

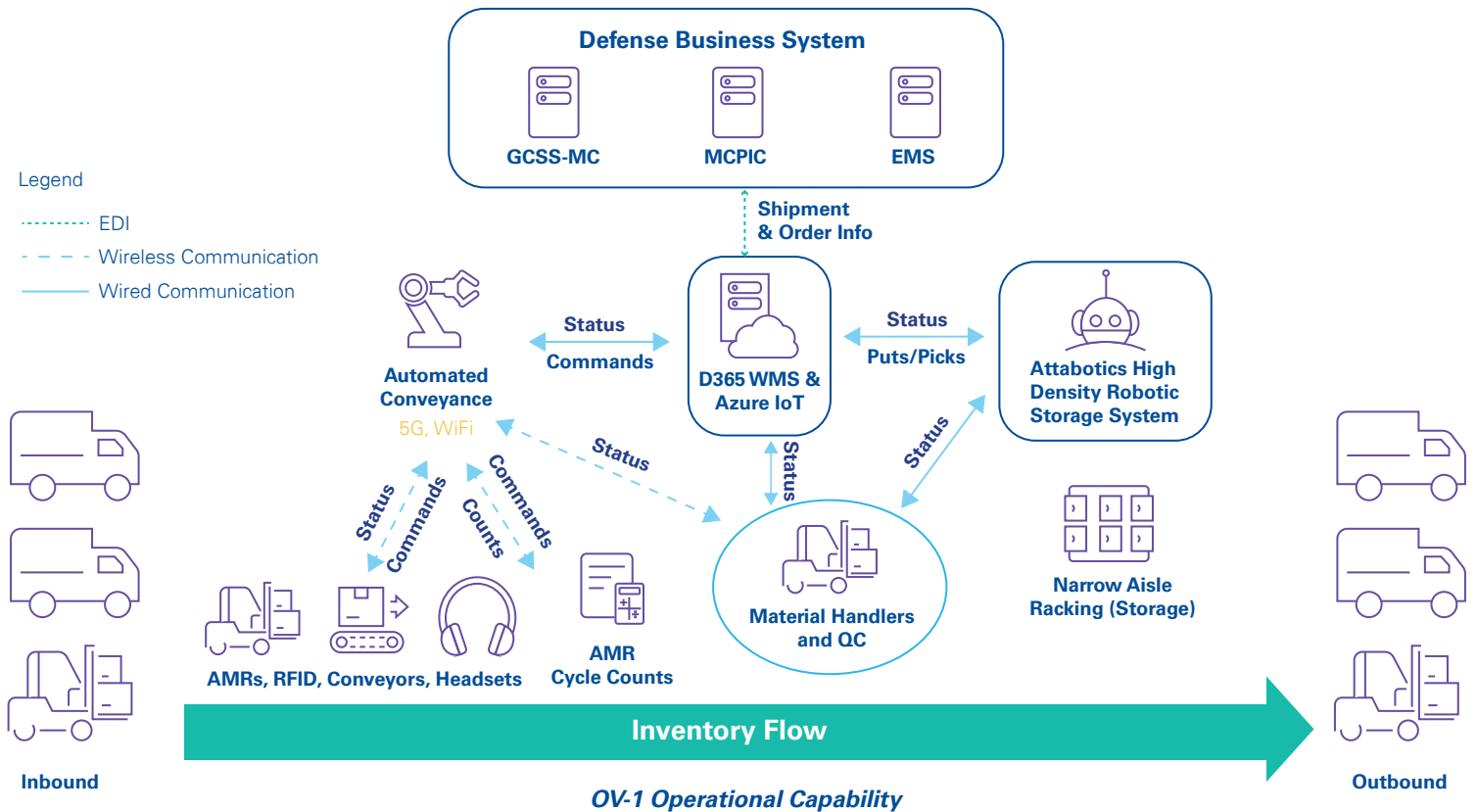


KPMG 5G Smart Warehouse Prototype



Solution overview

Creation of an integrated, automated, and digitized process for gear and product movement throughout the warehouse, which will be used by material handlers and supply technicians equipped with wearable, mobile, and voice capabilities that will be built on a 5G backbone to eliminate latency across systems and technology. The Prototype solution will orchestrate and optimize People, Processes, and Technology across the entire Supply Chain Value Stream. All solution elements will achieve an Authorized to Operate (ATO) prior to project completion in Dec 2023.



