Mobilizing the Enterprise

The Business Value of Mobile Computing
Summary

Mobile computing technology is driving a significant change in the way distributed systems support business activities; the emphasis is shifting from the server side of the equation out to the mobile client device.

This paper describes how IONA’s Mobile Orchestrator, along new hardware, software, and standards, are making the full set of business computing capabilities available to “occasionally-connected” end users.

This will result in far-reaching change to the experiences of the mobile workforce, because the location of workers is now irrelevant to the business activities they want to perform. Productivity is enhanced by the “asynchronization” of data and applications, because applications operate as they always have, except that the distinction between “remote” and “local” users disappears. Empowering workers in this way in turn provides financial and competitive benefits to the enterprise.

Mobile Orchestrator supports a variety of new and old technical approaches, because it provides open interfaces to Web services, file systems, Java applications, and hooks for custom code.

MO can be configured to act intelligently based on data type or content—or it can simply behave as a "dumb pipe" and rely on the application to make decisions. MO is equally proficient at sending native application data, or at sending asynchronous requests and replies as SOAP messages.

This paper presents several business scenarios that illustrate how mobile technology in general, and Mobile Orchestrator in particular, can provide business benefits and advantages to the enterprise.
Introduction

We now have a good idea about “the next big thing” in information technology: It is a sea change that involves internet technologies, the core business systems of the enterprise, and most importantly, the end users of business applications and computer-mediated business processes.

The next big thing can be described quite simply as mobilizing enterprise IT, and its primary focus is enabling the full set of business computing capabilities for mobile—or “occasionally-connected”—end users. New technologies and approaches can now erase the most problematic differences between the mobile computing experience and the use of business systems over a permanent, high-speed connection.

The most visible change will be to the experiences of the mobile workforce; the location of workers is now irrelevant to the business activities they want to perform.

Of course, this will also benefit the enterprise itself—how could it not? — but the industry is just beginning to understand how more direct enterprise benefits may be realized in practice. But the indirect benefits of providing full business system capabilities to mobile workers are undeniable.

In August 2002, Software Magazine’s Application Development Issue presented “The Business Case for Wireless Software Applications in the Enterprise” by Iain Gillott of iGillottResearch. This article made the following points:

“The results show that given the right circumstances, wireless and mobile applications can be very productive and efficient, even today when the market is in an early stage.

While skeptics may say that implementing a wireless and mobile application is not worthwhile, the results show that there are some very real financial
benefits, and that many companies are realizing increased competitive advantage through the use of mobile applications.”

While it is a straightforward extrapolation to say that the reach of enterprise core business systems will gradually be extended to include mobile workers, this change to the business environment is likely to have far-reaching consequences. It is one thing to enable a mobile worker to accomplish tasks that must now be done at the office. It is quite another thing to understand fully how that capability might affect business operations — and competition — across many industries during the coming decade.

But consider: If Company A’s sales force uses mobile devices that contain up-to-the-minute information on all aspects of products and pricing, while Company B’s sales force does not; if Company A’s service representatives can submit a completed, validated form even though not connected to the business systems that process it, and Company B’s people cannot; and if Company A’s systems automatically “push” such information to workers’ mobile devices, while Company B’s workers are the ones responsible for locating, identifying, and making appropriate use of such information... Well, would you rather be running Company A or Company B?

The companies that took part in the iGillotte research are well aware of the competitive advantages that result from wireless operation:

“Many companies today are making use of wireless and mobile solutions — they are just not talking about it. Given the very real financial benefits, with the resulting competitive advantage, many companies we approached were reluctant to talk about their solutions and the benefits they were seeing. They simply did not want their competitors to see what they were doing, call up the same vendors, and say “Do for me what you did for them!” For this reason, some companies we profiled wished to remain anonymous.”
“The naysayers will say there are no real quantifiable benefits to wireless and mobile applications — they are wrong. One hundred percent wrong. All of the companies interviewed for the study identified some benefits with their solution and the majority had quantified the benefits, either in terms of payback period, dollars saved, or increased revenues.”

IONA’s Mobile Orchestrator enables enterprises to focus on presenting end-users with the best and most efficient business applications, no matter where these users are and no matter what client devices they might be using. Thus MO can help your business realize the same kinds of benefits seen by all companies in the study.

