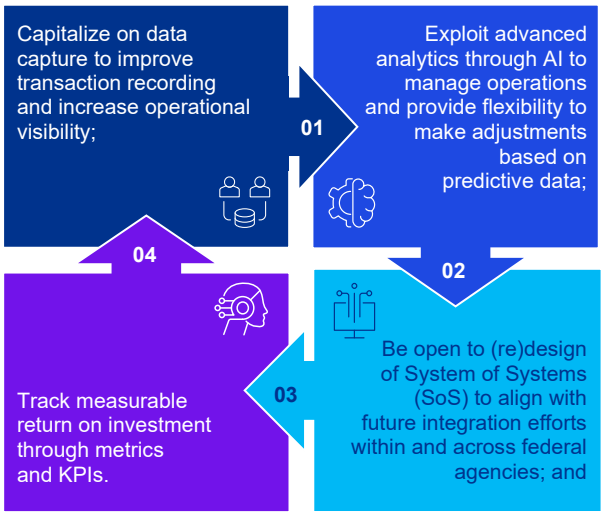
KPMG supply chain and smart technology solutions

Currently, the opportunity to capitalize on smart technologies to manage cost and service in fulfilment operations and distribution networks in the federal space has expanded in the marketplace. Smart technologies have been successfully applied in retail supply chains; and, as consumers, we experience the benefits of this capability daily. Updating government and quasi-government agencies with smart technologies includes leveraging them to:



In addition, FIAR compliance requirements provide justification to institute system-based internal controls to improve inventory accuracy of material and assets while providing financial accountability—both benefits from a Smart technologies solution.

First, leverage **Internet of Things (IoT)** to ensure **assets** such as plant, property, and equipment are made visible across systems and processes.

This visibility includes material components such as lot, batch, and serialization but can also accommodate kitting aspects. In the transportation network, inbound and outbound shipments become visible with mission status, location, and **traceability** of contents for planning and order tracking.

In addition to **IoT**, deploying and integrating **automated robotic conveyance, and asset tracking technology** into an **enterprise resource platform** for large-scale fulfilment operations can help **simplify and standardize** processes. Repetitive and manual tasks become **more accurate and reliable data emerges** through automation. This frees up people/resources to focus on **exceptions and issue resolution** to better meet mission requirements. This also leverages the same labor footprint to increase its mission capacity (i.e., higher material velocity or customer orders).

Smart technologies help **significantly reduce unnecessary activity** between the docks, storage locations, or large-scale machines doing **value-added** work. the possibility to **continuously operate** emerges based on **demand**, operations and networks **flowing continuously or pulse moving products and services. Prescriptive analytics**, fed with data from every part of operations, provides visibility across the workspace identifying non-mission-capable nodes or work centers, and then **reroutes work accordingly.**

One challenge faced in large-scale fulfilment operations with heavy equipment, is creating flow between the machines. **Simulation** of a new operating model can be employed in the design efforts. **Smart technologies** have the potential to prompt a reevaluation on the entire **architecture** of the enterprise to **cope with the scope and scale** of **SoS**. Working with this level of complexity through

design models to simulation is now possible using **Model Based System Engineering (MBSE).**

Perhaps the greatest benefit is the release of **people to collaborate** with across functional boundaries. Clearer expectation and recognition of material, customer, or regulatory requirements prompts change to the **operating models** to address compliance, organizational resilience, and a broader planning capability in an increasingly complex environment. The **risk** of functional silos **not communicating** can significantly impact transformation efforts from a **cost and implementation** perspective

Space utilization

Assessment of the warehouse location, ownership, and proximity to other warehouses of "Like Functionality" to reduce the amount of travel and complexity.

System and technology integration

Implementation of key technologies to enable warehouse performance—semiautomated guided vehicles and narrow aisles; voice-to-text recognition for receipt and issue functions.

Process enablement

Lead with process to create a Visual Factory to improve efficiency and effectiveness of operations.

Applying smart technologies to **upgrade** your **existing operating architecture is an investment, not a cost. The return on investment** should be measurable in reducing the infrastructure footprint. Storage or processing space reductions can reduce **overhead costs** of real property, labor, and the ensuing utility or energy consumption-related costs. **Exception costs** can be avoided as smart technology's robust processing will help **reduce excessive handling**. When work is **level-loaded** across a continuously operating facility, **productivity is released from the constraints of manual labor-based availability.**

A steady flow and output generate greater **overhead absorption** and **revenue potential** than batch and queue efforts or even expediting. These costs are eliminated or redistributed to be more effectively utilized.

