



MOBILIZING FOR MARGIN

The business case for mobile and wireless solutions



Mobile and wireless refers to the sum of all wire-free technologies, comprising licensed and unlicensed technologies. The major licensed technologies are public cellular technologies: GSM, CDMA and TDMA. Unlicensed technologies are for shorter range networks, and include Wireless LAN, radio frequency (RF) and Bluetooth. Each of these technologies has its specific characteristics, and its relevance varies by application.

We have included all wire-free technologies, as the impact of all is similar: mobile and wireless technology can be used to accelerate the flow of data within an organization, to competitive benefit.

Deloitte Research believes enterprises can enhance their competitive position from deploying mobile and wireless solutions today. While inflated promises about new mobile technologies have abounded, companies such as Sears, RAC, and Volkswagen are demonstrating the bottom-line contribution of today's stable mobile technologies.

This Deloitte Research Viewpoint provides insight into how mobile and wireless applications can deliver tangible benefits. Solutions we have analyzed have shown payback periods of less than one year, and forecast five-year returns up to 1,000 percent. The Viewpoint also presents a three-step approach to developing the mobile and wireless business case.

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EXECUTIVE SUMMARY



Mobile data has been labeled as “all hype but no trousers”. Commentators argue that mobile data makes intuitive sense, but that the next generation technology required to deliver the killer applications and meaningful benefits isn’t here yet. So, some would argue, visions of video conferencing via mobile phone must remain visions, and the mobile data dream must remain a dream – for some years at least. We agree with the former view, but disagree assertively with the latter.

Deloitte Research believes that mobile and wireless solutions can be good for your company’s health, today. These solutions – based on currently available technology – can serve as an effective lever both to reduce costs and to improve competitive advantage.

Mobile and wireless solutions are not a panacea; but they are far more today than just a pipe dream. A growing number of major enterprises, from various vertical sectors, have already realized significant returns from their mobile and wireless investments. Current technology may not deliver the hyped mobile videoconference, but for many applications, bandwidth capacity matters less than immediacy and relevance. Careful analysis of existing processes within an enterprise typically uncovers those that can benefit most – and with bottom-line impact – from deploying mobile and wireless technologies.

Our analysis of mobile and wireless implementations at Global 1000 companies shows that they can deliver even recession-grade rates of return – with break-even periods of less than two years, or, in some cases, less than a year. Five year ROI estimates for several of the cases we have examined have exceeded 100 percent. Given the pressing need companies face to reduce costs in today’s challenging economic environment, deferring action on mobile and wireless could place a company at competitive disadvantage.

Those developing the business case for mobile and wireless solutions should quantify both productivity and other performance benefits. Productivity benefits involve the quick, if not immediate, transmission of relevant data to people or machines that can transform data into information. Additional performance benefits manifest themselves in a variety of ways, from providing more accurate information, to strengthening customer satisfaction, to improving cash flow by processing invoices more rapidly.

DEVELOPING THE BUSINESS CASE

Developing the business case for a mobile and wireless solution involves three steps:

- First, identify how mobile and wireless can accelerate the flow of time-critical information within an enterprise’s processes.
- Second, quantify the impact that accelerated information can have on productivity using tangible metrics, and identify and measure additional performance benefits.
- Third, calculate and estimate the payback period.

By referencing mobile and wireless solutions that are either fully deployed or in trial phase, we can analyze the practical application of these steps. The trials analyzed here generally represent up to seven-figure investments made by Global 1000 companies: they are certainly not weightless hypotheses. All the solutions are based on available – not anticipated – technologies. For some case studies we have been able to name the company; for others, mostly the trials, the implementation has been too strategic to allow disclosure.