This a genuine and fundamental change in the way distributed systems support business activities. For many years, IT efforts have concentrated on the server side of distributed computing: providing integrated application services and back-end data to clients that were connected via high-speed links. The focus on the server side was necessary because the vast majority of applications used a tightly coupled, synchronous communication model. Applications were constructed with this model as the design center, but they did not work very well with mobile, occasionally connected clients.

People have attempted to solve this problem in a number of ways, including “thin client” computing, web browser-based applications, and various data caching strategies. But these approaches do not change the inherent disadvantages of using synchronous, tightly bound, client/server applications in a mobile environment. While browsers may work on many devices, and are therefore a natural GUI choice for vendors, they do not give the same look and feel as “native” applications, and are not necessarily the best choice from the user point of view.

But the pieces of the mobile computing puzzle are falling into place, and today’s technology drivers provide many of these, including:

- Service Oriented Architectures
Looser coupling between client and server components thanks to advances in asynchronous messaging technology and self-describing data, based on XML and/or SOAP. Powerful, cheap, and commonly available “commodity” mobile client hardware

Commonly-available high-bandwidth networking infrastructure and connectivity

Standards such as Web Services, 802.1x, and WPA

These technology advances will be instrumental in providing “unconscious connectivity” — meaning the ability to perform useful business functions without having to consciously access the server — and the ability for systems to manage connections, updates, and synchronization automatically and intelligently, without user intervention and interruption. Mobile Orchestrator mechanisms for accomplishing this are illustrated in Figure 1.

As Figure 1 shows, the “Orchestrator” components of MO manage the client- and server-side metadata, as well as the application logic that controls business processes whose participants — in the context of a mobile workforce — are separated in time and space. The “Mobile” in MO provides user-transparent adaptation to the available connectivity and bandwidth, with built-in reliability and security.

As a result of all these innovations, industry experts have begun to talk about “reversing the polarity of the Internet,” meaning that the emphasis will change from the server side of the equation to the client side. A key implication of this is that the measurement of an application’s usefulness for the business will include the richness of the user’s computing experience. No longer will the primary concern be the efficient use of the server — rather, mobile systems will radically improve the efficiency of users, in addition to significantly offloading the processing burden of servers.
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This recognizes the fact that mobile devices are really mobile computers connected to the Internet, capable of acting in a decentralized manner. Tying business applications to the availability of the server, and requiring mobile computer users to adjust to a single style of GUI, not only wastes the capacity of mobile computers, but also creates barriers to the adoption of mobile solutions. IONA’s Mobile Orchestrator is designed to help remove those barriers. And with the help of our System Integration and OEM partners, MO can mobilize the entire enterprise as it empowers mobile workers.

The following sections describe the capabilities of Mobile Orchestrator—as well as some of the new capabilities that a mobile workforce brings to the enterprise.
Mobile Computing in the Business World

We know the technology for mobilizing the enterprise is available today: A broad range of mobile devices is available. Infrastructure and their underlying standards are ready. And connectivity is becoming "acceptably ubiquitous" and inexpensive. But what are the real business advantages to be obtained from a return to “rich client” computing?

Moving application logic from the server to the client device does two important things:

- The client can do useful work when no connection is available. A worker never sees a "service unavailable" message because the service is running on her device.

- It reduces the load on servers because only results are sent back; processing is done on the client. And if the system is truly asynchronous, there is no need for instant response, and the server can process those results when ready.

And this second point underlines an extremely important proposition: mobility is about productivity, not connectivity. Productivity is enhanced by virtue of the “asynchronization” of data and applications. By using asynchronous messaging technology to manage information in the background, applications appear to operate as they always did. The user is never forced to perform any manual synchronization tasks (or to wait for data to be transferred).
The orchestration framework MO provides is analogous to a very lightweight client-side message broker and/or application server. Users never need to install infrastructure components—like a web server or database—on the client. MO’s lightweight, open orchestration framework can be configured to act automatically upon receiving arbitrary content. This approach helps minimize the risks in building new applications from scratch, and in assembling new applications from existing business functions. Application designers want to write as little client-specific code as possible in order to avoid becoming locked in to a particular choice in hardware, software, or infrastructure. Mobile Orchestrator addresses this requirement by providing richness and flexibility via configuration on the client side, rather than by hard coding, while still providing the ability to re-use server-side business logic and integration constructs.

With MO’s configuration-based approach, system designers need not concern themselves with client device idiosyncrasies, nor about the many new protocols, transports, standards, and languages that are springing up in support of mobile computing. While the server’s connection environment is fixed, the client’s connection environment may change frequently and dramatically. Thus MO allows the server to adjust transmission characteristics based on the current characteristics of the client’s changing connection environment.

