

Media Release

Ref: br/08

NAB 2003 – Microsoft booth (SL136)

7 April 2003

NTL Broadcast and TANDBERG Television demonstrate world's first delivery of real-time streamed video over DAB and DVB using Windows Media 9 Series

- **Distribution of audio, video and text content via DAB using Windows Media 9 Series**
- **Live streaming using DAB and DVB to the PC, and latest news and music content datacast using DAB to the Pocket PC**
- **Full-motion broadcast video over DAB at 150 kbit/s using Windows Media 9 Series**

NTL Broadcast and TANDBERG Television today announced that they are working with Microsoft to deliver a ground-breaking technology demonstration showing that Digital Audio Broadcasting (DAB) can be used to deliver real-time video content at bit rates as low as 150 kbit/s using Windows Media 9 Series. The demonstration specifically showcases the distribution of the latest TV news from Europe and live UK radio broadcasts to a Windows XP PC and Pocket PC using DAB and DVB (Digital Video Broadcasting) transmission standards. This demonstration also helps to open the door to many new content distribution scenarios to PCs, PDAs and mobile phones around the world.

The demonstration is taking place on the Microsoft booth (SL136) at this week's NAB exhibition in Las Vegas. It utilises RadioScape infrastructure technology to build a DAB data stream for file transfer of cached audio and video clips to PDAs, as well as 'live' streamed audio/video content to a Windows XP PC. It also showcases an end-to-end DVB-S broadcast system, via satellite capacity from PanAmSat, using Windows Media 9 Series - the latest digital media technology from Microsoft - to deliver high-quality video streamed to the PC.

"NTL Broadcast has a long and proud history when it comes to innovating the delivery of broadcast content," said Steve Holebrook, NTL Broadcast's director of media solutions. "This latest demonstration proves that DAB is a cost-effective means of delivering compelling, attractive multimedia content to handheld and mobile devices. NTL's leadership in DAB and DVB means that we're able to deploy the latest broadcast technologies and integrate them with

7 April 2003

NTL Broadcast and TANDBERG Television demonstrate world's first delivery of real-time streamed video over DAB and DVB using Windows Media 9 Series
page 2 of 4

best-of-breed third-party solutions to deliver cost-effective new business opportunities to our customers.”

Tim Sheppard, director of strategic partnerships at TANDBERG Television, added: “This showcase is a strong demonstration of how the combination of NTL’s broadcast expertise with Microsoft’s and our own innovative technologies can enable exciting new content delivery applications.”

“The transition from analogue TV and FM radio to digital DVB TV and DAB radio standards is accelerating around the world, so this is a timely demonstration as the world looks for new ways to fully harness the potential of DAB and DVB,” said Jim Beveridge, director of EMEA broadband policy at Microsoft. “Together with our partners, we are pleased to demonstrate the use of Windows Media 9 Series with current open digital broadcast standards to drive new business models and services.”

Annika Nyberg Frankenhaeuser, President of the WorldDAB Forum, said: “Digital Audio Broadcasting using the Eureka 147 standard allows the broadcaster to deliver a wide range of content to mobile, portable and fixed devices. As President of WorldDAB, I am very excited by the DAB services being demonstrated on the Microsoft stand at NAB 2003. They show clearly that the marriage between broadcast and personal devices can create exciting new services that consumers want. These services will revolutionise the way audio and video is consumed when mobile.”

“The DVB Project congratulates Microsoft, NTL Broadcast and TANDBERG Television on their NAB demonstrations which combine internet-bred services and technologies with digital broadcast systems. Such innovative applications open up a new realm for DVB systems, especially in this converging media landscape”, said Peter MacAvock, executive director of the DVB Project.

The NAB demonstration involves key contributions from a number of technology and content partners, each leaders in their own field: PanAmSat, CNN International, Capital Radio Group, RadioScape, Unique Interactive and MobileInvent.

The Las Vegas NAB demonstration

7 April 2003

NTL Broadcast and TANDBERG Television demonstrate world's first delivery of real-time streamed video over DAB and DVB using Windows Media 9 Series
page 3 of 4

Broadcast content for the demonstration is provided from two sources: CNN International (video feeds) and Capital Radio Group (four audio feeds). The video sources are encoded using TANDBERG Television's EN5920 real-time hardware encoder for Windows Media 9 Series. The DAB audio and video sources are IP encapsulated and multiplexed through RadioScape's Digital Radio Broadcast suite of products. The DVB and DAB streams are uplinked by NTL from the UK to one of the 24 high-powered Ku-band transponders on PanAmSat's Atlantic Ocean Region satellite PAS9.

