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The Value of Wireless Applications in the Pharmaceutical Industry

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An application with defined value is necessary for mobile and wireless technology adoption within the pharmaceutical industry. Applications with limited ROI or intangible benefits may be good ancillary solutions, but should not drive companies to implement wireless technologies. This document will help explore specific applications in the pharmaceutical industry and will build a strong argument for why these companies should begin to adopt wireless technologies.

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Background

Wireless devices, such as Personal Digital Assistants (PDA), are increasingly common in physician care and medical device arenas. Physicians are using PDAs to obtain and access formulary information and access customer care information, and most recently are beginning to use them for “e-scripting” – real-time, systematic prescription ordering direct to pharmacies. Medical device manufacturers are beginning to include wireless transmission capabilities into their devices to transmit relevant patient data to caregivers.

However, in the pharmaceutical industry, the applications are less clearly defined. There is a significant number of potential, broad applications such as in supplementing Sales Force Automation and Clinical Research and Development (R&D), but to date there are no specific applications that have taken the pharmaceutical industry by storm. Part of this is due to the historical stance of Pharmaceutical manufacturers to new technologies. These companies are relatively cautious when it comes to adopting new technology.

Wireless technology is considered by many analysts to be *the* next technological break through with a huge potential impact in the pharmaceutical space. According to a recent *eyeforpharma* survey (12/21/2000), “an overwhelming majority of respondents” agreed that wireless will be the “next big thing” to transform e-business in the pharmaceutical industry.

The challenge then is defining what it will take for this trend to begin making an impact. Most pharmaceutical companies regard wireless technologies as rather futuristic for their applications, and consequently for the time being, are content with “kicking the tires” in an attempt to see exactly what it might do for them. Several questions remain, such as:

- What kind of impact will wireless technology have?
- Why should I consider wireless solutions?
- When will they be viable?
- How can it help drive my company’s core business strategies and give me a sustainable competitive market advantage?
- How much will I have to invest in these solutions?
- What sort of return could I expect on this investment?

Wireless in the Pharmaceutical Industry

Wireless applications are still in their infancy across all industries, but none is so poised to be able to leverage this technology as the pharmaceutical industry. Although drug companies employ or contract with large numbers of mobile workers, the number of deployed applications utilizing this technology is far from pervasive. This opportunity is generally recognized, but the value has not been clearly articulated.

However, it is only a matter of time before the need will exist to deploy more wireless applications. The pressure will come from two primary sources: early adopters and your company’s own employees.

Market dynamics will force pharmaceutical companies to adopt the technology once early adopters realize the value of these applications. This is similar in concept to the “direct-to-consumer” marketing efforts that were for a long time discussed, but have only in the past several years propagated rapidly throughout the industry. But instead of market pressures, the

driving force to deploy wireless technologies will arise from physicians or other business partners who have adopted and embraced these services.

The other source of pressure will be from the pharmaceutical company's own mobile workers. As these employees become more dependent on PDAs, they are going to want to use them for more than just managing personal contacts and appointments. In addition, as overall wireless technology becomes more pervasive, such as greater access to the use of Wireless LANs, employees are going to expect greater flexibility in how and where they work.

The challenge therefore is to identify the applications that provide the most value to your organization on your terms before being pressured to do so. But will just any application do?

To date there have been several applications identified that could provide varying degrees of value to pharmaceutical companies. Most of these applications rely on synchronized data. That is, the data is stored on a local computer and a PDA periodically synchronizes the data from the PDA to the computer and vice versa. In this scenario, the data is not real time, but it is mobile.

There are several applications that utilize this mobile technology. For pharmaceutical sales representatives, the requirement to manage their inventory of drug samples is a highly regulated activity. Not only does this involve the ability to track the inventory and distribution of the sample material, it also includes the need to validate the identity of a physician and confirm the accuracy of their signature. Several companies have begun to deploy mobile solutions that can capture an electronic signature, provide access to physician validation data, and record sample inventory information (e.g., lot information). The main value of this is in the reduction of paperwork and increased accuracy. But, is it enough to drive mass adoption? One could argue, that aside perhaps from electronic signature capture, all of this data could be (and probably is) available on the sales person's laptop. So, does the signature capture piece justify the expense of deploying and maintaining additional form factors?