Thus system designers need not worry about transient network failures. Mobile Orchestrator lets designers ignore the fact that in mobile computing, the transport mechanism will be available intermittently or not at all some (or even most) of the time. An application cannot rely on the network and VPN to provide all the normal support mechanisms like routing, fragmentation control, reliability, security, and retries—but it can rely on Mobile Orchestrator to do all this, and in a device-independent fashion.
MO can also mediate the management of client software. Once installed on a device, MO can update itself, and can be used to update other software on that device. Thus MO can iteratively and incrementally continue to add richness and value to client applications, which in turn adds value to the corporate bottom line. And the payback period for mobilizing the enterprise is remarkably short. As stated in “The Business Case for Wireless Software Applications in the Enterprise” by Iain Gillott:

“Factors that affect the payback period, in addition to the obvious costs and benefits, are:

- If users are able to use their existing mobile device without change or just by adding a wireless modem.
- If the application can be effectively used with a mobile handset compared to the need for a PDA.
- If the mobile system is an extension of an existing corporate or enterprise application.

It was specifically stated by several companies, particularly large ones with a high number of transactions, high value transactions, or time critical services, that any system that can increase the flow of information and reduce costs, even by a few cents or minutes per transaction, makes a large difference in the bottom line.”

### Mobility and Service Oriented Architecture

Service Oriented Architecture (SOA) is an approach to designing software systems that enables maximum flexibility and extensibility. A service-oriented approach is a superior approach to integration as well, and for the same reasons.

As mentioned above, the vast majority of applications use a tightly coupled, synchronous communication model, which works very well
inside the firewall, but encounters problems in the dynamic world of mobile and client-device computing.

This is confirmed by the experience of incorporating Web services into SOAs. Because a remote request over the Internet is between a thousand and a million times more expensive (in terms of network latency) than making a local call, a Web service must provide more value and pass more information in a single request. Thus Web service interfaces deal with providing a business service, rather than with getting and setting multiple data values. Web services typically communicate via a single message exchange of a self-describing XML document, so as to minimize the number of network messages.

But the Web service approach does not address the problem of accessing traditionally synchronous services over the Internet. Mobile Orchestrator solves this problem by enabling a dynamic Service Oriented Architecture, over an unreliable and unpredictable network. Mobile Orchestrator provides a traditional SOA façade to provide support for services that might not be available at any given time and might potentially be unavailable for a long period of time.

Mobile Orchestrator “plays nicely” with new and old approaches by providing open interfaces to:

- Web Services
- File systems (typically for legacy systems; MO’s mailbox paradigm maps intuitively to many systems, and MO’s Catalog provides the basis for integration with existing portal systems)
- Java (which is especially good for new systems that are being built with mobility in mind)
- Custom code (you can design your own MO interface for your own requirements, for example an interface to an LDAP server)
Perhaps more importantly, Mobile Orchestrator is neutral with respect to
data types and data formats. MO does not require that data be mapped
into and out of a database, for example, which might require significant
work on the server side. Instead, MO can be configured to act
intelligently based on data type or content if desired – or it can simply
behave as a "dumb pipe" and rely on the application to provide the
intelligence. MO is equally proficient at sending application data, or at
sending asynchronous requests and replies as SOAP messages. The
importance of integrating mobile solutions with existing overall
enterprise architecture/infrastructure is undeniable. As stated in “The
Business Case for Wireless Software Applications in the Enterprise” by
Iain Gillott:

“Architecture: Most of the issues raised during implementation were
around the architecture. Since the mobile architecture must interface with
the enterprise IT systems, it is a critical element (at least until wireless and
mobile capabilities are built into the core of every IT system). Issues raised
include:

- The need to control the volume of mobile transactions, so as not to
  overload the mobile system.
- The need for open standards was stressed several times, so that the
  enterprise can leverage existing investments in e-business and e-CRM.
- The need to focus on systems that can provide much of the applications
  in the form of canned or software-based tools to reduce the need for
  custom programming and maintenance.
- The need to implement core infrastructure that can be easily, centrally
  administrated by the IT operations group or outsourced.”

This paper has thus far covered the general benefits to be gained in
mobilizing the enterprise. The following sections describe more specific
business scenarios in which Mobile Orchestrator can add value.
Mobile Business Scenarios

The following sections present a few of the many innovative business uses for Mobile Orchestrator.

