

Having reviewed the proposed DTG's excellent and detailed response, there is not much to add from Sony's perspective with regard to the individual questions.

I have attached for your convenience Intellect's position paper that was issued on 31/10/07. Whilst we did not manage to get consensus amongst all manufacturers, you will notice that the vast majority are against OFCOM's proposals. Those that do support T2 have a vested interest in doing so and have not considered the consumer's interests (something we are very passionate about at Sony).

Indeed, this is our major concern – that it's the UK consumer who will have paid for switchover through the BBC's licence fee and by investing in the necessary equipment. The so called "Digital Dividend" will be stolen from them and sold off. Then, they will have to put up with a lower quality service due to lower bitrates on the SD Freeview platform. They will then be expected to invest more money to upgrade to HD! The anticipated disruptive effect during switchover should not be underestimated.

The UK seems to have taken a very short term view. The priority seems to be selling the spectrum to satisfy the treasury's needs rather than considering what's better for UK PLC and the citizens of this country.

We very much hope that our feelings will be echoed in the responses that you will receive from other stakeholders. Hopefully our concerns will be listened to and acted upon by your good selves during this consultation period.

Intellect's Consumer Electronics Council position paper on the roll out of High Definition Television (HD) on Digital Terrestrial Television (DTT) using technical specification DVB-T2.

Context

This paper is written on behalf of Intellect, the UK trade association for the IT, telecoms and electronics industries. Its members account for over 80% of these markets and include blue-chip multinationals as well as early stage technology companies. These industries together generate around 10% of UK GDP and 15% of UK trade. Within its membership, Intellect represents consumer electronics (CE) companies who manufacture a range of digital products for the consumer market, including HD televisions. This paper was developed through a 3 week consultation period with members.

Within this consultation it is important that we do not lose sight of the aim with which all stakeholders (Ofcom, government, broadcasters, manufacturers and retailers) agree: **An HD service on the DTT platform is vital if it is to remain a competitive and valuable platform alongside Satellite, Cable and the Internet.**

HD is a natural evolution of television technology, provides the end user with the highest possible quality sound and vision, and will ensure that comparable levels of quality content will be available to all consumers regardless of their choice of platform. Government stated that HD services were to be one of the key benefits of digital switchover, Broadcasters are investing millions in upgrading the DTT network by 2012, manufacturers have developed HD products for the European market and UK consumers have bought HD-ready TVs at an unprecedented rate. As has been the case in the satellite arena, the availability of new services is dependent on the introduction of new technologies. Although this will lead to potential legacy issues with existing DVB-T / MPEG2 receivers, HDTV will be delivered via a new video compression system - MPEG4 - which is the most efficient video coding method for delivery of HD content.

Throughout the Digital Dividend Review (DDR), broadcasters and HDforAll have insisted that it would not be feasible to introduce HD services on DTT without using additional spectrum from the Digital Dividend. Ofcom have consistently disagreed with this and while also acknowledging the importance of HD on DTT have said that HD services could be rolled out by using existing spectrum more efficiently. Ofcom have now made a proposal which would lead to the introduction of HDTV services on DTT by simultaneously deploying two new technologies - MPEG4 and DVB-T2. It is this proposal and the Digital Dividend Review (DDR) that have prompted this analysis of the options for HD on the DTT platform.

Summary of views

This is a hugely complex debate with no perfect answer. All of the possible options would cause either short, medium or long term disruption to consumers, the DTV market, the DTV technical roadmap for HD, broadcaster planning or digital switchover. There are also many unknowns, and therefore risks, within the Ofcom proposal with little time to consider these in great detail due to the DDR process (which may in itself pose a risk as we move quickly towards a decision on the roadmap for DTT without having given it the proper time and research). Consequently it has been difficult for Intellect's consumer electronics members to reach a consensus view on the best way forward.

The majority of members believe that Ofcom's recommendation – adopting the DVB-T2 transmission technology to broadcast HD on DTT in 2009 – carries too many risks and that an HD service using MPEG-4 and DVB-T should be introduced within a shorter timescale. Nobody doubts that DVB-T2, and future generations, will offer significant benefits but uncertainty over the timelines and other key factors means that a consensus view is not possible.

However, given this uncertainty, all our members believe that **Ofcom must retain a spectrum contingency option within the DDR until a clear roadmap for HD on DTT has been agreed.**

Further analysis is outlined below:

Timeline and T2 technical considerations

Our members feedback on the realistic timelines for having products on the market with DVB-T2 ranged from Q4 2009 to Q1 2011. However, experience with the development of other technical standards means that many members believe timescales could slip beyond those envisaged by Ofcom. Potential causes of delays put forward include problems in the specification completion of silicon designs, or other problems arising from field tests after the first silicon tests have been finished.