Other applications in this space include electronic data capture for clinical trials. Again, these solutions are generally synchronized mobile applications, allowing physicians and other contracted workers to capture trial data wherever they might be. This application's primary value is in accuracy and timeliness of information. And again, one could argue that this type of information can be obtained through desktop and/or laptop computers even via the web. The question is does the ability to capture information on a light and highly mobile device justify the expense of this application?

In both of the above questions, the answer may very well be "yes." Unfortunately, it may be valid only on a company by company basis. And others may not be able to answer for certain: the value may be difficult to measure due to a lack of solid return on investment (ROI) metrics or an inability to track these metrics.

Other potential solutions are more generic. Solutions such as access to e-mail, corporate intranets, product/formulary information, and time/expense reporting all could be useful to your sales representatives. Other applications such as instant inventory or quality exposure for production managers could also be useful to workers who could also work in a mobile environment. But these solutions, too, could conceivably be done with the use of traditional computers (i.e., laptops and desktops). Some overriding questions remain. What value does lightweight, anytime, anywhere access provide and how can it be measured? Although these applications may provide great value (e.g., employee happiness, greater productivity, etc.) a

company's inability to track specific return for these value propositions impacts their willingness to adopt the solutions.

The Current Economic Impact

Pharmaceutical companies are not immune to the current economic conditions. It is true that people continue to demand newer and better drugs, but they are also demanding these drugs at lower prices. This new focus on cost/benefit analysis in drug manufacturing correlates with the way pharmaceutical companies spend on Information Technology.

There is a clear attention to spending on proven technologies that deliver high value and offer a quick return. Most pharmaceutical companies have invested and continue to invest in Enterprise Resource Planning (ERP) tools and Sales Force Automation/Customer Relationship Management (SFA/CRM) solutions. These tools help address business issues and goals, and they are proven solutions in the industry.

The ongoing spending done by these companies continues to be on focused, strategic initiatives. By definition, the strategic initiatives are those that help meet corporate goals. Therefore, there is limited investment in any tool or application where there is no clear distinction between the level of risk and the level of benefit.

In this environment, it is little wonder that wireless applications have not been more quickly adopted. Open standard wireless wide area network technology is generally unproven in the pharmaceutical industry. Companies might understandably be concerned about the utilization of the solutions as well as whether or not the expected return will be realized.

But the Application Is Out There, Somewhere

Just because there has been little adoption of the technology to date does not mean there are no applications out there worthy of the investment. Again, the situation is analogous to the "direct to consumer" marketing movement where several years ago this was thought to be a potential way of gaining market share, but since it was unproven, few companies acted on the idea. However, it only took a few companies to adopt this new marketing method before the idea became a necessity. Today, people expect to see advertisements about these drugs and want to have some control over which drugs they want their doctors to prescribe.

One day, wireless technology will likely be a common necessity of doing business within the pharmaceutical space. But it will take an application, or applications, that provide real value to make this happen. What application can do this?

The Beginning of the Answer

The key is in understanding the factors that are motivating the pharmaceutical industry generally and your company specifically. As mentioned above, one of the critical issues currently impacting the industry is the extreme pressure applied by the public and even the Federal Government to reduce the cost of prescriptions. This impacts a company's ability to remain profitable, and consequently can impact monies available for R&D activities – what pharmaceutical companies do best. Firms therefore must find ways to reduce the costs of R&D, production, inventory, sales, and marketing just to meet the pressures.

Another business driver is being able to continue to accelerate patented drug adoption in the marketplace. The pressures from generic drug manufacturers, coupled with the public cry for lower cost prescriptions, has made it that much more difficult to successfully drive market adoption of new drugs. And although direct marketing campaigns have had success, there is still a significant reliance on the message given to physicians by the army of pharmaceutical sales representatives (sometimes referred to as detail people). The detailing process is instrumental in new drug adoption and must be as efficient and effective as possible.

Another major concern is optimizing the speed of clinical development and ultimately bringing a new drug to market as quickly as possible. Pharmaceutical companies must see return on the R&D investment and to establish market share before the competition. Some of the factors associated with this are in R&D, manufacturing, marketing, and sales/detailing. In order to shave time off of the clinical trial process (thus reducing a drug's time to market) and accelerate physician and patient adoption, a company needs to focus on quick and accurate data collection, communications, analysis, and reporting all while maintaining consistency and in accordance with FDA guidelines. In addition, a company must also ensure efficient supply chain processing, production management, and inventory handling.

