



NORTEL

The Future Made Simple

Welcome to 2007's first issue of *The Future Made Simple*, a newsletter that uncovers some of the behind-the-scenes innovations and advanced research cooking in Nortel's labs.

Each newsletter will highlight the innovative work that Nortel is doing to help fuel the era of "pervasive, personal broadband" – broadband connectivity *when* you need it, *where* you need it, and from the most convenient device available, wired or wireless.

In this new era, communications across all segments of society – especially the enterprise – will be fundamentally transformed. We are already witnessing early glimpses of this transformation as we move closer to a hyperconnected communications environment, where anything that can be connected, will be connected.

Examples include the use of RFID technology for inventory management, sensor-enabled running shoes that allow your friends and loved ones to track your pace, or 4G-equipped digital cameras that allow users to instantly upload photos to their personal website or blog.

This issue of *The Future Made Simple* highlights Nortel's work to transform the enterprise and empower large businesses to improve their processes and increase productivity, all while making communications more connected and simple. We'll also take a closer look at how communications-enabled applications that marry the IT/computing and telecommunications worlds, allow enterprises to automate business processes and enjoy an integrated communications experience.

Throughout its 111-year history, Nortel has been at the forefront of innovation in communications. It's depth of experience across all technologies – carrier and enterprise, wireless and wired, applications and infrastructure – has built a strong foundation to help transform enterprise communications, and drive innovation.

John Roese
Chief Technology Officer
Nortel



The Future Made Simple

> Our vision for the future...

Advanced computing and IT innovations coupled with the deluge of new, wireless-enabled laptops and other computing devices might lead one to believe that we've reached the threshold of always on, always connected enterprise communications.

Not quite.

True, today's leading enterprises are starting to roll-out unified communications (UC) that helps to improve productivity by allowing employees to better communicate with customers, suppliers, partners and each other from virtually any location and any device. Through UC, enterprises can truly experience seamless communications that integrate email, phones, instant messaging, and other communications services into a **single system** with a **single identity**.

But, we have not quite reached the point where enterprises can experience the complete benefits of hyperconnected communications where anything that can be connected will be connected. One of the things they must do to get to that point is **communications-enable their applications**.

Communications-enabled applications will help eliminate one of the biggest barriers to business productivity in enterprises today: human delay in business processes. The root issue for human delay is that most of today's communications environments are not integrated. Workers have multiple passwords or identities, each linked to a specific location and device. For example, our phone number at work is tied to our desktop phone. Our mobile number is linked to our mobile device. We have separate access for multiple email accounts - work vs. personal - and instant messaging - Yahoo or AOL vs. corporate messaging services.

These multiple identities often slow down daily tasks and communications because it can take multiple attempts to reach the person you are trying to reach. And, once you do reach the person you've called, there's no guarantee that it's a convenient time for them to answer your question, or that they have access to the information you need.

There have been countless studies that calculate the amount of worker time wasted just trying to connect with each other. For example, a Microsoft study last year found that one in four workers spend the equivalent of three full working days each year trying unsuccessfully to connect with other people by phone. According to a recent report from Sage Research on Unified Communications Applications, worker projects were delayed or deadlines missed approximately 22 percent of the time on a monthly basis.

On top of these multiple applications, the number of devices connected to the network is growing faster than the number of people using the network. In fact, at Nortel we expect the amount of machine-to-machine communication to grow substantially in the next few years as cameras, cars, utility meters, home security systems and other items are connected to the network.

Each identity and device requires us to log in separately because the applications are not designed to talk to each other and are not yet **communications-enabled**.

Nortel is building a large and solid ecosystem of key industry players, including Microsoft, IBM, HP, SAP and Accenture to help transform the enterprise and empower them to benefit from tomorrow's era of communications.

In July 2006, Nortel and Microsoft formed the Innovative Communications Alliance (ICA) to help unify communications by breaking down today's device and network-centric silos, to make it easier for users to reach colleagues, partners and customers with the devices and applications they use most. *For more information on this alliance see www.innovativecommunicationsalliance.com.*

Nortel is also working with IBM to drive one of the biggest shifts enterprises face today - the move to Service-Oriented Architectures (SOA). SOA is a software architecture that enables any applications developer to take different building blocks of functions and put them together in various ways to build new, intelligent communications applications, services and business processes. *For more information on Nortel's work with IBM, see <http://www.nortel.com/prd/si/ibm.html>.*

Key technologies that empower the enterprise to transform and benefit from tomorrow's hyperconnected lifestyle include:

- 1) unified communications and common application development components that enable the mixing and matching of different devices and applications while linking them to a very flexible, intelligent network
- 2) optimized business networks and powerful mobile technologies like Wi-Fi, mesh and municipal wireless, to better handle real-time traffic and unified communications
- 3) communication-enabled applications designed to improve business processes and productivity

Communications-Enabled Applications ...

By marrying the rich content, data applications, and business processes developed in the IT/computing world with the intelligent, real-time functions of the telecommunications world – in essence creating what Nortel calls “communications-enabled applications” – enterprises can take advantage of far more powerful, automated business processes as well as a truly integrated communications environment. Human delay will be eliminated and communications will be that simple.

In the past, networks were largely single-purpose. They were built to deliver a specific service like voice communications, data, or mobility. Today, most service providers and enterprises are leveraging advanced technologies to converge their disparate networks onto a single architecture based on the Internet Protocol (IP), which allows different types of services and applications to be combined in new ways. For example, voice service can now be delivered over the Internet (instead of a separate voice network) and you can surf the Internet using a wireless device not just your PC. These capabilities were not possible just a few years ago.

Nortel is accelerating the enterprise transformation by empowering business applications with a wide range of network communications capabilities such as contact center systems, interactive voice response, unified messaging and unified communications. These solutions speed up collaboration and business processes, improving agility and increasing productivity.

