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Department of Communications, Information Technology and the Arts  
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Dear Sir/Madam

Please find enclosed a submission from Broadcast Australia in response to the call for submissions on the "Review of the Regulation of Content Delivered over Mobile Communications Devices".

Thank you for the opportunity to provide comments on these issues. Should you have any questions relating to our submission please don't hesitate to contact me on (02)8425 4603 or email [Graeme.Barclay@broadcastaustralia.com.au](mailto:Graeme.Barclay@broadcastaustralia.com.au) or Linda Andersen on (02)8425 4654 or email [Linda.Andersen@broadcastaustralia.com.au](mailto:Linda.Andersen@broadcastaustralia.com.au).

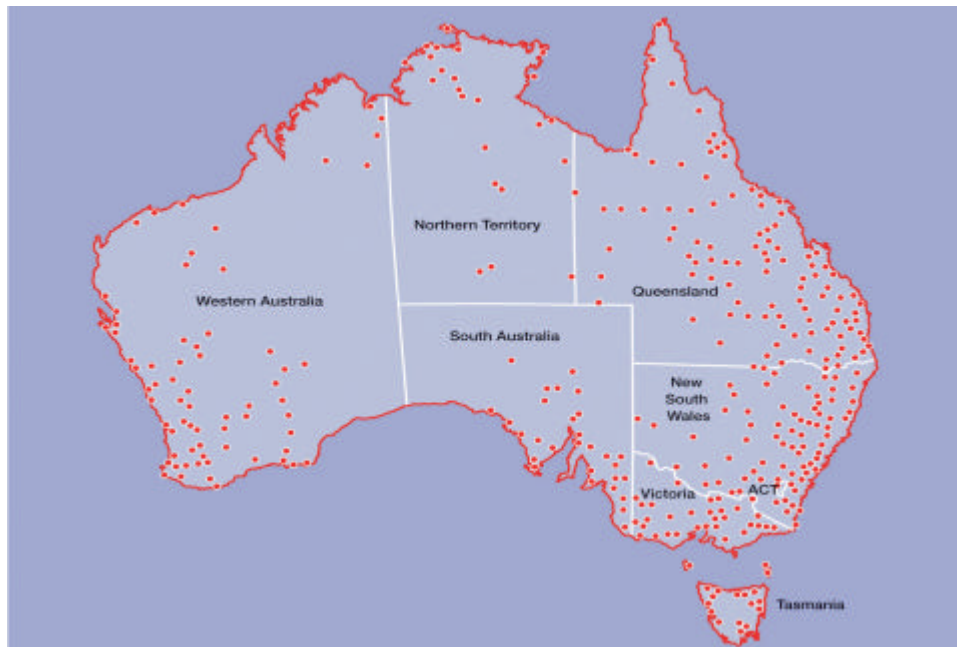
Yours sincerely

Graeme Barclay  
Managing Director

## 1. Background

BA's core business is the provision of services for the transmission of television and radio broadcasts to audiences across Australia. BA is a wholly-owned business of Macquarie Communications Infrastructure Group (MCIG), an entity listed on the Australian Stock Exchange (ASX code: MCG). MCIG's major shareholders include institutional and retail investors.

BA owns and operates the most extensive broadcast transmission infrastructure network in Australia. The company provides transmission services from approximately 600 strategically located transmission sites across metropolitan, regional and rural Australia and reaches over 99% of the country's population.



BA's principal customers are the ABC and SBS: BA delivers the vast majority of the national broadcasters' television and radio managed transmission services. The company also provides services and/or co-hosting for commercial FTA broadcasters, the community broadcasting sector, telecommunications companies and radio-communications users (such as emergency services organisations).

BA's key areas of operation include the provision of transmission services for:

- Analogue Television;
- Digital Television;
- Analogue Radio.

BA is a strong advocate of the potential benefits offered by digital broadcasting services and has already made substantial capital investment in digital television equipment and infrastructure to establish services for the ABC and SBS. Based on a deep understanding of international developments in digital broadcasting, BA continues to believe that digital technology offers the potential for:

- More efficient utilisation of available spectrum;
- Greater choice for the Australian consumer including new and innovative services;
- Entry into the market of new service providers thereby enhancing choice and diversity; and
- Introduction of technological advances that ensures Australia keeps abreast of global developments.

