

Agile Robotics Benefits

- Expeditionary quality MHE capabilities that can improve efficiency & effectiveness within adverse or hostile settings
- “Robotic” force multiplier; extended operations, improved throughput, decreased customer wait times, and reduced logistics footprint
- Improved visibility and optimization of processes enabling more “aware” and capable logistics



Stakeholders



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Agile Robotics for Logistics

Technology to enable unmanned material handling operations and maximize Soldier protection



**US Army
 LOGISTICS
 INNOVATION
 AGENCY**

Project Description

- U.S. Army Logistics Innovation Agency initiative in collaboration with Combined Arms Support Command, Army Research Lab, Director Defense Research and Engineering
- Includes development and demonstration of advanced Robotics capabilities for logistics. Specifically, a robotic forklift appliqué targeted at tactical supply support activity
- Results of 2nd year R&D effort. Capabilities include:
 - Effective autonomous navigation capabilities with detection and avoidance of obstacles
 - Dexterous manipulation capabilities to handle and move bulk sustainment commodities under multimodal command
 - Recognition and execution of abstract, high-level commands
- Massachusetts Institute of Technology leading development with Lincoln Lab, Draper Lab, BAE Systems

Leveraged DARPA Urban Challenge Work

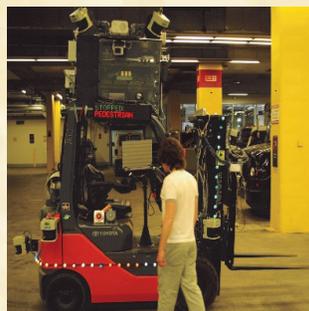


TECHNOLOGY ATTRIBUTES

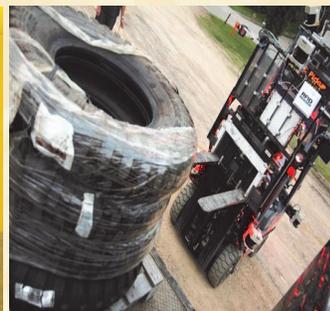
- Robotics perception and autonomy
- Robotic mapping and environmental learning
- Dexterous manipulation of loads
- Interaction/mission performance within a dynamic environment; humans, vehicles, buildings, equipment, uneven surfaces
- Natural human command interfaces including voice and pen gesture commands
- Annunciation of intent



Approaching pedestrian causes robotic forklift to pause



Robotic forklift approaches pallets at June 2009 demonstration



Envisioned Logistics

Capabilities

- Ability to automate logistics material handling functions
- Utility at support areas including tactical warehouses, Supply Support Activities, and ammunition storage/holding areas
- Potential capability migration to other Army vehicles/applications



Manned/Unmanned 3K Robotic Forklift 2nd Year Prototype



Targeting Existing Forklifts with Add-on "Kits"

