

Handheld Computers Streamline Facility Management

Personal Digital Assistant Proves To Be Valuable FM Tool

Recent case studies show that personal digital assistants (PDAs) yield highly positive results when used for facility management and maintenance, drastically improving worker productivity by eliminating time-wasting paperwork associated with previous fax-based systems. Organizations from Ortho-McNeil Pharmaceuticals and CB Richard Ellis, to Pacific Northwest National Laboratory and Harley-Davidson are finding that, in addition to affecting the bottom line by streamlining workflow, handhelds increase data integrity and ensure that backend systems are fully utilized.

“Considering the efficiency and the significant long-term cost savings of using PDAs, there’s no doubt that they are the future of maintenance and facility management,” says Loren Doll, Ph.D., vice president of FM International (FMi), a Santa Ana, Calif.-based consulting and implementation services provider that has helped numerous organizations implement handheld systems, including the California Department of Corrections which now uses handheld bar coding scanners to inventory more than 110,000 data elements.

Harley-Davidson Motor Company launched an online maintenance request tool three years ago at its headquarters in Milwaukee, Wis. The system, dubbed FIRST (Facility Intranet Request Service Tool), links customers directly to field technicians through the company’s computerized maintenance management system, DataStream. Employees initiate work orders using the company intranet, and a server routes them directly to the worker best suited to complete the task. Field technicians use docking cradles and Hewlett-Packard PDAs to download new work orders and upload completed ones.

Johnson & Johnson-subsiary, Ortho-McNeil Pharmaceuticals, developed a smaller, but equally effective, handheld program at its research and development facility in Spring House, Pa. Ortho-McNeil’s Lotus Notes-based system features a handheld user interface custom-designed by its custodial vendor, ABM Industries.

“Our program isn’t really elaborate, but it’s perfect for a small tight crew to get the job done,” says Bob Barnes, site manager of the 680,000-sf R&D facility. “Field staff download work orders to their PDAs, solve the problems, and close them out on-site. It’s a big time saver, and it has improved our overall data integrity considerably.”

Mobile Facility Maintenance

Pacific Northwest National Laboratory (PNNL), in Richland, Wash., one of nine multi-program national Department of Energy laboratories, launched a handheld pilot 18 months ago as part of an initiative to reduce paperwork and create a data-driven maintenance system.

“Our handheld program has helped eliminate paper from our entire preventive maintenance process,” says Erik Anderson, manager of Integrated Information for the Facilities and Operations Directorate at Pacific Northwest National Laboratory.

PNNL's handheld program works in conjunction with MRO's computerized maintenance management system, MAXIMO. Though PNNL staff use a variety of handheld devices, they all feature a MAXIMO-oriented PDA interface created by Barrington, Illinois-based Syclo LLC.

During the pilot, PNNL established more than 2,000 condition monitoring points on equipment throughout its two-million-sf campus. There are now over 6,400 set up in the system. Data collected from these points enables preventive maintenance orders (PMs) to be assigned based on system performance rather than elapsed time. Operators take readings and notes while on-site and upload them to MAXIMO later where they become keyword searchable, allowing managers to conduct trend analysis and look for data spikes indicating problem areas.

PNNL continues to develop a population of handheld-tailored data, currently consisting of more than 1,200 maintenance checklists. A stylus is used to access pull-down menus pre-populated with common maintenance issues and pertinent data such as operator name, location, and date.

According to Anderson, the program has dramatically shortened response time and decreased the number of unnecessary PMs. Counting an estimated 12 percent time savings by reviewing trends and exception data, and the cost-savings from increased worker efficiency and achieving paperless goals, PNNL realized a return on its initial \$103,000 pilot investment in the first 10 months. There are now more than 24 power operators, four carpenters, seven electricians, three pipe-fitters and two locksmiths participating in PNNL's handheld program.

Hardware Software Brainware

Due to the portability and increased efficiency of handheld devices, reception by both customers and users has been enthusiastic.

"Initially, about 30 percent of all work came from the online system. Now it's well over 50 percent and climbing. Our technicians have developed a real sense of ownership with the new program," says Jeff Regner, facilities manager for Harley-Davidson's 500,000-sf Milwaukee headquarters.

Field technicians at Harley-Davidson, Ortho-McNeil, and PNNL prefer the HP Jornada with its folding clamshell keyboard if they type notes. Compaq's smaller iPAQ has proven to be the more popular unit among tradesmen who do their work with a stylus and pull-down menus.

"Handheld hardware is changing fast. There are more advanced products coming to the market every month," says FMI's Loren Doll.

Last year Hewlett-Packard merged with Compaq. Unfortunately for some, the company will discontinue the well-liked Jornada in favor of developing the more compact iPAQ.

“One of the primary drivers for our company is an explosion in the variety of PDA devices available. Our goal is to make sure our software will run on every combination of devices so organizations don’t have to pick the winner,” says Jeff Kleban, executive vice president of corporate strategy for Syclo.

“The power of our core technology, called Agentry, is that it functions on almost all possible configurations of handheld hardware and back-end support systems, including MRO’s MAXIMO, DataStream and FacilityCenter,” he explains. “We’ve deployed solutions that take portions of these applications and extend them to mobile workers to use for automating work orders, managing inventory and auditing assets.”

