

White Paper

POMX

Point of Maintenance

What is the problem?



Is there a solution?

Current POMX
Architecture



The Future of POMX

Benefits



Summary

Problem

In today's Air Force, aircraft mechanics spend far too much time ordering parts and completing documentation versus doing what they do best - maintaining the readiness of weapon systems vital to national security. Currently, aircraft maintenance information is manually entered into a Maintenance Information System at the end of the shift. The current process introduces inaccuracy and latency into the data collection process.

Consequently, it has been an on-going concern for many years to:

- Decrease manual input and minimize inefficient data entry methods
- Maximize existing and emerging technologies to avoid errors and improve data integrity
- Utilize barcodes to increase accuracy and save time
- Eliminate redundancy in the data input process with user profiles
- Provide drop-down options to minimize mistakes and make better choices
- Create "traps" that eliminate the ability to introduce errors into documentation
- Deploy a data collection system that compliments the best maintainers in the world

Interfacing with the Integrated Maintenance Data System (IMDS) and communicating with the

Standard Base Supply System (SBSS) through the IMDS interface at the wing of the aircraft represents a paradigm shift that would not only save a significant amount of time and money, but improve the data collection process as well. Integration of data, and the flow of data between systems at a sufficiently rapid pace, is one of the most effective approaches to supporting the war fighter. In short, delivering technology that eliminates existing short-falls and contributes to mission efficiency is a visionary goal that needs to be realized.



Solution

Point of Maintenance (POMX) seamlessly captures data using a mobile device that can transmit

wirelessly or work in "store-forward" mode when the network is unavailable. Without replacing or duplicating the maintenance system of record, POMX provides a front-end that is capable of performing data collection, as well as supporting supply inquiries and ordering parts.

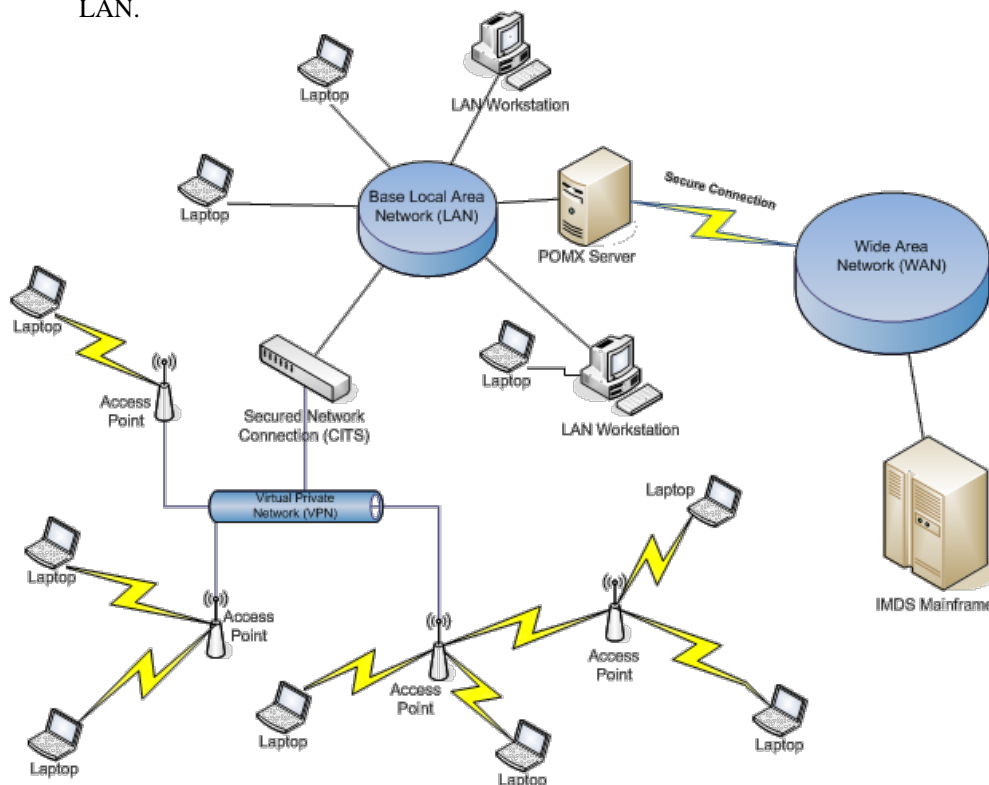
Through the use of default profiles, drop-down menus, barcode scanning, and intelligent business rules programmed into the device, POMX allows the user to enter data at the wing of the aircraft; therefore, saving time and making the data readily available for users working to increase aircraft availability. The maintainer no longer has to travel to the Aircraft Maintenance Unit (AMU) facility to transfer daily maintenance actions to the maintenance data collection system. Flightline entry of maintenance data using POMX eliminates the redundancy and inaccuracy of manual note taking by the maintainer.

