

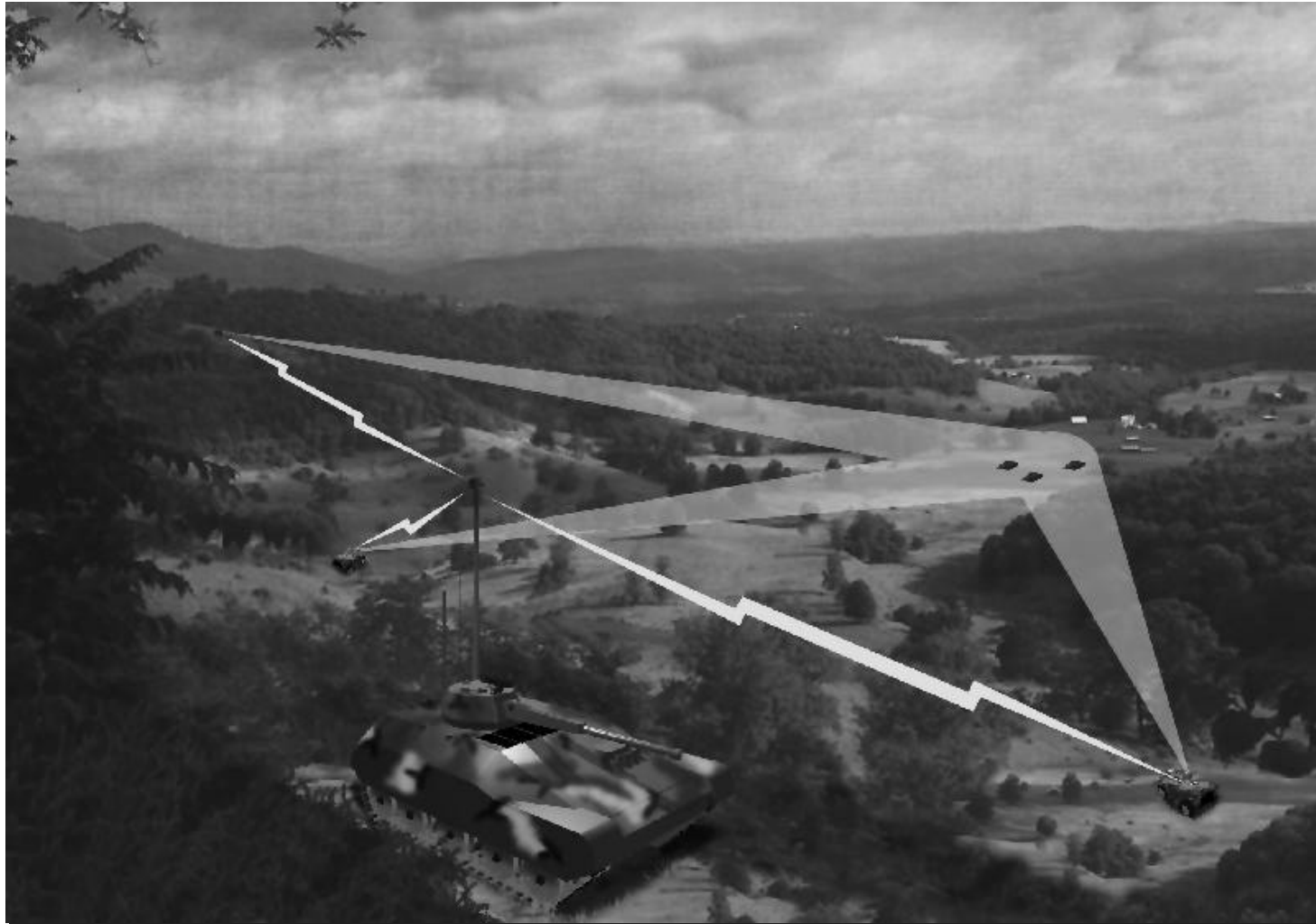


GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

Demo III Operational Concept



Report Documentation Page

Report Date 29May2001	Report Type N/A	Dates Covered (from... to) -
Title and Subtitle Demo III Operational Concept	Contract Number	
	Grant Number	
	Program Element Number	
Author(s)	Project Number	
	Task Number	
	Work Unit Number	
Performing Organization Name(s) and Address(es) General Dynamics Robotic Systems	Performing Organization Report Number	
Sponsoring/Monitoring Agency Name(s) and Address(es) NDIA (National Defense Industrial Association) 211 Wilson Blvd, STE. 400 Arlington, VA 22201-3061	Sponsor/Monitor's Acronym(s)	
	Sponsor/Monitor's Report Number(s)	
Distribution/Availability Statement Approved for public release, distribution unlimited		
Supplementary Notes Proceedings from the 2001 Vehicle Technologies Symposium - Intelligent Systems for the Objective Force, 29-31 May 2001 Sponsored by NDIA		
Abstract		
Subject Terms		
Report Classification unclassified	Classification of this page unclassified	
Classification of Abstract unclassified	Limitation of Abstract UU	
Number of Pages 21		



GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

Performance Goals

- Overall System
 - Intelligent, Modular, Open Software Architecture
 - Operable by Troops
 - Total Robotic Vehicle Weight: 2500 lbs
 - Transportable in Theater (e.g., Helo, V-22)
 - Ruggedization Suitable for User Appraisal
- Mobility
 - Day/Night/Limited Adverse Weather (Rain/Dust) Operation
 - Road Following: 40mph in Lane (High Reliability)
 - Cross Country: Speed Appropriate to Terrain & Vehicle Dynamics, Up to 20mph (day, dry), 10mph (night, wet)
 - Detect and Avoid All Non-Negotiable Obstacles
 - Towable by HMMWV
 - Mission Duration: 24 hrs



- Communication
 - RF Range: 10-15km using Available Military Frequencies
 - Data Rate: 25kbs/Vehicle

- Planning
 - Four Vehicle Mission
 - Operator Pre-Mission Planning & Intermittent Supervision Thereafter
 - Single Seat HMMWV Installable OCU / Non-Dedicated Vehicle
 - Planning For:
 - Feature Extraction/Trafficability Assessment
 - Tactical Behaviors
 - Target Hand-Off Among Multiple Vehicles
 - Cooperative Search
 - DTED II (30m) Topographic Database
 - Platoon Convoying



- Control
 - Multi-Threaded Control
 - Highly Modular, 4D-RCS - JAUGS
 - Tactical Behaviors
 - Safely Operable in Mixed Force (Mounted/Unmounted, Manned/Unmanned)