To this end BA has established and funded two key trials: **DIGITAL FORTY FOUR** datacasting in Sydney and Digital Radio Broadcasting in the Melbourne metropolitan area. . BA's wholly owned subsidiary The Bridge Networks has also applied to the ABA for a license to conduct a DVB-H trial in Sydney.

BA intends to continue its commitment to exploring and developing innovative new digital services and is vitally interested in ensuring the regulatory framework is sufficiently flexible and technologically neutral to permit commercial deployment to occur

## 2 Mobile Devices and Converging Digital Technologies

It is apparent that there is a range of new and emerging products that provide the capacity to integrate the delivery of data, audio and video. This is evidenced by the arrival of multi-media devices which can receive information provided across a range of platforms (eg. Digital Video Broadcasting (DVB), Digital Radio Broadcasting (DRB), DVB-H (DVB–Handheld), Digital Multi-media Broadcasting (DMB) and 3G mobile telephony) and the development of content which can be delivered and received across a range of technology platforms and terminal devices. These include new small screen devices such as digital radios, mobile phones, palm pilots, watches and other handheld devices. These services will be highly attractive to consumers and it is crucial that the regulatory framework facilitates their deployment.

In relation to small-screen devices, it is too early to say which platform(s) or standard(s) will become the adopted or de facto global standard(s), but we are starting to see serious development of a number of competing ways in which information and entertainment services can be delivered to portable and mobile terminals including:

- DVB-H to advanced mobile phones (being driven strongly by Nokia, but others are developing similar receive terminal devices). Live testing is already underway in Europe and the USA. ntl UK recently announced a DVB-H trial in Oxford to commence in the 1<sup>st</sup> half of 2005.
- DMB (Digital Multi-media Broadcasting), essentially the Eureka 147 DAB/DRB standard with the addition of a multi-media applications layer, which is being driven in Korea by Samsung, LG and Perstel. Consumer electronic products are expected to come to market in late 2004; prototypes were recently demonstrated at an International Symposium, hosted in Seoul, Korea (June 2004), and at an international broadcasting trade show (IBC) in Amsterdam (September 2004).
- 3G technologies, currently being strongly promoted by Hutchison under the “3” brand here in Australia, and by several other big-name brands in other parts of the world.

The expected outcome will be a convergence of what have previously been considered as separate telecommunications and broadcast operations and applications. The early signs of strategic alignment between operators from both these sectors are emerging in Europe and SE Asia: for example, the joint venture between GWR Radio and BT Wholesale is using the ntl DAB platform to trial DMB carrying news, sports and entertainment to handheld devices such as mobile phones and PDA's – refer Attachment 1..

## DVB-H

DVB-H is an example of the new digital small screen technology and is significantly advanced in its development. The following provides an insight into the new technology and its current state of progress.

### Standards

The DVB-H standard is part of the DVB family of standards which makes possible the delivery of TV content to hand held devices specifically designed to optimise battery life by using a technique known as 'time-slicing'. DVB-H utilises a more "ruggedised" mode of transmission than DVB-T (which predominantly targets fixed reception devices/fixed installations) allowing the receiving device to reliably decode transmissions in both a portable and mobile environment. DVB-H will use MPEG-4, Windows Media 9, AAC or a similar advanced video and audio coding and compression technology, so enabling a considerable reduction in the bandwidth required to deliver an acceptable quality of service to small screen devices. The bandwidth requirement will depend on genre, but will be typically in the range 100-300kbps, where fast-moving material such as sport would demand a bit-rate allocation towards the top of the range. This spectrum efficiency, combined with extended battery life, make DVB-H ideally suited for integration into mobile phones and handheld devices such as PDAs, etc. Integration into mobile and hand held devices provides an automatic return path to consumers and content providers enabling new service delivery business models. Convergent devices such as the Nokia 7700 – Prototype DVB-H GPRS handset have integrated a range of technical capabilities into the one device, providing for the delivery of television type content, telephony and internet, on the same devices. The return path is then available via either 2G, 3G or GSM.

DVB-H can be delivered utilising traditional broadcasting spectrum ie within the broadcasting services band (BSB) or utilising more traditional telecommunications spectrum ie 3G, 2G. Broadcasting spectrum has the advantage of requiring substantially fewer sites because of the propagation characteristics of sub-1GHz spectrum and is therefore more amenable to one-to-many communications. Broadcasting via a traditional 3G telecommunications network, operates at typically around 2GHz and will therefore require a much larger number of sites (and therefore higher deployment costs) to obtain similar coverage.

