming peripherals will become more varied in range. High-end devices will feature greater processing power and on-board storage. But for now, the focus will be on the low-cost, basic specification device.

Bottom line

As with all on-demand services, the quality of services delivered over these devices will depend on underlying Internet speeds. Performance is likely to vary by location, and by time of day. Viewers frustrated by slow delivery, delays, or the pixelated image resulting from low bit rates may blame the provider of the device, even if this entity has no control over Internet speeds.

Broadcasters licensing their content for access via these devices should review the electronic programme guide, to ensure that their brand and programmes have appropriate prominence in the menu. Broadcasters and content owners may also want to receive usage data, to understand which of their content is being watched, for what duration, and how often.

Households that seek to obtain all the content they are interested in may end up having to acquire a number of peripherals, each with its own range of exclusive content. This may well lead to a shortage of HDMI ports, and will lead no doubt to marketing of HDMI multipliers.

About the research

Deloitte has produced this report as part of its continuing support for the IBC Leaders' Summit. This is the third year in which Deloitte has proudly been Partner of the Summit. Deloitte's roles and responsibilities have entailed the research, writing and publishing of the report and the report's scope was the product of discussions between Deloitte and IBC.

Deloitte has a dedicated research team which works continuously in sourcing, writing and producing pieces of thought leadership as part of its long term comprehensive research program whilst undertaking independent analysis of the development of the technology, media and telecommunications (TMT) sectors. Our research team considered the sectors as an interrelated, inter-dependent ecosystem and was guided by our analysis of the capabilities and limitations in corollary sectors, such as fixed or mobile broadband networks, increased ownership of smart mobile devices declines in prices for solid state drives, increases in satellite broadband capacity and fixed broadband speeds.

Deloitte's approach is to blend qualitative and quantitative research. We held several hundred meetings around the world, typically with industry executives, investment banks and industry analysts, focused on discussing developments in the technology, media and telecommunications sectors, of which about a third cover in whole or part the evolution of the television sector.

Specific programmes of quantitative research that have informed this report include:

- Selected inputs from Deloitte's Global Mobile Consumer Survey, an online survey which includes a quantification of penetration and usage of mobile devices among 17,636 respondents in nine European countries: Belgium (2,000), Finland (1,000), France (2,000), Germany (2,000), Netherlands (2,009), Portugal (607), Russia (2,000), Spain (2,000), and the UK (4,020). The sample is nationally representative in Belgium, Finland, France, Germany Netherlands, Portugal, Spain, and the UK. The data for Russia is nationally representative of the total online population which results in a higher concentration of urban professionals with higher income. The survey was fielded by Ipsos MORI and took place during May-July 2013.

- Inputs from an online survey of 2,517 nationally representative respondents in the UK looking at a wide span of TV consumption patterns and attitudes to TV. The survey was fielded by GfK and based on a question set written by Deloitte and GfK reflecting inputs from industry executives. Fieldwork took place during June-July 2013. Respondents were sampled and weighted to reflect the UK adult population (16+).

- Copious consumption of television and second screen apps.

Views expressed by third parties providing input for this report are not necessarily those of Deloitte.

For further information about this research please contact paullee@deloitte.co.uk.

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Notes

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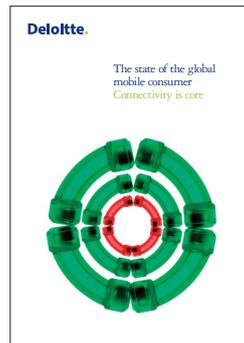
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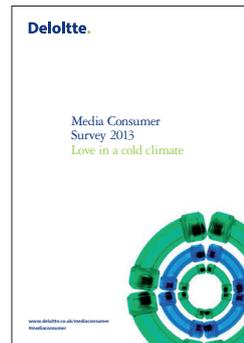
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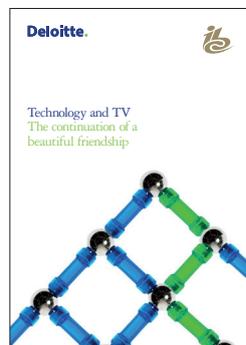
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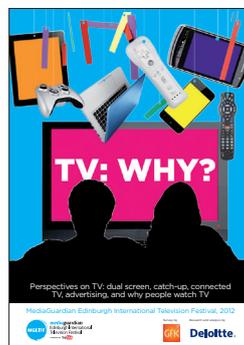
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Contacts



Jolyon Barker
Managing Director,
Global Technology, Media &
Telecommunications (TMT),
Deloitte Touche
Tohmatsu Limited
+44 20 7007 1818
jrbarker@deloitte.co.uk



Ed Shedd
Global Media Leader,
Deloitte Touche
Tohmatsu Limited
+44 20 7007 3684
eshedd@deloitte.co.uk



Paul Lee
Technology, Media &
Telecommunications,
Head of Research,
Deloitte Touche Tohmatsu
Limited
+44 20 7303 0197
paullee@deloitte.co.uk

Contacts at other Deloitte member firms – Europe, Middle East and Africa

Luc Van Coppennolle
Belgium
+32 3 800 8905
lvancoppennolle@deloitte.com

Alberto Donato
Italy
+39 064 780 5595
adonato@deloitte.it

Halvor Moen
Norway
+47 23 27 97 85
hmoen@deloitte.no

Olga Tabakova
CIS and its Russian office
+7 495 787 0600 x 2326
otabakova@deloitte.ru

Andreea Laurenza
Italy
+390283323246
alaurenza@DELOITTE.IT

Joao Luis Silva
Portugal
+351 210 427 7635 ext 5135
joaolsilva@deloitte.pt

Jukka-Petteri Suortti
Finland
+358 20 755 5561
Jukka-Petteri.Suortti@
deloitte.fi

Nikhil Hira
Kenya
+254 204 230 377
nhira@deloitte.co.ke

Mark Casey
Southern Africa
+27 11 806 5205
mcasey@deloitte.co.za

Ariane Bucaille
France
+33 1 5561 6484
abucaille@deloitte.fr

George Kioes
Luxembourg
+352 451 452 249
gkioes@deloitte.lu

Jesus Navarro
Spain
+34 91 514 5000 ext 2061
jenavarro@deloitte.es

Andreas Gentner
Germany
+49 711 1655 47302
agentner@deloitte.de

Santino Saguto
Middle East
+971 4 376 8888
ssaguto@deloitte.com

Franco Monti
Switzerland
+41 58 279 6160
frmonti@deloitte.ch

Joan O'Connor
Ireland
+353 1 4172476
joconnor@deloitte.ie

Daan Witteveen
Netherlands
+31 88 288 0236
DWitteveen@deloitte.nl

Tolga Yaveroglu
Turkey
+90 212 366 6080
eroglu@deloitte.com

Tal Chen
Israel
+972 3 608 5580
talchen@deloitte.co.il

Maureen Hughes
Netherlands
+31882882549
MaureenHughes@deloitte.nl

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