The World's Largest Single-Point Deepwater Fuel Terminal for the Department of Defense Uses a Best-in-Class Enterprise Asset Management (EAM) System to Consolidate and Report Maintenance and Supply Activities

The Challenge: Create a baseline configuration that manages data from six Navy Fleet and Industrial Supply Center depots around the world.

✧ **The Result:** A Single Platform Maximo® application, customized through the use of TRM RulesManager™ and TRM ScreenBuilder™, that allows users to automate all critical business functions.

Every driver knows how easy it is to "swipe" a credit card at a gas pump, swing through a service station for a 10-minute oil change, or run a car through a quick wash. But can you imagine the complications involved in servicing an aircraft carrier, submarine or military jet? The Navy needs much more than a local fuel depot. To ensure the war fighters are always ready, an entire Defense Fuel Support Point (DFSP) is needed.

One such support point is based at historic Pearl Harbor, the crossroads to two continents. Fleet and Industrial Supply Center (FISC), Defense Fuel Support Point, Pearl Harbor, Hawaii, is considered the "lead FISC" among six Navy terminals around the world. As such, FISC Pearl Harbor has the lead to drive best practices throughout the FISC fuel community.

"Our FISC fuel centers play a vital role in arranging the timely delivery of wholesale fuel to the fleet," said a fuel analyst from FISC Pearl. "It's imperative that we automate critical business functions such as fuel operations, preventive and corrective maintenance, purchasing, fuel testing and reporting. We also need a baseline configuration that can manage the data from all of our locations."

This means developing strategies to effectively consolidate all six DFSP terminals into a "Single Platform Maximo" system. For 10 years, Total Resource Management, Inc. (TRM) has been a primary contractor for Maximo and key performance indicator (KPI) systems at FISC Pearl Harbor and FISC Yokosuka (Japan) – projects that include consulting, development, support and training. TRM technologists have migrated through many iterations of Maximo and are in the planning stages for an upgrade to version 5.2. TRM also has been a special projects contractor for FISCs in Manchester (Puget Sound, Washington) and San Diego (California).

What can technology do for this high-level fuel operation?
"FISC Pearl Harbor is relying on us to integrate the technology needed to improve efficiency, productivity, accountability, and timely and accurate reporting," said Jim Miwa, TRM's director of systems engineering.

TRM is expert at doing just that. The company provides management consulting in facilities and asset management, requirements analysis, application development, database administration, application support, systems engineering, training and report development. Consultants always begin with a thorough assessment – in this case, of fuel operations at each of the six FISCs. TRM was able to perform all development and quality assurance at its Hawaii Advanced Technology Center before bringing applications to FISC.

Putting the tools into place

One of the biggest challenges is meeting best practices metrics. This project required the team to work to Performance Work Statements (PWS) and something the Navy calls Most Efficient Organization (MEO) metrics. These MEO metrics play a large role in determining the effectiveness of the PWSs. They are the Navy's version of best practices.

Maximo is an essential application for capturing and reporting on MEO metrics. Gone are the days of manual calculations. With Maximo, data and metrics on fuel operations, maintenance, labor/material costs, fuel testing and more, are handled easily, automatically and accurately.

TRM consultants recommended two productivity tools designed to strengthen Maximo performance. TRM RulesManager is used to set field defaults on certain applications (such as fuel operations) and to assist with certain calculations. This capability quickly helped lighten the data entry load for users, and created clean and consistent data. TRM ScreenBuilder allows users to customize screens within the laboratory and fuel operation tracking applications.

The information collected in Maximo can become a vital element of executive management decision-making when transformed by additional business intelligence tools. These tools include KPI and MEO compliance reports. This essential data is delivered through TRM KPI Manager (see sidebar).

Making custom applications work

These powerful customization and analysis tools help manage specific challenges. For example, FISC Pearl Harbor uses a process for purchase and work orders that falls outside of the realm of preventive maintenance. Before becoming purchase orders, all purchase requests must be routed through an approval process that involves a few select individuals. Once approved, the purchase orders drive the work orders. Work orders must travel through the workflow process in order to obtain supervisory approval.

After approval, these work orders eventually are assigned status designations.

