



## Microsoft Windows Mobile Customer Solution Case Study



## U.S. Army Deploys Data Collection System to Make Timely, Fact-Based Decisions

### Overview

**Country or Region:** United States

**Industry:** Military

### Customer Profile

With 300 government and contractor members, the Project Manager Heavy Brigade Combat Team (PM HBCT) supports the delivery, maintenance, and modernization of the U.S. Army's heavy ground combat systems.

### Business Situation

Struggling with manual data entry of report information, the PM HBCT needed a standardized, faster, and more efficient way to acquire, manage, and analyze its data.

### Solution

The PM HBCT implemented an advanced data collection system featuring Microsoft® Office SharePoint® Portal Server 2003, SQL Server™ 2000, and Windows Mobile® powered Pocket PCs.

### Benefits

- Projected 95 percent improvement in data accuracy
- Cut reporting time from weeks to days for more efficient data analysis
- Enhanced operations and decision making
- Reduced costs

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Victor Pitcel, Asset Management System Project Lead, Project Manager Heavy Brigade Combat Team, Program Executive Office Ground Combat Systems, U.S. Army

The Project Manager Heavy Brigade Combat Team (PM HBCT) is in charge of supporting the United States Army's heavy ground combat vehicles and weapons systems. Acquiring, tracking, and analyzing all the data related to these vehicles and systems, which are in use domestically and overseas, are considerable tasks. The PM HBCT deployed an advanced data collection system that makes use of Microsoft® Office SharePoint® Portal Server 2003 and SQL Server™ 2000. Field service representatives who work with the vehicles are equipped with Windows Mobile® powered Pocket PCs, which enable them to create reports anywhere in the world and send report information directly to the data collection system. The solution has helped the PM HBCT significantly improve the accuracy of its data, accelerate trend analysis reporting from weeks to days, enhance operations efficiency and decision making, and reduce costs.



## “We wanted real, usable information in days, not weeks.”

Tony Kado, Product Assurance Division  
Reliability Branch Chief, Project Manager  
Heavy Brigade Combat Team, Program  
Executive Office Ground Combat Systems,  
U.S. Army

### Situation

Thousands of vehicles containing innumerable parts from dozens of contractors add up to heaps of data to track, manage, and analyze. Yet this is a key objective of the Project Manager Heavy Brigade Combat Team (PM HBCT), which acts as the United States Army’s executive agent for life cycle management of the Abrams, Bradley, M88, BFIST, M113, M109, and Knight families of vehicles.

“We are responsible for preparing, delivering, maintaining, and enhancing the U.S. Army’s heavy ground combat vehicles and systems,” explains Victor Pitcel, Asset Management System Project Lead for PM HBCT. “This includes working with industry partners such as BAE Systems and General Dynamics to acquire, track, and analyze vast amounts of data to continually improve the safety, reliability, and performance of these vehicles.”

The major industry partners that are associated with the PM HBCT—known as prime contractors—employ roughly 100 field service representatives (FSRs) to support U.S. Army units requesting technical assistance with troubleshooting, diagnosing, and repairing vehicles. This support occurs at the vehicle, often overseas during combat missions, to reduce downtime and help sustain the fleet in the field. In the past, FSRs manually collected field data using handwritten notes, later created vehicle incident reports, and then sent the reports in e-mail to lead FSRs for review and approval. Once approved, the reports then were sent to the appropriate prime contractors. Contractor personnel would manually enter the collected data into various data stores for subsequent extraction and trend analysis reports as requested by the PM HBCT.

According to Pitcel, getting an FSR report from the field into a prime contractor database and subsequently into the

government’s hands in a usable format took several weeks. “The process was slow and inefficient,” says Pitcel. “Because there were many data handoffs and manual data entry procedures, the process was prone to human error. And when we requested vehicle report information, we had to wait for the prime contractors to search through their databases and compile the data.”

After waiting for field data to reach it, the PM HBCT then required additional time to ready the data for trend analysis and system assessment. “We invariably had to scrub the data, which was sometimes incomplete and nonstandardized,” Pitcel explains. “It was difficult to conduct adequate system evaluations in a timely manner.”