Receipt process

The Prototype solution will immediately integrate a set of digitized enablers to create efficiency in the Receipt operations. When gear is received into the warehouse, the Warehouse Management System [Microsoft Dynamics D365] will task or orchestrate its movement. This process will be defined by pre-setup through Advance Shipping Notice (ASN) and Due-In notifications and the digitized identification of the gear with a barcode and RFID Tag. D365 will task the movement of gear through the appropriate processes, primarily a conveyor system enabled with an Optical Scan Tunnel to direct gear to the traditional narrow aisle racking for storage or into the High Density Robotic Storage System – maintaining a digital footprint or audit trail throughout this process.



Microsoft Dynamics D365

Holistic Transactional Data Repository

- Capture transactions provided by material handling equipment and scanning devices
- Transactional system leveraging GCSS as the Accountable Property System of Record
- Facilitates inventory accuracy and accountability

Highly adaptable and flexible capabilities to meet a broad range of processes and interoperability

- Promotes process standards and consistency
- Improved KPI management and reporting

Future Proof

- Able to turn on warehouse management functionality currently not in use at CRI
- Expandable to other warehouses at MCLB Albany and beyond
- D365 Warehouse App allows for user-friendly transactions interface for warehouse operations (Receipt, Movement, & Issuance)
- Powerful external system integration capabilities

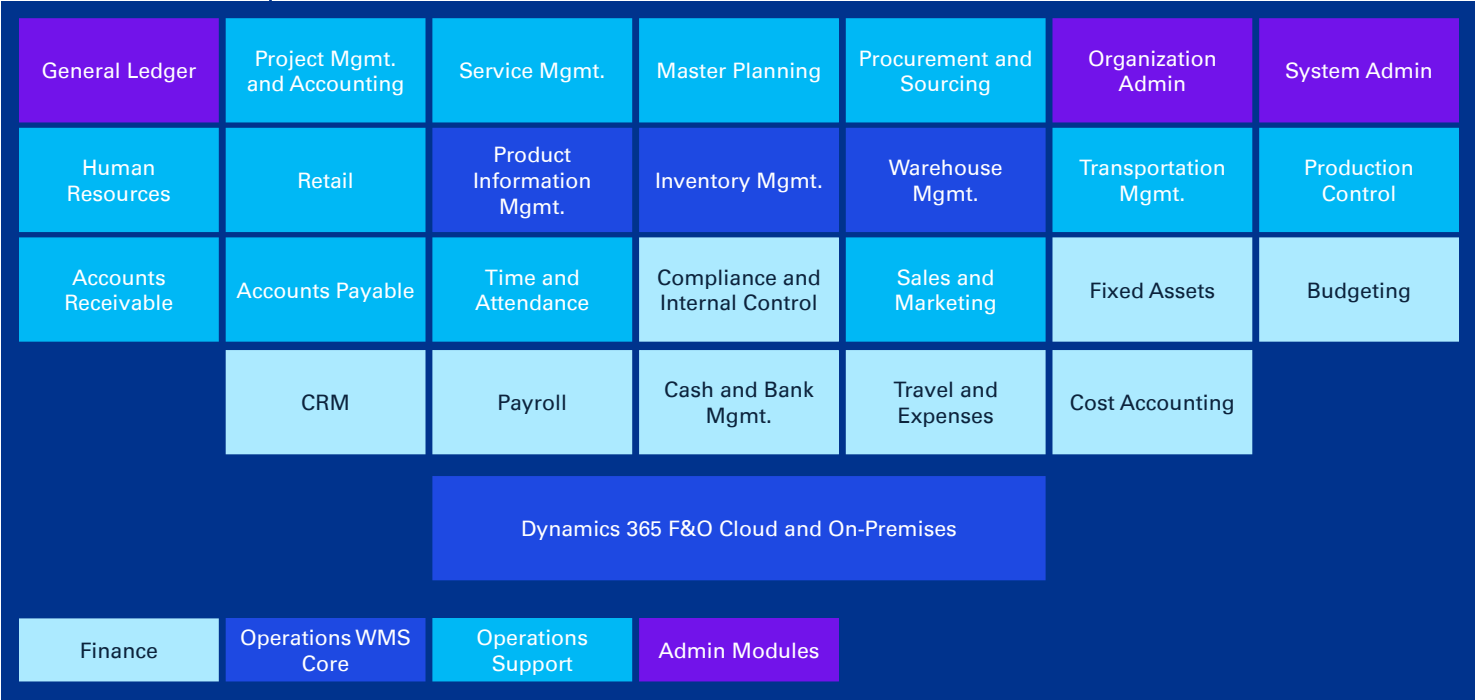
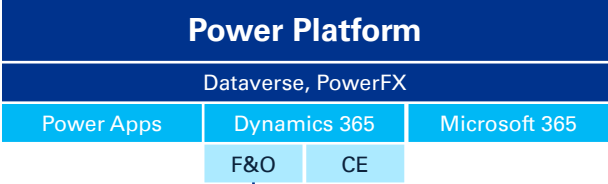
The screenshot displays the 'Master planning' interface in Microsoft Dynamics D365. It features a 'Planned orders' table with the following columns: Number, Reference, Item number, Requirement quantity, Site, Warehouse, Delay (days), Order date, and Delivery date. The table lists several production and purchase orders for various items, including 000061 through 000068, with quantities ranging from 1.00 to 37.00. The interface also includes a sidebar with navigation options like 'Summary of the current plan', 'Planned orders', 'Calculated delays', and 'Actions'.