Later timelines would mean that we would miss out on early seeding of the market with HD equipment through switchover and the potential mitigation of product legacy issues by introducing HD as early as possible would not be realised. It would also mean that the DTT platform could be significantly weakened by, for example, an HD offering on Freesat in 2008.

The European HD market

Planning across the European market is vital for manufacturers and consumers alike and a harmonised market brings benefits for both. While many EU member states have trialled HD on DTT (notably France, Italy, Spain, Sweden, and the UK) only a few actually have services available (according to DigiTAG Sweden and Spain both have a very limited regional HD offering). All this is currently based on DVB-T.

The view on T2 across other European countries is unclear. No other country has taken steps to consult on a move to T2 but other evidence suggests that some are adopting a wait and see approach to the technology. Italy and Spain also have similar bandwidth constraints to the UK and T2 will be a possible solution.

Here in the UK the HD trial was seen as a success and some HD-receivers are now already available on the market. France has now taken the step of mandating HD decoders from December 2008 using DVB-T and manufacturers are planning product to be available against that deadline. Some manufacturers are already shipping DVB-T + AVC-HD products not only in France for the test service already available for the Rugby World Cup, but all across Europe. Ireland is also planning towards an HD service launch next year using DVB-T although this market is relatively small compared to others.

To support this and to help consumer awareness, EICTA, the European trade association, have developed an HDTV logo which signifies that a device can receive and process High Definition television signals. While the technical requirements are currently based on DVB-S, DVB-S2, DVB-C and DVB-T plus MPEG-4 it is fair to assume that this would be expanded to include both DVB-T2 and DVB-C2 once a commercial need had been established.

Digital terrestrial broadcasting is booming in Europe due to the use of DVB-T as a common standard. This success story is enabled by the market stability that DVB-T has created. This has helped form the necessary environment in Europe for national authorities to make their analogue switch off plans by 2012 with confidence. There are also very clear cost and manufacturing advantages associated with a European-wide market that will ultimately benefit the consumer and help drive competition and innovation.

It is clear we have tried and tested technology in place to deliver HD on DTT with products and marketing resources available, and a manufacturing driver already in place with France committing to move to DVB-T MPEG-4 next year and Ireland planning to do the same. However, other countries look like they are waiting to see what the UK does regarding T2 in order that they can then plan ahead with more certainty. What we must avoid is a situation that leaves the UK exposed supporting a technology that is not adopted across Europe.

Consumer confidence

Cost

Consumers will pay a significant cost during the adoption of DVB-T. However, Europe-wide common standards create significant economies of scale, with price points of DVB-T set top boxes already falling to below €20. This is only possible when manufacturers see a stable target market and can recoup design and manufacturing investments over large quantities.

The price differential between an SD and an HD DTV receiver is a combination of the cost of the MPEG4 HD decoder, the DVB-T2 front end (if used) and the fact that initial product volumes will be low and high quality. It could be viewed that the volume of HD-Ready Flat Panel Displays already deployed indicate that consumers desire to have the highest quality TV experience, despite the cost. (It is important to note that the availability of a suitable STB will mean that consumers can continue to use the existing display, thus reducing the total cost of moving to HD services.) However, it is safe to assume that DVB-T2 product cost would be initially higher for consumers than DVB-T, although comparatively less than that from moving from SD MPEG-2 to HD MPEG-4.

It is not the intention that T2 would require consumers to invest in a new aerial but this will be confirmed upon completion of the specification.

Picture quality and service availability

As the switchover plan stands a DTT 6 mux service will be available on the 80 transmitters for 90% of the populace, with a 3 mux service targeted at the remaining 10% who live in more sparsely populated areas. This service will include all the public service broadcasting channels (PSB's) and a number of others providing, on average, an 18-channel service.

The Ofcom proposal involves clearing one mux which could then be used for HD services. We believe this carries important implications for both picture quality and service availability:

If the proposed HD service on DTT were provided by the existing 3 PSB mux's there would be very little scope for rationalising all of the other services onto the other 2 mux's. This squeezing of capacity would result in a drastic reduction of picture quality, and/or a reduction in the number the services offered, although advances in encoding technology may mitigate this to a degree. This would be a negative step for consumers, manufacturers and broadcasters alike.

Even if we were to rationalise the 6 mux's to clear one, solely for use by HD services it does not fare much better in its projected impact on consumers. This move, whilst theoretically possible, would increase the difference and disparity between urban services and regional services as HD could not be included in the regional services. This will upset consumers, place pressure on the government and highlight the continuation of the 'digital divide' in the UK.

The issues raised here are complex and concern the migration not only towards full DSO but from SD to HDTV. We believe further analysis would be required to consider the full impact on the current DSO frequency planning, the picture quality of services as they are potentially moved between muxes, and the necessity for consumers to potentially make an even greater number of rescans than is currently planned.