The Current POMX Architecture Overview diagram (below)

graphically displays the normal mode of operation for POMX. In the normal mode of operation, the devices and server are connected via the Wireless Local Area Network (WLAN) and Local Area Network (LAN) to the IMDS Central Data Base (IMDS-CDB). The user enters maintenance data via barcode scanning and other AIT-enabled functions, as well as using the LAN workstation to perform administration functions. The data transactions are then transmitted over the WLAN to the POMX database via a database synchronization routine between the device and the POMX database server.

If WLAN connectivity is unavailable, the device is inserted into an Ethernet four port docking station that is connected to the LAN.

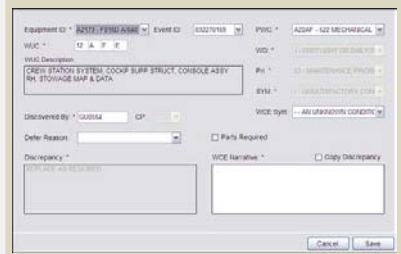
The data transactions are then transmitted through the dock to the POMX database via a database synchronization routine between the device and the POMX database server. If the Wide Area Network (WAN), WLAN, POMX server, or IMDS-CDB is inoperative, the device still allows users to continue documenting maintenance actions without any adverse noticeable effects. When the WLAN is unavailable, the device stores the offline transactions in its database and transmits the information when the WLAN becomes available. If the WLAN is unavailable for a prolonged period of time, the user has the ability to transfer stored transactions from the device to the IMDS-CDB via the POMX server using a docking station attached to the base LAN. The device, however, cannot perform supply functions or schedule Job Standards (JSTs) when the WLAN is unavailable.