Research In Motion (RIM) is another company competing for a share of the rapidly evolving handheld market. RIM’s BlackBerry unit, is part of a comprehensive end-to-end wireless solution. The BlackBerry features 24-7 wireless connectivity, an optimized keyboard, thumb-operated tracking wheel, and an integrated cell phone. It also supports email, voice mail, and Web browsing.

FieldCentrix, an Irvine, Calif.-based provider of field service automation (FSA) systems, pioneered the use of handheld devices to streamline service operations in 1998. The company now offers a variety of advanced solutions catering to organizations that dispatch personnel and parts for HVAC, real estate services, telecommunications, and high technology sectors.

This year FMi began rolling out two of its own handheld systems—FM Inspector, a remote data collection and inspection tool, and FM Mobile, a wireless Web-based work order system that functions with TRIRIGA’s asset management software, FacilityCenter.

FM Inspector allows organizations to assign user-defined data sets to any Pocket PC. Captured data is uploaded to a Microsoft Access database which can generate a variety of custom reports.

FM Mobile is a “thin client” wireless solution that allows for the real time creation, modification, and closure of maintenance work orders using FacilityCenter as a backbone.

Converging Technologies, Emerging Trends

As the popularity of PDA-based maintenance programs increases so does the associated technology. According to Loren Doll, another emerging trend in the marketplace is the convergence of PDAs, cell phones, and barcode scanners into a single device with all necessary support services being supplied by one provider.

“The impetus for organizations to adopt handhelds will increase as these elements continue to merge,” says Doll.

Advancements in wireless technology allow for instant worker dispatch and real time access to information. CB Richard Ellis, working in conjunction with Syclo, recently implemented a wireless solution for Fleet Bank that transmits work orders directly to technicians, replacing the previous fax-based system. Since the program began, Fleet has doubled the number of completed work orders and saved an estimated \$5,000 per month in overhead.

However, along with the advantages of wireless come other challenges. At PNNL, where workers must go through a timely log-back-in process whenever they lose contact, tight network security coupled with a large campus can make wireless solutions impractical. “Most of our handheld workforce connects to docking cradles a couple times a shift, which works well, but we are piloting a wireless dispatch program with a few workers who have less transient connectivity,” says PNNL’s Anderson.

Top managers who do not consider paperwork a significant problem may be reluctant to invest in a mobile initiative. According to Syclo’s Kleban, a handheld solution addresses two key problems affecting an organization’s bottom line. First is the inherent productivity drag created by a paper-based workflow. Second is inaccurate or insufficient data capture, which affects an organization’s ability to capitalize on the backend application already invested in.

“An easy way to look at the potential cost savings of going mobile is by calculating the amount of wrench time lost to filling out paperwork. Even the smallest increases in productivity, when multiplied daily across each individual technician, will result in the mobile solution paying for itself in just months. Mobile gets more out of existing backend applications, which again, means more gains for the company, balancing the budget needed to implement a solution,” says Kleban.

“Regardless of convergent technologies and wireless networks, more organizations will begin using handhelds because the significant cost savings and increased data quality are undeniable,” says Doll.

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For more information:

Erik Anderson
Manager of Integrated Information
Pacific Northwest National Laboratory
(509) 375-3933
erik.anderson@pnl.gov

Bob Barnes
Site Manager
Ortho-McNeil
(215) 628-5405
rbarnes@psgaus.jnj.com

Loren Doll, Ph.D.
Vice President
FM International
(714) 550-5525 x 203
ldoll@fminternational.com

Jeff Kleban
Executive Vice President of Corporate Strategy
Syclo LLC
(847) 713-9103
jeff@syclo.com

Jeff Regner
Manager of Facilities
Harley-Davidson Motor Co.
(414) 343-4011
jeff.regner@harley-davidson.com

Resources:

ABM Industries: www.abm.com
BlackBerry: www.blackberry.net
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Syclo: www.syclo.com
TRIRIGA (FacilityCenter): www.tririga.com



Case studies indicate that switching to handheld devices for fieldwork, regardless of specific hardware or connection type, results in significant cost savings. Pacific Northwest National Laboratory's initial pilot program generated an estimated 12 percent labor savings in the first 10 months; Rush Medical Center issued palm devices to 85 technicians and increased productivity by an estimated 27 percent; and Hewlett-Packard claims PDAs save its field technicians an average of 43 minutes a day per worker—the annual equivalent of five full-time employees. *(Image courtesy of Syclo.)*

Syclo's Agentry platform acts as the bridge between a wide variety of PDAs and computerized maintenance management systems, (including Maximo, FacilityCenter, and DataStream), creating a cohesive digital work environment. Agentry technology allows organizations to customize a mobile interface for their existing enterprise, without writing any code, and deploy it on a number of different handheld devices. *(Image courtesy of Syclo.)*



The Jornada, by Hewlett-Packard, with its larger screen and folding clamshell keyboard, has proven to be a popular unit with fieldworkers who type notes as part of their work process. Compaq's smaller iPaq is favored by those who prefer a light weight unit and use a stylus combined with pre-populated menus to access information. RIM's BlackBerry is part of a comprehensive end-to-end wireless solution. In addition to work management, the BlackBerry also features an integrated cell phone and Internet capabilities.