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Navigating the New Normal: How AI can Solve Public Sector Inventory Challenges
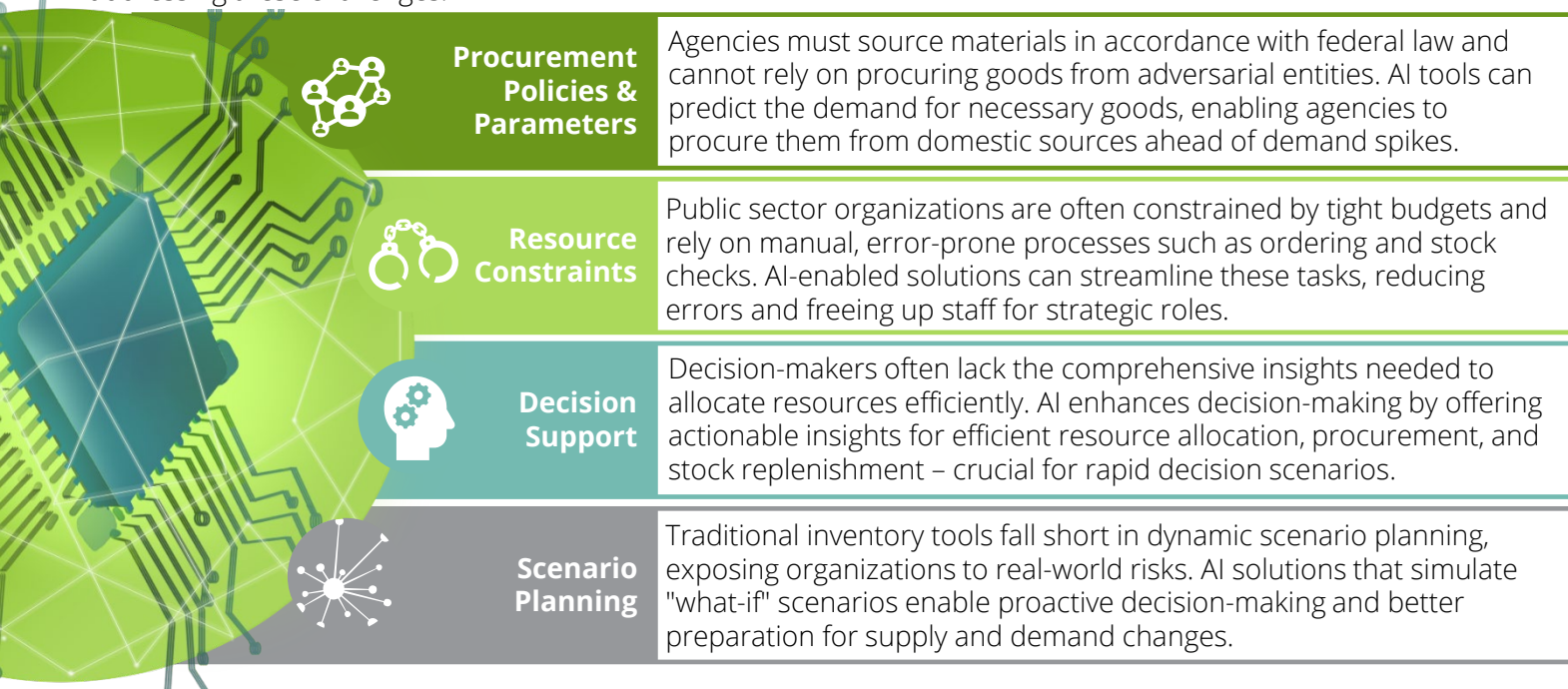
Enhancing Inventory Optimization with Artificial Intelligence: A Strategic Perspective
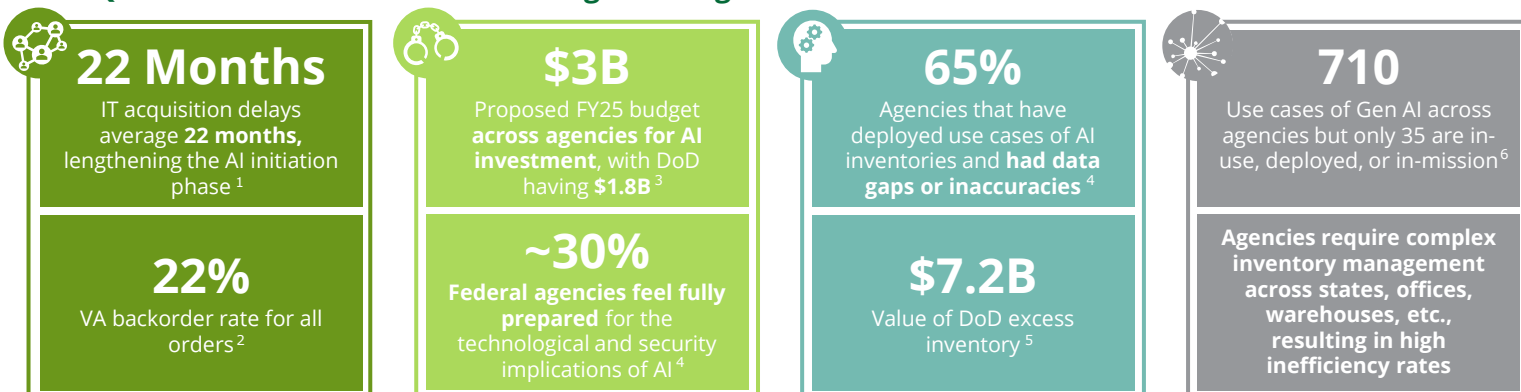
Introduction

AI accessibility and utility for consumers has greatly increased over the past year with a notable rise in public sector adoption driven by policies like President Trump's Executive Order 14179 "Removing Barriers to American AI Innovation" and prioritization on enhancing America's AI leadership. However, AI's potential to transform inventory management in the public sector is still largely unrealized, where transparency, accountability, regulatory compliance, alignment with public service objectives are prioritized compared to private sector. AI-enabled systems improve operations and provide decision-makers with valuable data insights, leading to strategies that better meet mission requirements. These systems have already shown significant benefits in the public sector by enhancing resource management and focusing efforts on essential tasks.