FIGURE 1: MOBILE AND WIRELESS SOLUTIONS ANALYZED

Enterprise and Application	Solution Summary
Sears, Order Management	Sears used RF (radio frequency) to speed the flow of information from the sales desks in its department stores to the storeroom. Customer orders for bulky items are now relayed to mobile devices on the belts of storeroom operatives. Previously a staff member would carry the order, a process that added little value and was a potential bottleneck.
RAC, Vehicle Evaluation	RAC uses GSM mobile technology to speed the dispatch and improve the legibility of inspections of second-hand cars undertaken by the company’s engineers. Previously hand-written examinations were mailed out only after engineers had returned to base. Now engineers send electronic assessments over the cellular network to base; these are then printed and then mailed out to clients.
Volkswagen, Final Preparation of Vehicles	Volkswagen uses RF (radio frequency) technology to speed the delivery of cars from a vast parking lot at its central factory to its flagship showroom. Previously staff would search on foot for each vehicle.
High Technology Vendor, Time and Materials Processing	The high technology vendor sells technical support to its customers. This line of business had suffered significant revenue leakage, resulting from issues such as slow invoice processing, inaccurate information. The trial has reduced the extent of revenue leakage, as well as the administrative burden for both technical engineers and their coordinators.
Vehicle Manufacturer, Paint Shop Maintenance	The manufacturer wants to reduce the current rate of down time at its paint shop. The proposed mobile solution would, for example, provide technicians with mobile access to technical data thus increasing productivity.
Industrial Manufacturer, Maintenance Services	This industrial manufacturer has trialed the use of mobile technology to improve the productivity of its service technicians, for example by automating the procurement process. Historically procurement has been undertaken via call center agents; the mobile solution moves this to mobile-enabled PDAs (Personal Digital Assistants).
Major defense organization, Maintenance Services	The organization is aiming to reduce the average downtime of its high value plant. The solution under trial allows technicians with wireless PDA access to technical information, job allocation and procurement.

SOURCE: DELOITTE RESEARCH, 2001

STEP 1: IDENTIFY POTENTIAL BENEFITS AND APPLICATIONS

Enterprises should first review their processes to identify where speeding the flow of accurate, relevant information will deliver benefit. Companies should also develop their understanding of the mature mobile and wireless technologies available today. Enterprises are then in a position to determine which of the available technologies can speed the flow of information.

RAC, Sears and Volkswagen have all improved their competitive position through deploying mobile and wireless solutions. Their applications appear simple, and the amount of data exchanged is small in size. But in all cases, the benefit from mobile technology has been substantial, as the information sent or received is critical:

- For RAC, an automotive services company, GSM mobile allows its engineers' evaluations of used cars to reach customers more quickly. Previously engineers had to carry the forms back to base, from where they would be mailed out.
- For Sears, a major department store, customer orders of large goods were communicated from the till to roaming operatives in the storeroom instantly. Previously a staff member would have to carry the order through.
- For Volkswagen, a major vehicle manufacturer, mobile technology means it can identify nearly finished cars within a voluminous parking lot much more rapidly. Previously staff would have to search on foot for the car.

More background on these examples is provided in Figure 2.

FIGURE 2: IMPROVEMENTS IN INFORMATION FLOW ENABLED BY LIVE MOBILE AND WIRELESS IMPLEMENTATIONS

RAC is a UK based organization that offers a range of services to car drivers. One service offered to potential buyers of used cars is a comprehensive, impartial examination undertaken by a RAC engineer. RAC's engineers enter the results of each of the 160 tests undertaken on a touch screen, mobile enabled Personal Digital Assistant (PDA). The assessment is relayed via GSM to its central office, where results are printed out and then mailed to clients. Previously engineers would submit handwritten forms whenever they returned to their office. Occasionally rain affected the legibility of forms. The mobile and wireless solution allows accurate assessments to reach each vehicle's prospective purchaser far more quickly than via paper based processes

Sears, a chain of US department stores, uses Radio Frequency (RF) technology to instantly communicate orders for bulky items (such as garden tables) from the till to staff in the storeroom. A message is sent to a mobile device, incorporating a printer, strapped on the belt of storeroom operatives. Mobile communications allows the information to reach an individual, who would typically be moving around the storeroom: fixed communications would oblige operatives to return to a fixed point within the storeroom. Previously a staff member would have to carry the order through. The accelerated communication ensures that the right item is waiting for the customer at the designated time of collection.