A satellite receiver dish, located at the NAB convention centre in Las Vegas, downlinks the signals enabling them to be decoded for re-transmission over DAB.

The DVB (TV) feed is decoded by a satellite receiver card within a Windows XP PC on the Microsoft booth at the NAB show, delivering high-quality live content at a data rate of 1.5 Mbit/s and displayed on a large plasma screen.

The DAB transport stream is first decoded by a QPSK satellite receiver before being re-transmitted by NTL from a low-power local DAB antenna. This re-transmission makes a 'real' DAB digital radio signal available at the convention centre. CNN International's live content over DAB, encoded in Windows Media Video 9 at 150 kbit/s and decoded using a RadioScape DAB decoder card, is streamed into a window in the Windows XP PC. The EPG from Capital Radio is re-formatted by Unique Interactive for inclusion in the DAB stream.

Capital Radio Group's four audio feeds – Capital FM, Capital Gold London, XFM and Century 105 – are also carried via the DAB transport stream. MPEG-encoded live audio broadcasts (at 128 kbit/s) from each channel are made available through the Windows XP PC and handheld PDAs, which are DAB-enabled by MobileInvent.

In addition, NAB attendees are able to experience the latest audio and video content from Capital Radio that is transferred via DAB and saved directly onto Pocket PCs and Windows XP PCs using technology from the Plus! Sync & Go feature of Microsoft Plus! Digital Media Edition. This means that the latest dynamically delivered content is continually updated and available on these devices including *My Capital Travel*, *My Capital News*, *My Capital*

7 April 2003

NTL Broadcast and TANDBERG Television demonstrate world's first delivery of real-time streamed video over DAB and DVB using Windows Media 9 Series
page 4 of 4

Entertainment, My Live Music, My Capital Videos and My Capital Interviews. The EPG is displayed on the Windows XP PC using a RadioScape user interface.

Both end-to-end systems were designed and integrated by NTL Broadcast.

ENDS

for further information:

Bruce Randall, NTL, Winchester
Tel: +44 (0)1962 822582
Fax: +44 (0)1962 822374
e.mail: bruce.randall@ntl.com
www.ntlbroadcast.com

Natasha Rice/Hannah Bailey
Nelson Bostock Communications
Tel: +44 (0)20 7229 4400
Fax: +44 (0)20 7792 7411
email: natasha.rice@nelsonbostock.com

Gay Bell
Platform PR
Tel: +44 (0)20 8964 9149
Fax: +44 (0)20 8964 9514
email: gay@platformpr.com

more on NTL Broadcast:

- The Broadcast division of NTL has a 48-year history in transmission and has helped pioneer the technologies of the digital age.
- 22 million UK homes receive ITV, Channel 4 and Channel 5 via NTL's broadcast transmitter networks. NTL Broadcast also provides transmission for most UK independent radio stations, both analogue and digital.
- NTL provides end-to-end media solutions to the broadcast industry across terrestrial, cable and satellite platforms. This includes satellite uplinking, satellite newsgathering, outside broadcast facilities, programme presentation, play-out and distribution.
- With a portfolio of over 2300 radio sites across the UK, NTL's Wireless Solutions group specialises in end-to-end mobile and cellular network infrastructure, from site sharing and in-building solutions to access circuits, managed back-haul and core network provision.
- NTL Broadcast provides a full range of telecommunications services to the public safety sector
- NTL is assisting other countries with new broadcast systems and the introduction of digital services. Operations are already established in south-east Asia.
- Further information can be found at www.ntlbroadcast.com

more on TANDBERG Television:

TANDBERG Television (Oslo, Norway, Stock Exchange: TAT) is a market leader in the provision of open solutions for the digital broadcasting of audio, data and video across various networks including cable, satellite, terrestrial, IP and telecom. The company has proven systems integration and global support capabilities as well as sales and 24-hour support and monitoring operations in Asia, Australia, Europe and the United States. TANDBERG Television's customers include major broadcasters, network operators and convergence players around the world including Australian Broadcasting Corp. (ABC), BBC, BSkyB, FOX Sports, NBC, NTL, Telenor and StarTV. More information can be found at <http://www.tandbergtv.com/>.