

Special GPS Guide! Navigation Solutions for Home and Business

**Actius MM10**  
Super-Slim  
Notebook that Docks

**HANDHELD  
computing**

# Mobility

Mobile and Wireless Solutions for Today's Business

## Mobilizing Field Service

*How PDAs save companies millions — and how they can work for you*

## Dump Your Desktop PC

*Moving your staff to full-power laptops*

**What's Bluetooth really good for?  
A technology status report**

**Notebooks, Tablet PCs, and hands-free headsets go head-to-head**



Now Incorporating  
Notebooks, Tablet PCs,  
and PDAs

Issue 2.3 • Jul / Aug 2003



\$4.95 U.S. • \$6.95 CAN  
[www.hcmobility.com](http://www.hcmobility.com)

# Mobilizing Field Service

## Now Is the Time

By David Hakala



The Melard Sidearm on the job with heating and cooling technicians.

**A**cquiring more customers through sales force automation was a mobile mantra in the go-go 1990s. Today, just keeping your existing customers is a top priority. Service—installation, maintenance, diagnostics, repair and delivery—is the most effective way to keep customers happy and paying. It can also be a make-or-break selling point with new prospects. Equipping field service operations with mobile computing and communications capabilities is a master key to survival, growth and profitability.

Just ask Bryan Gilbert, VP and General Manager of Process Cooling & Heating, located in Santa Ana, California. This privately-owned, \$5 million commercial air conditioning company implemented a mobile field service automation system in January, 2002. Gilbert is pleased with the results, to say the least.

“We went from 8 to 16 field techs because we can generate and handle that much more work,” he says. “This

technology is one of our best assets right now for getting new customers, especially larger ones. We can tailor our programs to meet their needs. We’re ahead of all the others guys.”

Don’t you wish you could say that?

### Paperwork’s Chilling Effect

PCH realized in 2001 that its information and work flow systems were inadequate, and went in search of a solution.

“We had a very old paper-based system using index cards and Excel spreadsheets,” recalls Gilbert. “There was lots of information in different piles. It wasn’t clear at any time what we had to do. When we received a work order and wanted to know what had been done on that piece of equipment in the past, we had to search our file history to find out.

“Another problem was our three to four week invoice cycle, which was killing us—especially during summer when we had guys working 12-to-14-hour days. We had to make paperwork flow faster,

including reports to customers about what (additional work) had been done.

“We looked at giving each guy a fax machine so he could send in paperwork from the field. But that would just generate more paper at the office. It was a waste of time.

“Then we looked at standard service management software. It would help process work at the office, but we still couldn’t get information back to the office fast enough. So we looked into wireless technology.”

### FieldCentrix: An Early Innovator

PCH turned to FieldCentrix, Inc., a software developer and system integrator which has specialized in field service automation since 1994.

“One of our co-founders was in field service for many years,” says Brett Knox, FieldCentrix’s VP of product development. “He recognized the need for mobile computing in lieu of pagers and radios.” Experience in the field helped shape the FieldCentrix product.

“Porting office applications to mobile field devices just doesn’t work,” says Knox. “The work flow doesn’t make sense to field service people. They want to go turn wrenches. Their environment is very different from home office.” So FieldCentrix worked “backward,” designing its products from the perspective of the field to the home office; hence the company’s name.

“Back in 1994, wireless data wasn’t ripe. Coverage was thin, and 9,600 bps was the standard,” says Knox. But FieldCentrix hung in there, developing a more sophisticated suite of end-to-end FSA applications as wireless technology improved.

“We were early partners with Microsoft Windows CE, and the Ardis and Mobitex networks,” says Knox. “In 1998, we went live with wireless FSA applications” based on Microsoft Pocket PC and Pocket PC Phone Edition, Windows CE, Windows 2000, and Windows XP.