TIP OF THE WING TECHNOLOGY

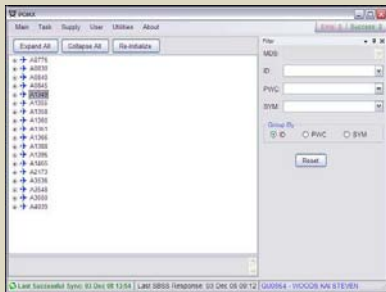


Close Screen

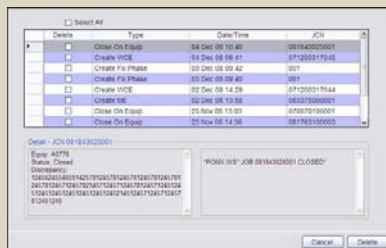


Create WCE Screen

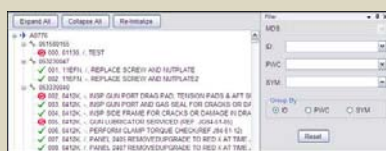
POMX ACTIVE SCREENSHOTS



Home Screen



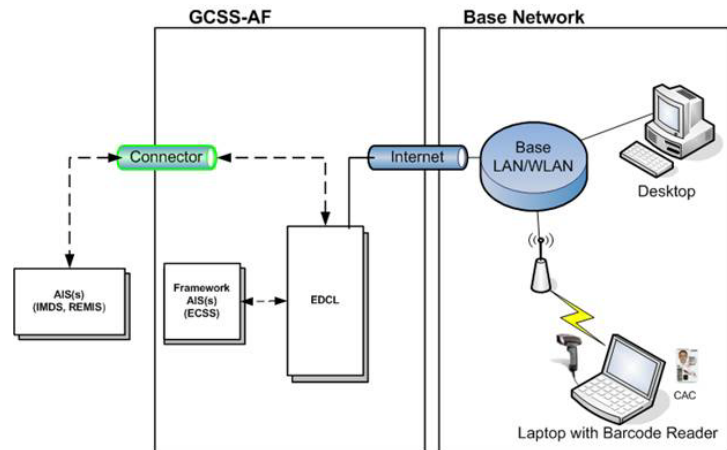
Success Queue



Tree with WCE's

With the advent of Common Access Card (CAC) enabled hand held hardware and laptop computers that promote greater security and flexibility, the POMX architecture too will evolve to deliver greater capability. The POMX e-tool was not only one of the initial capabilities planned for inclusion in IMDS, but is slated for migration to the Air Force Global Combat Support System (GCSS-AF) through the Enterprise Data Collection Layer (EDCL). The mission of GCSS-AF is to provide timely, accurate, and trusted Agile Combat Support (ACS) information to Joint and Air Force commanders, their staffs, and ACS personnel at all ranks and echelons, with the appropriate level of security needed for the Expeditionary Aerospace Force to execute the Air Force mission throughout the spectrum of military operations. Also, GCSS-AF is the means by which ACS Automated Information Systems will be modernized and integrated to improve business processes.

Normally, job data from IMDS is synchronized with the POMX server every 15 minutes and all other data is synchronized on an as-needed basis. The mobile device allows the flight line maintainer to document jobs associated with aircraft equipment ID through the use of a set of manual job control numbers assigned to each mobile device. Maintenance job data is entered on a mobile device then sent to the POMX server. The POMX server, in turn, sends the data to IMDS, waits for a reply from IMDS, and then sends the results back to the mobile device. The mobile device to POMX server connection must be either through the LAN or through the wireless LAN. The POMX server to IMDS connection must be made through the WAN. Maintenance job data entered on a mobile device that is not connected to the POMX server, or the POMX server is not connected to the WAN, is considered to function in a batch or store-forward mode.



How POMX Works

The POMX server is populated with IMDS data during the initial POMX install and then updated, or synchronized, at configurable intervals through the Data Importer.

This mode allows the mobile device to store the maintenance data until it is connected to the POMX server and the POMX server stores the data until it is connected to the WAN and has connectivity to IMDS.

TIP OF THE WING TECHNOLOGY:



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*"We have the best aircraft
maintenance in the world, and
yet the documentation is still
being done through the use of
paper and pencil."*

Major Randall E. Ackerman

AF/A4MM

Target Audience

The target user populations for POMX are Air Force aircraft flightline maintenance technicians who currently use IMDS to document and track their activities. The intention is to expand this population to include technicians who perform inspections and maintenance tasks on communications and electronics equipment, as well as ICBM maintenance. Future expansion of capabilities to consider in the aircraft maintenance arena include: back shops, additional maintenance databases of record, parts accountability, and supervisory/scheduling roles.

Benefits

Some of the business benefits with the full scale implementation of POMX in the operational environment include:

- Increases data integrity and accuracy through intelligent application design
- Reduces manual data entry
- Allows for near real-time interface with IMDS and communication with the Standard Base Supply System (SBSS) through the IMDS interface
- Decreases data latency problems
- Operates in disconnected state (a.k.a. store-forward or batch)
- Automatically transfers data to and from IMDS when wired or wireless networks are present
- Easily deployed using existing hardware
- Complies with existing security measures

Summary

The key to delivering a valuable tool to the maintenance community of the United States Air Force is automating the data collection process in a way that improves the accuracy and integrity of the information gathered. In addition to providing more timely data, POMX has the means of delivering more accurate data as well. POMX uses business rules, pre-filling of data fields with intelligent defaults, drop-down lists of allowable values, and barcode scanning to facilitate accurate data entry. Increased data accuracy supports better analysis and decision-making for senior leadership.

POMX successfully demonstrates and implements capabilities that dramatically reduce manual data collection, increase user efficiency and increase data accuracy and availability. Stakeholders are continuing with plans to field POMX capabilities, while continually expanding capabilities using an incremental development approach. Air Force decision-makers and maintainers will gain immeasurable benefits from this integration of automatic data collection with the maintenance operational system(s).