Deploying New Services to Client Devices

Imagine that your company wants to inform all its traveling employees that a company-wide frequent flyer bonus mileage agreement has been struck with Airline A. Without user action or knowledge, the details of interacting with this new program are pushed out to traveling employees’ notebook computers and PDAs. Any available connection is efficiently utilized to download the information needed to reconfigure the client-side Mobile Orchestrator agent, and make it aware of the remote service that supports this program.

From this point on, MO transparently manages client relationships with that service, which is actually hosted by Airline A. In this way, employees always have the latest information about their frequent-flyer points and discounts, even when they aren’t connected.

In the future, your company might join an affinity program with Hotel chain B. In the same fashion, the company can empower all travelling users with the details of the new service—here again, the affinity partner, not the company, hosts the service.

This is only one example of how Mobile Orchestrator can add value to client devices incrementally, by automatically uploading new services that are available to mobile users.

Making Mobile Workers More Productive

Today, we are seeing an ever-expanding set of business and service activities performed by mobile workers, each of which can be made more efficient by supporting its use by occasionally connected users. Examples include professional/medical visits, governmental/regulatory tasks and
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The following example is about making the job of Visiting Nurse easier and more productive, but there are numerous other activities that can be supported in this way, including other professional/medical visits, government tasks and duties, and of course, sales and support.

A Visiting Nurse (VN), working for a US health insurer, may have to fill out 50 or more different forms, depending upon the type of patient and visit. These forms are all available online, but only when a connection is available to the web server—not when the nurse is out on the road and needs them most.

Today, the only option is to fill in the paper forms manually and re-enter them later on a connected computer. In some cases, companies even fax the filled-out forms to other countries, where data entry workers enter them manually overnight. This of course requires dealing with all the problems, expenses, and errors implied by geographic separation and double data entry.

It would be a great advantage to give VNs the ability to carry these forms (and the logic to validate and pre-process them) on the road with them. This would avoid the additional overhead, expense, and errors involved in duplicate entry. But it might take more than a year for a development team to port this large set of web forms and the associated processing logic into a format that can run on a handheld or tablet PC. And of course by the time this task is completed, both the server and client platforms (hardware and OS) may change significantly.

To avoid the time and expense needed to port the entire application, Mobile Orchestrator’s client-side Orchestration framework can be deployed today on the VN’s mobile device, along with the logic needed to allow the VN to enter, pre-process, and validate forms offline.

The Occasionally Connected Company?

The business scenarios in this section illustrate the indirect enterprise benefits derived from an increase in mobile worker capabilities and productivity. But if we think of mobility as the driver of a fundamental paradigm shift—that “change in the polarity of the Internet”—then other possibilities come to mind as well. Imagine a company that presents a “virtual storefront” run from a single mobile notebook computer.

The mechanisms of a business are the processes and forms that direct transactions with customers. With MO providing asynchronous support for these capabilities, a company does not need to provide a permanent e-commerce façade.

Instead, an occasionally-connected company needs only to outsource a minimal level of middle-tier infrastructure (say, a web server and an ftp server)—enough to ensure that the MO client software and a lightweight sales application can be downloaded to a customer’s computer, and that a customer inquiry or order can be captured, even if the company laptop is not connected at same time as the customer’s.

This is obviously a much simpler and less expensive solution than creating and maintaining a full-blown e-commerce website. And because the sales application runs on the customer’s machine, it can provide better performance and even a nicer appearance than a traditional website.

Thus Mobile Orchestrator lowers the barriers to business success by reducing the cost and complexity of IT solutions.
With the MO approach applied to the most commonly used forms, the VN can immediately become more productive—while the IT shop or system integrator can focus on “mobilizing” the next most-used set of forms. To the nurse, the application looks and feels just like the familiar web-based form, except that using it is much faster because it is running locally rather than over a connection to a server.

In a short time, the ability to enter and process the next most important set of forms is transparently pushed out to the VNs’ mobile devices. When VNs check their computers, they are notified that they can now work offline with additional forms. No retraining is required because no user interfaces are changed. The only visible change is ever-improving productivity.

The VNs are delighted because the client application hasn't changed. Application developers and system administrators are delighted because from their viewpoint, all that has changed is some XML configuration files, and the addition of some client-side HTML and JavaScript that is now running on the client, instead of the server.