FieldCentrix's core application is the FX Service Center, a work management and dispatch solution. Its functions include call taking, field personnel scheduling and dispatching, customer service, work orders, time sheets service agreements, inventory and equipment tracking, pre-invoicing and reporting. The software supports drag-and-drop scheduling and rescheduling, exportation of completed work order and time-sheet data to CRM systems, and integration with accounting or CRM for electronic billing and payroll processing.

FX Mobile delivers work orders, guides service workers step-by-step through standard tasks, prompts them to take notes, and records recommendations for future repairs or upgrades. Industry-specific templates can be added for specific pieces of equipment a tech works on, speeding the troubleshooting and repair process.

PCH's field techs use Melard Technologies' Sidearm handheld PC (Melard was acquired by MicroSlate earlier this year). The ruggedized Windows CE device, powered by an Intel StrongARM 206 MHz processor, is well suited for the hazards of the heating and air conditioning business.

When a job is done, the customer can simply sign the worker's screen. The completed work order is wirelessly sent for processing and billing. The worker can simultaneously send copies of work order summaries to multiple recipients, i. e., customer contacts who review and track repairs. These reporting capabilities turned out to be a surprise plus to PCH.

"We learned that large customers, in particular, want to track certain types of problems and repairs," says Gilbert. "With FieldCentrix's software, we can run any type of reports they need. The customer is happy because he can analyze where his maintenance money is going and where he should spend it in the future. He can identify repair

patterns and talk to a manufacturer about a part's history, if necessary."

Customers' "need to know" is further satisfied by FieldCentrix's FX e-Service module, a Web portal extension of FX Service Center and FX Mobile. It manages delivery of e-mail reports from mobile workers to customer contacts. It also enables customers to submit service requests, access work order information, and manage their accounts. Electronic self-service significantly reduces the load on call center staff, allowing dispatchers to concentrate on scheduling and dispatching field techs.

FX Optimizer further streamlines dispatching operations. It uses artificial intelligence techniques to automatically schedule appointments. By considering many more scheduling options than manual methods can, it produces more efficient schedules. Dispatchers are freed to handle exception calls and more productive activities.

### Bringing In New Money

PCH's cash flow has improved dramatically thanks to electronic submission of completed work orders. Getting an invoice to a customer now takes a day instead of 3-4 weeks. The system also enables PCH to ask for more work even as it requests payment for work already done.

"When we submit our invoice and work order reports, we also include the tech's recommendations on what else needs to be done. When our paperwork cycle was 3-4 weeks, it was easy for the customer to say, 'Well, it waited that long, it can wait a little longer.'"

"Additional repairs" are a major potential revenue stream, according to Knox.

"On any service call for a specific problem, 60-70 percent of the time something else needs fixing too. At the end of our FX Mobile workflow dialogue, the system prompts the tech, 'Did you find any additional repairs?' It records

them and sends them off to the office, where sales guys see them in real time."

Field techs used to generate about \$100 per month per tech in "additional repairs" revenue at Mesa Energy Systems, another FieldCentrix customer. Since implementing FX Mobile, that average has soared to over \$2,000 per month. Mesa Energy, a mechanical and retrofit service firm, fields 85 service trucks.

"Additional repairs alone paid off Mesa's system in nine months," says Knox.

The opportunity to capture additional work was so great that PCH assigned it to a full-time employee, a tech who had been injured and could no longer work in the field. His new job consisted of following up on additional-work recommendations while they were fresh and still perceived as urgent.

Gilbert credits much of the doubling of PCH's business and staff to this additional-repair work. Productivity rose among regular sales reps, too.

"We were producing quotes for things that were already done" under the old system, he says.

Hiring twice as many techs does not fully reflect the business gains that PCH realized, Gilbert contends, since each tech's productivity rose sharply.

### Where the Time Goes

"The paybacks of this system are really measured in lost time regained," says Gilbert. "Previously, techs were coming into the office every day, turning in paper and hanging around the water cooler. Now they only come in for weekly meetings and parts that aren't in their trucks. We have saved five billable hours per week per tech."