As these and other business drivers are dissected, the potential areas for wireless become more apparent. But how can wireless technologies provide realistic and strategic value to help address these areas? The problem with the current capabilities of the technology is that the promise is generally better than the reality.

Coverage is a big concern. Certainly, the entire country is not serviceable by wireless carriers. Even in populated areas where there is coverage, the coverage is not ubiquitous. You still lose signal in buildings, tunnels, etc. In fact, in every city in the country you'll find people trying to find a better signal by pointing their wireless devices around as if they were reading radioactive levels with a Geiger counter. So obviously the anytime, anywhere concept is not quite a reality. Yet.

Bandwidth is another concern. Current data rates are roughly one third of what you might see using a dial-up modem on your laptop or desktop. Include network latency and the perceived data rate is even less. This is definitely not the environment over which you want to be transmitting large amounts of data. Careful application design can help streamline the amount of data needed to transmit, but not all applications can be streamlined to the point of acceptable processing time. Again, in the near future, faster wireless infrastructure will be deployed. However, the near future is still likely to be 18 to 24 months away.

What about mobility? PDAs are definitely more mobile and less intrusive than laptops. They can provide a relatively easy way to capture and store data. In certain situations, this benefit can outweigh the costs by itself, such as in physician point of care. But these devices do not have to be wireless to provide this benefit. Offline synchronization is the current primary means for sharing data between PDAs and other computer systems. Because of this, many companies look at the current investment in laptops and find they cannot justify the cost of deploying PDAs simply because the computer can do nearly everything the PDA can do, and more. The fact that a laptop is bigger, heavier, and takes several minutes to boot up is a reality some companies will choose to endure without a distinct and high value differentiator to justify the additional cost.

One such differentiator where wireless technologies has a clear and distinct advantage is in alerts and notifications. It is this one differentiator where today's wireless technologies can do

what laptops and desktops do not do so well. This technology has been around for many years, and is commonly used within many industries. The introduction of two-way paging, which gives users the ability to respond to a page via a page, has increased the usefulness of this technology. In addition these two-way paging networks require minimal bandwidth, offer store and forward capabilities (in case of signal loss) and provide maximum nationwide coverage. Couple this capability with some of the other data storage and access abilities of PDAs and there is now the making for a compelling reason to deploy such technology.

However, currently not all PDAs can support alerts and notifications. One device that does (in “always on” mode) is the BlackBerry device from RIM. This device also has excellent user adoption due to its unique capabilities. A recent Goldman Sachs report surveyed 175 laptop users issued with RIM devices and found that after receiving the PDA, laptop usage decreased by 45% and nearly 20% of the respondents stopped using their laptops altogether. According to Goldman Sachs, a laptop’s total cost of ownership is roughly \$9,700 per year, whereas they found the BlackBerry device is roughly around \$2,000 per year - a potential substantial cost savings and incentive. Other manufacturers will be providing similar “always on” devices in the near future, and one could conclude that cost of ownership of these other devices will be similar.

Finding *The Application*

We are finally to the point where we can investigate applications that are going to drive adoption in the pharmaceutical industry. Although it may seem obvious, the other factor in adoption of this technology is being able to determine ROI. And the ROI needs to be large. Pharmaceutical companies, with their natural aversion to new and unproven technologies, will not be swayed by a low or moderate return. If you are going to invest, there needs to be significant return potential. This potential must justify the perceived risk in that even if only a fraction of the potential return is realized, the benefit still outweighs the cost.

In addition, the ROI needs to be based on hard and fast numbers – dollars and cents. Determining intangible value and equating estimated dollars to it is not compelling enough necessarily to make a pharmaceutical CFO agree to the investment.

And, as in any ROI model, there must be some core of the return based on measurable statistics so that the ROI model can be validated during the course of the wireless application’s lifecycle. Intangible or statistically vague values should be positioned as a means to further mitigate the risk of the investment and justify the decision to move forward.

Another key aspect of any wireless application should be in leveraging existing IT investments. Pharmaceutical companies have spent millions in ERP, SFA/CRM, Supply Chain Management, and Internet/intranet solutions. Any wireless solution should attempt to supplement these initiatives and make these investments more valuable. In return, the wireless application should not add risk to these other systems’ integrity. The wireless solution should only make the information in these systems more accurate and up to date.