GENERAL DYNAMICS

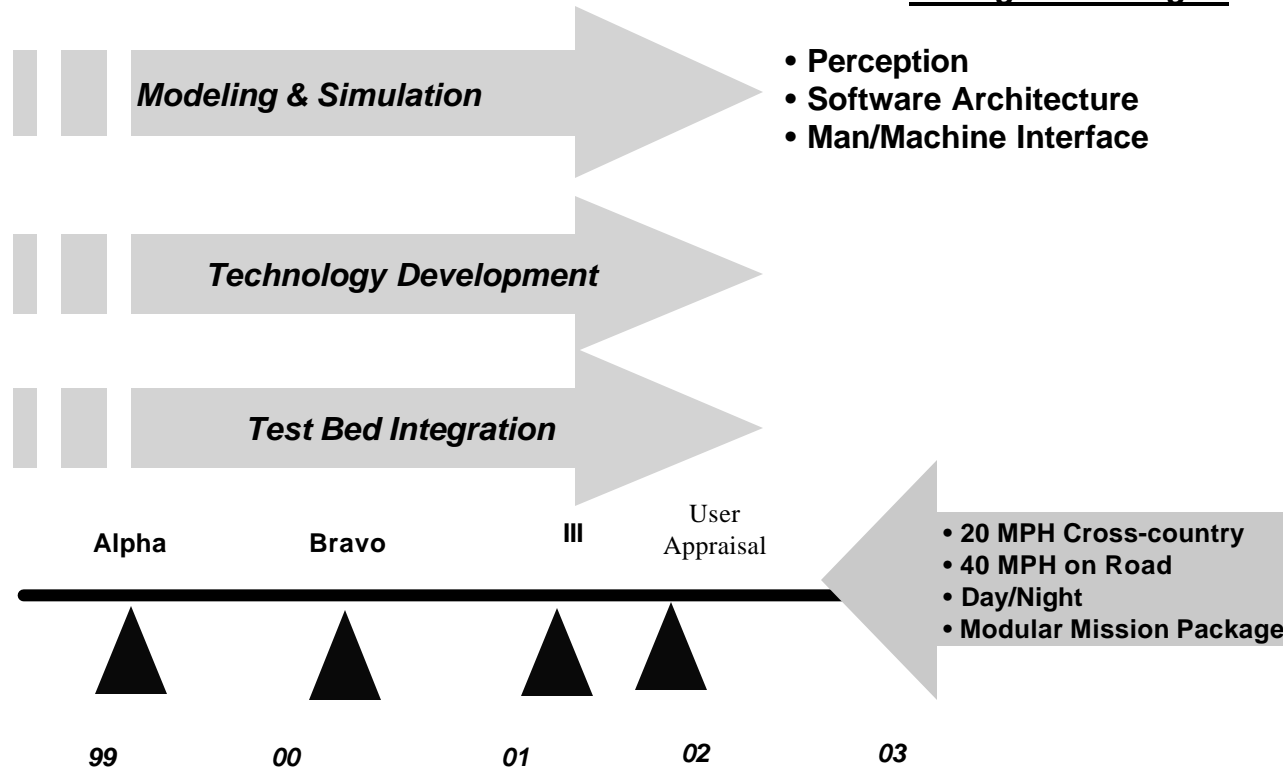
Robotic Systems

ISO 9001 Certified



Game Plan

Pacing Technologies





GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

Demo III Experimental Unmanned Vehicle (XUV) DEMO A Configuration





GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

XUV DEMO B Configuration





GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

XUV DEMO III Final Configuration



