

Business mobility: A changing ecosystem

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Abstract: This paper examines the evolution of the still-nascent business mobility ecosystem and its key drivers, such as consumer behavior, that shape the segment. It also explores the changing roles and relationships of the ecosystem's key players; projections for growth in business mobility; and the value or ROI of business mobility. It offers advice to businesses that are considering business mobility solutions. And it points out a number of changes that members of the business mobility ecosystem will need to make in order for business mobility to evolve to the point of fruition, where companies are willingly ready to purchase solutions as a strategic investment, and where the solutions are as solid but also as flexible and easy to buy and integrate in a heterogeneous, global market. Lastly, the paper takes a look at a few large companies that have made significant steps toward strategic and holistic adoption of business mobility.

Keywords: Business mobility, ecosystem, mobile growth drivers, ROI

1. Introduction

While early cell phone adopters used hand-held devices for communicating with their managers, coworkers, suppliers and customers, the devices were insufficient for conducting meaningful business in a secure mobile environment. There was no e-mail component, no scheduling capabilities, no way to manage a personal computer's address book, and – most important – no network security.

Nonetheless, opportunities for personal use got people excited about wireless communication, and helped build a critical mass of consumers hungry for more mobile applications – especially e-mail, gaming and other favorite electronic activities. Consequently, unlike more traditional rollouts of technology in business settings, the end user has always been at the forefront of mobility.

Individual consumer demand has sparked the widespread use of mobile technology in ways that enterprise demand might never have. Today, we see how the Internet and Web 2.0 capabilities such as FaceBook and Second Life have created a cultural and generational gulf between “digital natives” and “digital immigrants.” Now, business users, who are also everyday consumers, are insisting on Web 2.0 or Web 2.0-like tools and services in their business lives.

Exploring the evolution of the still-nascent business mobility ecosystem, this paper examines:

- The foundations of business mobility and its key drivers, such as consumer behavior;
- The changing roles and relationships of the ecosystem's key players;
- Projections for growth in business mobility;
- Return on investment in business mobility; and
- Three case studies of business mobility today.

2. The foundations of business mobility

What was it that attracted early adopters to mobile communication? Probably *not* that it enabled their managers to interrupt weekends and vacation days with calls to beaches, backyards and soccer fields. In fact, personal applications were the big attraction: the ability to be in touch with their families throughout the day; to be able to call for emergency road service without leaving their cars; to check sports scores and stock prices; to phone home from the grocery store because they forgot their shopping lists; and to exchange text-messages with friends and family.

The mid- to late-1990s saw the growing trend toward wider corporate distribution of mobile phones to employees – or the decision to support a wider range of models, with the aim of improving productivity and efficiency. This opportunistic adoption may be considered the first phase of business mobility. At the time, analysts and academic researchers predicted enormous growth in years to come [7]. Today, such growth is occurring.

Eventually, enterprises started taking a greater interest in mobile applications after individual consumers demonstrated a strong desire to go wireless – and after applications for reading e-mail remotely on PDAs were introduced. Executives immediately saw the benefit of being able to read e-mail away from the office and the PC, and demanded that their IT departments supported the PDA-based solutions. That spurred greater interest among knowledge and other mobile workers.

Today, businesses are integrating mobile technologies in varying forms and complexities within their IT infrastructures – and the workforce is increasingly reaping the benefits. Similar to the way in which consumers' Web 2.0 behaviors have led to the rise of social networking tools and blogs within the enterprise, the demand for mobility is largely driven by end-user enthusiasm and engagement.

While consumer demand drives business mobility, it is not the same consumer demand that historically drove mobility among individual consumers. Local area networks (LANs), wide area networks (WANs) and smart-phones bring the promise of business mobility closer to reality, but organizations moving toward mobility will demand more from the business mobility ecosystem – and ecosystem members will have to collaborate in new ways, compete against one another at times, rethink their revenue models and in some cases, retool their strategic objectives.

