Digital Economics

The 'digital economy' has been a prominent theme in many nations in recent years, yet with limited implementation to date. Political changes in the UK represent an opportunity for the global communications industry to create movement from words to action. The new government has declared its intent to diversify from a reliance on financial services and to reduce the cost of delivering public services. In both areas digital communications can play a major role.

Research did well in the Comprehensive Spending Review, whilst the Growth White Paper in spring 2011 will reiterate the importance of technology. Unlike the US, where another round of stimulus funding threatens to reduce competitiveness, the UK approach could offer a timely opportunity to deploy innovative solutions, subsequently applicable worldwide.

Innovation has always been at the heart of Mobile VCE – arguably VCE was pioneering 'open innovation' before the term was coined. In this newsletter we explore this theme from two perspectives – Mobile VCE's vision activity and the potential to transform public services and other industries.

We encourage our members to join us in refreshing our research priorities and in communicating these messages. As we move forward, we also invite players from other industries to join us on our journey, to share in the creation of, and to benefit from, this time of change.

Dr Walter Tuttlebee *Chief Executive*

Beyond 4G: China

The Mobile VCE team at the B4G workshop in Shanghai

Summer 2010 has been a busy period for the UK-China B4G Science Bridge. Funded by Research Councils UK, this is an initiative involving academic exchanges between leading Universities from both countries. Mobile VCE participates on the Programme Management Committee and our member companies contribute Industrial steering.

In July this year our members had the opportunity to attend a London workshop, addressed by Chinese academics seconded to the UK. As well as current LTE-Advanced research, they learnt about China's 'New Generation Mobile Wireless Broadband Communications Networks' initiative, a 70bn RMB programme managed by the Ministry of Science and Technology (MOST). Dr Yang Yang, from the Shanghai Research Centre for Wireless Communications (WiCo) – one

of VCE's MoU partners – also presented SWAN, the 'Shanghai Wireless Advanced Network'. This pilot network is being used to demonstrate innovative applications and to test and validate candidate IMT-Advanced (LTE-A) technologies.

August saw a further workshop held in Beijing, alongside the Chinacom conference, attended by research teams from China's leading Universities and several leading UK academics. Videos are available to those who were unable to be present.

In September, Mobile VCE was invited by UK Trade & Investment to speak at 'The Enabling Innovation Leadership Forum', organised as part of the Shanghai Expo. The Forum involved senior industry leaders and government ministers from both countries, with a focus upon industry, science

Transforming Industries and Public Services…

Why and What ?

The UK's role in creating and growing the digital communications industry is well known to Mobile VCE's member companies – it is why so many global telecoms businesses locate R&D in Britain and work with the UK's leading research universities. Enabling technology from UK companies such as ARM, CSR, ICERA, Imagination, IPwireless, picoChip, Ubiquisys is having worldwide impact.

Today's rapid and radical industry evolution is enabling new capabilities, efficiencies and business models in fields as diverse as healthcare, transport and smart energy. Mobile VCE is encouraging strategic coordination between government and industry to remove barriers and create structured mechanisms that could radically enhance public services and transform industries, and the economy – this is the true potential of the Digital Economy.

The past decade has seen mobile phones revolutionise person-to-person communications around the world; over the next decade, combining mobile internet with real-time personal context data will enable us to address some of the big challenges facing our societies and economies.

Public Services

Public services typically retain the 'old model' used by telecom operators – build a new infrastructure for each new service. In telecoms this approach severely constrained interworking and service evolution, limited scale economies and kept costs high. Standardised nationwide infrastructures, such as LTE, wired broadband and digital broadcast, which can support a multiplicity of services across many application sectors, offer a new approach, where low cost services can rapidly emerge, bottom-up rather than top-down. They are key building blocks to reduce expenditure and enhance economic growth.

Wellness

Early manifestations of the 'Internet of Things' are here today. Nike+ sport sensors monitor exercise and heart rate in the gym. The Withings 'Body Scale' measures and automatically uploads weight and body mass to the web. The FitBit is a USB stick size, body-worn, device that records sleep and exercise. Such commercial products that link wirelessly with the web – often with Google Health – are moving from monitoring exercise for (already fit) fitness geeks to monitoring sleep and weight for ordinary citizens.

Environmental Monitoring

Sensors in mobile phones can monitor not only personal health but also the physical environment. Collection, aggregation and real-time analysis of data gathered from phones across a city, region or country, promises highly accurate, timely and localised monitoring, providing sensitive and early alerts to environmental threats. Such a crowd-sourced capability is vastly cheaper and more comprehensive than bespoke infrastructures.