The last thing to consider in this stage is the complexity of the solution. If the application takes longer to explain than it takes to drink a cup of coffee, you should be concerned that the technology may not be ready at this point to support such a solution. Until real anytime, anywhere service is available with high bandwidth capabilities, many solutions that look good on paper may not live up to expectations.

With all of this in mind, let's look at the applications previously mentioned to see how they measure up. Table 1 attempts to capture some of the applications currently being deployed/analyzed in the pharmaceutical space. To explain the columns in a bit more detail, a *Simple* solution is one where the amount of integration required is not overly complex and/or the process itself will not require substantial changes. *Utilizes Current Wireless Strengths* alludes to the use of alerts and notifications, most commonly through two-way paging. The thought is that if a solution does not use these capabilities, a laptop could do the job as readily as a PDA, or the wireless solutions may not work as desired (e.g., over-dependence on ubiquitous service and coverage). *Leverages Existing IT Investments* refers to the application's ability to interact with systems and business processes already in place. If it's a stand-alone application it should receive a lower mark. The *Business Driver(s) Addressed* is fairly straightforward, it addresses why a pharmaceutical company should deploy the application. And the *ROI Value* is based on not only the return, but the return as compared to the level of effort and investment required to develop the solution. It's fairly apparent when looking at applications in this way why these applications haven't been adopted more readily.

Application	Simple (Y/N)	Utilizes Current Wireless Strengths (Y/N)	Leverages Existing IT Investment (Y/N)	Business Driver(s) Addressed	ROI Value
Sample Management	No	No	Yes	Simplify the sample management process for Sales Reps Improve FDA process	Low to Medium
Electronic Data Capture	Yes	No	No	Increased accuracy in clinical trial information	Medium
Access to Product/Formulary Information, Intranet, etc.	Yes	No	No	More accurate information into the hands of the sales reps	Low
Time and Expense Reporting	No	Yes – presumably via 2-way paging	Yes	More accurate and timely cash flow visibility	Low

These solutions, although maybe not enough to drive adoption themselves, are still valid applications that provide value. Determining a high value application that will compel pharmaceutical companies to invest in this technology that these other applications could then leverage becomes the critical challenge to the success of wireless adoption.

But what could that application be? Ideally, it is something that is relatively simple, both in concept and design. It should take advantage of today's wireless strengths and leverage investment already made in the company. It must address a high priority business need or goal. And it should have a high ROI.

Potential Application: The Life of A Sales Rep

One such application that should be pertinent throughout the industry addresses the need to maximize sales efficiency and impact. One of the big costs associated with sales is the amount of time required of a sales representative to make between 4 and 7 detailing calls per day, each

only lasting a few minutes. A representative may sit in a physician's office for up to one hour waiting for an appointment. And worst case, the doctor, after all that waiting, determines that he or she is too busy and they need to reschedule. Other sales calls could have been made during that time and would have made the process more efficient. And with more calls come more scripts. The overall impact of inefficient detailing calls is lost revenue and market share opportunity.

In a typical sales representative's process, there is room for improvement. On any given day, the representative starts by checking her CRM application via laptop to determine her daily schedule. She has allowed plenty of time between appointments to ensure that she can see all of her appointments even if there are delays. The representative then loads up her car, probably leaving the laptop at home, and sets off to the first office. Sitting in the waiting room for an hour, she finally is able to meet with the first physician. She either drops off a sample, or spends a couple of minutes detailing one or two products. Then it's off to the next appointment.