2.1. *Driving mobile growth*

According to a recent Gartner study “until 12 months ago, wireless e-mail had been a sort of ‘elite group’ application, most often deployed for and used by executives in large organizations. During the last year, this situation changed: a ‘democratization’ process has begun that will bring wireless e-mail to many mobile devices, and business and consumer users will adopt it massively. There are 15 million business e-mail users worldwide (that is, about 2 percent of total business e-mail accounts); by year-end 2010, the number of wireless e-mail business users will grow to 130 million (0.7 probability). By yearend 2010, the total number of wireless e-mail users, including business users and consumers, will exceed 350 million worldwide (0.7 probability)” [2].

E-mail is the predominant gateway to business mobility because the practicality of mobile access to e-mail is so obvious. Mobile e-mail, like land-line e-mail, doesn't have an easily quantifiable return on investment. It is hard to tell how much more productive or valuable it makes an employee. Nonetheless, generally speaking, most of us would agree that mobile e-mail is an important business tool. Already, many organizations – especially those with an employee population working in the field – could barely function without it. And many who choose not to implement it will find themselves at a competitive disadvantage in the coming months and years.

Increasingly, businesses that have discovered the value of mobile e-mail realize it is only the tip of the iceberg and are looking to mobilize other mission-critical applications such as field repair or delivery – which do have a direct and measurable ROI.

Peppard and Rylander [9] predicted that in the future, handheld mobile devices connected to telecommunications networks will be a critical way to gain access to content in digital format. However, a number of concerns still limit a wider adoption of wireless e-mail. Unsurprisingly, security tops the list. The inherent complexity of mobile technologies – in particular, the continuous introduction of new products and the lack of standardization in the space, together with the significant impact on IT departments in terms of management and security – raises many issues that have influenced enterprises to put off making key strategic decisions in this area. But ease of discovering, buying and implementing solutions are also barriers to more widespread adoption.

Mobile devices will continue to be the vehicle for communicating in a number of methods and accessing a variety of business and personal services and capabilities. These devices will likely continue to become even more highly intuitive with interfaces that support a wide array of services as well as productivity and personal applications and tools (e-mail, calendars, cameras, music players, etc.). In this respect, in order to keep current with Web 2.0 technology and user expectations, devices need to offer a combination of beauty and brains, all the while delivering an uncompromised user experience. Services and applications should be easy to discover, purchase and use. That means not only designing mobile device interfaces to support current and future services, but making it simple to integrate services and applications such that the experience is easy for the end user as well as the IT manager.

3. Ecosystem members and their changing roles

In a recent analysis, the telecommunications and software consulting firm Ovum found that mobile applications face slow growth despite the segment's most successful vendors having been in business for five or more years [3]. There have been significant hurdles to overcome. However, conditions are now ripe for growth – and for this market to extend itself beyond a niche market and early users – from opportunistic toward strategic and ultimately holistic adoption.

When considering drivers of mobile growth, Ovum attributes investment by carriers and other players in the ecosystem. Carriers have begun to take the mobile application space seriously and are creating the structures that are necessary to enable rapid growth of mobile applications. Carriers are forming partnerships with software vendors, offering incentives and training their sales teams and actively pursuing the opportunity. Since carriers are generally the major sales channel for mobile solutions, this is beginning to provide a major piece of the puzzle for greater corporate adoption of mobile applications.

Superficially, the business mobility ecosystem may appear familiar – device manufacturers, network operators, systems integrators, IT providers and value-added resellers (VARs), each specializing in a product or service that, when combined, enable mobile communication. But their relationships to one another are changing. For example, in a dramatic and potentially industry-changing development, Internet carriers are joining the business mobility ecosystem as the Internet replaces mainframes and operating systems as the primary platform through which data travels. Roles are shifting, revenue models changing, new business models emerging [1,7], new risks emerging and new opportunities are presenting themselves in a more complex, open, competitive and heterogeneous environment.

In the past, device makers limited themselves to manufacturing and selling mobile devices and appealing to end-users through usability and aesthetics; and they partnered with network operators to offer mobile solutions.