Personal Healthcare

Building low-cost bio/chemical sensor chips into the mobile phone, that can detect specific bacteria (or resultant chemicals) in the breath, could allow rapid health screening and early disease detection and treatment, with associated cost savings. Sensor updates, via the high street shop or by post, could provide a powerful new tool in pandemic management. Health sensors on phones that allow testing for sexually transmitted diseases (and others) are on the way. The UK's strengths in life sciences and semiconductors are significant in this field. Wireless illness prevention can dramatically improve public health and reduce healthcare expenditure.

Transport

Tackling issues of congestion and CO2 emission require real-time data and intelligent decision making. Location-aware phones offer a self-provided solution, combining sensors and a means to crowdsource, combine and communicate such intelligent advice. Simple and sophisticated traffic management solutions, using data anonymisation to ensure driver privacy, have now been proven.

Perspective

Industry Vision

Are you prepared to predict where digital communications will be by 2020 ? If, as many believe, it will underpin and transform many industries, and enable the creation of new ones, this will require mobilising the Internet, but also somewhat more. Let us consider some context…

In 2010 global subscribers to mobile services exceeded 5bn. Compare this with 2000, when there were 700m subscribers and analysts were concerned about 'saturating markets'. Two years ago, the fact that mobile devices were the future of computing was assertion; now it is received wisdom. Recent years have seen major changes in market share and industry structure, with a dramatic rise of services, new players and innovative concepts – all of these are features of high growth and dynamic markets, alongside the rapid technological change with which we have become familiar. The vision of tens of billions of connected devices seems much less distant in this context.

Prof Barry Evans, Chair of the Visions Group

Such dynamism and its impact has shaped Mobile VCE's Industry Visions activity from the beginning. Our 'Visions of 4G', published in 2000, spoke to such a future, informing VCE's direction and deliverables to our member companies over the past decade. In the coming decade mobile Internet growth will mirror that of mobile voice over the last. But, in addition, multiple connected devices per person will become the global norm which, combined with dynamic personal context data, will enable future capabilities much richer than simply a 'mobile web 2.0'.

VCE's Industry Visions Group is staffed by senior people and visionaries from our member companies who work together to identify key industry drivers, resultant possible futures (new growth opportunities) and, from these, key technology challenges where VCE can make a difference.

By virtue of the wide geographic and value chain representation, Visions Group members get to see beyond the 'company coloured spectacles' which can so often constrain a 'BigCo' vision. Its work helps shape research plans, not only within VCE but also within our members' companies themselves. In 2011, in addition to prioritising future research, the Visions Group is looking more broadly, to consider how the drivers and trends could also open up shorter term opportunities for our participating companies, exploring opportunities to work with other application industries and with SMEs. To find out more, please contact Prof Barry Evans, Vision Group Chairman, or the Mobile VCE office.
www.mobilevce.com/vision

Beyond 4G: China *Continued from page 1*

and energy. During 2009 the energy consumed by China's mobile operators increased by 30% - within such a context, the interest in Mobile VCE's Green Radio programme was understandable. Simon Fletcher of NEC, Industrial Chairman of the programme, presented at this event, accompanied by Prof Tim O'Farrell, its Academic Coordinator, and Mike Fitch of BT, who leads the VCE B4G Industrial Steering Group. The opportunity was also taken, the preceding day, to hold a further B4G workshop in Shanghai, hosted by Huawei.

Looking forward, the programme is now planning for a Testbed phase, with a recently issued 'Call for Technologies' to the participating Universities.

Mark Prisk, Minister from the Dept of Business Innovation & Skills, with the Mobile VCE Team in Shanghai

Member companies wishing to get more involved with the programme are invited to contact the Mobile VCE office. Presentations from the June workshop are accessible via the calendar page of the Mobile VCE website.
www.mobilevce.com/ukchina

Simon Fletcher, NEC

Q **NEC provide Industrial leadership of Mobile VCE's Green Radio programme. How did this come about?**

A *NECs interest in the environmental agenda is driven by a vision of a Sustainable Information Society, so it was a logical step for the company. We recognised that VCE was globally leading in articulating the need for large scale collaboration between industry and academia in this important field, a touch stone for Open Innovation. So the opportunity for NEC to shape a programme that could lead the industry, and that could inform our own research priorities, made great sense.*