Number	Reference	Item number	Requirement quantity	Site	Warehouse	Delay (days)	Order date	Delivery date
000061	Planned production orders	015659999	20.00	MCLB-A	1241	1	4/4/2022	4/5/2022
000062	Planned production orders	015659999	20.00	MCLB-A	1241	1	4/4/2022	4/5/2022
000063	Planned production orders	015659999	20.00	MCLB-A	1241	1	4/4/2022	4/5/2022
000064	Planned production orders	015659999	1.00	MCLB-A	1241	-4	4/4/2022	4/4/2022
000065	Planned purchase orders	015222577	20.00	MCLB-A	1241	-4	4/4/2022	4/4/2022
000066	Planned purchase orders	015222577	20.00	MCLB-A	1241	-4	4/4/2022	4/4/2022
000067	Planned purchase orders	015222577	3.00	MCLB-A	1241	-4	4/4/2022	4/4/2022
000068	Planned purchase orders	015338812	37.00	MCLB-A	1241	-4	4/4/2022	4/4/2022

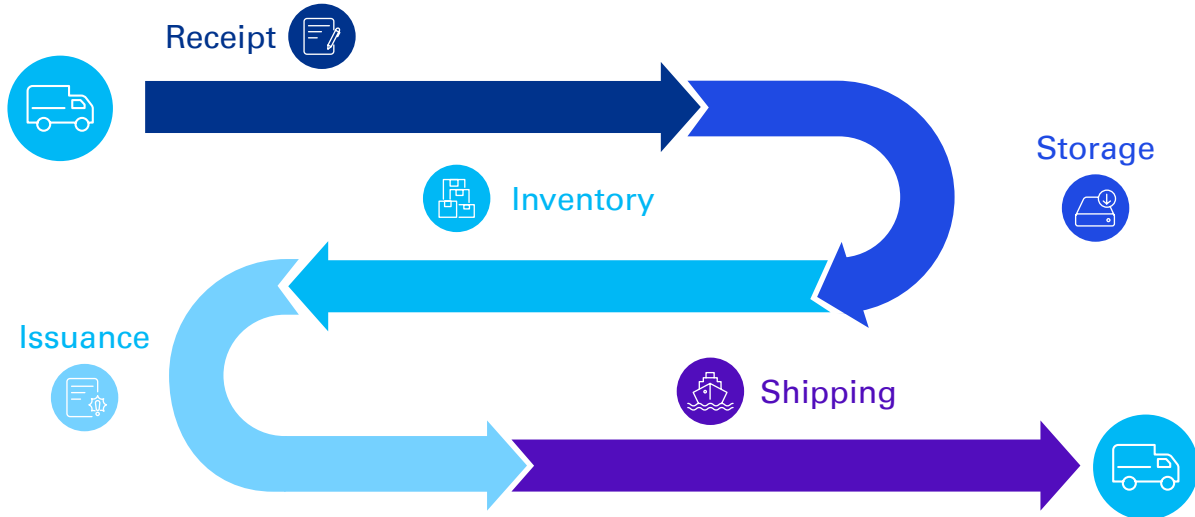
The screenshot shows the 'Warehouse App' interface in Microsoft Dynamics D365. It displays a job card for 'USMC-000067' with a search bar at the top. The job card includes a table with columns: Order, Description, Product, Requested, Started, Completed, Scrapped, and Ret. The job is currently in a 'Leaving' state with 10 primary employees. The interface also shows a progress bar and a 'Start job' button.