Today, differentiation at the device level is based on a combination of elements. While integrating more advanced technologies such as dual-mode (cellular and wireless LAN, for example) is one obvious path for remaining competitive, the look and feel of the device is as important as what is under the cover. Users want devices that are smart, intuitive, suited to both business and personal use, and look good. This remains true in both mature markets such as Western Europe and the US, and in rapidly emerging markets such as India and China, where lower price points do not necessarily negate the value of aesthetic appeal to end users. A variety of models with a range of features and price points is also critical. Whereas in 2006 India was still considered largely an entry market, it is emerging as a market with higher average selling prices and replacement purchases. Rural, central Africa is in large part bypassing traditional wire line and personal computing infrastructures and leap-frogging to adopt the latest wireless technologies; mobile devices are used for a variety of applications ranging from simple telephone communication to determine latest livestock selling prices for remote farmers, to banking their income.

As important as the device's looks and intelligence are, its accessibility in the market and its ability to support a variety of applications are paramount.

Traditionally, the market's primary players had a fairly straightforward arrangement: device makers built the hand-held units, and operators or retailers put them into the hands of end-users. For example, in Europe where the global system for mobile communications (GSM) standard has prevailed for years, customers have traditionally had more choice in devices and increasingly in service providers, because virtually all handsets were compatible with the GSM standard. In the U.S. sales were primarily through operators – and devices were often branded or co-branded by operators. Retail purchase choice was limited to the devices that were compatible with the operator's network standard.

In that model, network operators such as AT&T, Verizon and Sprint shared the space: they built and maintained networks on which mobile data traveled, each with their own standard. Each member of the ecosystem had a role, a revenue model and its own unique value on the supply chain. Overall, the ecosystem was relatively uncomplicated: members – each with their own set of core competencies – brought the fruits of their efforts to the table and cooperated with one another to sell to consumers.

3.1. New relationships, new rules, new complexities

As business mobility becomes a necessity, and as convergence becomes a reality, the ecosystem is becoming more complex, as well – and the relationship between members more delicate. In some markets, the retail shop is the dominant route to market, as well as the service and repair point. In others, carrier branded or co-branded sales remain prominent, with the carrier increasingly becoming a solution provider, offering integrated applications.

In the business mobility ecosystem, device makers can no longer rely on sales of just one model to maintain market share. They have more partnerships, more competition from inside the ecosystem, heavier demand for new products and services that meet a variety of end-user needs and more complexity in their device sales. These manufacturers may be involved with multiple partners, including carriers, VARs, IT integrators – in sales training, support, even helpdesk operations. Their involvement will require new commitments, new investments and new revenue sources – and in some cases, willingness to both partner with and compete with the other members in the ecosystem.

As the demand for mobility solutions grows at the individual user level as well as at the business level, virtually all players in the business mobility ecosystem will be faced with the challenge of offering a variety of more personalized solutions. Two paradigms are emerging; first is the need for virtually all resellers to offer flexible, easy-to-use solutions at the device level. This means the ability to offer

multiple services with an intuitive user experience, on multiple devices from multiple vendors. Unlocked will take on a new meaning, where consumers and business users alike will demand an uncompromised user experience.

At the same time, emerging solutions that support multiple radio technologies and emerging standards and applications will be an increasingly important part of the mix. Such is the influence of the many forms of convergence, too: fixed-mobile convergence (FMC), voice and data, personal and professional applications.

For example, Voice-Over-Internet Protocol (VoIP) routes phone calls through the Internet, not through cell towers. The inevitable convergence of Internet, cell, cable and land-line services created more opportunities, but it also created the prospect of lost revenues in traditional business models. As business mobility increasingly becomes a necessity, it adds further complexity to the ecosystem. The result: wide-open market opportunity for all players, new business models, and wide-open competition across the converging Internet, carrier, hardware, and software players in the expanded ecosystem.

Not all businesses and business users have the same needs. Corporations are heterogeneous; a holistic adoption of business mobility will require a seamless integration of features on a single screen. The newest mobile devices are “unlocked” and able to be used in multiple solutions with hundreds of VARs, network integrators, carriers and other members of the business mobility ecosystem. In some ecosystems, VARs continue only to sell products. For now, their models are not changing. Others are moving toward a solutions model where they provide not only handsets to corporate or individual consumers, but a range of services as well.

3.2. *Challenges to ecosystem revenue models*

Business mobility market participants already collaborate in numerous ways in the development of products – and they cooperate to offer simplified solutions to the enterprise. Carriers are important both as customers and as channels for applications and software and solutions developers and hardware manufacturers. System integrators also are key partners in the value chain because they select hardware and develop the software and service packages that become long-term licensing and service agreements for applications developers and carriers.