While DVB-H appears to repeat the functionality of 3G technology from the user perspective (eg: video service to handhelds), the much greater bandwidth available in DVB-H and the fundamentally different network characteristics of DVB make it a more attractive and technically viable proposition in a content rich environment.

- Broadcasting is traditionally a "one-to-many" application while telephony excels in the one-to-one space. While SMS messaging has become a vehicle for one-to-many communications of very small

parcels of data utilising telephony networks, the network architecture imposes a natural limit on the capacity of this technology as excessive demand will soon overload the network.

- 3G bandwidth will be required for delivery of one-to-one” telephony and internet. This will limit its capacity to provide high bandwidth video content which needs to be distributed on a repeatable basis to many receivers. DVB-H utilising MPEG 4 (or similar) compression technology will allow on average up to 20 video-content channels per 4Mbits/sec. Total channel capacity will depend on the type of content and the modulation scheme used to deliver the signal. Effective multiplex channel capacity will be in the range of typically 4-14 Mbps depending on the design of the DVB-H network. ntl UK will run 16 channels of video in its DVB-H Oxford trial.

### DVB-H Architecture

DVB-H is a convergent technology integrating telephony, internet and broadcasting on a single device. The following diagrams sourced from [www.dvb.org](http://www.dvb.org) describe the architecture of the DVB-H offering.

Diagram 1 sets out types of devices suited to DVB-H and DVB technology.