Volkswagen, a global vehicle manufacturer, uses RF technology provided by Indentec Solutions to speed the collection of cars from a parking lot with thousands of cars to its flagship showroom. A RF tag, the size of a plane ticket, hangs from the rear view mirror in each car in its parking lot. When a car is ready for collection, a specially equipped van drives through the parking lot. When the van nears the target car, a light on the RF tag flashes and a horn sounds in the car. Previously staff would have to search for the car on foot.



SOURCE: DELOITTE RESEARCH, 2001

STEP 2: QUANTIFY BENEFITS

Quantify Productivity Benefits

There are two phases involved in assessing the benefits of wireless and mobile solutions: measuring the productivity gains, and identifying and sizing the other performance benefits.

Significant productivity gains can be realized, as demonstrated in RAC, Sears and Volkswagen cases.

- RAC's engineers now save 20 minutes in compiling each assessment. Engineers can now spend a greater proportion of their time engaged in technical assessment - their core competence - rather than processing paper. At present 160,000 inspections are undertaken per year using this solution, implying a saving of over 53,000 hours per year.
- Sears eliminated the need for the job of shuttling orders between the till and storeroom staff - a task that had provided little or no added value in over 700 stores. This frees staff to spend a greater proportion of their time on activities that add to company value.
- Volkswagen removed the need for a team of nearly 50 staff whose sole task was to search on foot for cars awaiting collection. Overall it calculated that its mobile and wireless solution enables it collect cars four times more efficiently than before.

Early results from selected companies undertaking trials of mobile and wireless solutions are equally impressive. The following are a selection of productivity enhancements measured:

- A high technology vendor has found that its mobile and wireless solution for field technicians could remove on average one hour per day in administration. This is equivalent to \$25,000 potential additional revenue per year, per employee.
- An industrial manufacturer found that mobile enabling the parts ordering process for field engineers could save them 15 to 20 minutes per day. Assuming a commercial billing rate of \$100 per hour, this would represent some \$8,000 additional annual revenue, per employee.

FIGURE 3: PRODUCTIVITY GAINS REALIZED BY ORGANIZATIONS TRIALING MOBILE AND WIRELESS SOLUTIONS

A major high technology vendor provides technical support services both on a charged and a warranty basis. Time and materials reporting for field engineers has been paper- and phone- based, an approach that implies some two hours a day in paper work, and 30 minutes on internal phone calls. Engineers have only spent a quarter of their time on actually fixing the problem. The vendor is testing an electronic time and materials system, based on a mobile-enabled Personal Digital Assistant (PDA), for its field engineers. Trials have shown that an engineer could save on average one hour per day, through a reduction in administrative processes. Assuming a commercial billing rate of \$100 per hour, this is equivalent to \$25,000 potential additional revenue per year, per employee. The firm employs thousands of engineers worldwide.

An industrial manufacturer provides maintenance services via a team of field engineers. The proposed mobile and wireless based solution comprises a range of functionality, including streamlining of the procurement process. Engineers may require a part to complete a repair. Previously engineers had to call into the office to order the part, a process that tied up both the engineer and the call center agent. The solution moves the process to a mobile-enabled PDA, accessing central information systems over a packet cellular network. In trials, the enhancement to procurement alone has saved engineers 15 to 20 minutes per day, and has reduced the requirement for call center agents to deal with the mundane process of accessing stock information.

A national defense organization needs to maximize the battle readiness of its high value, high technology fleet. The proposed mobile and wireless solution equips engineers with PDA based access to updated technical databases via Wireless LAN. The solution means that engineers can access detailed reference information on the fly, rather than having to return to a central location, download relevant information, print out and then return to the machinery. The solution also allows job information to be sent directly to the individual, rather than having to wait for the engineer to pick up this information. Results from the trial suggest that plant downtime can be reduced from between anything between 36-140 days to a range of 5-15 days.

SOURCE: DELOITTE RESEARCH, 2001

- A defense organization testing mobile enabling of plant maintenance (job allocation, database access, parts procurement, quality assurance), found that average plant downtime could be reduced from 88 days to ten days.

