The future's fantastic

They've all heard the fantasies, but the next three years of network development look set to change the way we work. Brian Tinham talks to BowZer Production's futurologist Graham Whitehead

What's on your wish list for ICT (information and communications technology)? Put that another way: what useful improvements do you expect in the future? We're all aware of the technologies and business benefits in data and voice convergence on IP (Internet protocol), and most of us have at least heard of BT's £10 billion 21st Century Network (21CN) overhaul, so we know that integrated, high speed communications is becoming more feasible. But what else?

What about things 'talking' to things over always-on, pervasive networks? How about future-proofed roaming infrastructures for whatever services you care to think of? How about universal and prioritised video, voice and data communications with presence detection that knows where you are and what you want? For that matter, what about being able to reach out to every potential customer as though he or she were indeed unique, with timely, personalised and compelling offers they can simply click to accept?

Sounds fanciful? Graham Whitehead, managing consultant, futurologist and technology evangelist at BowZer productions, which looks into the future of technology, thinks not. This group is working on turning such dreams into reality. And it's doing so right now.

"Business models will be totally changed," he asserts. "For example, at the moment manufacturers advertise their products and services and wait for customers to respond. In the not too distant future, I will target you personally as the only and most important one in the world. I'll be able to stroke you rather like Amazon does today. I'll be able to 'tell' you: 'There's a new book out by your favourite author. Would you like it now? If you do I can offer you a discount.' This is coming."

Whitehead is one of those curious animals: not only human dynamo but one with connections throughout BT's corridors, as well as government and the wider business world. His brand of enthusiasm is contagious and he is nothing if not persuasive. For him, the foundation, and what we need to focus on, is 21CN – the programme of total infrastructure technology rip and replace that was initially presented to institutions and investors on 24 June 2004.

"They'll be shutting down all the old networks – voice, private circuits, X25, everything," he says. "A total of 17 non-talking legacy systems will be completely removed and instead we'll have one hugely simplified network that's fit for today and tomorrow. Thousands of nodes and buildings are being retired and we're creating a single global network based on IP [Internet protocol] and MPLS [multi-protocol label switching] with core transmission fibres and wavelength division multiplexing carrying voice, data and vision.

"By 2012 everyone will be connected. Already the first paying customers – 350,000 domestic users and small businesses in Cardiff, Pontypridd and Bridgend –will be turned over to phone, broadband and Ethernet services on the new network in the near future. There will then be a six

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months interregnum sorting out what went well, what not so well and learning from the experience before we go on to UK-wide roll-out."

At its core, 21CN will have 10 gigantic routers, which are currently being installed. At the edge of these will be 100 metro nodes – intelligent routers providing routing and signalling for 21CN's voice, data and video services – arranged in areas of network with dual redundancy built on different vendors' kit with different software, meaning governmental levels of security.

From these BT will provide multi-service access nodes (MSAN) for connection to existing analogue phone, ISDN, broadband etc, as well as DSL (digital subscriber loop) and high speed, high capacity DSL Max links during the migration period. It's all based on COTS (commercial off-the-shelf) systems, with eight vendors now under contract: Fujitsu and Huawei for the access domain; Alcatel, Cisco and Siemens for the metro nodes; Cisco and Lucent for the core routers; Ericsson for the i-node domain (the intelligence that controls the services); and Ciena and Huwei for transmission.

"It's a revolution in communications and network computing," insists Whitehead. "For example, with 21CN you'll get ADSL 2+ providing up to 24Mb capacity. So suddenly the modem pain and wait states have completely gone for everyone – and you can reach out and do things."

Like what? "Like improving the service and cutting the cost for the Environment Agency's analogue river level sensors that currently run over private circuits. Those will be changed to digital IP-enabled sensors connected by WiFi wireless, maybe WiMax, with one transmitter covering 15 miles of river and providing exception reporting automatically. That means instant information, with inanimate objects doing the reporting. That type of thing."

In other words, the kinds of communication, collaboration and integration projects that can be done today, but don't come cheap and do require specialist attention, suddenly become low cost, routine, always-on, available anywhere, any device.

So now let's broaden our thinking. "I see the ultimate in online customisation," says Whitehead. "You'll be able to customise a new car, for example, using an online product configurator in your home and then 'sit' in it in virtual space and look around before you buy. That's not unrealistic: with 21CN and DSL to the home plus the new generation of massive network-ready HDTV we're almost there."

What else? "People will effectively wear a badge – could be your mobile, your shirt, whatever – and the network will know where they are. That means incoming information finds you and displays itself on whatever device. No more plugging in, booting up and the rest – always on information. Consumer durables, for example, will become part of the network so washing machines will house maintenance servers. If there's a problem you'll get a message: 'They've looked at your washing machine and a bearing needs replacing. We see Thursday at 9.00am is OK for you and have arranged for an engineer to be with you then.'

"And talking of presence, people don't use public transport because there's a printed schedule. But if the network knows where you are, the bus routes available and where you want to go, it can show you a map and bus arrival times on your mobile – all in real time monitored by GPS on the buses. They've already trialled a service that allowed people to interrogate the arrival times of busses at any particular stop, using phones or mobiles with voice recognition services. In the future it will be possible for your mobile device to be connected to the server on the bus and you could get information about where you are currently on the route or estimated arrival times."

When everything is connected seamlessly and effortlessly, there will be cooperation between organisations. Large companies have IT Departments (for example), but in the High Street smaller businesses find keeping up with the new technologies much more difficult. Chambers of Commerce or "e-businesslinks" could become a centre of excellence allowing common functions to be shared and centrally managed across many organisations.

So what about manufacturing businesses? Clearly, much of the opportunity will be on the customer facing side – getting your offers in the right manner at the right time and in the right place to score. But while the pundits think in terms of retail outlets talking to your mobile as you wander by, there will also be opportunities around staff presence sensing and calling. So when a rush order, late change or staff illness mean you need alternative people with certain skill sets, you can reach them fast.

Equally, the network will track materials, components, trucks and so forth – so think of the potential for additional supply chain improvement and inventory reduction. Real time data rather than an ASN that tells you materials are on the way could make a significant difference to optimising plans, schedules and operations on the fly.

Then think about remote access, remote working, or even peripatetic working: universal, high bandwidth networks could mean a whole new era of hot-desking while also radically improving the productivity, timeliness and preparedness of service and maintenance engineers, machine minders, warehouse staff, forklift truck drivers – you name it.

And readily available DSL Max will mean video conferencing that works right over the network, with quality of service ensuring prioritisation of critical transmissions.

Don't believe the wireless world is up to it? How about this? "When you go to the filling station with your in-car or in-truck mobile, PC Tablet computer, or whatever information communicator you will then be using, that's an opportunity for the network to transfer gigabits, scooping up data to re-synchronise and downloading information pertinent to you whenever and wherever you are," prophesies Whitehead.

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