For example, KPMG, as the ***prime*** contractor, was engaged to execute the strategy and plan for reengineering the asset management approach to warehousing, and is responsible for the development, planning, piloting, and implementing a series of transformational initiatives in three multigenerational areas:

Warehouse modernization is implementing and transforming the methodology in which items are receipted, stored, and issued through various means of system-enabling processes and technology. This capability develops an integrated and responsive supply chain that delivers improved performance and customer satisfaction. When combined with well-engineered physical layouts, lean work processes, and task-appropriate handling equipment; a robust warehouse management system deliver optimized inventory levels and appropriate response times.

Primary components of the modernization effort include:

Space utilization

i. Warehouse viability – Assessment of the warehouse location, ownership, and proximity to other warehouses of "Like Functionality" to reduce the amount of travel and complexity

ii. Material divestment – Analysis of usage, requirement/demand, and business direction to reduce the quantity and end items to balance to the needs of the Warfighter against supply chain costs

System and technology integration

i. Wi-Fi – Installation of Wi-Fi throughout the warehouses to reduce manual tasking and recording, system integration across platforms, and enable new technologies for ease of installation and use

ii. Optical character recognition (OCR) – Multistep process of pattern recognition involving creation of the ability to digitally read serial numbers on weapons and military equipment using deep learning and advanced OCR

iii. Enterprise management systems – Migrated from a "Manual record and entry" process to a digitized and automated processing (warehouse management system) of gear

iv. Modeling and simulation – Implemented a simulation model for weapons processing to create a capability to simulate and model client processes to support real-time and rapid feedback to client “what-ifs”; outcomes include:

   a. Two- and three-dimensional modeling of the process and layout

   b. Interactive, live feedback at user-controlled inputs and speed for real-time depiction of results as the model is processing

   c. Numerical and quantitative feedback, real-time to understand key performance indicators – Process speed, bottlenecks, yield, etc.

   d. Scenario modeling with the client – Adjustment of “Dials and Levers” by the client and immediate feedback as the model is tuned with the new parameters

Process enablement

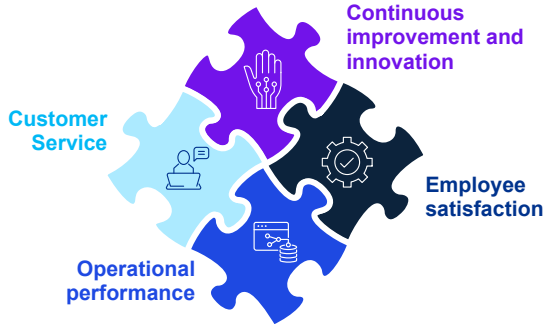
i. Standard Operating Procedures – Identified and mapped all processes into standard work instructions

ii. Pulsed moving line – Installed a pulsed moving line designed to efficiently move gear through the process

KPMG impact summary

- **Cost:** Reduced cost to date for operations **by >32%**. Additionally, divestment has removed billions of dollars’ worth of inventories
- **Speed:** Products move through the process at rates (Dock to Stock to Issue) that have improved by **over 30%**
- **Quality:** Accuracy within stores and pick accuracy have improved trending to goal of meeting **99% desired level**
- **Risk:** Improved overall mission capability rates by a **factor of 10**
- **Controls:** Improving operational and financial discipline, created transparency for tighter capacity to manage risk
- **Process standardization:** Aligned and standardized processes and established asset management metrics to provide transparency to operational performance

Efficiency: Leveraged vendors and Sources of Supply sub-organizations to operate in a smarter, faster, and lower cost manner Focused on driving efficiency and improving inventory accuracy



- **Continuous improvement and innovation:** Assessed how services could be delivered better and more proactively to identify areas of improvement and innovation
- **Employee satisfaction:** Leveraged resources efficiently based on a cultural change model aligning people, processes, and business
- **Operational performance:** Improved customer satisfaction by delivering in a consistent, reliable, and timely manner
- **Customer Service:** Delivered process and experience to meet expectations for needed business services

Smart technologies, advanced analytics, (re)design of SoS, and measuring return on investment are critical pursuits to modernizing fulfilment operations and distribution networks. The task can be daunting to go it alone, but ***with KPMG, we bring over 100 years of experience and trust in navigating strategic change.*** Smart technology to government and quasi-government agencies is the latest challenge, and KPMG is at the forefront.

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