Simply put, the PM HBCT was not in control of its own data and had to wait several weeks before it could review and analyze useful information. As a result, the PM HBCT found itself unable to make timely, fact-based decisions regarding its heavy ground combat vehicle systems.

### Solution

The U.S. Army Project Manager Heavy Brigade Combat Team needed to standardize and streamline its data collection, sharing, and analysis. “We wanted real, usable information in days, not weeks,” says Tony Kado, PM HBCT Product Assurance Division Reliability Branch Chief.

The PM HBCT chose Portal Dynamics, a Microsoft® Gold Certified Partner, to develop an advanced data collection system. Portal Dynamics is the lead system integrator for the U.S. Army’s Program Executive Office Ground Combat Systems (PEO GCS), under which the PM HBCT operates. “Portal Dynamics had prior experience developing Windows®-based portals and integrated Pocket PC applications that are being used by the Marine Corps and other factions of the

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Victor Pitcel, Asset Management System  
Project Lead, Project Manager Heavy Brigade  
Combat Team, Program Executive Office  
Ground Combat Systems, U.S. Army

Army,” says Kado. “It made perfect sense to work with a company that was already familiar with the ideas and concepts that we wanted to employ.”

Known as the PM HBCT Asset Management System (AMS), the new solution uses Microsoft Office SharePoint® Portal Server 2003 and Microsoft SQL Server™ 2000 to integrate, standardize, and store data from FSRs as well as the prime contractors. FSRs are outfitted with Windows Mobile® powered Dell Axim X51v Pocket PCs running the AMS application. “The PM HBCT Asset Management System provides the ability to record data using Pocket PCs and send FSR reports electronically in real time,” says Mary-ellen Mancini, Senior Program Manager for Portal Dynamics. She adds that the AMS is linked to a broader information portal, the PEO GCS eBusiness Life Cycle Management Portal, which enables the U.S. Army to track its assets and perform fleet trend analysis.

“FSRs now have the ability to create a variety of reports on an offline mobile device as they are working on a weapon system,” says Kado. “The Pocket PCs are small enough that an FSR can enter a vehicle and crawl around without getting caught up on any of the gear. And with drop-down menus instead of handwritten notes, the process of collecting vehicle information is much faster and more accurate.”

Using their Pocket PCs, FSRs generate Weekly Status Reports, Vehicle Incident Reports, Field Problem Reports, Preliminary Fire Injury Accident Reports, Engineering Change Accomplishment Records, and After Action Reports. Once an FSR completes a report, he or she saves it to the SQL Server database through the PEO GCS Portal. After the report is reviewed and approved by a lead FSR, it is immediately available for use by PM HBCT stakeholders for system assessment and trend analysis. The Web-based AMS

application uses Microsoft SQL Server Reporting Services to help PM HBCT personnel, prime contractors, and U.S. Army depots to quickly and easily create trend analysis reports.

Phase one of the AMS project—in which the solution was designed, developed, and deployed for the Bradley Fighting Vehicle Systems—took approximately five months. To date, there are approximately 30 FSRs with Windows Mobile powered Pocket PCs running the AMS application. Phase two, for the Abrams Tank Systems, is currently in development. Kado indicates that roughly 40 additional FSRs will receive mobile devices by the end of 2006, and FSRs for other vehicle platforms will receive the devices soon thereafter in later phases of the project.

## **Benefits**

With the Project Manager Heavy Brigade Combat Team’s Asset Management System connecting PEO GCS stakeholders and critical information through the eBusiness Life Cycle Management Portal, FSRs creating and submitting reports using Pocket PCs, and all data stored on and managed through a central database, the PM HBCT has been able to significantly improve its operations. Using the AMS, the U.S. Army has enhanced data integration, standardization, and accuracy; expedited reporting and data analysis; improved efficiency and decision making; and reduced costs.

## **Enhanced Data Integration, Standardization, and Accuracy**

Two of the primary objectives in developing the AMS were to integrate and standardize all data related to PM HBCT heavy ground combat vehicles and systems. In the past, critical information resided in various prime contractor databases, and the data was compiled, formatted, and managed differently.