Challenges the Public Sector Faces with Traditional Inventory Management

Public sector inventory management faces unique challenges such as diminishing budgets, stringent procurement policies and procedures, and mission response requirements. AI deployment can support addressing these challenges.

Procurement Policies & Parameters	Agencies must source materials in accordance with federal law and cannot rely on procuring goods from adversarial entities. AI tools can predict the demand for necessary goods, enabling agencies to procure them from domestic sources ahead of demand spikes.
Resource Constraints	Public sector organizations are often constrained by tight budgets and rely on manual, error-prone processes such as ordering and stock checks. AI-enabled solutions can streamline these tasks, reducing errors and freeing up staff for strategic roles.
Decision Support	Decision-makers often lack the comprehensive insights needed to allocate resources efficiently. AI enhances decision-making by offering actionable insights for efficient resource allocation, procurement, and stock replenishment – crucial for rapid decision scenarios.
Scenario Planning	Traditional inventory tools fall short in dynamic scenario planning, exposing organizations to real-world risks. AI solutions that simulate "what-if" scenarios enable proactive decision-making and better preparation for supply and demand changes.

A Quick Look at Public Sector Challenges through Data

22 Months
IT acquisition delays average **22 months,** lengthening the AI initiation phase [1]

22%
VA backorder rate for all orders [2]

$3B
Proposed FY25 budget **across agencies for AI investment**, with DoD having **$1.8B** [3]

~30%
Federal agencies feel fully prepared for the technological and security implications of AI [4]

65%
Agencies that have deployed use cases of AI inventories and **had data gaps or inaccuracies** [4]

$7.2B
Value of DoD excess inventory [5]

710
Use cases of Gen AI across agencies but only 35 are in-use, deployed, or in-mission [6]

Agencies require complex inventory management across states, offices, warehouses, etc., resulting in high inefficiency rates

1. Gartner Survey Finds Government Tech Purchase Decisions Take on Average 22 Months (https://www.gartner.com)
2. GAO-20-487: Actions Needed to Improve Management of Medical-Surgical Prime Vendor Program and Inform Future Decisions (https://www.gao.gov)
3. FACT SHEET: The President's Budget Advances President Biden's Unity Agenda (https://www.whitehouse.gov)
4. GAO-24-105980: Agencies Have Begun Implementation but Need to Complete Key Requirements (https://www.gao.gov)
5. DoD Secondary Item Inventory FY2022 Fact Book (https://www.acq.osd.mil)
6. The Government is Using AI to Better Serve the Public (https://ai.gov)

AI-Driven Inventory Management

By leveraging AI, organizations can efficiently confront traditional inventory management challenges, such as navigating procurement policies and parameters, managing resource constraints, providing robust decision support, and facilitating comprehensive scenario planning. AI technologies offer unprecedented opportunities to accurately predict future inventory requirements and adaptively respond to changing market conditions. The following are a few examples of concepts that explore the transformative potential of AI in redefining inventory optimization strategies.

Intelligent Inventory Allocation

Leveraging dynamic inventory allocation will optimize resource distribution across locations such as U.S. stockpiles and other regional facilities based on predictive demand analytics, traffic patterns, and regional forecasts

- Optimize resource distribution
- Enhance ability to respond to regional needs with reduced likelihood of out-of-stock occurrences

Predictive Inventory Lifecycle Management

Integrating AI systems into procurement strategies can enable organizations to enhance operational efficiency by predicting the lifecycle of inventory, from introduction to obsolescence, and adjust procurement accordingly

- Minimize overstock of expired or obsolete products
- Ensure availability of the items required to complete an agency's mission

Precision Inventory Level Optimization

Utilizing deep learning algorithms to calculate the precise number of items to keep in stock for each SKU, factoring in lead times, supplier reliability, and demand forecasts helps ensure agencies have efficient and effective inventory management

- Improve planning and remove the guesswork
- Strategically position inventory for timely and cost-effective supply chain management

Deloitte's[7] Inventory AI Capabilities

Leveraging AI, Deloitte[7] supports both the public and private sectors to enable intelligent solutions such as Omnia AI, enhancing inventory management operations with capabilities that include:

Demand Forecasting: AI can enhance forecast accuracy and reduce shortage risks using machine learning and deep learning to analyze patterns from various sources for dynamic modeling.

Supply Planning: Supply chain professionals can use AI to tackle complex data and topics, addressing inventory, planning, order management, and logistics to improve decision-making and visibility.

Inventory Lifecycle Management: AI uses advanced forecasting and inventory algorithms to automate replenishment and optimize stock levels, making inventory management more efficient and cost-effective and tailored to demand and operational needs.

Scenario Analysis: AI-enabled digital twin environments simulate what-if scenarios reflecting real-world changes in demand, production capacity, inventory availability, and supplier reliability, enhancing risk assessments, enabling proactive decision making, and reducing manual labor.

Closing Thoughts

AI can transform the way you operate and manage inventory in the public sector by increasing effectiveness, reducing costs, improving response readiness, and enabling better decision-making to successfully perform critical missions. To   learn more about the right AI solutions for your organization, contact our team using the information below!

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