Marine Corps Platform Integration Center (MCPIC)

The Marine Corps' single source of truth for pre-positioning asset visibility

CGI

Successful military pre-positioning and preparedness requires leaders to accurately locate, track, and fully use all of their resources.

The task of ensuring assets are in the right place at the right time, and in the right hands, becomes particularly complex when preparing a modern military force for battle in distant theaters of operation.

It is critical to connect warfighters to combat-ready equipment and supplies. Transforming the way each command manages its inventories, materiel distribution and asset visibility is vital to fulfilling its immediate mission. Equally important is ensuring that these assets can eventually be returned, maintained and/or replaced when necessary.

CGI's Department of Defense (DoD) clients face these complex issues, while managing a rotating inventory of hundreds of thousands of military end items across multiple areas. CGI has supported our DoD clients for nearly 30 years to help solve these supply chain challenges.

The Marine Corps Platform Integration Center (MCPIC) supports inventory tracking through digital tagging of mission-critical equipment, allowing system users to access real-time data by leveraging automated identification technology and Internet of Things (IoT) sensors.

Keeping an inaccurate count, or shipping the wrong items to deployed warfighters, creates enormous logistical issues and added costs. Common consequences include the need to purchase additional equipment after an original stock was mistakenly taken on mission or exercise, or deploying equipment that is about to go out of warranty, expire, or require maintenance—which can render it useless in the field.

Solution benefits

- Provides 100% total asset visibility across logistics supply chains

- Real-time access to analytics including condition, auditability and GPS location, in order to proactively solve logistics dilemmas

- Integration of existing business operations from multiple disconnected and stove piped systems

- Data driven insights to monitor health and criticality of assets to optimize operations and significantly reduce costs

- Improves data quality and data trust for informed and rapid warfighting decision making

- Allows clients to more efficiently utilize personnel and free up manpower for improved military warfighting output

- Decreases time to implement new IoT devices from days to minutes, reducing manpower and operational delays.

Tracking assets and more

Historically, military organizations used pen, paper and spreadsheets to track equipment and inventories, or to document equipment loading within warehouses and on ships. To transform such an effort into a streamlined, efficient and effective process, CGI developed a Total Asset Visibility (TAV) solution that automates and digitizes these manual processes through a centralized data hub aggregating data from multiple sources.

Simultaneously, CGI was assisting one of our DoD clients with implementing and monitoring Active Radio Frequency Identification (aRFID), which was a DoD In-Transit Visibility (ITV) mandate.

CGI found that aRFID had certain limitations, was often counter-productive to the accountability and accuracy for both inventory and the prepositioned ITV, and came with significantly higher costs for aRFID tags than pRFID tags. After testing and evaluation in the Marine Corps Support Facility's Systems Integration Testing Facility (SITF) at Blount Island Command in Jacksonville, Florida, CGI confirmed the application of passive radio frequency identification (pRFID) tags on each asset to improve tracking accuracy for individual assets.

For example, the pRFID readers placed at the ramp of the ship recorded each item as it was loaded, matched that item against the preloaded logistics plan, and confirmed whether the item belonged on the ship.

Ultimately, the system presented a simple "green light" for loading or "red light" for rejected. A discrepancy report then facilitated correction of 100% of inventory deficiencies prior to deployment—saving time, resources, and cost while on rotation.

The true differentiator for the TAV solution was the integration of an Item Unique Identifier (IUID) (actively mandated by DoD Directive 8320.03) with pRFID. By capturing the IUID data of every item being tagged with pRFID, our customer was then able to automate the IUID process and integrate it within the TAV solution. Over time, this became the foundation of today's TAV solution, which in turn is the heart of MCPIC.

Adapting to challenges as they arise

The TAV solution continued to evolve organically over the next decade. CGI developed needed features and modules, working with our DoD client to solve challenges in real time.

The first evolution of the TAV solution was the creation of a sensor-equipped vehicle for rapid pRFID tag reads. CGI placed a pRFID reader and a Global Positioning System (GPS) tracking device on a cart, then place the pRFID tags at pre-defined locations on the vehicles. Inventory tracking became as easy as driving through the yard to scan the acres of tanks, trucks and containers. Every detail of the inventory—including color, warranty information, serial number, IUID, etc.—became immediately available in the TAV system once the sensor has read the pRFID tag. As shown in the map rendering below, by implementing this electronic cart solution,

personnel could conduct recurring automated inventories, which showed total asset visibility, instead of only annual inventories which lack complete detail and accuracy within the supply chain lifecycle. This new way of conducting inventories took only one to two days, one person and one sensor-equipped cart. Historically, this same effort took over 125 people a full year, required much manual data entry and was inherently inaccurate.