In this way, MO can incrementally make workers more productive, while minimizing or eliminating the technical tasks of porting the application to mobile devices and administering them. Re-training is avoided completely.

But the potential productivity increases for VNs—or for any type of field worker—are limited only by the imagination. Consider the improvement in VN efficiency to be gained by having newly scheduled appointments automatically delivered to the VN’s notebook computer or PDA.

For VNs and other field workers, every minute spent managing electronic paperwork is a minute less spent on the jobs they’re trained and paid to do. Being at the right place at the right time with access to the right information is essential to doing an effective job.
And it is equally important that the information recorded by mobile field workers—during their visits, repair calls, and inspections—be available on a timely basis to the rest of the company.

Every minute these workers spend dealing with connectivity issues or manual data synchronization is time not spent on their primary function. Mobile Orchestrator, configured with appropriate mobile hardware and software, can save time and money by automatically solving connectivity and data delivery/synchronization problems.

**Managing Content Delivery Over the Internet**

The number of different types of information delivered to mobile devices today—from text messages to still pictures to video—is staggering and it is increasing. This trend is visible worldwide and there is no end in sight.

For example, an Italian telecommunications firm provides a very popular service to football (soccer) fans. Subscribing users receive a one-minute video on their cell phones whenever their football team scores.

Because the telecom company’s current network has no multicast or broadcast capability, the server must manage the list of about 300,000 recipients and publish a copy of the video to each subscriber individually. This places a huge load on the network and servers, and may cause delays in what is a very time-critical service.

In contrast, Mobile Orchestrator allows the server to publish one copy of the video to a channel that represents fans of the goal-scoring team. The server’s job is complete at this point—Mobile Orchestrator manages the list of recipients and the downloading of copies of the video to individuals.

Or consider the simple act of sending digital photos to a friend. A naïve user would likely send e-mail with photos as attachments. This can cause any number of problems, including excessive download time, storage issues on the mail server, and figuring out where to store the photos—
not to mention the inappropriate use of corporate systems, if the pictures are sent to a work-related e-mail account.

An expert user might take a different approach and publish the pictures on a private web site, but this too can be problematic. It is time-consuming for the publisher to post photos. Here too, the recipient may not want to view the photos while at work and viewing from home might be over a low-bandwidth connection. In any case, this approach still requires e-mail access, if only to provide the web site address. This might still be an irritation, even if the recipient still remembers the address at the time he wants to view the photos.

It is much easier to perform this kind of task with Mobile Orchestrator. The photo sender can simply tell the Mobile Orchestrator Service running on his computer to send the photos to one friend, or list of friends, who have subscribed. Mobile Orchestrator efficiently manages the secure, reliable delivery to the target computers, taking into account the state of connectivity. On recipient computers, Mobile Orchestrator places the photos directly into a photo album folder (and optionally notifies recipients). Best of all, the photos are available locally when the recipient wants to look at them.

**Sales and Inventory Control**

Imagine a sales force that always has the latest collateral, presentations, and price lists in-hand. A salesperson would be delighted to know that his mobile device always contains the latest corporate information on product availability, pricing, and marketing. He would be even more delighted if he had around-the-clock access to the forms and business process tools for requesting follow-on visits, shipping evaluation products, or placing an order.

Here again, the enterprise benefits from this empowerment of the mobile worker. Both the enterprise and the mobile device user value the ability to enter and validate information on the mobile device, and in the background have that information delivered to and from the enterprise’s
servers—without worrying about connections, bandwidth, logging on, or synchronizing data.

The catalog model supported by Mobile Orchestrator provides such capabilities. Business documents are pushed out to the mobile devices, based on either a worker's choice to subscribe to material, or an enterprise directive that certain information be distributed to its workers.

In this way, user access to information on the client side is independent of the interaction between the client-side device and the corporate data repositories. This interaction takes place in the background and is invisible to the user.

**Training Kit In A Box**

Every enterprise faces the tasks of training new employees and providing current employees with up-to-date information about company policies and procedures. Maintaining the policy information that is applicable to all employees is a challenge, to say nothing of the training information required for people new to specific jobs.

While many companies try to keep training materials current, at some point it usually becomes the employees' responsibility to find the latest information—for example on a company's internal website—and make appropriate use of it. But searching for information is rarely the best use of an employee's time, and a mobile worker can't search the website on a slow or non-existent connection.