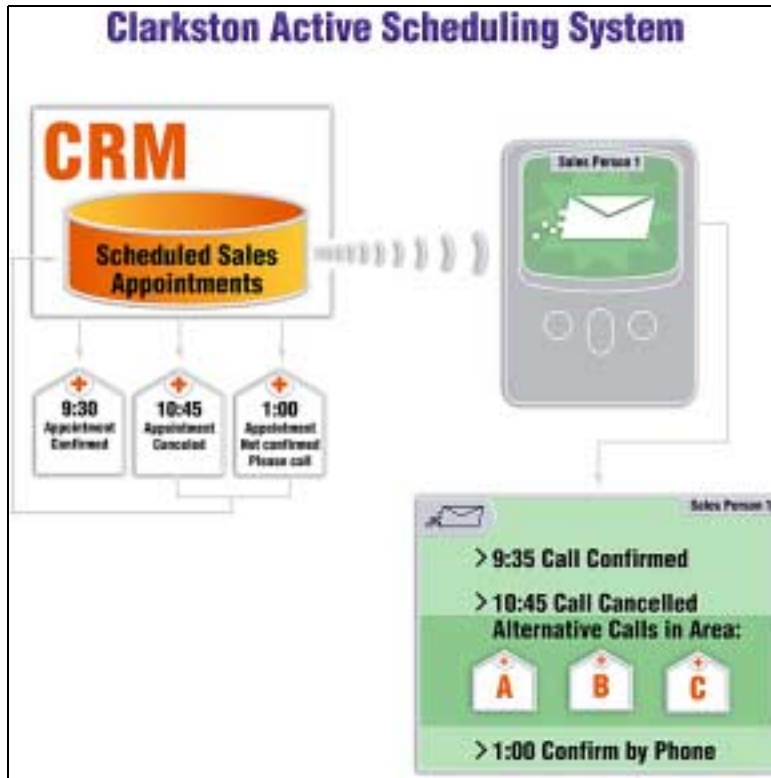
The representative arrives at the next office approximately 30 minutes before her appointment. When she arrives, the office assistant informs her that the doctor is running an hour behind schedule. It's a good thing the sales rep left a couple of hours between this appointment and her next one.

After this appointment, she goes to the next one. This time, after she's been there for 20 minutes, the office assistant informs her that the physician is backlogged with patients, and that they'll need to reschedule. Our rep now has several hours before her next appointment.

Obviously, the current manner for visiting with physicians could be improved. What if wireless technologies were leveraged to help alleviate wasted time for the sales representatives?

In such a solution, the wireless application would utilize current CRM/Scheduling and e-mail systems, and would deploy "always on" PDAs to your sales representatives. This solution would allow them to have more control over their own schedules and allowing the company to have more visibility into the process.

The concept is simple. One to two hours before a scheduled appointment, the system sends an e-mail to that physician's office assistant querying if the appointment is still on, delayed, or cancelled, and whether or not specific information or samples are required. The system will interpret the response and will send on the appropriate information to the sales representative. If the appointment is still on, this information and any other information in the response is passed on to the representative. However, in the case of a long delay or cancellation, the system will determine if any other primary physicians in the same general vicinity could be seen, verify that no other representatives are scheduled to visit with them in situations where layered sales may be common, and will send this information along with the fact that there is a delay or cancellation. (See figure on following page)