Automating the workflow process has helped increase productivity and – more importantly – has created accountability by establishing a consistent business process. According to FISC personnel, users are pleased with the way workflow has helped to clearly define their roles in the purchasing and/or work order process. The new methods enable them to complete their daily tasks in a more timely and efficient manner.

Maximo at the Fleet & Industrial Supply Center – Defense Fuel Support

The Fleet Industrial Supply Center (FISC) Defense Fuel Support Point (DFSP) bulk fuel terminals manage several billions of dollars in Navy Fuel Distribution Systems worldwide. These FDS assets are critical to the logistics support for U.S. Navy's fighting machine. As early as 10 years ago, the FISC DFSP departments realized that management and upkeep of these mission-critical assets required a state-of-the-art enterprise asset management (EAM) system. As a result, MRO Software's Maximo, the market-leading EAM system, was deployed at the Pearl Harbor and Manchester (Puget Sound) fuel support points. Since then, Yokosuka and San Diego also have implemented Maximo.

Maximo manages and supports numerous functions at the FISC DFSP including asset tracking, corrective maintenance, preventive maintenance, fuel operations tracking, fuel laboratory testing, budget and cost tracking, procurement of material and services, labor availability, labor charges, project tracking "1391", job plans, performance metrics and Most Efficient Organization (MEO) metrics.

Maintenance: Using Maximo, FISC DFSP is able to track the lifecycle of revenue-generating assets. Maximo provides a means of tracking maintenance-related activities including preventive, corrective and emergency tasks and schedules, equipment and location costs and equipment failure trends. This information helps FISC DFSP increase productivity and extend asset life.

Fuel Operations: Using Maximo, FISC DFSP is able to manage daily fuel operations tasks from fuel scheduling to fuel testing. This provides for detailed analysis of resource, equipment and cost information for the entire fuel lifecycle, resulting in streamlined and more efficient fuel operations processes.

Purchasing: Maximo Purchasing provides for streamlined purchasing processes. Using Maximo, FISC DFSP is able to analyze vendor performance, ensure accurate and timely parts ordering, eliminate costly off-contract buying by establishing approved vendors and automate materials requisitioning based on maintenance schedules.

Interfaces: Currently, each FISC DFSP has an interface between its GIS system and Maximo's Oracle database. This interface provides the capability to run queries and view assets from the GIS system based on data entered through Maximo. For example, if a user needs to view all pipelines requiring pressure testing, or pipelines that failed pressure testing, that user may do so.

Maximo's integration platform, Maximo Enterprise Adapter (MEA), provides the capability to interface with other FISC enterprise systems such as Automated Fuel Handling Equipment, Fuel Automated System, One Touch Financial, Petroleum Quality Information System and Geographic Information System. The MEA provides integration capability in a manner that's secure while maintaining the data integrity between the systems. This ability to share essential data between complementary FISC enterprise systems helps to increase overall efficiency and productivity.

Reporting and Metrics: Prior to using Maximo, management level reporting and visibility was a laborious effort that often required extracting data from multiple sources. With Maximo, FISC DFSP is able to easily extract the data required for MEO metrics and other management reporting needs.

Workflow: Maximo Workflow enables FISC DFSP to define and manage maintenance processes from start to finish, bringing streamlined collaboration to all maintenance teams. Maximo Workflow allows for a more controlled maintenance process through automated routing, email notifications, a complete audit trail and analysis capabilities that point out areas needing improvement. Currently FISC DFSP uses Maximo Workflow to streamline and provide greater efficiency in managing purchase requests, purchase orders and work orders.

Project Tracking: The custom developed Project Tracking application is used to manage projects from beginning to end. This application is used to initiate the request for DESC funding using the "1391," to keep track of the project timeline and to create a historical record of work performed.

Quality Assurance: The custom-developed POL-QAMS (Petroleum, Oils, Lubricants - Quality Assurance Management System) application is used to track quality assurance on fuel testing. The POL-QAMS application replaced LIMS (a previous stand-alone application), providing improved integration and workflow within Maximo. Many tasks such as logging in samples, inputting test results, printing sample test reports, etc., are accomplished through the POLQAMS application.