Those billable hours are being to put to better use, too. The number of service calls a PCH tech can handle per day, says Gilbert, has increased from two-to-three to three-to-five.

"The ability of techs to get information in the field, quickly and easily, has made a big difference. A tech



FieldCentrix's FX Service Center makes scheduling techs' work a breeze.

can request the last five work orders on the spot, so he can see what's been done before. The system provides so much detailed information—such as how to get to a job site in a customer's facility. Techs get in and out faster, so they can make more calls per day."

Back-office staff is also saving time, and internal bickering over paychecks is down.

"The system automatically generates time sheets and sends them to the home office," says Knox. "The home office person can review it and revise if necessary, then send it back to the tech. The tech sees a split-screen view, 'ours' and the tech's. The tech signs the time sheet electronically. Dispatchers aren't hit with piles of paper on Friday. At Mesa, dispatchers went from spending five or six hours on time sheets to three-and-a-half hours. All of this is done without techs coming into the office. There are fewer arguments, fewer surprises in pay checks, more time spent making money.

"That was a big cultural concern when we started looking into mobile FSA," says Gilbert. "We talked with other companies which had implemented it, and some had problems with techs who resented 'time clocks in their pockets.'"

"We assembled our techs and explained the benefits to them. Their number one concern was, 'I'm gonna get cheated out of hours.' But that became a non-issue once they saw the system and how it works.

"In fact, one tech told me, 'This is the best thing since paid time off.' And that

was an older tech who still doesn't own a PC."

Management was most concerned about training new techs and about how fast new hires would take to the mobile system. But that turned into another pleasant surprise.

"The novices were even more interested in the technology, and actually

turned out to be better users," says Gilbert. "Training new hires is really critical. We have developed an intensive

training program, and they get up to speed pretty quickly."

Media coverage of large enterprises' mobile FSA initiatives may be part of the answer. Most reports have focused on dauntingly expensive, complex projects. While the ROI results have been equally impressive, the sheer scale of effort required may deter smaller companies.

Sun Microsystems' Field Information Appliance program is a good example. Widely reported in 2001, this admirable project required "less than \$10 million" and seven months to develop. A



Capturing a customer's signature improves billing time and cash flow.

panoply of vendors and system integrators

was required, including Symbol Technologies (customized handheld devices), the Interlink Group (suite of Java-based mobile applications), Red Hat Linux (operating system), Aether Systems (wireless service aggregation services and middleware software) and, of course, Sun's JavaSoft unit.

"The most important thing to remember about any type of wireless technology is that you have to stay on top of what's really being done with it, and how it is actually working in the field," he adds. "You have to be dedicated to making it work for office staff as well as field techs. Go out with them and use the system. Make sure all information is really going where it's supposed to go and gets processed properly."

### Where Are The Little Guys?

Mobile FSA is not new, as FieldCentrix's history illustrates. But its adoption has been far more widespread among large enterprises than small and medium

firms. PCH's experience clearly shows that modest firms can realize major ROI from mobile FSA. So what's holding them back?

Sun failed to respond to our request for comment on the FIA's current deployment status. But as of May, 2002, 550 of 3,500 techs worldwide were reportedly using the system, and another 2,700 were supposed to get FIAs by the end of that year.

Hard dollar results are noticeably absent from most accounts of mobile FSA initiatives. While competitive considerations may account for this

reticence, it seems odd in contrast to the many predictions of short payback times and detailed accounts of realized or predicted "soft" benefits.

"Defects (paperwork errors) went from 76,000 per million documents down to 80 per million," says Greg Richards, who was the lead software engineer on Sun's FIA project. That's impressive and indicative, but one can only guess how much work and re-work was saved. Richards, who is now VP/GM of Mobile Solutions for Gig Harbor, Washington-based Tolt Technologies, declined to provide dollar figures, citing confidentiality issues.