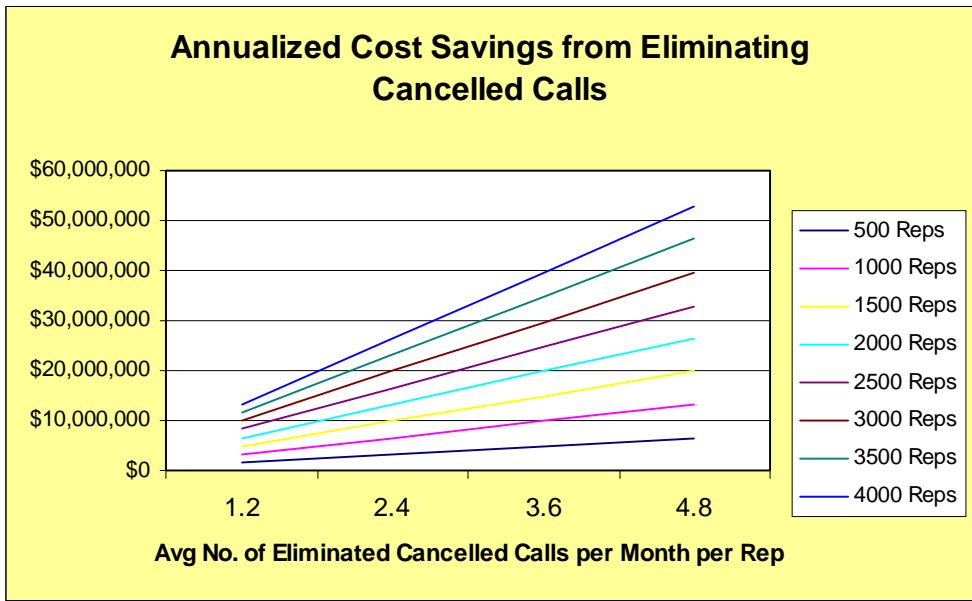
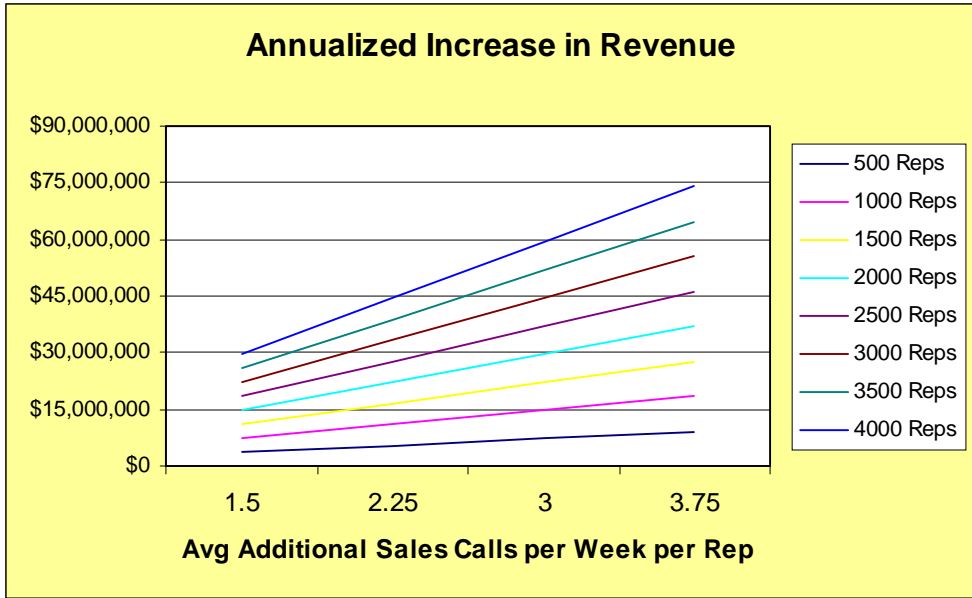
The representative then responds with the physician(s) she would like to call on and either contact that physician's office directly or request the scheduling system to send an e-mail to confirm an appointment.

In the event that an e-mail response from a scheduled physician is not received by the system, a message will be sent to the representative suggesting a confirmation be done by phone. The representative can then notify the system of any delays or cancellations and can request alternative calls in the area of physicians not being visited by other representatives.

The Value of This Solution

The goal of this solution is to maximize the number of calls a sales representative makes in a day. This has two effects: 1) it reduces cost by eliminating wasted time associated with cancelled appointments and 2) it can increase the number of prescriptions written by increasing the number of visits (i.e., details) made.

The return on such a solution can be astonishing. Using conservative estimates, the following charts demonstrate the potential return a pharmaceutical company might reap by implementing this solution.