**Diagram 1**

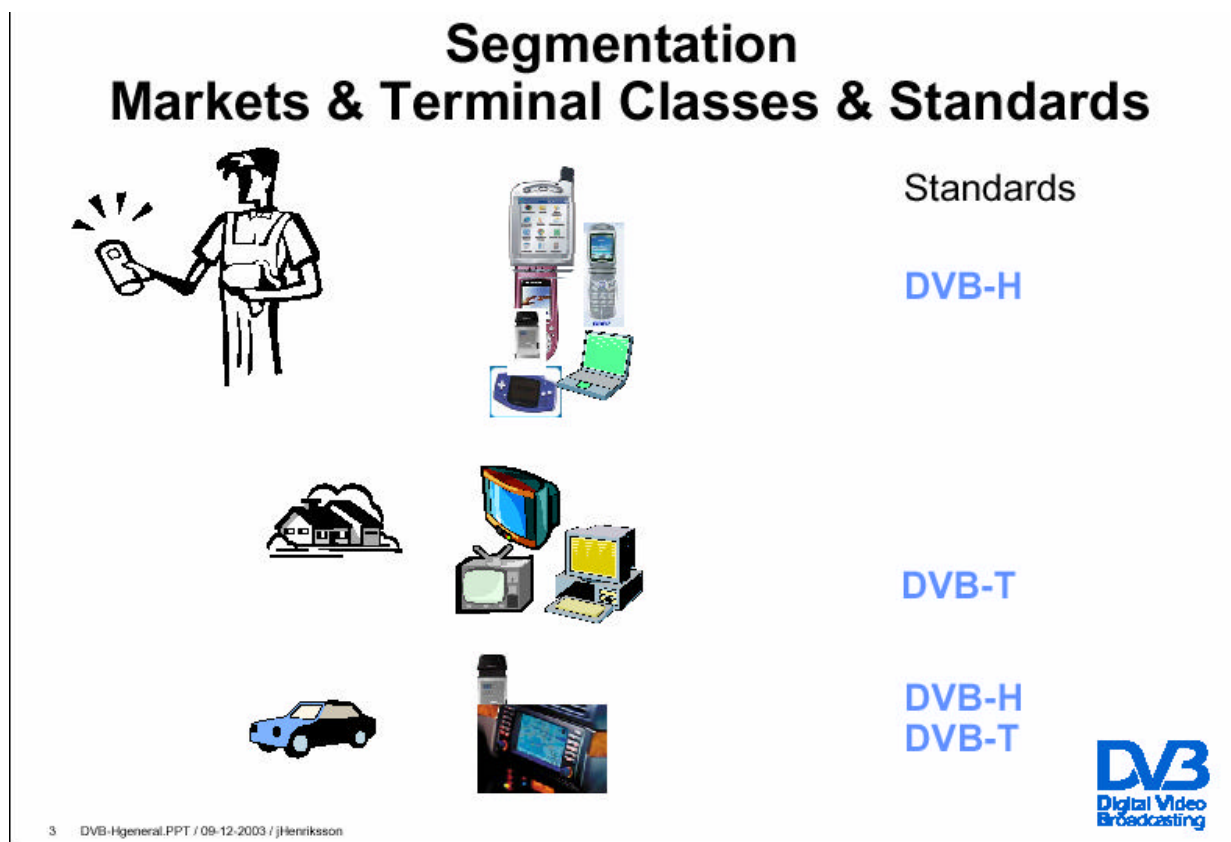
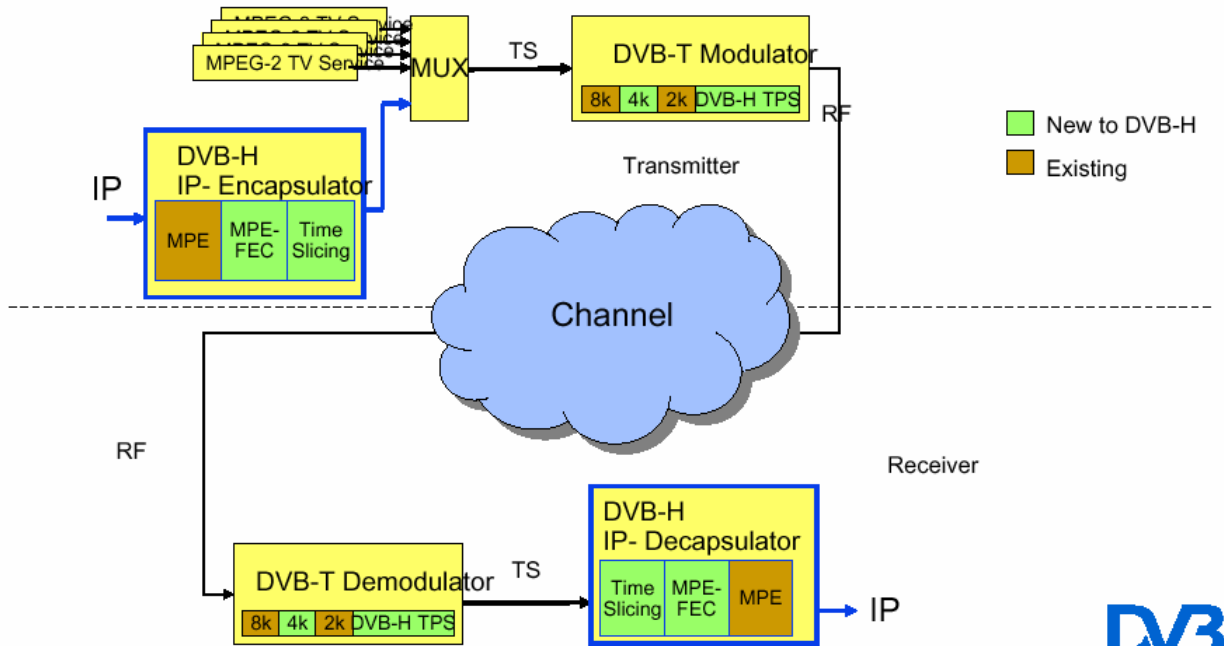


Diagram 2 provides a Block Diagram of the delivery of broadcasting content to the DVB-H device.