Many firms less affluent than Sun, Xerox, Honeywell, etc., may hesitate to commit to mobile FSA until they see some hard savings and new revenue. But some small-to-medium customers want mobile FSA anyway.

Demands from customers drove Innovative Business Software to add mobile extensions to its security service management software, according to CFO and business development manager Timothy McKenney.

"Mobility has become one of the hot buttons for security companies," he says. "They want it because it provides greater cost efficacy, control of people and control of inventory." Keeping up with large competitors who have gone mobile is another factor, he adds.

IBS partnered with Orsus Solutions to develop a mobile extension of IBS' existing software.

"The big question was how it fits existing business processes," says McKenney. "The beauty of Orsus is that IBS has not had to change its software at all. We had already developed APIs for customers to access data and present it on Web sites. The Orsus tools and APIs made the transition to PDAs simple."

The Orsus Mobile Framework includes the Developer Studio wireless application development environment, the Mobile Application Server gateway

which aggregates data from internal and external sources, and a Management Console which facilitates management of users, devices and runtime events.

"We have connectors to back-end ERP and CRM systems," says Avrami Tzur, VP of Business Development for Orsus. "But ERP systems weren't designed with field service organizations in mind. Extracting data (from back-end systems) is not a big deal. Transforming business processes is more difficult. The problem is how to provide information that the field rep needs on a PDA screen with a small screen, no mouse, no overlapping windows, etc. Mobile Framework makes that process much easier."

"Everybody who has seen the mobile software is interested in doing it," reports McKenney. "It enables billing in real time versus once a week. It even supports immediate credit card collection instead of three-week billing times. The availability of information in the field allows techs to do in four days what previously took five days."

The recent emergence of development and management platforms for mobile applications, such as Orsus's, makes mobile FSA more affordable to implement and maintain. A typical Orsus-based system costs roughly \$5,000 per employee, according to Tzur, including hardware, server and services costs.

"Customers typically see payback in 7-8 months," he adds.

## Estimating Potential ROI

Countermind Ventures, LLC, located in Englewood CO, was spun off from the Interlink Group in February, 2003, to commercialize the Java-based technology that Interlink developed as part of the Sun Microsystems Field Information Appliance project. Countermind surveyed mid-sized enterprises as part of its preparation to address that market.

"The cost to implement a Countermind FSA solution, for a company with about \$25 million in

revenues and 120 field reps, would be about \$800,000 to \$900,000," says Randy Starr, Director of Technology. "We provide hosting set-up and services for \$188,000 the first year, \$75,000 to \$80,000 per year thereafter."

Lease financing arrangements can help a \$25 million company absorb a \$1 million startup expense, he notes. But even without leasing, "a company like this should realize payback in about 12 months." Starr offers specific survey results to back up his assertion. In our hypothetical company with 120 field reps:

Two to five percent of all billable work, worth \$42,000/month, "simply disappears," says Starr. Techs find work needs to be done on the site, they do it and it just doesn't get captured for billing. Sometimes they believe a machine is under a service contract and bill work at the wrong rate. Customers sometimes request work on a machine that's covered by a service contract, then steer the tech to one that isn't. Revenue losses are prevented when techs have access to machine serial numbers and contract information kept at the office.

Nearly two hours are spent simply routing a work order from a call center to dispatchers to field techs to management, and getting it into the billing system. Starr estimates that cost at \$28,000/month, assuming a \$28/hour blended wage rate for the people who handle paper.

Redundant data entry consumes 20 minutes per invoice, costing \$4,000/month.

It takes 30-45 days to generate an invoice. That costs our firm \$9,000/month, based on 30-day financing at 8 percent interest.

It all adds up to \$83,000 per month. An end-to-end mobile FSA solution virtually eliminates that waste of money, according to Countermind.

Your mileage may vary, but every field service organization should perform a similar analysis to learn how it is wasting money. Then find a mobile FSA solution that specifically plugs those leaks. ♦