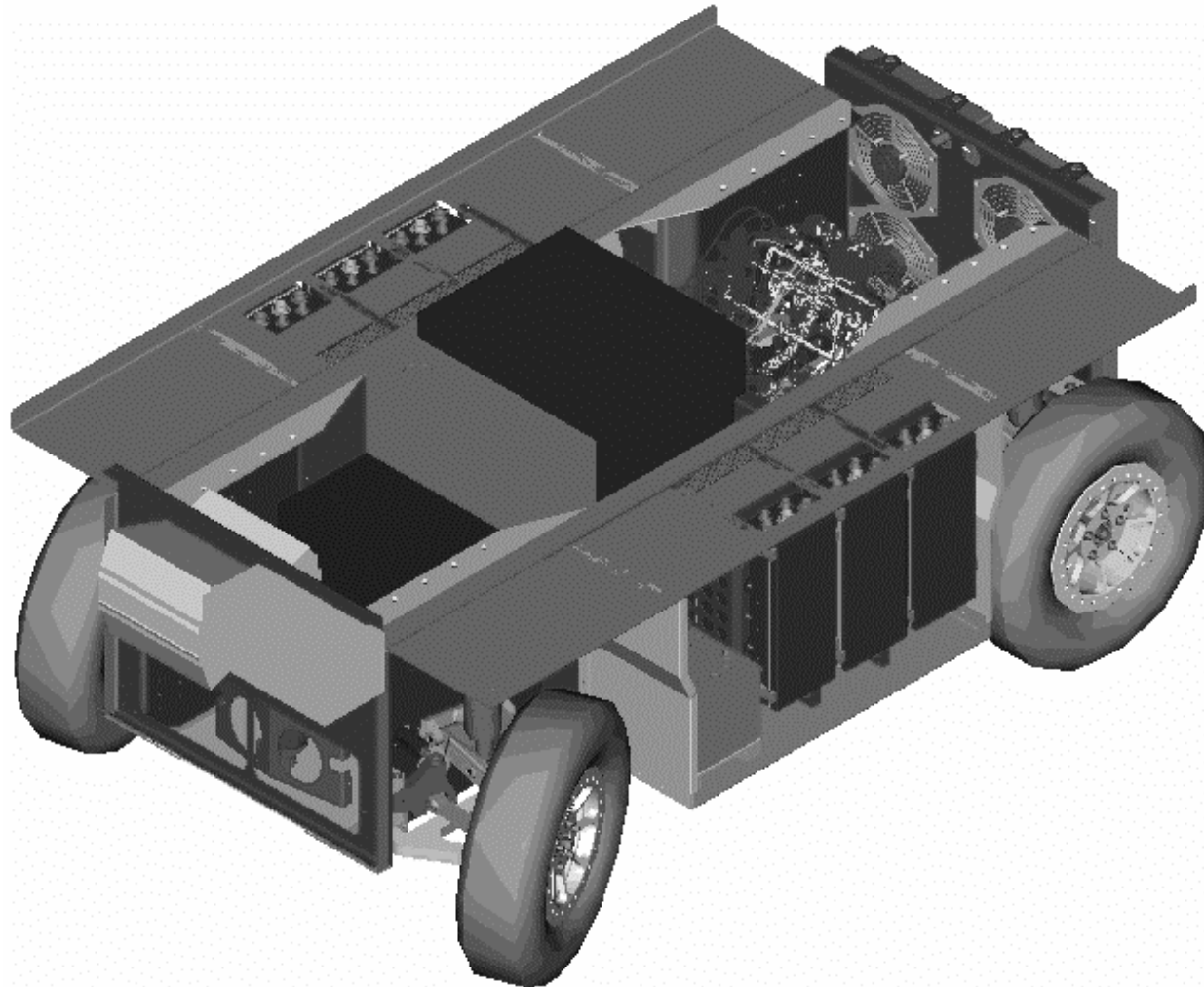


GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

Platform





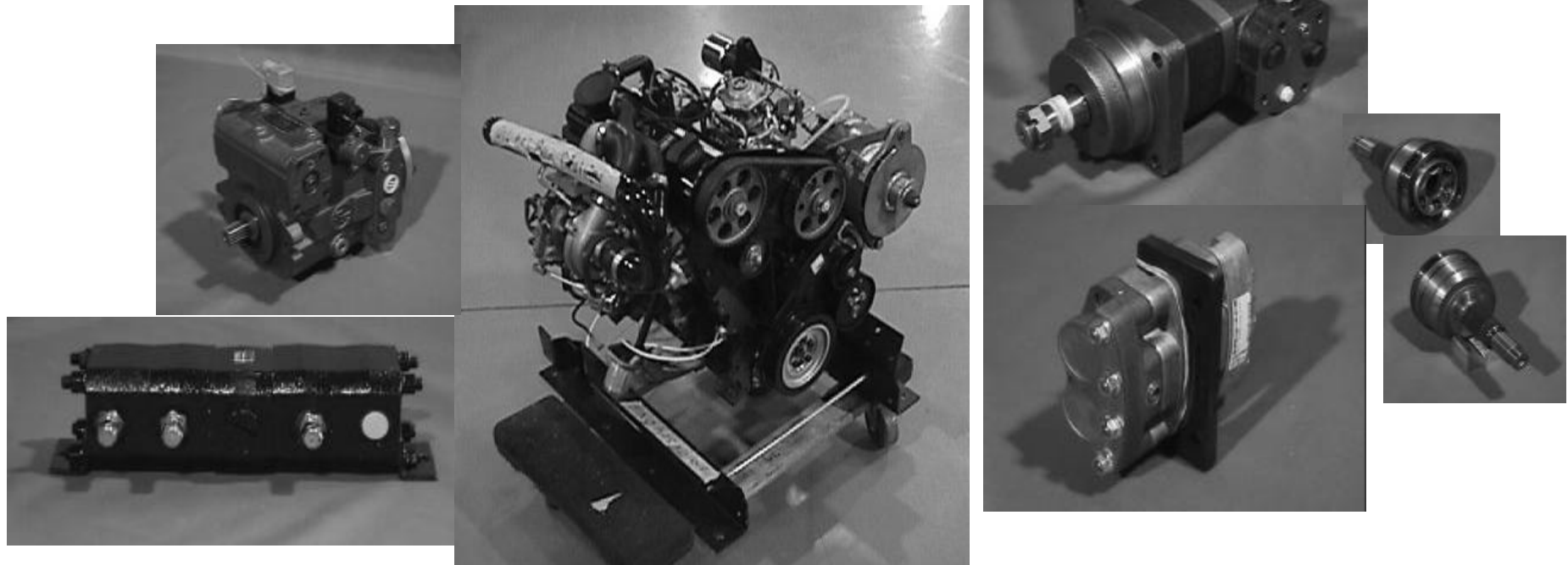
GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

Platform - Powertrain

- 78 Hp VW Turbo Diesel Engine
- 70 GPM Sunstrand Hydrostatic Pump
- Pump Drive Sized for 4300 RPM and 2500 RPM Engine Speeds
- 15 Cu In Eaton 2-Speed Wheel Motors
- John S. Barnes Mechanical Flow Divider





GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified



XUV Sideslope Capability



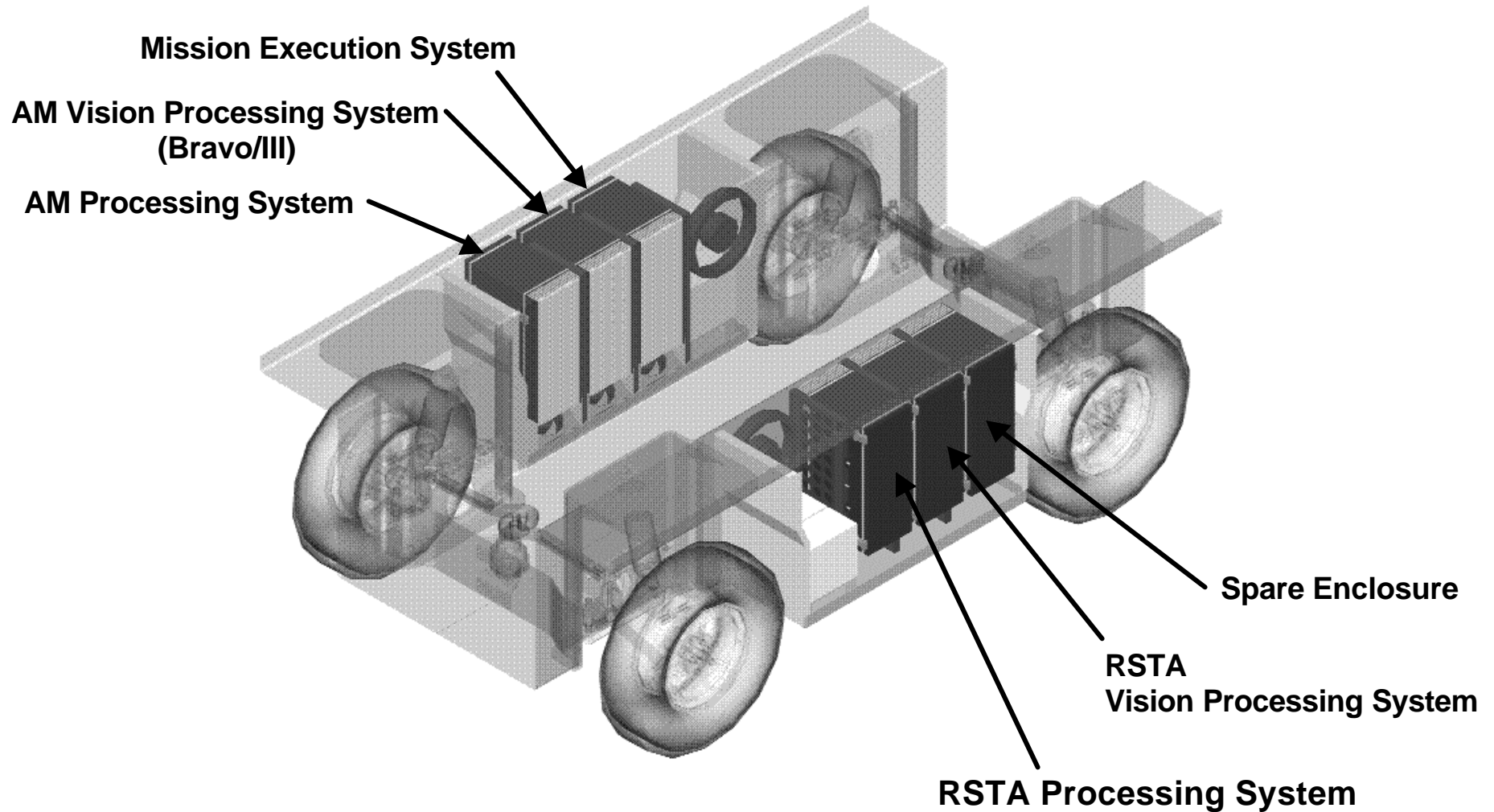


GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

Vetronics - Processing Enclosures



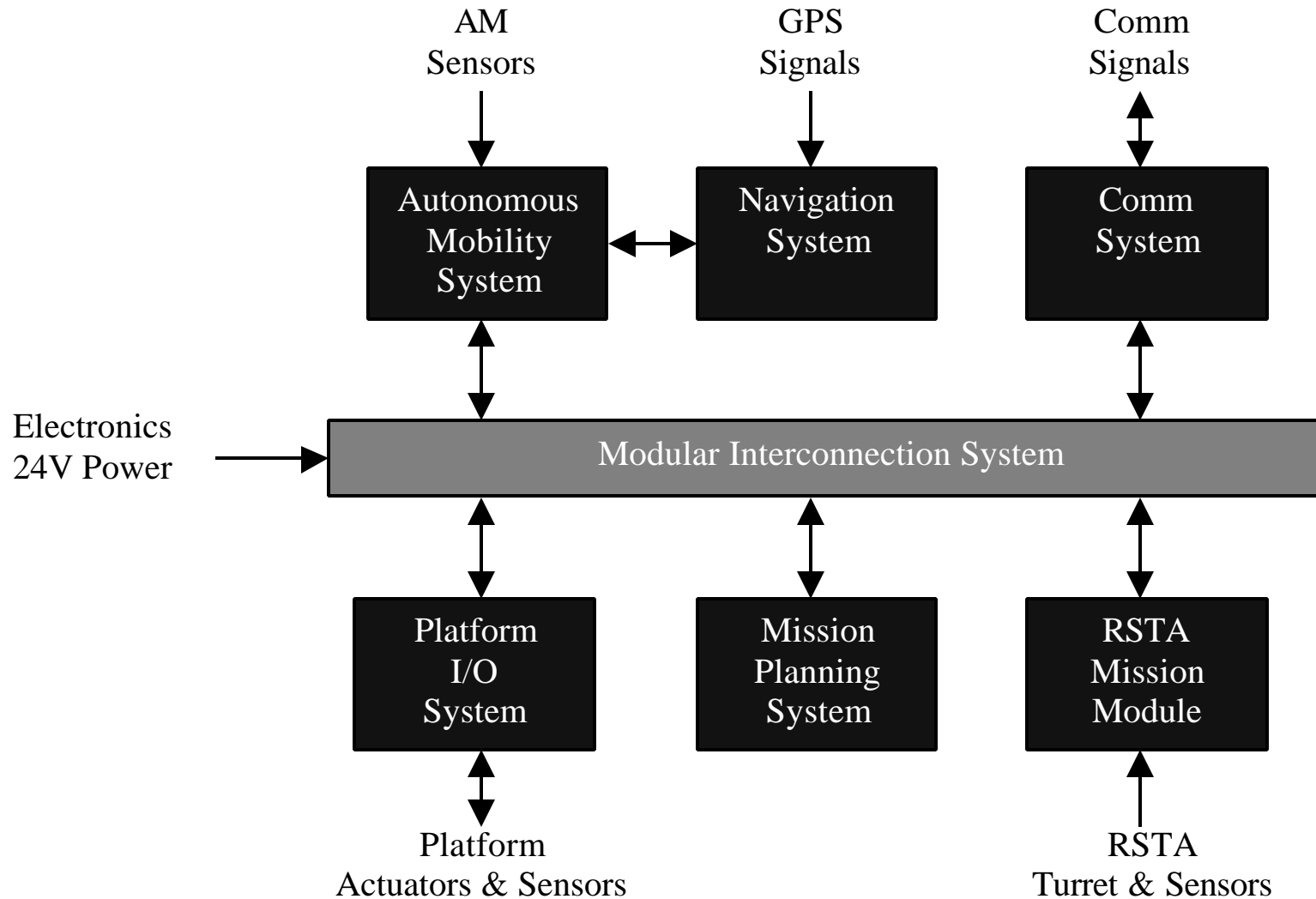


GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

Vetronics

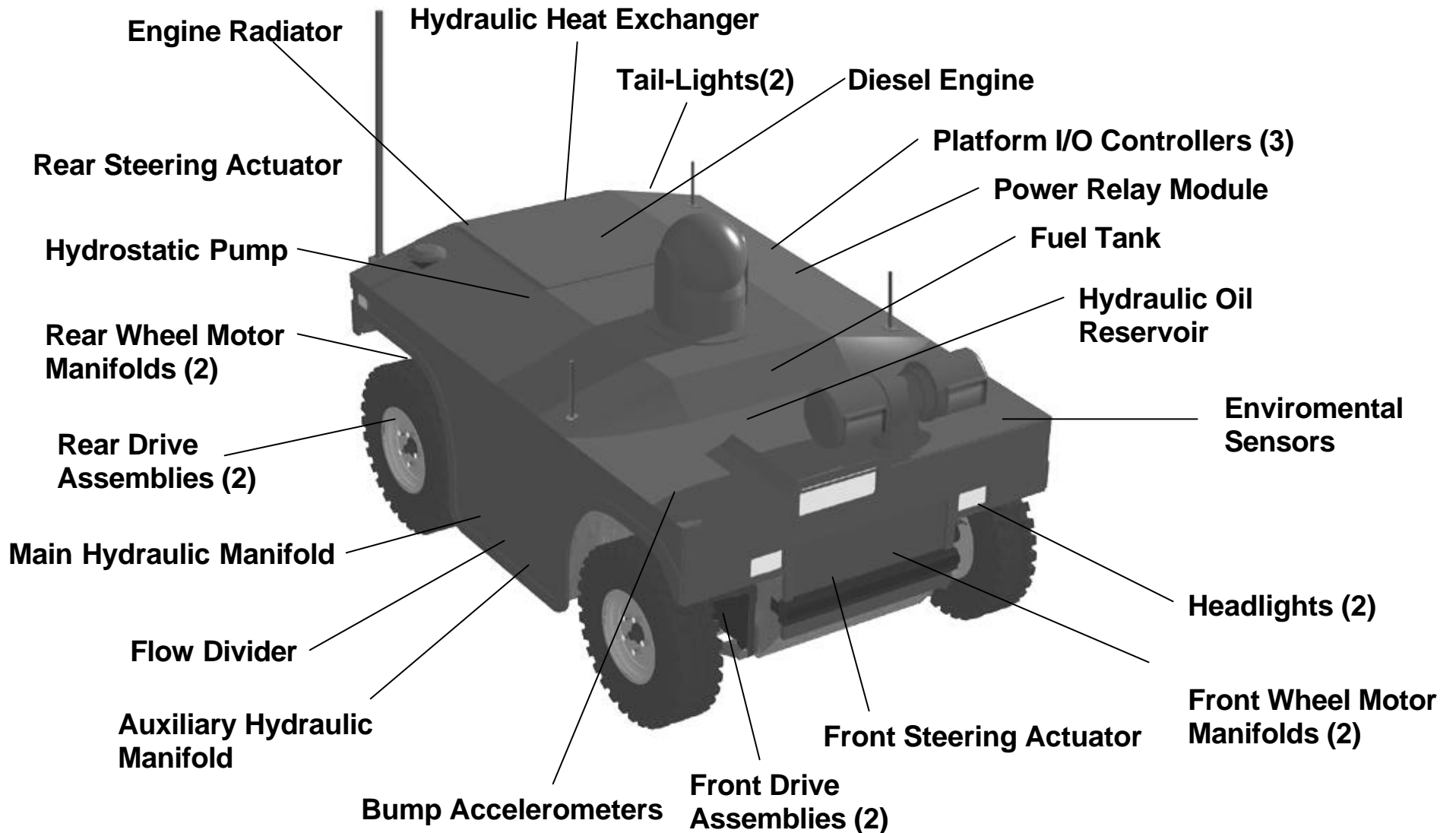




GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

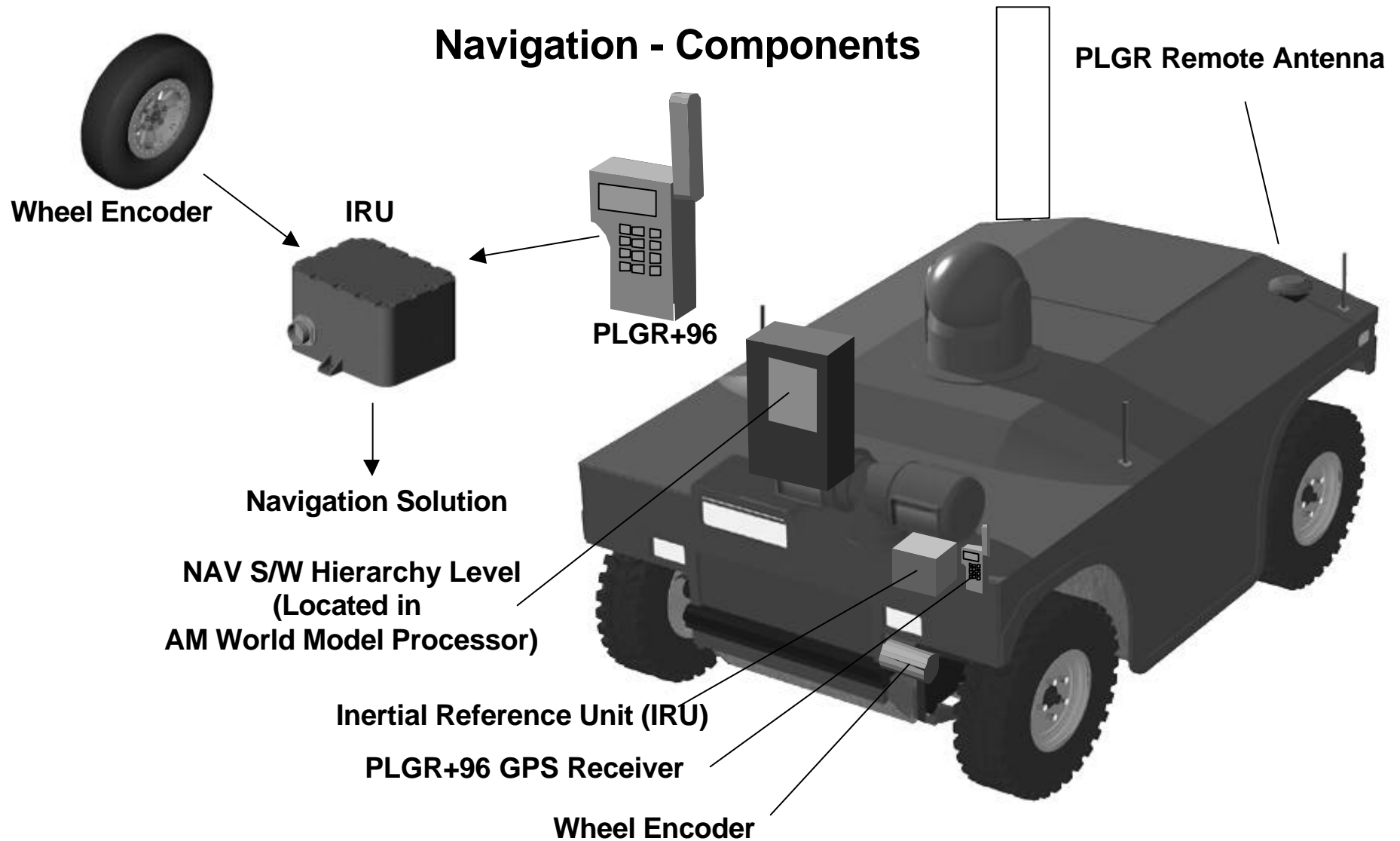




GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified





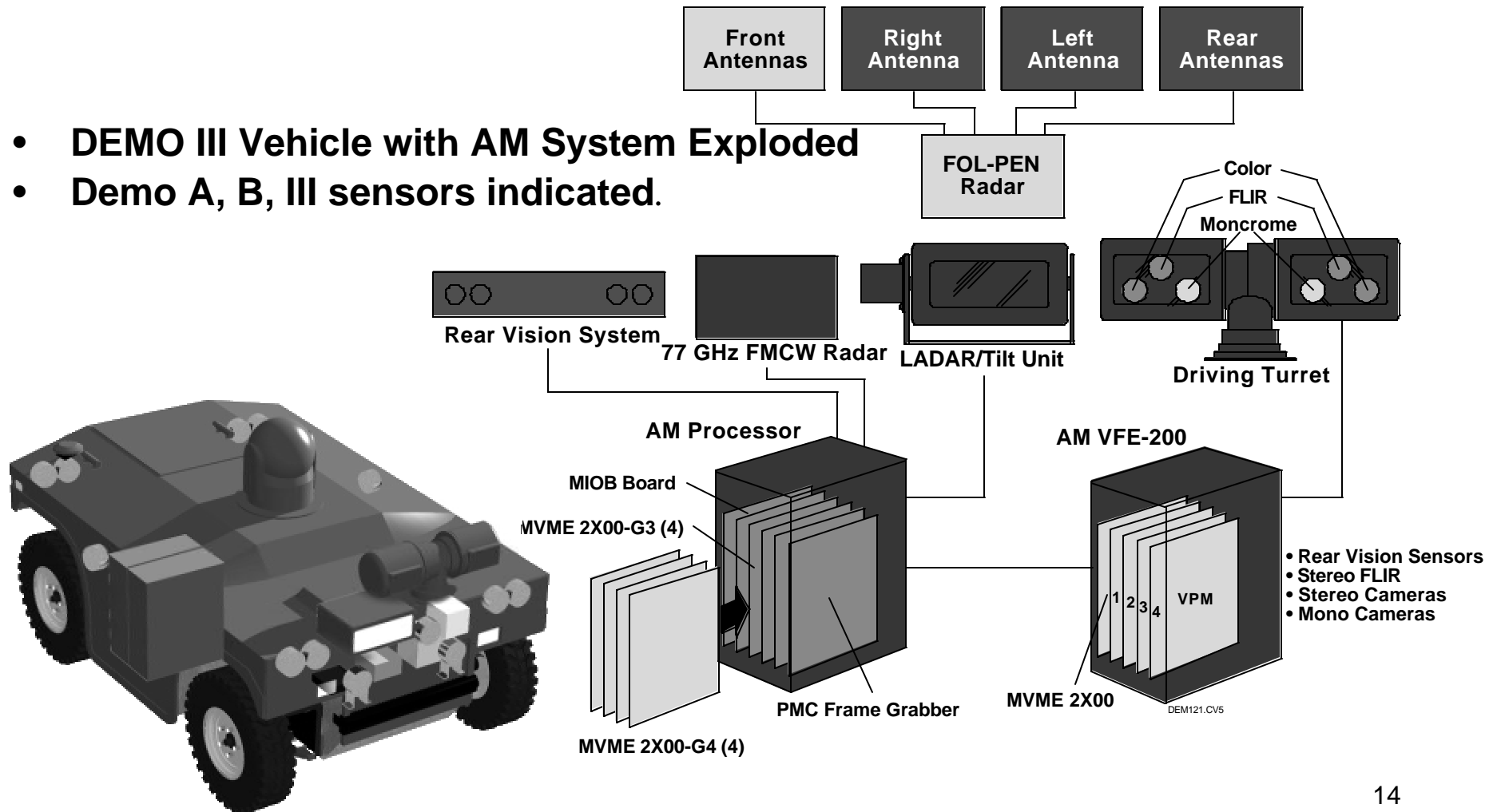
GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

Autonomous Mobility on the XUV

- DEMO III Vehicle with AM System Exploded
- Demo A, B, III sensors indicated.