While revenue sharing does occur, there is currently a natural division of revenue between implementation services (hourly or project fees for integrators and consultants), software licenses, hardware purchases and carrier services. As the business mobility market matures, however, the lines between these streams will blur. For example, more software will be delivered as a service by various players (including hardware vendors, carriers and system integrators) and more hardware will be delivered pre-configured or easily configurable with applications. In many cases, enterprises are already acting as their own system integrators, and – in a few cases, such as in the utilities industry – as their own network operators.

Openness and standards will remain important as the converging mobility, Internet, IT, entertainment, software, and other industries continue to broaden the ecosystem.

Clearly, mobile access to the Internet means more than simply retooling Web sites so they look better on mobile devices. What mobile users really respond to is not some stripped-down version of the Internet, but a fourth screen that more closely resembles what they are used to experiencing on their PCs or TVs, such as the ability to read an entire Web page on a small device – or even watch a movie or TV show or play a game.

But are corporations actually moving toward a holistic approach to mobility? While many workers are no longer tethered to land lines, *business mobility* means more than just a cell phone connection and remote e-mail.

4. Business mobility: A priority for many organizations

In a recent Forrester survey, respondents said they expected mobile voice, equipment and data services spending to grow to 29 percent of telecom and networks budget – up from 26 percent in 2006 [8]. According to Forrester, enterprises are bullish on spending: 63 percent plan to increase mobile data spending and 56 percent expect to increase voice spending. Almost half of the survey respondents ranked setting a mobile strategy and policy as a priority for 2007. Meanwhile, centralizing management of mobile devices is a priority for 41 percent of the respondents. Interestingly, less than a third of the respondents ranked either of these as a low priority – suggesting that mobility is important for most enterprises.

One potential stumbling block: without a strategy, firms will continue to cobble together “one-off” solutions and never experience the true value of mobility. For vendors to be successful in the mobility space, they will need to demonstrate how they can help clients build and execute a business mobility strategy that integrates mobility with the customer’s existing wired infrastructure, incorporates both voice and data, and extends beyond basic (cell phone, e-mail, contacts) access to provide end users access to their information and one another in a secure, “always-on” environment and with a user experience that is without compromise.

Rather, today’s mobility offers connectivity to a limited set of users with a relatively small number of applications. Going forward, vendors will need to help their enterprise customers identify which applications or processes make the most “mobile sense.” By creating case studies and implementation guides, vendors can help firms use mobility to improve business processes with lessons learned from early mobility pioneers such as FedEx and BP.

Consulting firm PricewaterhouseCoopers (PwC) projects the business mobility market in the U.S. will surpass \$100 billion in 2009 [10]. PwC believes the most successful business mobility businesses will have an open model that encourages innovation through strategic alliances and partnerships. The model it envisions demonstrates a willingness to sacrifice short-term control in favor of long-term growth. For example, application developers may compete directly with one another in customizing a solution for one company or a set of companies with similar interests, while simultaneously partnering to develop a high-volume, packaged solution offered through a carrier.

Ultimately, PwC believes the business mobility market will enable business transformation on a grand scale to a large customer base. Mature, standardized applications and pervasive high-speed connectivity to employees, vendors, customers and other enterprises will impact a wider array of business processes than ever before and generate new mobile business models reminiscent of today’s Enterprise Web 2.0.

5. Return of Investment (ROI) of business mobility

How is the value of business mobility measured? A recent industry study conducted by the Economist Intelligence Unit (EIU), a leading global research and advisory firm, polled senior-level decision makers at global 1,000 companies to find out how their organizations were using business mobility. The survey revealed that far from being deployed in “bleeding-edge” technology firms or relegated to niche or vertical industries, business mobility is now broadly applicable to companies across industries [5].

From revenue gains to improved workforce agility, collaboration, and the ability to attract and retain top talent, the power of mobility can be applied in many ways to drive value to the enterprise. Taking a closer look at the ROI of business mobility, following are highlights from the EIU study, including direct quotes from some of the surveyed executives.