Further background on these trial solutions is provided in Figure 3.



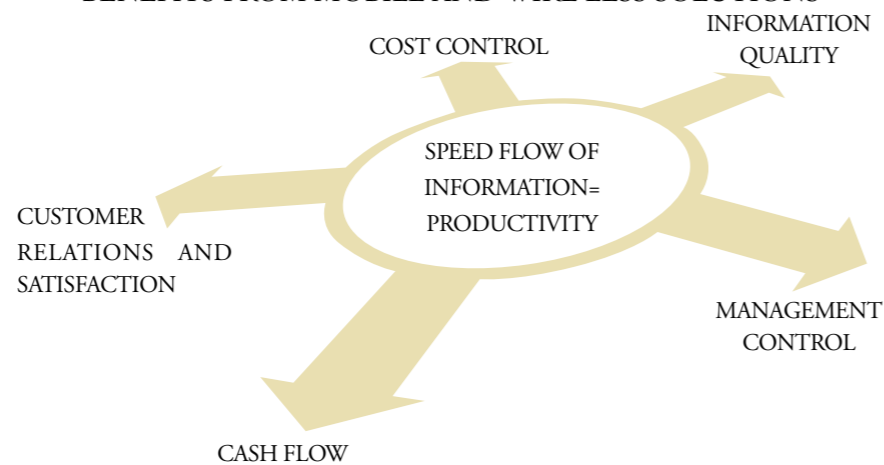
Quantify Additional Performance Benefits

Enterprises developing business cases for mobile and wireless solutions must consider, and size, the additional potential performance benefits beyond productivity. These will vary on a case-by-case basis. Some of the additional performance benefits can be significant – as is shown in the examples below – and could be the determining factor in an investment decision.

The key additional performance benefits we have identified can be summarized as follows:

- **Information Quality:** Information is exchanged electronically between a mobile device and a database, over a mobile/wireless connection, rather than dictated. For one company, the resultant improvement in billing accuracy contributed to a 50 percent reduction in revenue leakage.
- **Cost Reduction:** The solution can allow tasks to be eliminated, reducing not only time but also the costs associated with those tasks. For one enterprise, this meant fewer journeys for field engineers, leading to an overall 20 percent reduction in fuel bills.
- **Cash Flow:** Faster flowing information can speed the invoicing process. In one trial, this implied a one-time cash flow benefit equivalent to eight percent of the total value of billings.
- **Customer Relations and Satisfaction:** More accurate and more timely information can be used to address customer inquiries, and to improve customer delivery processes. In the example we analyzed, this implied a significant reduction in error rates.
- **Management Control:** The solution improves management access to accurate, up to date information. For one company this helped the analysis of production flow.

FIGURE 4: PRODUCTIVITY AND ADDITIONAL PERFORMANCE BENEFITS FROM MOBILE AND WIRELESS SOLUTIONS



SOURCE: DELOITTE RESEARCH, 2001

FIGURE 5: ADDITIONAL PERFORMANCE BENEFITS FROM MOBILE AND WIRELESS SOLUTIONS

INFORMATION QUALITY

Exchanging data wirelessly can improve information quality within an enterprise. Using mobile data can simply mean that information is sent to a device, rather than dictated to a mobile worker. This is quick and accurate. In the trial for the high-technology vendor, an immediate benefit of the solution is that office staff no longer need to dictate job details to field engineers. Instead information is sent electronically, over a cellular mobile link, to the engineer's mobile-enabled PDA. Upon completion of the job, updated information, including additional comments related to the task, is copied directly onto an electronic invoice and sent back to the office.

Previously, some customers experienced billing problems due to errors in transcription from the engineer's written notes into a billing system, resulting in customer dissatisfaction and lost revenue. The company expects the solution to eliminate cases of mistaken billing. Additionally, with the paper-based system, some customers could not be billed simply because the wrong billing address was submitted. The high-technology vendor expects the mobile and wireless solution to reduce revenue leakage due to incorrect addresses by 50 percent.

