



Case Study: Portsmouth Naval Shipyard Uses RFID to Track Paperwork

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A relay race involves several members of a team where a baton is exchanged or handed off from one runner to the next. To run a successful 4x400 meter relay race it takes speed, communication, and a smooth and successful baton hand-off to the next runner. At Portsmouth Naval Shipyard where Navy submarines are overhauled, repaired, and modernized, workers have a "relay-like race" behavior. Their goal is simple....get the submarines back to the fleet as quickly and efficiently as possible. Workers are encouraged to finish a job and without delay, pass the baton (so to speak) to the next person in the process.

Task Group Instructions (TGI) or a statement of how and in what sequence the work is to be performed are placed in a folder/package. Each step in the process has a TGI and as it is completed, the folder is passed like a baton to the next step or person in the process until it is completed. What happens when the TGI is misplaced? According to an experienced manager in the Shipyard Process Improvement Office, any misplaced work package could increase costs as well as cause delays in the schedule. Imagine a LOS ANGELES class submarine with 29,000 parts sitting in dry dock for overhaul and repair. Because there are thousands of work packages controlling the overhaul process, there is the potential to misplace them and/or the materials used to complete the task.



Portsmouth Naval Shipyard
(Courtesy US Navy)

The Navy has a comprehensive life cycle maintenance plan for their submarines to ensure safe, reliable and mission capable operations. Periodic maintenance and modernization begins immediately after construction and continues throughout the life of every vessel. These maintenance tasks are typically done either by the ship's crew or in a depot or a Naval shipyard as the one in Portsmouth, NH.

In 2005, the Naval Sea Systems Command embarked on a better way to

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conduct business resulting in the Lean Initiatives Program. To the Navy, "lean" is defined as a business process improvement approach focused on greater efficiencies, increased productivity and improved product quality, while gaining customer satisfaction and improved employee morale. This command-wide process was designed to eliminate waste and non-value-added activities ultimately cutting costs and reducing maintenance time. In compliance with this program, Portsmouth Naval Shipyard took steps to manage work packages in a more efficient manner. To do that, many barriers had to be knocked down to monitor success. Barriers such as:

- Time lost when searching for tools
- Accountability for inventory
- Delays in work flow sequences

The first step in this leg of the relay race to a Lean Initiative process was to streamline the maintenance process in the area of tracking tools, indirect materials. Portsmouth looked to CribMaster to help them with their process improvement.

CribMaster is a set of inventory solutions used in military and other industrial-type environments. Their full suite of inventory management devices using scanners, barcodes, Radio Frequency Identification (RFID) is all driven by a robust software package called CribMaster.

In their search for a storage system that offered flexibility, Portsmouth chose several ToolCube™ point-of-use devices in their consumable material trailer. The ToolCube™ is a large, heavy-gauge-steel constructed cabinet that contains drawers and compartments of various sizes. Here's how it works. The employee simply scans his/her badge and selects the item requested.

CribMaster then provides access to only the approved quantity of the exact



ToolCube Point-of-Use Device

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item requested. With the ToolCube's™ unique storage system of configurable drawers, Portsmouth could accommodate many different types of inventory. Moreover, this system had the capability of adding more devices as their operation grew and controls needed to be tightened.

Greater efficiencies began to be revealed in Portsmouth's ship maintenance process with the proven results of CribMaster. The next step in the relay world of overhaul and maintenance was how to track the movement of the TGI. In 2008 Portsmouth was tasked to explore other technologies to track the movement of TGI's throughout the shipyard. Their end goal was non-stop execution of the TGI by knowing two simple occurrences, where the TGI's are on the shipyard and where the TGI's stopped in the process.

Again, Portsmouth looked to CribMaster for a solution to take them to the next level of process improvements. The solution was to install the CribMaster Last Point Read (LPR) stations that would track the TGI movement throughout the shipyard with the use of RFID. It works like this. Generation II RFID tags are affixed to the inside cover of the TGI. CribMaster LPR devices are strategically located on different floors of the building near elevators and at choke points. The LPR device continually emits a radio frequency that will search for a RFID tag. As a RFID tag comes in range of the LPR it will capture data from the tag and store the information as history to CribMaster's Oracle database.

With the CribMaster LPR, Portsmouth now knows precisely where the TGI was last seen and what floor it was on. Each leg of the maintenance and overhaul relay has been successfully completed with a smooth hand-off of the baton...or TGI. Now, that's what Portsmouth Naval Shipyard calls teamwork.