Order	Description	Product	Requested	Started	Completed	Scrapped	Ret
USMC-000067		015659999	1.00		0.00	0.00	

Microsoft Dynamics D365 module chart

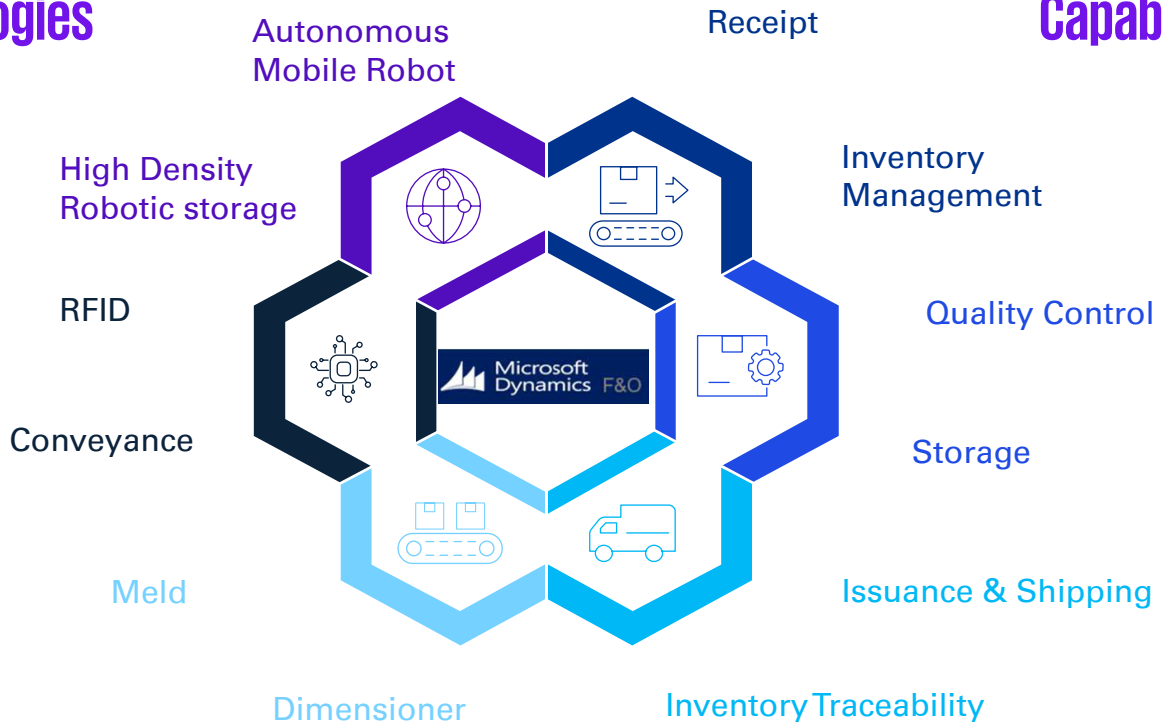


D365 processes



Integrated Technologies

D365 Capabilities

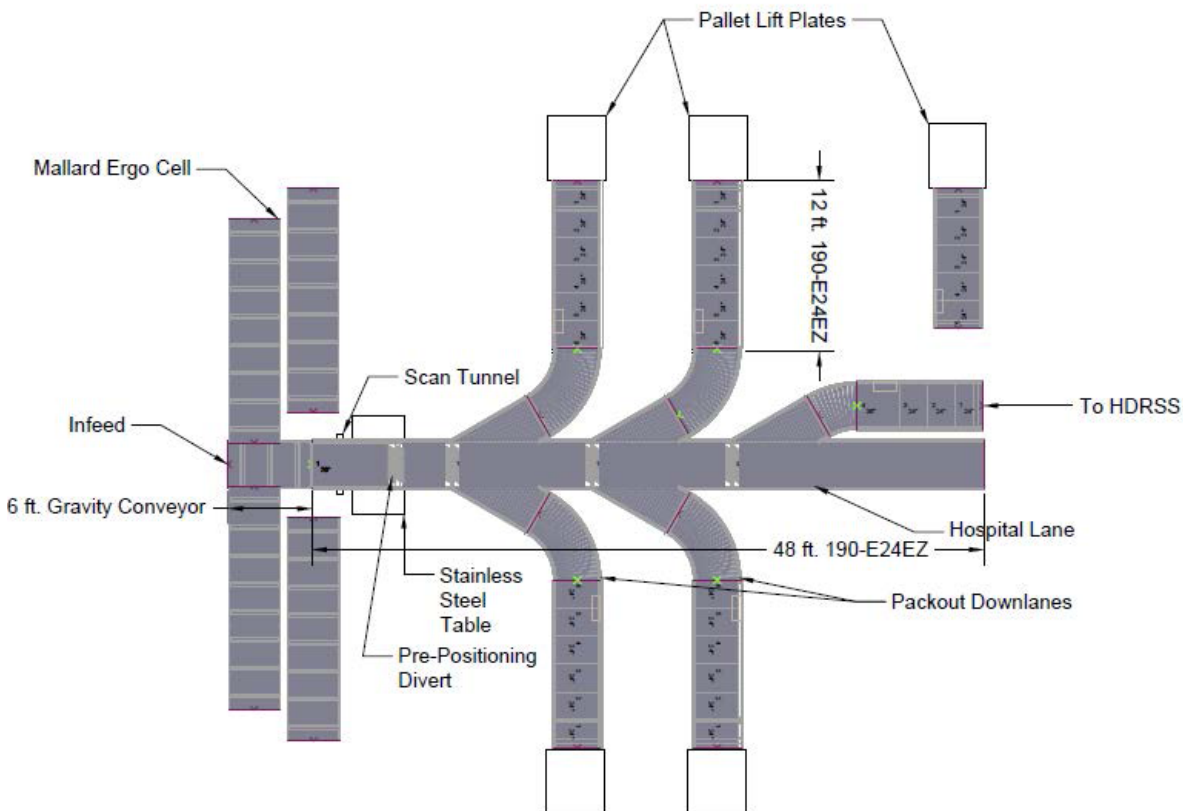
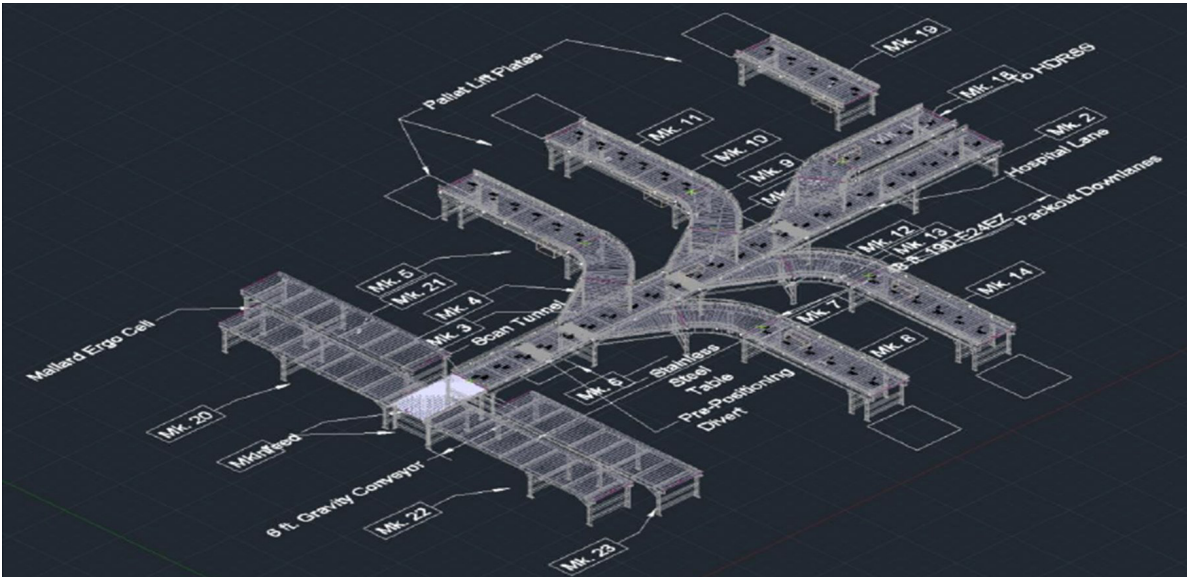