Worker Automation: FISC DFSP utilizes Personal Digital Assistant devices to automate the capture of labor associated with work orders generated from Maximo. Non-productive labor (e.g., travel time between jobs, various "standing" work orders, lunches, breaks, etc.) is captured on the PDA as well. This labor data is uploaded into Maximo on a daily basis and populates the appropriate work order tables, calculates labor cost and assigns this cost to a Maximo general ledger code. This application helps to increase productivity by minimizing paperwork and data entry, allowing technicians to maximize the time they spend on tasks associated with fuel asset maintenance and operations.

This is the Maximo Start Center for FISC DFSP. This screen shot illustrates all the functional areas that the application supports including POL-QAMS (Petroleum, Oils, Lubricants – Quality Assurance Management System).

Another Maximo custom application involves the Navy's Petroleum, Oils, Lubricants - Quality Assurance Management System (POL-QAMS). Prior to POL-QAMS, FISC Pearl Harbor used a homegrown systems application that no longer had staff experienced to support it. TRM created a testing application that mimics the existing program, but allows it to reside within the overall Maximo system. The new application has been successfully deployed at four fuel terminals.

Because Maximo is focused on all areas of asset-intensive organizations, the FISCs have the opportunity to extend the benefits of Maximo to other departments. Any function that involves identification work, assignment and planning of resources (labor, material, services), identification of actual costs, or tracking of assets can make use of Maximo's functionality.

Providing the support needed to meet challenges

TRM supplied seven or eight consultants/technologists onsite throughout the implementation process. TRM also has supplied training and developed a training manual for the users to help guide them through application enhancements.

The project hasn't been without challenges, however.

"A critical challenge has been to ensure that we deliver solutions that match or exceed the communicated requirements within projected budgets, and all within the confines of the Department of Defense/Department of Navy security policies, guidelines and initiatives," Miwa said. "And that's a tall order."

The FISC fuel analyst agrees. "The bigger challenge for us is anticipating, consulting and communicating requirements of which we may not be fully aware," he said. "I expect the consultants we bring on board to deliver something new and different – leading-edge technologies, as well as creative solutions to unexpected situations. I rely on TRM for the quality and expertise of the people. The expectations are set high, and TRM has always delivered for us."

About Total Resource Management

Total Resource Management (TRM) is focused on improving the asset and operational performance of organizations through the effective use of information technologies. TRM is an IBM Premier Business Partner with over fifteen years; experience delivering asset and service management solutions based upon IBM Maximo. TRM supports clients across a wide range of industries, including government, defense, cities, facilities, energy, utilities, transportation and life sciences. TRM is based in Alexandria, Virginia and has business centers across the U.S. For more information, visit www.trmnet.com or call 703-548-4285.

Enterprise Performance Management (EPM) is a methodology that defines how an organization will operate in accordance with its performance plan. Typically, the plan includes:

- An articulation of the business strategy
- Actions and tactics that align to that strategy
- Identification of key performance indicators (KPIs)
- Progress tracking

TRM KPI Manager is a software tool that helps an organization quickly assess progress against listed objectives in the performance plan. It is a highly visual and easy-to-use tool that enables both the management team and line personnel to understand and compare KPI metrics up and down the organization, across time or in any user-defined dimension.

TRM KPI Manager allows the FISC DFSP to analyze data captured in Maximo and provide information to improve and optimize maintenance and operations, thus satisfying requirements given in the Performance Work Statement (PWS). FISC DFSP currently uses the following KPIs:

PR Status Turnaround Time KPI
Description: Measures the status of transition time for a purchase request by supervisor/buyer/AO.

Throughput KPIs
Description: Measures the throughput in barrels by customer as required by the FISC DFSP Performance Work Statement. Throughput KPIs are by process, product and transport mode. This helps with real-time Activity Based Costing accounting by providing the cost per barrel to issue fuel.

Evolution Overdue KPI
Description: Indicates overdue fuel missions by fuel location. A mission is overdue if the current date is past the scheduled finish date.

Management Summary KPIs
Description: Tracks the following work order data by work type.

1. Number of scheduled work orders
2. Number of completed work orders
3. Percentage of completed work orders
4. Labor hours for work orders
5. Total cost of work orders