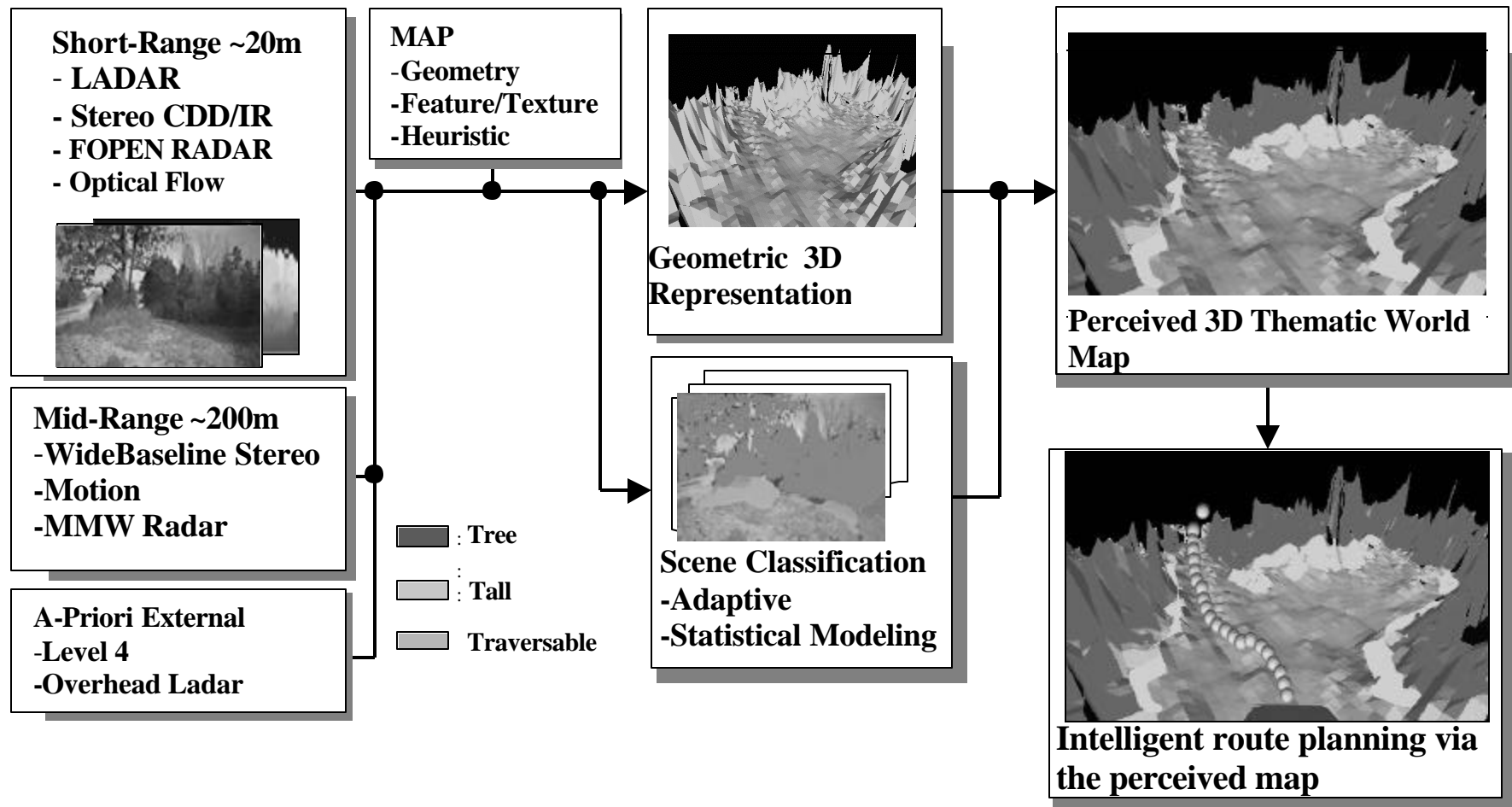


GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

Autonomous Mobility on the XUV





GENERAL DYNAMICS

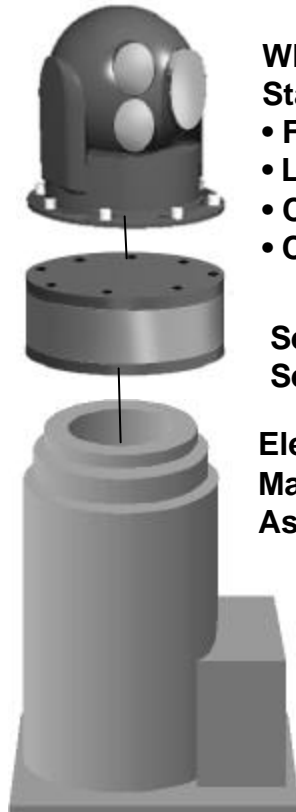
Robotic Systems

ISO 9001 Certified

RSTA on the XUV

RSTA Sensor Integration Plan.

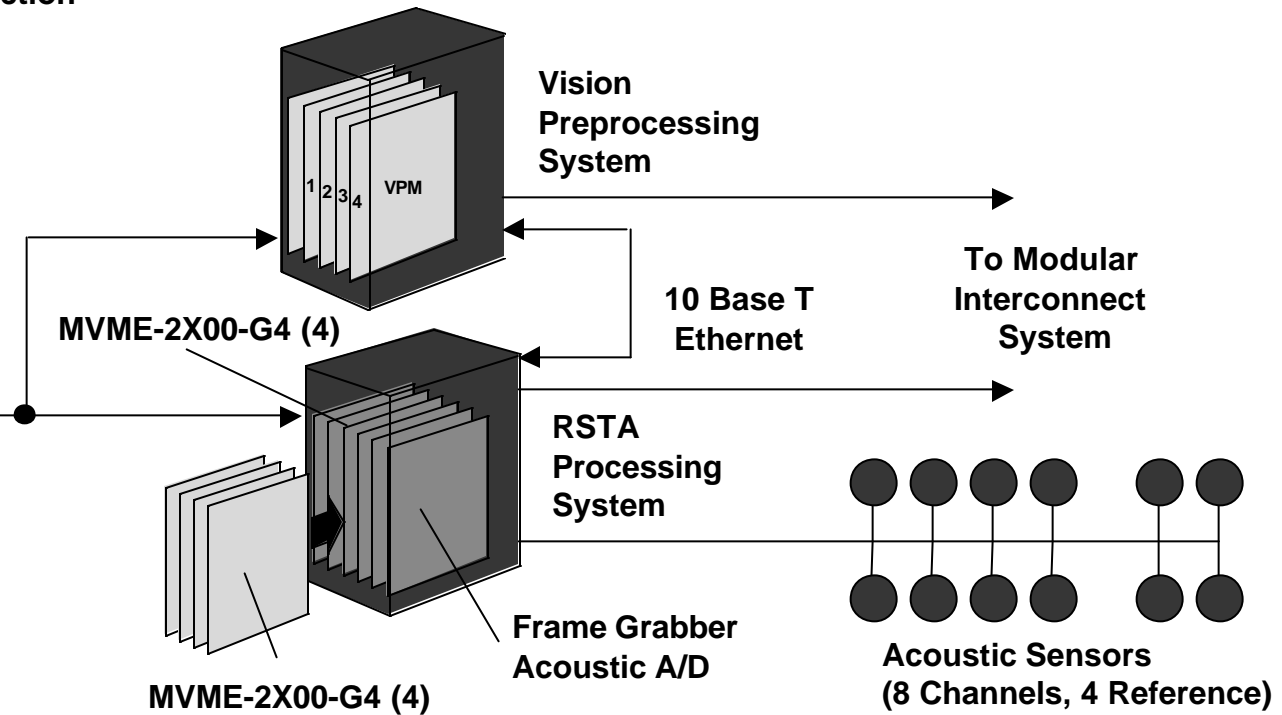
AM Sensors	Alpha	Bravo	III
Wescam 14QS Gimbal	X	X	X
Acoustic Sensor Array	X	X	X
Acoustic Noise Cancellation		X	X
Additional Cueing Sensors		X	X
Self-Protection Sensors		X	X
Mast Assembly		X	X



- WESCAM Model 14QS
Stabilized Gimbal**
- FLIR (Amber Galileo 3-5mm)
 - Laser Ranger
 - Color Camera
 - Color Spotter Scope