Autonomous robot container movement

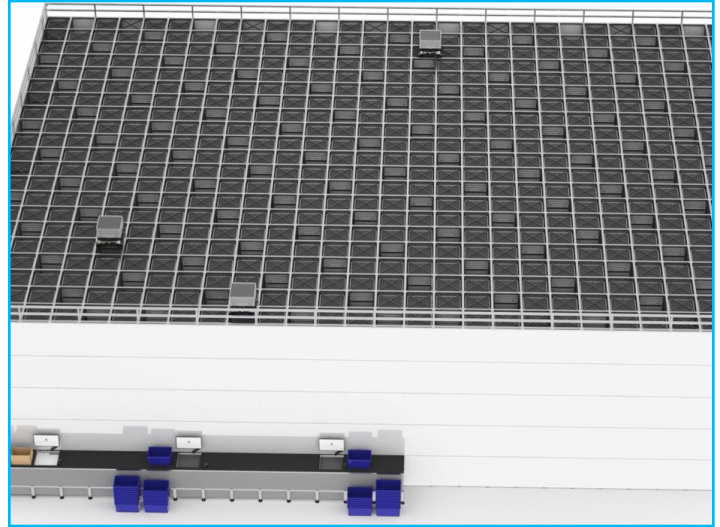
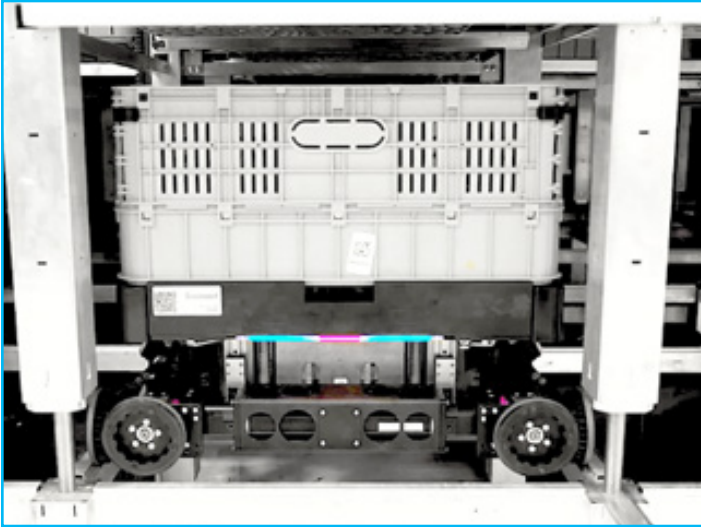
- Automated transfer of pallets and containers by an autonomous robot
- Increased material handling equipment safety through sensors that avoid people and objects
- Improved warehouse ergonomics that boost the productivity of operations



Automated sorting and conveyance



High-Density Robotic Storage System (HDRSS)