Nortel's work with Microsoft and IBM will provide the real-time communications capabilities and the network-oriented functions, such as location, presence, proximity, and identity that will communications-enable applications making communications more intelligent, intuitive and simple. Nortel is also building a GUI-based service creation environment tool that will enable services to be rapidly created and tailored to implement particular business processes.

As we unify all of the disparate networks and make them more intelligent, we can also integrate them with business applications and processes to help improve productivity and eliminate delays. Workers will be able to directly access the real-world and real-time state of the business – using any device, application or network connection. For instance, healthcare workers can improve patient care by connecting to medical devices and monitoring equipment– from any location, using any device.

Or, when a user right clicks on a cell in an Excel spreadsheet, they will be able to see who created that cell, whether or not they are available to communicate, then activate a call and potentially create a conference if needed with all the people involved in contributing information for that cell. While that sounds like a simple activity, it has not been done because communications applications and services have been inaccessible to each other, fragmented within silos – voice, data or video, and enterprise or carrier networks.

Benefits from communications-enabled applications can have immediate impact on driving revenue for businesses through increased customer satisfaction. For example, consider the customer loyalty gained when a hotel can communications-enable a business travelers hotel room. As soon as they check in, the assigned RFID badge communicates with the room's location sensors - perhaps with the swipe of the traveler's thumbprint for authentication - to instantly and invisibly make the network/room adapt to their preferences and profile. The room's phone is automatically personalized with each customer's service set, the television with their favorite programming and movies, and the in-room PC with their preferred desktop settings and applications. The moment they leave the room, all calls are forwarded to their mobile device.

This is just the beginning. Soon, everything from email, to web browsing, to basic business productivity tools will be re-invented to give users a more productive communications experience.

Nortel is working aggressively to create technology innovations that help transform the enterprise and allow the network to determine not just a user's location and identity, but also their activity and availability at any particular point in time, should the user agree to make that information available. This seamless delivery of services is one of Nortel's leading research areas.

Nortel's combined enterprise and carrier researchers are working to give users a fluid, natural, and intuitive user experience, optimized to business and personal needs, on a communication architecture that invisibly adapts to different networks, devices, and environments. All these capabilities allow the user to focus on the task at hand, and not on the technologies.

These types of scenarios are not that far off.

Highlights from Nortel's Labs and External Research Efforts

- **Identity Assertion** project with Georgia Tech to create secure identity methods to help provide geographically dispersed interaction, whether it is with someone next door or around the world. Nortel and Georgia Tech are exploring ways of representing and asserting identity with the goal of allowing the person, system, or sensor involved to maintain control over their credentials and personal information.
- **Sensor dispatch trial system** in Nortel's Advanced Technology Sensors Lab in Billerica (MA) is exploring ways that video and sensor information can, for example, enable better and faster response times for law enforcement and emergency / medical personnel.
- **Innovative healthcare project** with the Advanced Communications for Healthcare Enhancement (ACHE) research network designed to apply advanced communications to improve clinical effectiveness and safety. As part of the project, Nortel will be collaborating with a team of innovators from McGill, Toronto, Carleton and 5 other Universities in conjunction with several other program sponsors.
- **Optical Metro Network Initiative** (OMNInet) research effort with several industry leaders working to create a reference model for a wide-range of next generation metro digital communication services, based on advanced photonic technologies. Other members include: iCAIR, the Electronic Visualization Lab at the University of Illinois at Chicago, the MCS Division of Argonne National Lab, and CANARIE (Canadian Advanced Network for Advanced Research, Industry, and Education).

Technologists in the Spotlight

- **Abbie Barbir**, one of Nortel's standards advisors, serves as the chairman of the International Telecommunication Union (ITU) Focus Group on Identity Management. This group is working to create a standard global identity management (IdM) framework to help provide significant benefits, such as: greater trust by users of online services; reduced cybercrime and SPAM; and seamless and simple "nomadic" roaming and access to services worldwide. A global IdM framework will allow users to reduce the number of different names and passwords for each service they subscribe to. When users sign up for new accounts with online providers, they will no longer need to fill in all the same details over and over again. Such a framework will also help diminish identity theft and fraud, allow greater flexibility in the way online identifiers are used, and strengthen privacy protection for users.

Quotable quotes

"Nortel is working hard to take enterprises to the next level. By making applications more intelligent consumers will have the power to take full advantage of technologies like RFID and advanced sensor technology to get the most of all of our devices," said John Roese, CTO, Nortel. "Going forward, applications that are not enabled by networks and communications will be inadequate; networks that know nothing about applications will be irrelevant."

What's Nortel talking about where and when?

- May 20-25, Las Vegas – Interop (booth #1237). See http://www2.nortel.com/go/events_detail.jsp?cat_id=-8005&block=3&oid=100216818&locale=en-US
- May 29-31, Vienna, Austria – WiMAX World Europe 2007 (booth number 202 in Hall X). See http://www2.nortel.com/go/events_detail.jsp?cat_id=-8005&block=3&oid=100217164&locale=en-US
- June 3-5, Boston – MuniWireless 2007. See <http://www.muniwireless.com/article/articleview/5737/1/41/>
- June 10-13, Tampa, FL— Global Connect. See <http://www.innua.org/global%5Fconnect/2007/>
- June 18-21, Chicago – NXTcomm. See <http://www.nxtcommshow.com/>

Nortel resources...

- Nortel's latest Technical Journal that focuses on next-generation applications and services http://www2.nortel.com/go/news_detail.jsp?cat_id=-10002&oid=100218786&locale=en-US
- Please contact Jamie Moody (moodyjam@nortel.com or 972-684-7167) for additional information and with any comments or suggestions regarding this newsletter.