The new solution delivers a standard, consistent way to create and manage data, as well as a central repository for storing it. "Vehicle and system data is standardized and in the hands of the PM HBCT now, which gives us much better control of our information and operations," says Pitcel. "We are able push relevant data to our prime contractors, instead of pulling it from them and having to scrub what we receive."

Because PM HBCT now has a standard tool set and methodology for creating and tracking information, data accuracy has improved. The AMS application running on Windows Mobile powered Pocket PCs has greatly reduced the number of human errors that used to hinder the handwritten, manual data entry and information transfer processes of the past. In fact, Pitcel estimates that once a quantifiable means of measurement is established, PM HBCT will find that its data has approximately 95 percent fewer errors than before.

#### **Expedited Reporting and Improved Data Analysis**

Through the use of Pocket PCs and SQL Server Reporting Services, FSR reporting is now much faster and more efficient. What used to take weeks to create, approve, and distribute now requires only hours or days. The submission, storage, and distribution of all reports occur instantaneously; the variables are the amount of time that it takes an FSR to complete a report and a lead FSR to review and approve that report.

Because the time between data acquisition and report submission is now streamlined, data analysis has vastly improved. PM HBCT personnel are now analyzing data that is more timely and accurate, and therefore more relevant. "Reports are used in finding failure trends and performing system assessment to determine what needs to be improved on our vehicles to make them

safer, faster, and more effective," Pitcel says. "The fact that we're now able to analyze data that is days old versus weeks old assists us a great deal."

#### **Improved Efficiency and Decision Making**

Efficiency has improved across the board, according to Pitcel. With Pocket PCs, FSRs now perform their duties faster and with more accuracy. The offline devices—which contain parts information, system manuals, and past reports—also act as a searchable information repository for FSRs working with a vehicle, anywhere in the world.

Perhaps most importantly, the AMS has helped improve decision making. With a uniform tool set, data consistency, immediate reporting, and more timely data analysis, PM HBCT can enact quicker solutions to field problems and conduct faster system assessments.

"The Asset Management System has improved the visibility and control of FSR reporting. It has also outlined a critical path for the vehicle and system life cycle process by enabling fact-based decisions to be made with sound and reliable data," says Pitcel. "I cannot overstate the importance of our new ability to make decisions faster and with more accurate information."

#### **Reduced Costs**

Pitcel and Kado expect the new solution to help reduce government costs. It takes FSRs less time to create and submit reports, prime contractors no longer have to manually enter data into their systems or spend considerable time compiling information to satisfy PM HBCT requests, and PM HBCT personnel spend much less time waiting for and subsequently scrubbing data. The time saved in creating, entering, compiling, scrubbing, and analyzing data is significant, and will continue to reduce everyday operations costs.

## For More Information

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For more information about Portal Dynamics products and services, call (703) 778-3500 or visit the Web site at: [www.portal-dynamics.com](http://www.portal-dynamics.com)

For more information about the United States Army, Program Executive Office Ground Combat Systems, Project Manager Heavy Brigade Combat Team, call (586) 574-5630 or visit the Web site at: [www.peogcs.army.mil/pmo-hbct.html](http://www.peogcs.army.mil/pmo-hbct.html)

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## Windows Mobile

Windows Mobile brings the power of the Windows operating system to mobile devices, helping businesses and their mobile employees stay connected while on the go. Windows Mobile runs mobile versions of Microsoft programs, including Microsoft Office Outlook® Mobile; Internet Explorer Mobile; Pocket MSN®; Windows Media® Player Mobile; and Microsoft Office Word Mobile, PowerPoint® Mobile, and Excel® Mobile. With Windows Mobile, information workers get powerful software combined with the familiarity of Windows. Combined with available service plans and connectivity options, Windows Mobile powered devices, available from 42 device makers and 68 mobile operators in 48 countries, can be used to make calls, send e-mail and instant messages, surf the Web, and access critical business information even when users are away from the office.

More information about Windows Mobile can be found at:

[www.microsoft.com/windowsmobile](http://www.microsoft.com/windowsmobile)

### Software and Services

- Windows Mobile 5.0
- Microsoft Office
  - Microsoft Office SharePoint Portal Server 2003
- Servers
  - Microsoft SQL Server 2000

### Hardware

- Dell Axim X51v Pocket PCs

### Partners

- Portal Dynamics

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