Q **How have you found the role of Industrial Chairman?**

A *It has been a challenge. It's a high-profile, internationally important, activity, and, with all of VCE's member companies involved, the industrial coordination task is not insignificant. We have created a great platform for mutual learning, not just from the research, but also amongst the companies. Since we began, several green wireless projects have been initiated within the industry; this keeps us on our toes and is providing opportunities for collaboration. As well as being challenging, it is proving very valuable, and personally fulfilling.*

Q **How does NEC make use of its membership of Mobile VCE?**

A *Like any other company, ensuring the research outcomes reach the right people in the company is a priority. Mobile*

VCE provides us with an effective way of accessing the best of UK academic research, and a very efficient way of networking with the UK R&D ecosystem in communications. VCE's close links with the Digital Comms KTN, which it helped establish, and other networks, have also been useful to us as a company. My recent activities in Standardisation, LSTI and NGMN have convinced me of the impact of ideas that I first became aware of through previous VCE Core Programmes. Based on this experience I fully expect impact of the Green Radio ideas over the coming years.

Q **Does being a Japanese company impact such issues?**

A *Much of the benefit is routed to Japan via NEC's UK R&D lab. However, NEC also has labs in the US, other parts of EU and Asia and VCE thinking has found its way into projects in those locations as well. My responsibilities take me to Japan a few times a year but, as with any global company, we have close communication at all times. The VCE website offers a valuable resource that is supplemented by our own internal information systems providing reports, research outcomes and new ideas. We also run regular internal briefing meetings. Staff from Japan can participate in VCE meetings via Webex, and by judicious timing of European trips to coincide with VCE meetings.*

Q **How has NEC's engagement changed with time?**

A *It has varied, reflecting individuals involved and company priorities. It has strengthened significantly in recent years, reflecting the adjustment of internal communications in line with changing roles of NEC subsidiary companies and alignment of VCE's vision with company priorities. This coming year I will be joining the Board of Directors, and look forward to helping shape VCE's direction going forward. With other industrial directors from companies HQ'ed in the US, France and China, it will be good to bring in the Japanese perspective.*

Transport & Energy

Following its successful international workshop on Nomadic & Collaborative Media, hosted by the BBC, Mobile VCE a second application workshop, addressing Transport, takes place in December.

Themed as Augmented Travel, the event will welcome speakers from the road, rail and urban transport sectors and will allow these players to see demonstrations of emerging technologies and explore specific applications with VCE's member companies.

In February another application workshop is planned on Smart Energy. The event will examine the challenges faced by the energy industry, with perspectives from major energy companies players and from VCE's member companies. The technology and regulatory transitions facing the energy industry today parallel those faced by telecoms over the past two decades.

www.mobilevce.com/calendar

Upcoming Events

*Dates or venues may change – please check the Calendar Page of the Mobile VCE website – **www.mobilevce.com** – to confirm. Events are normally open to all staff from any industrial member company. Registration is usually required - this may be done directly from the Calendar Page.*

Remote participation by Webex is available for Industrial Steering Groups and for some other meetings for Industry staff who are based outside the UK or who are otherwise unable to attend.

2010/2011

December 9th Applications Workshop: Augmented Travel Transport – User Interactions – Thales, Reading

January 5th Industry Energy Focus Group – Green Radio

January 11th Industry Steering Group – User Interactions – Bristol University

January 12th Industry Steering Group – Instant Knowledge – Vodafone, Paddington, London

January 13th Industry Executive Event & Dinner – by-Invitation – jointly hosted with Cambridge Wireless – London

January 25th Industry Steering Group – Flexible Networks – Surrey University, Guildford

January 26th Industry Steering Group – Green Radio – Bristol University

February 2nd Applications Workshop: Smart Energy –Industrial Members & Invited Guests

February 24th Business Models & Exploitation – Instant Knowledge – Industrial Members & Invited Guests

March 2nd Industry Energy Focus Group – Green Radio

April 5th Industry Steering Group – User Interactions – Bath University

April 6th Industry Steering Group – Instant Knowledge – Vodafone, London

April 7th Green Radio Education Day – Members & Invited Guests

April 12th Industry Steering Group – Networks –London School of Economics, London

April 13th Industry Steering Group – Green Radio – Kings College, London

May 25th Business Models for Breakthrough Services – User Interactions – Industrial Members & Invited Guests

June 22nd Instant Knowledge International Workshop – Service Concepts and Demonstrations - Industrial Members & Invited Guests

July Industry Steering Groups – All programmes, dates TBC

Details of monthly Coordination Steering Group teleconferences and of technical meetings for each research theme are available from the relevant Industry Steering Group Chairman or the relevant pages within the members' area of the Mobile VCE website

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