5.1. Key indicators of ROI

Over time, the population of mobile workers has steadily expanded. According to the EIU study, nearly 40 percent of executives surveyed said that at least one in five of their company's workforce could be considered a "mobile worker," spending an average of one day per working week away from the office.

As business mobility makes headway into organizations and more advanced applications and processes are mobilized, the reasons behind companies' mobility adoption can vary from traditional ROI benefits to more contemporary values such as employee retention.

EIU survey respondents were asked to consider several ROI measures and state whether their organizations currently used them or planned to do so within the next two years. After reduced physical infrastructure costs, executives most frequently said they would be looking for better collaboration with customers and better access to colleagues or external partners as key indicators of ROI.

Goals related to work-life balance have also entered into executives' ROI calculations, where mobility is a means to attract and retain top performers by offering greater flexibility and empowering employees to work remotely. Almost one-third of surveyed organizations already track work-life balance programs; about one-quarter plan to do so within two years.

Aligned with these results, surveyed executives were also asked to identify the top three challenges to their future competitive strategies:

- The need to attract and retain talent within their firms;
- The ability to respond more quickly to customer needs; and
- The need to quickly identify and communicate any noticeable changes in customer behavior.

In addition to driving bottom-line results, the EIU survey shows that organizations are increasingly focusing on new and sometimes non-financial measures of ROI.

5.2. Hard benefits

Some of the traditional ROI measures for mobility include reduced real estate costs, faster sales cycles, lower costs associated with remote training and overall financial performance. For package delivery leader UPS, for example, business profitability is top of mind when decision-makers there evaluate the effectiveness of their mobility strategy – and the nature of the logistics business makes mobility standard operating procedure at all levels of the organization. At UPS, the "sales force is highly mobile, which has significantly improved the bottom line. Mobility has allowed salespeople to skip going into the office to print out their daily or weekly call list with all the other documentation. Because of this real-time effect, (sales people) can do bids on the fly now" [5].

Organizations like UPS expect business mobility to yield a rich payoff, and mobile solutions are used throughout the company. In fact, UPS views mobility as part of the normal business day and does not differentiate between drivers or corporate managers. According to the company, "everyone is mobile" [5].

5.3. Soft benefits

Three-quarters of EIU survey respondents pointed to human factors such as attracting the best talent, improving customer service and building brand reputations as reasons for deploying mobility [5].

With a large and distributed sales force that is constantly exchanging information with its customers, mobility could not be more important to pharmaceutical leader Novartis. Each day, the company supports several thousand field employees in North America, realizing the benefits and operational gains offered by business mobility. The company invested very early in wireless capabilities for the sales force and found that from a “productivity viewpoint, it was a big win” [5].

In addition to mobilizing its field sales force, Novartis has also applied mobility to employees across the business as a means to attract and retain top talent by offering better work-life balance. Giving employees more control over how they want to work – in an office environment, at home, or a mixture of the two – has become a competitive advantage for the company.

Novartis also provides its field-based employees with high-speed Internet access at home. This allows sales representatives to upload their daily work faster, and enables the company to offer online training on drug products, regulations, medical procedures and other issues.

Far from being ends in themselves, such mobility initiatives are viewed as keys to staying competitive. Asked to identify the main competitive factors pushing their organizations toward greater mobility, surveyed executives cited factors involving person-to-person contact among colleagues or with customers as being greater concerns than traditional benchmarks such as reduced downtime or lower physical infrastructure costs [5].

5.4. A new approach to business mobility

When organizations first started giving mobile devices to their employees, most believed only specialized workers at technology companies would benefit from having such tools. Mobilizing a workforce was perceived to be costly, complex and a security nightmare.

However, the EIU survey suggests that these beliefs are largely becoming relics of the past, putting to rest some of the old myths that once called into question the promise of a mobilized workforce, namely, that:

- Mobilized workers were a specialized subgroup of employees who represented a small fraction of any organization’s overall workforce;
- Mobilizing an organization’s workforce was always a costly endeavor that might not be offset by the savings from resulting efficiencies and benefits; and
- Employees using mobile solutions could not securely connect to the company network to access corporate data, making them a threat to the integrity of a company’s most critical information.