COST REDUCTION

Cost reduction benefits from mobile and wireless solutions are not limited to reducing time required to undertake a particular task. In some cases a task or activity itself is removed. The industrial manufacturer providing maintenance services cited in the previous section found that its solution reduced fuel costs by 20 percent.

The mobile and wireless solution improved the field engineer's visibility of information held on central systems and central office staff have improved their communication with engineers out of the office. As a result the typical number of weekly visits to base made by a field engineer has fallen from three to one.

CASH FLOW

The impact on cash flow from simply accelerating the movement of information within a company is impressive. The high technology vendor's trial found that when field engineers submitted an electronic time and materials form over a mobile connection, from the client site, the average time from job completion to invoice dispatch plummeted from 45 days to one week. One impact of this improvement is a one-time cash flow benefit equivalent to eight percent of the total value of billings.

CUSTOMER RELATIONS AND CUSTOMER MANAGEMENT

Customer relations and customer management can be improved by mobile and wireless solutions. For Volkswagen, its use of RF tags improved its ability to deliver a fully completed car to its customers at the time of collection.

First the RF tags speed the process of identifying the car from the parking lot. Second information held on the tag about any outstanding work required - such as fitting any accessories not installed during routine manufacturing - has reduced the chances of an unfinished car being presented to the customer. The tag also holds information on the completion of other final delivery tasks, such as cleaning, polishing and fuelling.

As a result of the system, the proportion of incomplete cars being presented to customers has fallen to nearly zero.

MANAGEMENT CONTROL

Management Control afforded by mobile and wireless solutions is based on the resulting improvement in information quality and flow. For Volkswagen, this meant an improved management ability to identify bottlenecks within the final preparation process for cars being readied for delivery to customers. The mobile and wireless solution measured how long each of the final preparation processes takes; one of the bottlenecks identified and addressed was the fuelling process.

SOURCE: DELOITTE RESEARCH, 2001

STEP 3: CALCULATE ROI AND PAYBACK



Productivity gains, cost reductions and other benefits from mobile and wireless solutions are all positive news, unless - and this is a fundamental caveat - the investment required to attain these benefits is too high.

In today's demanding economic climate, acceptable payback periods are being pushed steadily down, and the expected return on investment is rising. Mobile and wireless solutions can pay for investments within even these demanding timescales, and also deliver triple-digit five-year returns. All the case studies we have considered show or estimate returns on investment in less than two years (see Figures 6 and 7).

FIGURE 6: ACTUAL OR FORECAST PAYBACK PERIODS FOR SELECTED MOBILE AND WIRELESS SOLUTIONS

Enterprise	Pay back period
Volkswagen	Less than one year
High Technology Vendor	Less than one year (based on trial)
Vehicle Manufacturer	17 months (based on assessment)
Industrial Manufacturer	20 months (based on trial)

SOURCE: DELOITTE RESEARCH, 2001

FIGURE 7: FORECAST FIVE YEAR RETURN ON INVESTMENT FOR SELECTED MOBILE AND WIRELESS SOLUTIONS

Enterprise	Five year return on investment
High Technology Vendor	>1000 per cent
Vehicle Manufacturer	289 per cent
Industrial Manufacturer	100 per cent

SOURCE: DELOITTE RESEARCH, 2001

Understanding the return on investment numbers requires context. An idea of the productivity and additional performance benefits driving the return on investment periods is provided in the subsequent paragraphs.

The realized benefits for Volkswagen, for example, are due to its ability to remove the need for staff whose job would be to search on foot for cars. The cost of the deployment was less than what the equivalent one-year labor wage packet would have been. If Volkswagen had included additional benefits, such as the positive impact on customer satisfaction, the return of investment would be higher still.



The impressive rate of return forecast by the high technology vendor's trial was due to revenue recognition, revenue collection and labor savings. The mobile solution minimizes the revenue leakage suffered through the paper-based time and materials billing process. Previously forms were lost, incorrectly filled out or simply submitted too late. Revenue was lost both from unbilled time and from materials that were never charged to the customer. The mobile solution improved revenue collection by increasing information accuracy. Labor savings were made possible by reducing engineers' administrative workload.

