

# Industrial Material Handling Industrial Autonomous Vehicle

## Goal

- Reduce costs and improve efficiency in industrial material handling by providing to the industrial AGV industry performance tests to support the use of non-contact safety sensors and appropriate control systems architectures and standards to enable the use of advanced navigation techniques based on such non-contact sensors.

## Deliverables

- Support relevant voluntary standards:
  - Modify ANSI/ASME B56.5 to allow non-contact safety sensors, safety performance tests, system architecture for component and system interoperability
- Work with key industry partners to advance state-of-AGV technology
  - Demonstrate: technology transfer from DOD UGV projects; advanced navigation of AGV in factory

## Customers and Collaborators

- Automated Guided Vehicles Users and Vendors
- Potential AGV Users
- Material Handling Industry of America
- Service Robot Manufacturers and Users

*Military:* Army Demo III  
*Transportation:* DOT



*Manufacturing:*  
NIST IAV Project

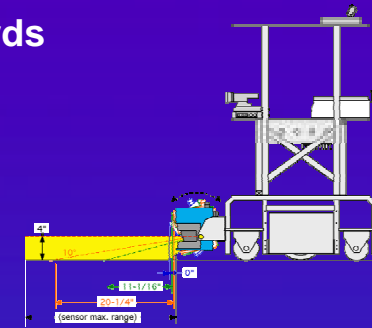


*Industry:*

AGV's, Service Robots

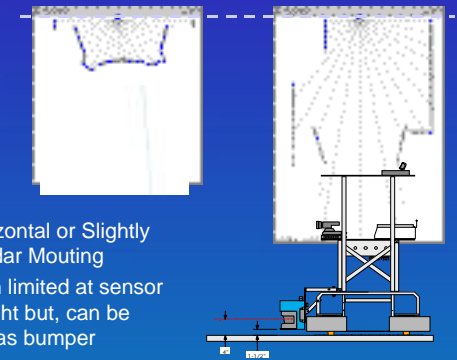


## Standards



- NIST is working to clarify ASME B56.5a-1994 standard to be more useful for AGV vendors and users
- Advance standard to allow for the use of non-contact bumpers (e.g., laser ranging)

## Measurements



- Fixed-Horizontal or Slightly Angled Ladar Mounting
- Information limited at sensor mount height but, can be dual-used as bumper

## Advanced Technology

- Vision-Based, Lane-Following toward autonomous vehicle adaptation to large industrial facilities
- Facility Mapping toward autonomous vehicle world-modeling
- Advanced Sensors (e.g., 2D Ladar technology)