Surveyed executives decisively rejected these assertions, along with the belief that mobile work means being “always on” and a threat to work-life balance [5]. At the same time, they revealed mobility is not without its hurdles, although most seemed focused on cultural and managerial issues rather than business ones. The single largest obstacle cited by executives was the challenge of learning to manage a mobile workforce. Even so, less than 20 percent of those surveyed selected that answer. Closely related to managing mobile workers was maintaining a cohesive organizational culture across scattered workforces.

The survey shows that executives are coming to grips with other dimensions of the organization that might benefit from greater mobility. For example, executives pointed to the need to identify new business processes and applications to mobilize as significant tasks for the future.

6. Business mobility applications: Some examples

As ecosystem members jockey for new footing, and as devices and networks emerge promising more robust and secure mobile environments, embedded or easily downloaded applications, how are leading-edge organizations moving toward true business mobility? Here are examples of how three organizations are using business mobility applications to improve efficiencies, increase effectiveness, and maintain their competitive edge.

6.1. *Mobility in the media*

Recently, a European news agency made a shift toward mobility so it could gather and transmit news more efficiently. Based in Munich, Germany, Bayerischer Rundfunk (BR) has been the state broadcaster for Bavaria since 1948 and was a founding member of the Association of Public Broadcasting Corporations in the Federal Republic of Germany (ARD) in 1950. It is currently the fourth-largest ARD member organization, with about 2,900 employees. There are more than 6.3 million radios and nearly 5.4 million televisions registered in its geographic area.

BR runs its own five radio stations and its own TV channel, and contributes to the joint ARD channel *Erstes Deutsches Fernsehen*. Structurally, BR is broken down into legal, radio, TV, administrative and technical directorates.

Mobility is of key importance to most media operations because information needs to be researched, gathered and transmitted quickly. This applies in particular to the journalists from BR who report from all over the world. They need to send their reports to the editorial teams as quickly as possible, and the administrative staff needs to be accessible when they are away from the office – which occurs frequently.

BR sought a unified and flexible system for its mobile communications. A number of requirements from various departments had to be considered. For instance, mobile synchronization of contact and calendar details was necessary to maximize standardization between the IT system and the mobile devices. Another requirement was that employees had to be able to send and receive e-mail.

The IT department had its own requirement: the operating system had to be open and capable of being integrated into the existing IT architecture easily. The essential applications include receiving e-mail, managing appointments and using the latest address files available. BR's IT infrastructure is based on Microsoft Exchange, a groupware solution that permits comprehensive and varied tasks, such as e-mail and appointment management and the creation of address books.

Employees of BR now have mobile access to their e-mail, appointments and contact details. The staff uses a total of 200 hand-held devices controlled via two servers. Reporters can e-mail up-to-date reports using their mobile devices. Regardless of whether they are at receptions or on a press trip, or if a court reporter wants to send an initial report to the editorial team while a case is in session, the mobile solution enables reporters to extend the information “edge” that the broadcaster enjoys.

The new solution offers many advantages: an up-to-date appointment calendar, an accessible personal phone list, the sending and receiving of e-mail, and – most important for business mobility – integration into the IT architecture. For example, reporters can use their mobile devices to transmit and transfer data in real time. It is also important for staff at the technical directorate to be highly accessible since the IT systems cannot be “down” in a media environment.

There is an alert function running for this reason. This function enables the technical directorate staff at BR to be advised quickly if problems arise. BR management believes it is particularly important for staff to be accessible at all times, and have a high level of acceptance for the application, since central communication functions can be used via mobile devices.

6.2. *A single, integrated platform*

In addition to media companies, the technology sectors, including telecommunications, have led the way as consumers of business mobility products, including VoIP and security features such as encryption. In most other industries, the first business mobility products were mobile voice and wireless e-mail access via laptop or PDA. Adopted quickly by financial services and professional services firms, today these industries are expanding mobile access to other types of applications and being joined by companies from other sectors such as manufacturing, healthcare, pharmaceutical, biotech and utilities.

The ultimate goal for business mobility: an integrated platform for mobile applications that extend far beyond e-mail – with Internet access, and with ability to support a variety of devices (to suit the end users' preferences) and a variety of applications and services. As in the case of BR, ultimately, business mobility will mean being able to operate a business or do a job using just one remote device – and being able to send/receive attachments, work around a virtual private network (VPN), add a firewall, etc., all on just one screen without compromising security – seamlessly integrating personal life and office life.