Diagram 2

## Draft DVB-H block diagram



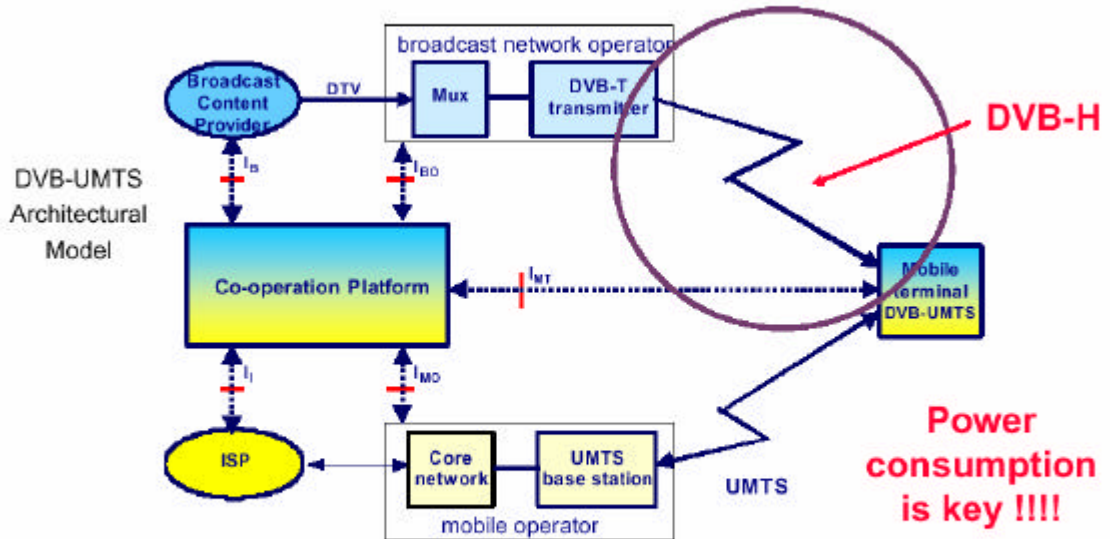
15 DVB-Hgeneral.PPT / 09-12-2003 / j-Henriksson



Diagram 3 provides details of the integration between the broadcasting and telecommunications networks.

Diagram 3

## Where will DVB-H have to play a role?



6 DVB-H general PPT / 05-12-2003 / jhenriksson



Note: DVB-H evolved from DVB-T in order to reduce power consumption and allow handheld devices to be used in mobile environments where batteries are necessarily small.

### DVB-H trials

DVB-H trials are an important element in system verification and are now underway in Germany (Berlin), Finland (Helsinki) and in the US (Pittsburgh) where Crown Castle has been awarded a licence for a trial. ntl will commence its Oxford trial in the 1<sup>st</sup> half of 2005. BA subsidiary "The Bridge Networks" has receiver approval from the ABA to undertake a DVB-H trial in Sydney from BA's Gore Hill facility. Such trials are essential to assist with frequency planning and improve general understanding of technical issues including the complex issue of interoperability between telecommunications networks and services and broadcasting. While DVB-H is a standard which facilitates the delivery of content to handheld devices, any trial will need to address the issues associated with the delivery of subscription services, billing, content management etc. ntl UK has announced it will run 16 channels of video ie sports, music, news, comedy, soaps, documentary, drama, cartoons and specialist channels including interactive gaming and shopping in its DVB-H Oxford trial.

## To market

DVB-H is generating significant interest in the broadcast and telecommunications worlds and DVB-H services are expected to start as early as 2005. One senior mobile telecommunications industry analyst is quoted as saying that he expects to see 100 million DVB-H capable handsets in 2007, growing to 300 million by 2009. Nokia has released a prototype handset – the Nokia 7700 – Prototype DVB-H GPRS. More information is available at [http://www.dvb.org/documents//DVB-H\\_Outline.pdf](http://www.dvb.org/documents//DVB-H_Outline.pdf).

BA believes that the final outcome will be the “horses for courses” adoption of appropriate technology. For example, while 3G offers similar capability to DVB-H in the user terminal, the limitation on bandwidth ie 1.5Mbits/sec vs 5.5 Mbits/sec and the fundamentally different network characteristics (on-to-one versus one-to-many) will mean that 3G will continue to be suited primarily to narrowband-type telecommunications applications while DVB-H will be ideally suited to the delivery of higher bandwidth, content-rich audio-visual services like television/radio applications.

Refer Attachment 1 for more technical detail on DVB-H.

### 3. Implications for Regulation

The new multi-media devices have the capacity to deliver content traditionally provided separately by the telecommunications and broadcasting sectors and utilising different platforms, devices and business models. While existing legislation covers content relating to mobile phones eg voice, text messaging etc; television, internet, radio, datacasting, narrowcasting, subscription TV etc, the regulation is sector/platform based.

The challenge for the regulators in the convergent environment is to:

- a. determine the spectrum requirements and availability for delivery of these new services and determine the basis for allocation.

DVB-H is a broadcasting technology based on the DVB standard and compatible with DVB-T. DVB-H is a natural extension of existing broadcasting services with the capacity to operate in both the broadcasting services band (BSB) and bands (eg L Band) more commonly used by the telecommunications sector.