HD channel offering

It is always difficult for manufacturers to plan product when the content offering is unknown. It is a matter of debate as to what constitutes a compelling HD offering and while all members agree that more channels are better than less, providing they carry quality content, many other considerations (noted in this paper) must be taken in to account. Manufacturers and HDforAll have consistently stated that any HD service on DTT should consist of 4-5 channels. While DVB-T2 may deliver more, the majority of members believe the earliest possible introduction of HD on DTT will be a significant factor in the long-term success of the platform in the UK, especially given the launch of Freesat HD service early in 2008.

HD switchover and product legacy

If the BBC Trust decided to introduce an overnight download HD service on DTT, a move to DVB-T2 either during or after digital switchover will require a further switchover process that would create some legacy equipment in the market. If we decided to introduce a 3-4 channel DVB-T HD service, as opposed to an overnight download service, and T2 was introduced at a later date then that legacy issue would be far greater.

Digital switchover

The following is the opinion of Digital UK:

"Feedback from viewers to Digital UK consistently includes the message that they want clear unequivocal advice about what they need to do to and when achieve the transition from analogue to digital. Given the complexity of the DSO process it is already proving a challenge to meet that aspiration. Once in the public domain, Ofcom's (HD) proposals will make the task of bringing clarity to the process considerably more difficult. One of Digital UK's primary concerns is that it will be many months, if not years, before it is absolutely clear what the proposals will mean for individual viewers in terms of equipment choice, availability of different services and timing of change."

Digital UK concerns highlight the uncertainty around the Ofcom proposal and in particular the challenge of introducing a service midway through the switchover process. Regarding T2, these concerns must be weighed against the level of consumer confusion if T2 was introduced after

switchover and the greater legacy problems that could create. If HD was delivered using DVB-T that messaging as part of the switchover process would be easier given the relative certainty around the earlier timing of service introduction and availability of the technology.

Conclusion

All Intellect CE members welcome the Ofcom proposal and their commitment to HD on DTT. It is vital for the competitiveness of the platform that we have a compelling HD service available to consumers and a clear roadmap in place that provides certainty for industry and consumers. Ofcom is well placed to work closely with Industry to develop this roadmap and it is important that the issues raised above are considered carefully.

The complexity and uncertainty surrounding many of the issues involved, many of which are highly technical and have a strong commercial impact, mean that it has not been straightforward to reach a position. The majority of members believe that the timescales the best way forward is to deliver HD services on DTT using DVB-T:

- Services could be rolled out throughout the switchover process starting with Granada in 2009
- The confirmation of HD services on DTT now would allow manufacturers to build MPEG4 technology into the majority of DTT receivers in the UK within a year. They will be doing this for the French and Irish markets anyway. Integrated MPEG 2 / 4 HDTVs would be amongst the first products to be introduced and would be on the market in 2008. The low-cost, commodity set-top-box market would be seeded with MPEG4 within a similar timescale.
- This would allow us to capitalise on the product replacement cycle throughout switchover and members estimate that around 5 Million integrated AVC HD TVs would be sold by 2010 if the introduction was supported by all manufacturers.

Given these views we believe it would be unwise for Ofcom to make a decision on the future technical roadmap for DTT until enough detailed analysis of the feasibility of it's proposals has been completed. If this work has not been satisfactorily completed in time to meet the DDR consultation deadlines then a decision should not be taken simply to meet them.

Finally, due to the uncertainty surrounding the Ofcom proposal all our members believe **Ofcom must retain a spectrum contingency option within the DDR until a clear roadmap for HD on DTT has been agreed**. If this is not done, and Ofcom's proposal proves unviable, then the opportunity to provide a compelling HD service on the DTT platform in the UK will be lost.

Other members view:

- The Ofcom timescales for the introduction of DVB-T2 are broadly accurate and can be met. The standard is mainly based on specifications from other existing standards, such as DVB-S2, which should reduce the risk of timescales slipping. The DVB Board has recently confirmed they are on track for finalising the spec in March 2008.
- If the 2009 timelines proved to be accurate then we would be introducing a service at a relatively early stage in the switchover process which would offer a greater HD channel choice to consumers than DVB-T.

- Introducing DVB-T first may rule out the introduction of DVB-T2 for quite some time and that would be a mistake given the increased capacity gains.
- T2 will deliver a more compelling service offering for consumers and that it is worth the wait.
- A more detailed analysis of the Ofcom proposal may be required to establish it's viability

Intellect members listed by opinion

MPEG4 DVB-T

Alba Group
Hitachi
Humax
JVC
Philips
Pioneer
Sagem
Sanyo
Sharp
Sony
Toshiba
TVonics

MPEG4 DVB-T2 (Once feasibility established)

Pace
Panasonic
Samsung