Another organization sought an end-to-end global enterprise security solution for its entire enterprise network. Andritz Oy develops high-tech production systems and industrial process solutions for various standard and highly specialized products in five vertical markets: Pulp and Paper, Rolling Mills and Strip, Processing Lines, Environment and Process, Feed and Biofuel, and Hydro Power.

Andritz Group employs 10,000 people at more than 100 worldwide locations. The company manages 35 production facilities and 120 global affiliates and distribution firms, requiring extensive IT and communication resources. Andritz Group sought a collaborator that could provide a comprehensive enterprise offering with the ability to manage and protect a global network and enable mobile employees with the tools and resources necessary to do their jobs effectively and efficiently. Andritz Group's Finnish subsidiary, Andritz Oy, was tasked with implementing a global enterprise security solution.

In addition, the company needed to outfit approximately 800 of its 1,100 employees in Finland with mobile business devices featuring specific applications that allow them to perform necessary tasks in the field. Through a three-way consultation process involving Nokia, Andritz Oy, and reseller Nordic LAN WAN, the companies implemented an end-to-end enterprise solution to meet the customer's needs and expectations. The devices are easy to use, deploy and manage over the air. The solution features wireless e-mail and other mobile business applications; firewalls and VPNs for multiple layers of protection; and professional services and support to help Andritz Oy during the process.

In order to protect their global enterprise network and extend their network perimeter, Andritz deployed nearly 100 firewall/VPN appliances, which combine enterprise-class reliability, market-leading software and a hardened operating system on purpose-built, high-performance platforms. This allowed Andritz to integrate security features into the network and easily deploy and manage those systems. To help provide secure communication and access to information and resources for mobile employees, Andritz deployed Nokia SSL VPN and Nokia IP VPN solutions, which enable authenticated, controlled access to business applications, data and resources from a desktop, notebook, or handheld device. These solutions helped Andritz increase productivity by connecting mobile employees to the enterprise and one another via mobile devices, while protecting proprietary company information and assets.

Because constant communication between on-the-go employees worldwide is necessary, Andritz needed to provide them with reliable devices as well as the necessary tools and applications to communicate easily and perform their jobs effectively.

To accomplish this, Andritz outfitted its mobile employees with hand-held devices, each equipped with a solution involving mobile e-mail, calendar, and contacts, yielding several benefits for Andritz, including:

an easy-to-use interface (essential for going beyond phone calls and e-mail to performing complicated tasks in the field); corporate e-mail compatibility with a variety of e-mail solutions; simple, no-nonsense management of personal information; straightforward text and messaging features enabling instant communication among mobile employees; ease of integration with Andritz's existing infrastructure, leading to fewer disruptions and distractions – and a quicker return on investment; and GSM global connectivity, offering flexibility and cost savings for employees who travel.

The deployment of an end-to-end enterprise offering for Andritz provides a strong base from which Andritz can work with its present and future partners to build out more business mobility projects.

6.3. From three phones down to one

Business mobility holds promise for more than just the technical and media sectors. HSB Stockholm, for example, is a Swedish housing cooperative established in 1923. HSB Stockholm builds, manages and actively strives to create good housing for its members. With more than 155,000 members in the Stockholm area alone, it is one of the major players in its field; nationally, every tenth Swedish home was built by HSB.

With more than 390 tenant-owner associations within its organization, HSB Stockholm receives between 4,000 and 5,000 phone calls every day. And it makes between 3,000 and 4,000 outgoing phone calls. In essence, telephony communication is a critical function for HSB Stockholm's success. Employees manage issues over the phone regarding everything from leaking pipes to building projects costing many millions of euros. Easy telephony and employee availability are key elements to keeping members satisfied and maintaining a steady growth of business.

How employees use telephones differs widely depending on their function within the organization. Some are based at the office, while others roam the Stockholm area visiting member associations and checking the progress of building projects on site. HSB Stockholm previously depended on DECT phones to achieve in-office mobility for its employees. That meant that some employees had up to three phones: a stationary office phone, a DECT phone, and a mobile phone. As the DECT phone system was approaching the end of its life-cycle, HSB Stockholm had to make a decision: either invest more in the DECT system or invest in a mobile communication system for its existing Alcatel switches. The first option would have meant additional costs for new DECT phones and extra base stations. And it still could not guarantee 100 percent in-office coverage.