In its responses to the Department's Digital Television Reviews, BA has remarked on the potential usage of BSB spectrum (specifically one or more of the presently unallocated two national digital channels) for the delivery of audio-visual services to small-screen devices via DVB-H. BA also notes that the potential exists for the utilisation of L Band for the delivery of services via DVB-H (and, for that matter, DMB, which is also another vehicle for the delivery of digital radio).

- b. ensure that technological neutrality applies equally to the licensing and other general regulation of audio-visual services to small-screen devices, whether provided using telecommunications or broadcasting spectrum. There may be merit in the Department/ABA providing clarification or guidance to the industry on the Government's view of the appropriate licence/s for audio-visual services to small-screen devices. While there are a number of possible models relating to the delivery of new content to small screen/handheld devices it can be assumed that customers will be required to pay a monthly charge for a service bundle which includes some or all of these audio-visual services making these services fall into the category of 'subscription', 'subscription narrowcasting' or 'commercial broadcasting' services under the Broadcasting Services Act. As the Department notes in its Issues Paper, it would appear that some mobile service providers appear to be working on the basis that their mobile content services can be defined as subscription narrowcasting services under the BSA (ie. subject to class licensing arrangements).
- c. ensure that the community is protected from inappropriate content no matter whether this is delivered via telecommunications or broadcasting spectrum and regardless of the device it is received on.

BA believes that a key issue for government is to ensure technological neutrality in relation to content regulation. In essence we believe that there should be no difference in regulation imposed on content services as between audio-visual services provided via “telecommunications” spectrum (2.5G, 3G etc) or 'broadcasting' spectrum (television, radio, subscription, narrowcasting). We understand that this is in conflict with the model proposed by the IIA which suggests a limitation on the types of programming allowable on handheld devices. The necessity for this approach could be avoided in the case of certain restricted content (ie permissible for those aged over 18 years) by ensuring that appropriate “know your customer” checks and other authentication measures are deployed by service providers.

Note: BA has made a submission in response to the Second Digital Review Issues Paper relating to “Provision of Commercial Television Broadcasting Services after 31 December 2006”. A number of matters addressed in that review and particularly certain propositions made by BA in relation to spectrum allocation and licencing have relevance to this Review.

## **Attachment 1**

### Platform and Technology Convergence

The convergence of telecommunications and broadcast platforms for the delivery of information and entertainment services is already happening; the Nokia C7700 device is a testament to this fact. Other manufacturers are following Nokia's lead. On a parallel path, Samsung, LG and Perstel, three major manufacturers in Korea, are strongly pushing the development of the Digital Multimedia Broadcasting (DMB) standard – essentially a more multimedia-centric Eureka-147-based digital radio standard, equally capable of delivering data and low bit-rate video streams using the MPEG-4 H.264 standard. The mobile phone connection will be used to deliver a return path, so providing a fully interactive capability. One key question is what spectrum these terminals will adopt for the forward-path delivery of large data files – BSB spectrum or other telecommunications spectrum.

IMS Research reported in May 2004 that advanced cellular data services, increased terminal capabilities and the launch of digital terrestrial TV broadcasting in many countries, are just some of the drivers that have created a market for TV over cellular services. Live TV over cellular services are forecast to be employed by more than 120 million users worldwide by the end of 2010, equating to shipments of approximately 56 million handsets in 2010. According to IMS Research, Asia is expected to see the greatest penetration of cellular TV services, followed by the Americas, Europe, and The Middle East & Africa.

Motorola predicts there will be 100m devices like the Nokia C7700 in use by 2007 and 300m by 2009; Professor Ulrich Reimers, chairman of the DVB Project believes the predictions are overestimated, but only by a matter of a year or so.

#### **1. GWR and British Telecom DMB Trial**

**Source:** <http://www.gwrgroup.com/news.cfm?nid=163>

#### **GWR and BT create mobile digital datacasting operation**

1. The new venture is a digital multi-media broadcast operation – it will use digital radio capacity to transmit instantaneously, at high speed, substantial amounts of multi-media content, such as news, sports and entertainment, to handheld devices such as mobile phones and PDAs.
2. The new operation will create services to transform mobile devices such as mobile phones or PDAs into an entertainment and information source with the content continually updated and always available.
3. The operation will develop services to complement and enhance existing telco mobile communications services and encourage interactivity.