A similar implementation was then developed for taking warehouse inventory, where readers were placed in both the ceilings (for range over the entire warehouse) and on each shelf level. Each reader displayed coordinates on a map to track each item's precise location.

Additionally, the systems uses a personnel presence module as a safety feature to track personnel in typical and atypical work environments. The concept remains similar: The same pRFID technology tracks everyone on base— including when they drive on and off—through pRFID tags incorporated into ID badges. This allows the customer to maintain 100% compliant safety evacuations of military base during random inspections and emergency situations.
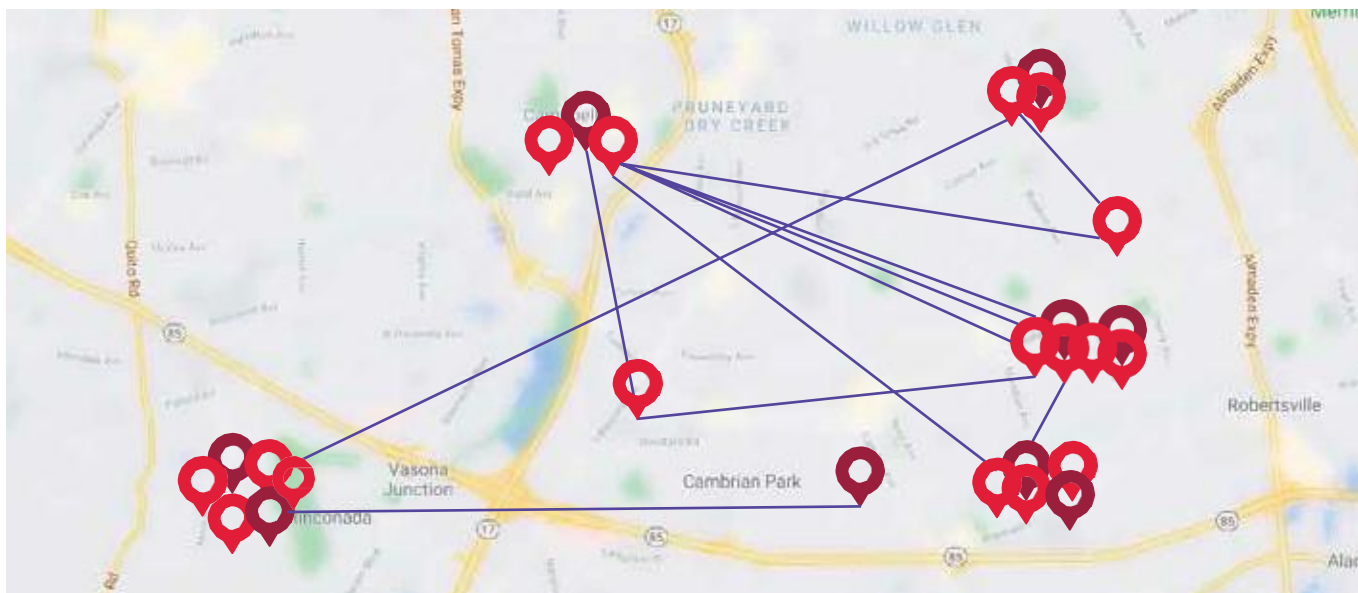
TAV provides the capability to track an asset's historical location

The TAV solution can deploy to austere environments. It allows for the tracking of supplies during shorter-term, disconnected operations to remote environments lacking internet connections.

Personnel place these pRFID tags on the equipment in-country, set up readers, scan the equipment and store the information on a mobile tablet in "local mode" (disconnected from the internet). No matter how long it remains disconnected, the tablet synchronizes all of the data into the system once it is reconnected.

Today, the TAV solution is based on interconnected devices and sensors in an Internet of Things (IoT) - based platform to provide Automated Information Technologies (AIT) to our clients.

Internet of Things (IoT)

- Captures every action that occurs for all tracked assets providing total accountability throughout the supply chain lifecycle.

- Provides real-time visibility of assets on dashboards, including GPS location on maps, within warehouse grids, even in geo-fenced locations.

Automated Information Technology (AIT)

- Centered on pRFID tags providing scalable device management of interconnected tablets, IoT sensors, AIT, GPS, and devices.