It would be a great advantage to have this type of information delivered to the user under the control of the enterprise and updated when necessary. Even better, when changes to policies or procedures are pushed out to client systems, the employee should be notified. Because an MO-based solution can be used to track user activity, employers benefit as well—from knowing that the information was delivered and consumed.
A system based on Mobile Orchestrator can do all these things and thereby provide employees with the equivalent of a mentor: someone who ensures that they have the information they need, when they need it, and who even tells them what to do with the information—wherever they happen to be.

With an MO-based system, a new employee can be given a notebook computer that is configured with all the information needed to carry out the responsibilities of a specific job now, and that can evolve as policies change, and as the employee’s responsibilities and experience increase.

For example, a new hire in the product development organization can be issued a laptop with information about company development procedures such as code management, coding guidelines, and check-in, build, and test policies. When these guidelines and policies are updated, the company knows that the information will be delivered to new and current employees alike.

**e-Government**

One of the most intriguing potential uses for mobile technology is in e-Government, which is the provision of computer support to improve communication between citizens and their official representatives—as well as communication among those representatives to help them perform their duties more efficiently.

Many governmental offices and agencies provide websites for disseminating information, and may even provide e-mail addresses for inquiries and expression of opinions. While these mechanisms are undoubtedly worthwhile, they have some of the same shortcomings described in commercial business scenarios above; specifically, it is the user’s (citizen’s) responsibility to discover how to find information and how to make views known to representatives.

Mobile Orchestrator can be used to improve e-Government. For example, a Website is fine for static information, such as the names of
representatives and officials in a given geographical area, their areas of authority and expertise, and even their voting records. But for more ephemeral information, such as proposals and their status, zoning and planning issues, and the like, the burden of keeping current falls on the citizen.

With MO, citizens can register interest in certain topics, or in measures that affect a particular location or electoral area, or in activities by a particular councilor—and have information that meets those criteria automatically pushed to their mobile devices as soon as it is available. And they could express their opinions on any of these matters to the proper representatives without having to find out their e-mail addresses or even who they are.

And MO allows an unprecedented level of control over information. For example, documents can be “sunsetted” with a time-out, such that they are automatically removed from client devices when they are no longer valid. Documents can be transmitted in encrypted form, and decrypted at an appropriate later time, e.g., when a contract takes effect. In this way, the information is pre-positioned in the mobile devices of the electorate and made readable at a later date—reducing the need to transmit large amounts of data in a small amount of time.

(Note that this feature is extraordinarily valuable in other contexts as well. Imagine the benefits to a marketing organization if it can pre-position sales collateral in notebook computers and be sure that the information will not be used before the time intended.)

Mobile Orchestrator can also provide advanced auditing capabilities, including receipt confirmation of information sent to representatives, reporting whether a message was actually read, and tracking the movement of documents throughout the system.

Members of government can of course use these same mechanisms, in much the same ways, to facilitate their internal communication as well.
This scenario stops short of claiming that mobile devices are ready to be used for “e-voting.” The security issues surrounding this topic are still being investigated and discussed, and a solution will probably not be found until mobile systems can fully support transactional semantics.

But the possibilities really are boundless, and they promise to bring a new level of efficiency to the operation of government and its interaction with the electorate.
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Conclusions

Mobilizing enterprise IT is about making the full set of business computing capabilities available to “occasionally-connected” end users. Empowering workers in this way results in very real financial benefits, and many companies have gained significant competitive advantage through the use of innovative mobile applications.

In this fundamental change to the way distributed systems support business activities—this “reversing the polarity of the Internet”—emphasis will change from the server side of the equation to the client side.

While MO’s configuration-based approach and inherent tolerance to transient network failures makes life easier for system designers and IT shops, mobility is about productivity rather than connectivity. Productivity is enhanced by the “asynchronization” of data and applications, because applications operate as they always have, except that the distinction between “remote” and “local” users disappears.

Mobile Orchestrator supports SOA, as well as other new and old technical approaches, because it provides open interfaces to Web services, file systems, Java applications, and hooks for custom code. MO can be configured to act intelligently based on data type or content—or it can simply behave as a “dumb pipe” and rely on the application to make decisions. MO is equally proficient at sending native application data, or at sending asynchronous requests and replies such as SOAP messages.

This paper presented several innovative business scenarios. The lesson to take from these is that no matter where you look, it is easy to find new and exciting uses for Mobile Orchestrator technology, and even easier to see the resulting benefits to the enterprise. Mobilizing the Enterprise is truly the Next Big Thing.