In the fall of 2006, HSB Stockholm decided to try Nokia Intellisync Call Connect for Alcatel, a solution that integrates mobile devices with the company's fixed telephony infrastructure. It extends desk phone features with one business number to the mobile device. The solution also simplifies the corporate telephony architecture and facilitates in the elimination of overlapping devices, meaning that HSB Stockholm employees could start using their mobile devices as primary business tools.

The solution entails an installable client software application, which manages interoperability with the Alcatel OmniPCX call control platform and provides an intuitive user interface to manage call routing preferences and access in-call services from the private branch exchange (PBX). Some of the most important features used by HSB Stockholm personnel include do-not-disturb, hold/resume, call transfer, consultation call, swap, conference call and private/business modes.

The solution routes the mobile calls made in business mode via Alcatel OmniPCX. The receiving party will see only the desk phone number instead of the mobile phone number. This means that the mobile phone number can be kept for private use. External callers will use the same desk phone number to call in, and the solution manages routing to the mobile device according to user-defined rules. After

successfully testing the devices, HSB Stockholm decided to invest in 40 licenses. Over time, they plan to invest in an additional 100 licenses. The DECT phone system was shut down completely in September 2007. Management calls the solution “very intuitive.” Users hardly need to read the manual to use the application. The ease-of-use means that employees are more available and more productive.

The prior use of multiple phones was a challenge for achieving effective communication. With the new solution, employees save time and hassle, needing only one hand-held device by their side. Also, DECT phones did not give the employees at HSB Stockholm full coverage in the seven-story office building. With their new device, personnel are now free to roam the office while remaining connected to the GSM or 3G net. However, possibly the most important benefit of such an integrated solution is the increased functionality and user-friendliness of the application. Instead of having to press long and complicated “short” number sequences for different commands, users now only need to choose one of the intuitive icons displayed on the user interface – for example, to transfer or put a routed call on hold.

HSB management sees significant benefits to the new solution. Most important is the ability of employees to stay in touch with members effectively and with greater efficiency.

7. Conclusion

Over the last several years, the pace of mobile innovation has objectively increased, but remarkably little of it actually reaches the broader U.S. mobile user market in a meaningful way [6]. The mobile ecosystem as it currently exists is simply too much of a barrier. Many organizations are currently addressing mobility opportunistically rather than strategically or holistically. Moving to a holistic approach will require members of the business mobility ecosystem to show the IT managers and the business leaders measurable ROI or demonstrate real business value. Without an ROI, IT may not buy in; consequently, without new ways of thinking about revenue splits, there could remain an economic barrier to entry, network coverage may not improve significantly, and usage will likely never move much beyond opportunistic.

A move toward holistic use will also require applications to be simplified, while still supporting multiple device models as well as single mobile device models with multi-channel distribution capabilities and open and extensible and middle-ware.

Similarly, without a compelling, market-driven vision for business mobility, the mobility landscape will remain scattershot, individually-driven – possibly strategic, but not transparent and holistic. This new vision will require ecosystem members to reposition themselves and realign with the understanding that they will cooperate with one another *and* compete against one another.

7.1. Vision and bold experimentation

There are several recommendations for business mobility ecosystem members [4]. These recommendations include:

- Investing to become “a knowledge bank” of business mobility services and solutions: more papers, articles, analyst reports and industry recommendations will appear in coming months;
- Being prepared to provide a seal of approval for mobile applications: the solution provider landscape is crowded and confusing for enterprise buyers – a laundry list of possible partners is even less helpful than providing no direction at all;
- Identifying partners to facilitate a go-to-market strategy: reach out to other value-chain participants to gain greater customer visibility and improve product positioning; and

- Evaluating integrated channel partnerships similar to those formed between the wireless e-mail providers and carriers.

The market could see additional acquisitions. Until recently, a robust go-to-market ecosystem was the missing link in the business mobility value chain. Bringing together a universe of leading channel and operator partners will unlock the true potential of business mobility.

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