The return on investment period for the industrial manufacturer is based on joint deployment of both a core CRM system and the provision of a mobile and wireless solution for the field service team. The organization of information driven by the CRM implementation enables relevant information to be exchanged with the field engineers; the mobile and wireless solution exploits some of the value offered by the CRM system. The major benefits driven by the mobile and wireless solution are:

- Productivity based enhancements, through engineers being able to undertake more jobs per day.
- Overhead reductions, through reducing the requirement for call centers.
- Improvements in cash flow, as a result of invoices being processed more quickly.
- Reductions in transportation costs, through staff reducing the frequency of visits to base.
- Rationalization of the procurement process.

The estimated benefits for the vehicle manufacturer are expected from personnel efficiency: from staff completing more jobs and from the availability of self-service technician applications. Other areas of benefit for the vehicle manufacturer result from improved uptime and quality improvements.

In developing their business case, enterprises must include all additional performance benefits from the mobile and wireless solution. The impact of these additional performance benefits could make or break the business case.

CONCLUSIONS AND RECOMMENDATIONS

Enterprises should consider mobile and wireless solutions as essential tools for improving competitive advantage. Mobile and wireless may not be appropriate for every company process, but it is likely that at least one key application, if not several, would benefit from the application of a mobile technology. It may be a reduction in travel, or the removal of paper work. Indeed it is likely to be a simple change; but the impact can be significant. We estimate that a mobile solution could improve the efficiency of a typical field worker by 25 percent. This considers the primary impact only; the cases referenced in this paper have shown multiple secondary benefits can also be attained.

Mobile and wireless should not be dismissed as smoke and mirrors. This applies for technologies that are available and mature today. Mobile and wireless enterprise solutions, based on today's technology, can deliver even recession-grade business cases.

Deloitte Research recommends that enterprises should:

- Differentiate between mobile hype and mobile reality.
- Understand the scope of mobile and wireless technologies that afford robust quality today.
- Determine where weaknesses in current business processes exist.
- Apply our recommended three steps of *identify*, *quantify* and *calculate* to assemble the business case.
- Review developments in mobile and wireless technology.

Mobile and wireless can deliver a vital kick to a company's performance that could see it through recession, and ready it to exploit growth periods. Mobile video conferencing may be hype, but mobile and wireless as a tool for driving revenues and margins certainly has trousers.

About the Author

PAUL LEE

Tel: + 44 20 7779 6014

e-mail: paullee@dc.com

Paul Lee is a Director at Deloitte Research, based in London. His research focuses on mobile and wireless issues for service providers and enterprises. Paul is a guest lecturer at London Business School and frequently quoted in leading business publications such as the Financial Times and Wall Street Journal

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For more information about Deloitte Research, please contact the Global Director, Ann Baxter, at +1 415 268 1026 or via e-mail: abaxter@dc.com.

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For Further Information, Please Contact:

GLOBAL

J BRADFORD BRANCH

Tel: +44 20 7779 5582

e-mail: bbranch@dc.com

IGAL BRIGHTMAN

Tel: + 972 3 608 5500

e-mail: ibrightman@deloitte.co.il

AMERICAS

JOHN LEVIS

Tel: +1 469 417 3185

e-mail: jlevis@dc.com

PHILIP ASMUNDSON

Tel: + 203 708 4860

e-mail: pasmundson@deloitte.com

EUROPE

FABIO TROIANI

+39 02 655 661

e-mail: ftroiani@dc.com

GRAHAM RICHARDSON

Tel: +44 20 7007 3349

e-mail: grrichardson@deloitte.co.uk

ASIA PACIFIC

ARTHUR OWEN

Tel: +852 2852 1001

e-mail: artowen@dc.com

YOSHITAKA ASAEDA

Tel: +81 3 3457 1841

e-mail: yoshitaka.asaeda@tokyo.tohatsu.co.jp