4. The new entity will be operated by BT Wholesale with GWR representation on its management Board.
5. The business is expected to lead to a significant increase in the number of digital radios in the UK when DAB digital radio chips are incorporated into mobile devices.
6. It is expected to provide a significant new revenue stream for GWR. The business plan forecasts GWR's first revenue share in the year ending March 2007 with an estimated annual pre-tax revenue share in excess of £5 million by the year ending March 2008.

Ralph Bernard, GWR Executive Chairman, said:

*"We stated that we planned to exploit ground-breaking opportunities for interactive datacasting using digital radio broadcasting capacity when we initiated the GWR 'Livetime project'. BT's communications network, technology expertise and relationships with service providers make it the ideal partner to take this project forward."*

*"The introduction of DAB digital radio chips into mobile phones and PDAs will be a major boost for digital radio by significantly increasing penetration, particularly as these types of devices have a much shorter replacement cycle than traditional radios. This innovative convergence project will also provide GWR with an additional income stream."*

Chris Hutchings, BT Wholesale Markets Ventures Director, said:

*"BT is very pleased to be partnering with GWR to create this new venture in the convergent area of broadcast and telecommunications. It represents BT Wholesale's ongoing commitment to providing our customers with complementary, innovative new services designed to stimulate the market for all."*

The new operation will develop the capability to deliver a wide range of unique 'one-to-many' digital multi-media services in real-time to mobile phones and PDAs at a similar rate to broadband internet. The incorporation of DAB (Digital Audio Broadcasting) digital radios into these devices should also lead to a significant increase in the number of digital radios in the UK.

GWR is licensing its datacasting project to BT Wholesale and contributing a further £2.75 million over the next 18 months in exchange for a share of the venture's annual revenues above £30 million. GWR expects its first revenue share in the year ending March 2007 with an estimated annual pre-tax revenue share in excess of £5 million by the year ending March 2008. Over the last four years GWR has invested £4.4 million in this project, including £2.5 million in the year to 31 March 2004.

BT Wholesale will be investing funds over the next eighteen months in deploying the business.

The new venture will utilise Digital One's digital broadcasting capacity, running alongside the eight national digital radio stations, for which Digital One will

receive fixed and variable fees from the new venture. Digital One is 63% owned by GWR.

The new entity will create mobile broadcast services designed to complement existing mobile communications services. It plans to launch a service during 2005 when it expects to start broadcasting principally within the M25 area of the South East of the UK. Nationwide services are expected by the end of 2006.

The new venture will operate within BT Wholesale with GWR represented on the management board of the venture.

GWR Group plc will now be publishing its preliminary results for the year to 31 March 2004 on Wednesday 26 May 2004.

### **Enquiries:**

#### **GWR Group plc**

- Ralph Bernard, Executive Chairman 0118 928 4313
- Wendy Pallot, Finance Director 01179 005316

#### **College Hill**

- Adrian Duffield/Matthew Smallwood 020 7457 2815/2020

#### **BT Group Press Office**

020 7356 5369

### **Below are examples of possible services:**

**News and sport:** - There would be no need to dial-up to find out the news & sport. Every time the user picks up the device the very latest information will be available to browse. It is similar to having a news portal on the phone without the need to pay each time the user wants to look at it nor the wait to dial-up and download information. It is already there and can be used 24/7 for a low fixed fee.

**Traffic congestion:** - Breaking traffic and travel updates would be always available on the phone or PDA, ready to be checked when the user is on the move. There would be no need to dial-up each time to discover delays, the information is constantly pushed onto the phone memory and can be accessed for a low fixed cost. The latest information replaces out of date information automatically making it very efficient and simple to use.

**Live entertainment device** - the mobile phone or PDA becomes a live entertainment device as it will automatically receive games downloads and movie previews to be played at any time. Games can be played at any time with others using the mobile phone connection as well as movie clips forwarded.

**Stock market information** - the PDA could have a stock market ticker and share updates constantly refreshing. There is no need to dial-up for the latest business and financial information as it is directly broadcast to the device.