Photos courtesy of Attabotics

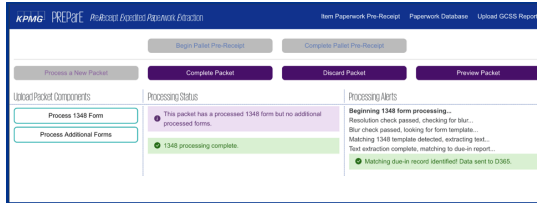
- Increased storage capacity in reduced footprint
 - Current design allows for storage of items in 5,300 bins (22.5" x 22.5" x 10" (LxWxH), max capacity: 80 pounds)
 - Approximately 440 pallet positions stored in 67' x 50' x 13' structure
- Streamlined and efficient movement of gear
 - Rather than traveling throughout the facility via forklift, gear physically transfers from a workstation to storage bins (round trip)
- Accurate Put-Away, Storage, and Issuing
 - WMS control minimizes errors
- Automated reporting for enhanced inventory and labor management
- Substantial safety improvement
 - Elimination of the storage of HDRSS-destined gear via forklift trucks significantly reduces OSHA recordables/near misses and gear damage potential

Analytics and Optimization

Analytics provides machine learning and artificial intelligence support to build a data-driven warehouse



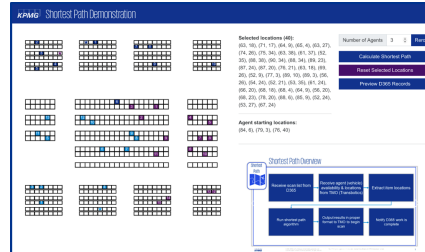
OCR



Optical character recognition (OCR) technology is built into a custom mobile application with artificial intelligence integrations for automatic processing of receipt documents and data transfer to D365.



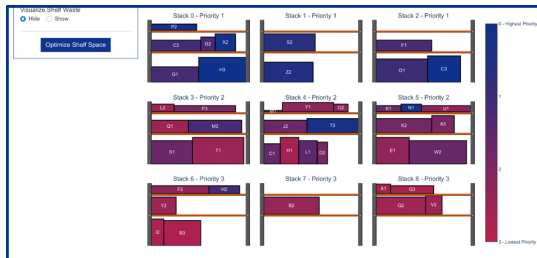
Shortest Path



An advanced algorithm provides the most efficient path to vehicles for item retrieval, including support for multiple vehicle retrieval and flexibility for vehicle start and end location.



Storage Optimization



Item properties are utilized in an optimization algorithm to provide the ideal location in the warehouse for each item in storage.



Physical Intrusion

Artificial intelligence is used to detect activity and cross-reference it with work scheduled by D365 to automatically identify anomalous activity.



Decision support

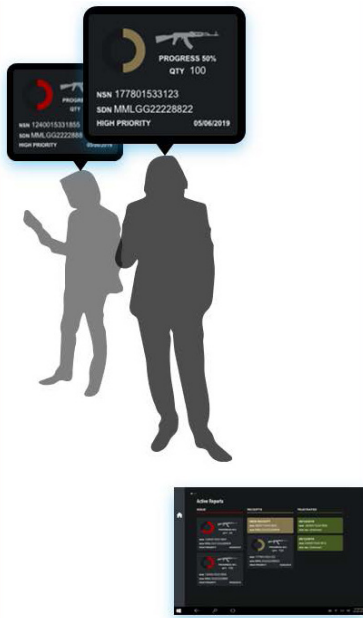
Interactive dashboards and custom metrics are provided to support warehouse decisions and management in real time.

Advancing Accountability – Digitizing and Automating the Connected Material Handler

Initial UX Development

Digital Enablement

- Material Handlers and Supply Techs are able to work across multiple different digital touchpoints for a consistent user experience



Operations Engagement

Health Measurements

- Warehouse managers are able to measure and evaluate performance both as individual users and as an aggregate warehouse



Real Time Integration

Network Integration

- Users are able to indirectly pull information from the GCSS-MC and other systems to evaluate assets in real time to streamline the experience of gear processing



Connected Material Handler – User Experience in a Digitized Environment

- Develop Validation/**Performance Measurements** reports
- Develop **Activity level report** for monitoring progress for warehouse processes
- Incorporate the usage of monitors in Operations to display health **performance and status of processing**
- Create support documentation for **common used features** to minimize the hand key data input

Call to action

To learn more about our supply chain capabilities, visit us at read.kpmg.us/fedsupplychain or contact:

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