**Self Protection
Sensors**

**Elevated
Mast
Assembly**





GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

RSTA Mission Module

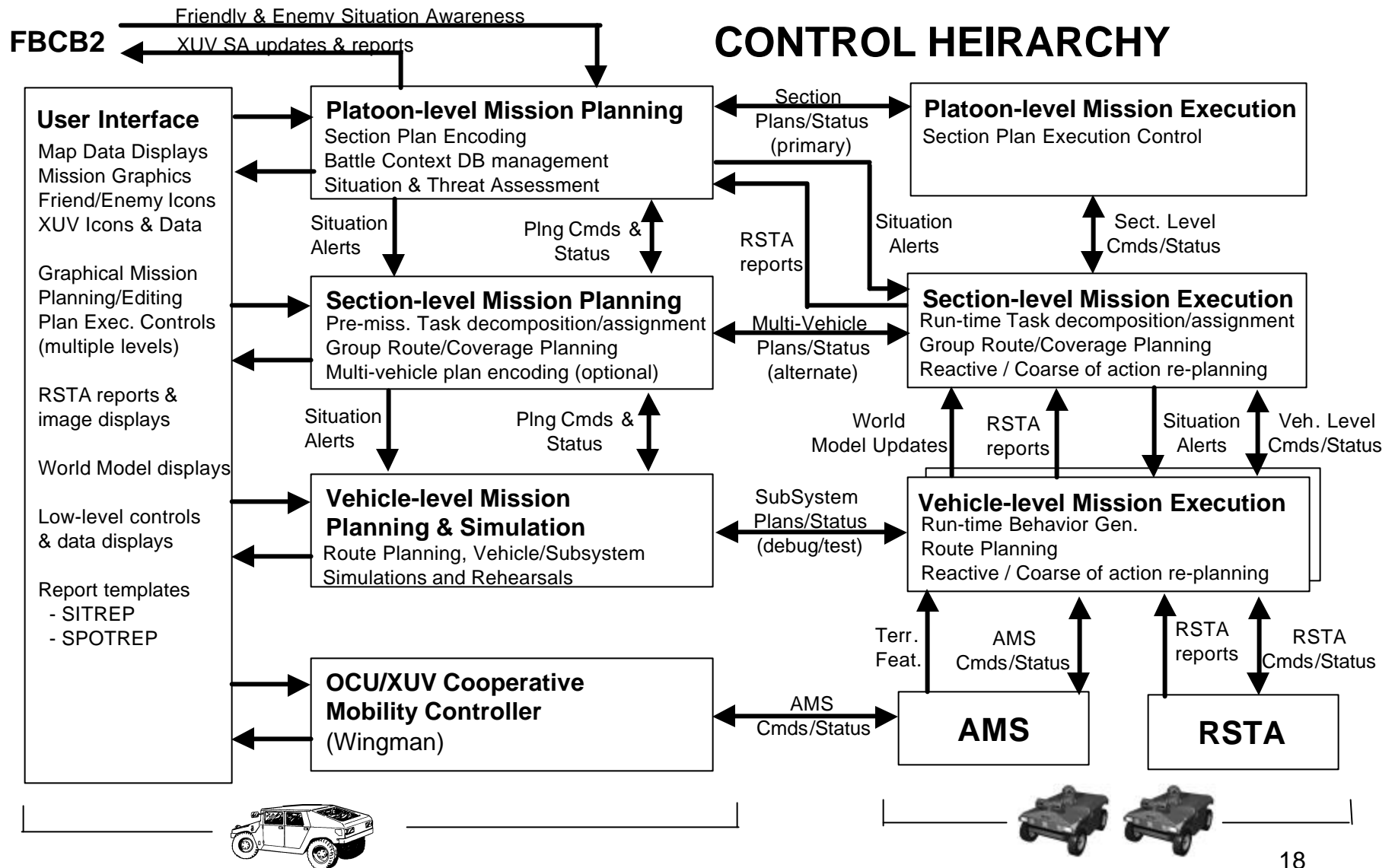




GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified





GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

Operator Control Unit - Hardware



16" diagonal LCD w/
NEMA 12 enclosure

Multi-position swing
arm for LCD

Rugged Keyboard

Electronics Box,
shock mounted

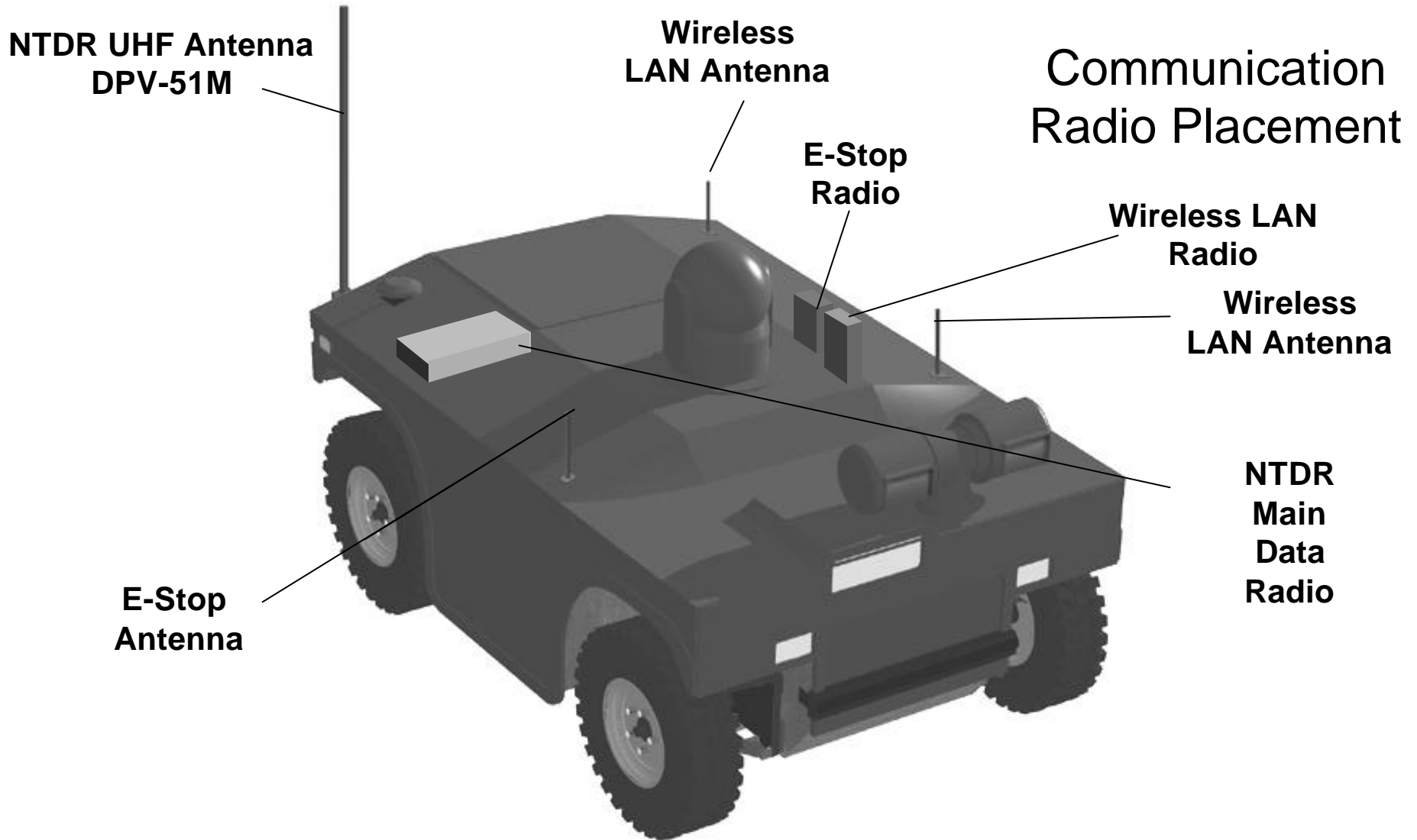




GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified





GENERAL DYNAMICS

Robotic Systems

ISO 9001 Certified

JAVELIN FIRE AT REDSTONE BY UGV/S JPO