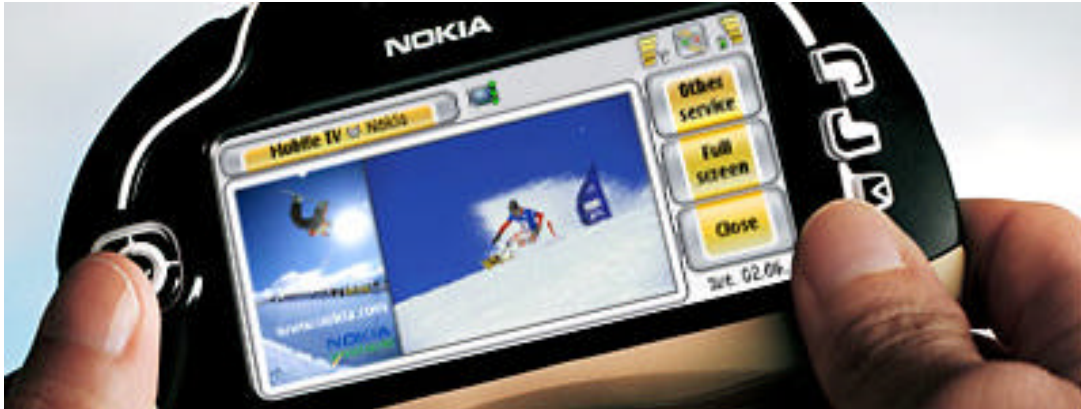
**BT Wholesale:**

BT Wholesale is the part of BT Group, which provides comprehensive network services and solutions within the UK. Its customers number more than 500 communication companies, fixed and mobile network operators and service providers, including the two other principal BT businesses: BT Retail and BT Global Services.

It offers connectivity to every corner of the UK and its strategy is to continue upgrading its network for next generation services, including broadband, and the converging multi-media future. Its assets in the UK include BT's fibre and copper networks, the core telecommunications network and local exchanges. The BT Wholesale portfolio includes a comprehensive range of wholesale and service provider products. These include ADSL, convergence, transit, bulk delivery of private circuits, frame relay and ISDN connections, as well as added value services.

## DVB-Handhelds and other portable terminals

### IP Datacasting



IP datacasting technology is an enabler for the broadcast of digital content - such as TV - to mobile handheld receivers. The technology is based on a combination of the DVB-H standard and IP technology.

With IP datacasting, all content is delivered in the form of IP data packets - the same format used for distributing digital content on the Internet. As a result, consumers can experience the best combination of broadcast and multi-media content with their mobile handset. This end-to-end solution can be demonstrated with IP Datacast network elements and Nokia 7700 media device with built-in Nokia Streamer.

There are several points where the mobile phone TV differs from conventional digital TV, which is designed for home and automotive use. In order to enable a longer battery lifetime for a mobile device, content is received in high-speed bursts. Between bursts the receiver shuts down to save power. This "time-slicing" technology is supported by DVB-H.

Additionally IP datacasting can easily adapt to the smaller screen sizes of handheld terminals. Smaller screens require fewer Kbps to deliver high quality video. In addition, the MPEG-4 standard is used to provide highly efficient video compression, so that up to 30 - 80 TV programs can be sent over one 7MHz digital multiplex. This low-bit-rate compression uses a specific aspect of the MPEG-4 standard, known as "Part 10" or H.264. Small screen video, at a reduced frame refresh-rate (e.g. 18 frames per second or less, rather than the traditional 25 frames per second for television) can be delivered in good quality at bit-rates as low as circa 150kbps.

Yet another difference is that IP datacasting networks support indoor coverage for devices with small, in-built antennas, rather than those using rooftop or other external antennas.

An integral part of the mobile IP datacasting concept is the availability of an interactive return channel. The broadcast content is delivered via the

broadcast channel, but the possible interactivity, such as content purchasing, voting or viewing additional on-line info, takes place over a cellular network interactive channel. These two networks complement each other and can be used to create a wide range of new content and services for consumers - starting with mobile phone TV.

Nokia is strongly driving the development of DVB-H handsets which are integrated into the same form factor as the mobile phone, together with personal organiser (PDA) facilities. The Nokia C7700 is an in-production device and the integrated DVB-H capability is expected to become a standard feature/option later this year – refer [www.nokia.com](http://www.nokia.com) and [http://www.dvb.org/documents//DVB-H\\_Outline.pdf](http://www.dvb.org/documents//DVB-H_Outline.pdf) for further information.