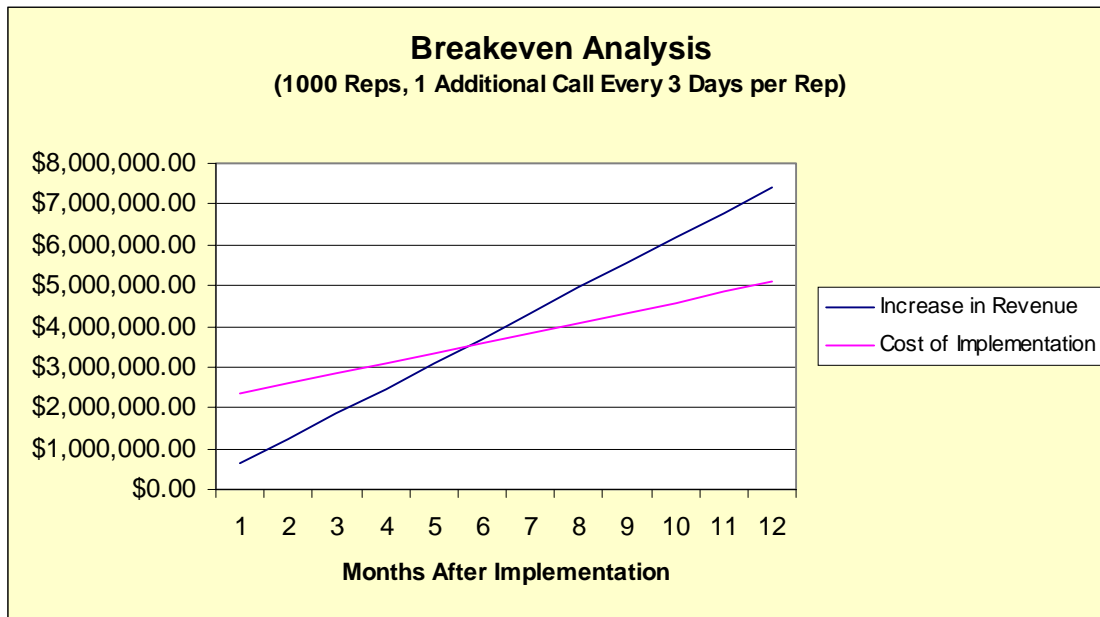


Conceivably, this solution could also be used to decrease the time currently allowed between scheduled appointments. If this were the case the number of additional calls per day per representative could potentially increase even further.

This application has the potential to provide tremendous return, but how does this application stack up to the criteria stated earlier? To reiterate, the application must be simple in concept, leverage existing wireless strengths and systems investments, and address real business issues or goals in addition to providing strong ROI. As you can see from the table below, this application meets all criteria.

Application	Simple (Y/N)	Utilizes Current Wireless Strengths (Y/N)	Leverage Back Office Investment (Y/N)	Business Driver(s) Addressed	ROI Value
“Active Scheduling”	Yes	Yes	Yes	Increase Revenue Increase sales efficiency Decrease costs	High
Sample Management	No	No	Yes	Simplify the sample management process for Sales Reps Improve FDA process	Low to Medium
Electronic Data Capture	Yes	No	No	Increased accuracy in clinical trial information	Medium
Access to Product/Formulary Information, Intranet, etc.	Yes	No	No	More accurate information into the hands of the sales reps	Low
Time and Expense Reporting	No	Yes – presumably via 2-way paging	Yes	More accurate and timely cash flow visibility	Low

But is it really simple? The concept is simple. The amount of integration is minimal* and the process changes required will not be difficult for the sales representatives to learn due to the simple interface. In addition, the amount of time and resources required to deploy and manage the application are such that the application would pay for itself within months (see chart below).



* Assuming an e-mail system and a CRM/Scheduling system are already in place

A PDA Just for One Application?

A high value solution, such as the potential solution identified above, goes a long way to justify the investment. But, once the PDA is in place, you can begin to roll out some of the other applications with varying levels of ROI. Essentially, use the one high value application as the driver, and the other applications to improve the employee's productivity, increase efficiencies, and other more intangible value propositions.

These applications certainly do not need to be deployed all at once. Some applications may need to wait for newer technology, while others might be too costly to deploy immediately. But, once the PDA is in place, and employees grow accustomed to using them, the foundation is set to exploit the technology when and how it is appropriate for your organization. In this approach, you can continue to adopt the technology while enjoying the fact that you are continually realizing tangible benefits.

Another potential outcome of this scenario is reducing the need to deploy laptops. With the use of PDAs, and providing mobile workers with the information and tools they need while on the road, it is conceivable that laptops could be replaced with less expensive desktop computers for the mobile workers to use at home as the primary tool for synchronizing bulk data.

Conclusion

Wireless technologies promise to provide substantial opportunities to the pharmaceutical industry. Unfortunately, with today's technology only a limited number of these opportunities are realistically achievable. The challenge lies in defining the application that provides high value (i.e., high ROI) while also leveraging existing investments and current wireless capabilities. The sample scheduling system highlighted above is but one example of these applications. Other processes, such as those in R&D, clinical trials, and manufacturing, also utilize mobile workers and thus the promise of other high value applications.

Once the high value applications are determined, other lower value applications can leverage this established foundation. As new technologies are introduced, by building on the current technology's core capabilities, a company is assured that existing applications will still have relevance and new applications can be built that will coexist.

Through interactive alerts and notifications (via two-way paging), high value wireless applications can be achieved today. Now is the time to take advantage of these capabilities. By acting now, not only will you enjoy the luxury of the competitive advantage such a solution might provide, but also the freedom to act and plan on your own timeframe rather than due to competitive pressures.

Wireless technologies in themselves are nothing more than gadgets and toys, but business solutions that intelligently utilize this technology can reap dramatic benefits and help companies seize the advantage.