- Sensors automatically capture movement, location, condition, status, and more, providing FIAR- compliant auditability while also enabling proactive decisions for logistics dilemmas.
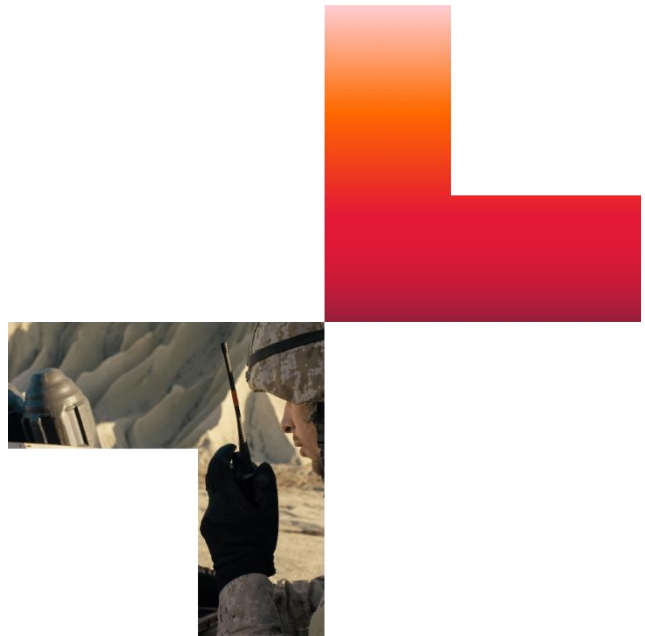
Measuring Success

- Inventory of 16K vehicles decreased from one year to one day; Located 150+ lost vehicles recovering
$18M+ of inventory

- pRFID automated inventory processes resulted in a 99.96% increase in efficiency at multiple military commands

- 82% reduction in time to conduct 100% inventory of 3,000+ items

- Single source of consolidated and visualized data led to a decrease of disparate and stove-piped legacy client applications by 86%.

Looking ahead

CGI is exploring proactive ways of using the TAV solution, to bring further automation and predictive analysis to DoD supply chains. Everything from supplies to maintenance are predictively identified and addressed—and where the workflows and authorities are already in place—and can be delivered in advance of any challenge.

CGI is currently testing additional IoT sensors to provide accurate location of activities in areas where GPS cannot determine location, such as warehouses or underground caves. As users mark and/or inventory items in a warehouse using a tablet device, the sensors can determine the accurate location and plot it on a 3D map for stakeholders to see.

In addition, CGI is integrating the IoT sensors, pRFID readers, and resource management with 3D maps to enhance the warehousing solution to provide optimal pathways for stowing and un-stowing items for shipping and receiving. This enhanced solution will choose the best available user—based on activity and workload— and provide them with the optimal path to pick an item from the warehouse shelf for shipping, or the optimal path for stowing an item after receiving.

The TAV solution allows clients to increase productivity with enhanced and automated business processes; enables the realignment of workers currently using manual asset accounting methods; quickly locates equipment when needed; cuts inventory costs through reduced manpower; and drastically improves total asset visibility, which in turn radically improves audit tracking capabilities.

Total Asset Visibility services available

- Supply chain automation
- Software development and systems integration
- Site surveying and analysis
- AIT hardware procurement and security configuration
- On-site hardware and software installation
- User system training and service desk

Contract vehicle options

CGI provides total asset visibility services to support our clients' missions through 3 major General Services Administration (GSA) schedules and 1 Army contract vehicle

- One Solution for Integrated Services (OASIS)
  www.gsa.gov/oasis

- Alliant 2 Government-wide Acquisition Contract (GWAC)
  www.gsa/gov/alliant2

- Chief Information Officer-Solutions and Partners 3 (CIOSP3) GWAC

- Computer Hardware, Enterprise Software and Solutions (CHESS)ITES-3S
  www.ubtus.com/contract-vehicles/ites-3s

Contacts

Christopher Hetman

Vice President

Defense Logistics

christopher.hetman@cgifederal.com

904.696.5188

Louie Millette

Director

Solution Architect

lucien.millette@cgifederal.com

703.227.6386

Alan Watson

Director

Client Engagement

a.watson1@cgifederal.com

828.289.1416

Insights you can act on

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world.

We are insights-driven and outcomes-based to help accelerate returns on your investments. Our 91,000 professionals provide comprehensive, scalable and sustainable IT and business consulting services that are informed globally and delivered locally.

cgi.com

CGI