

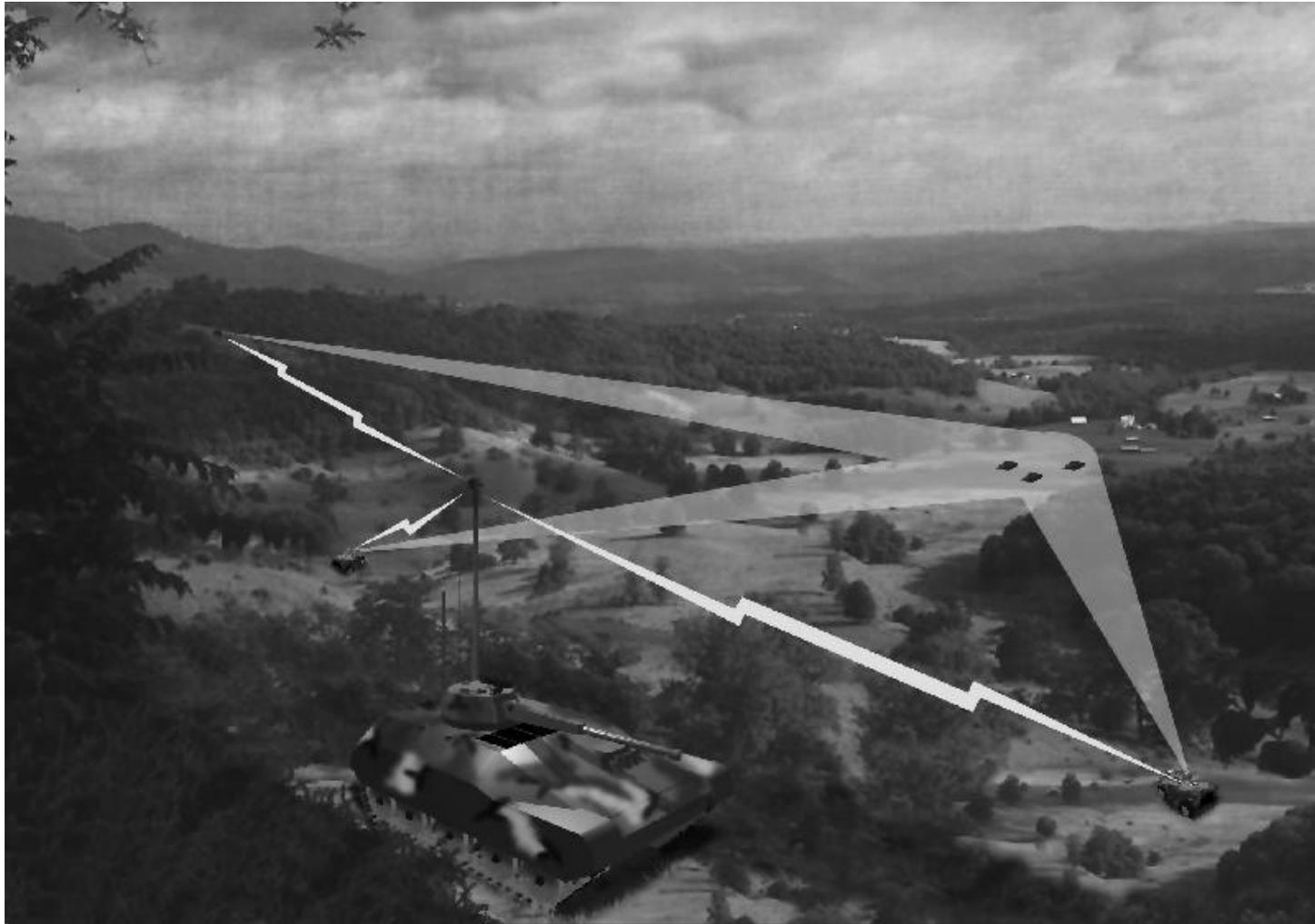


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Robotic Systems

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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 Dyanmics 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		



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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



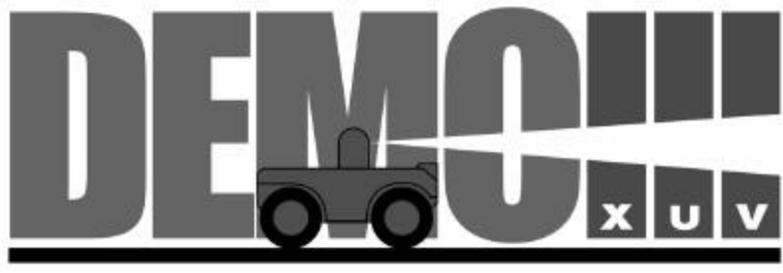
- Control
 - Multi-Threaded Control
 - Highly Modular, 4D-RCS - JAUGS
 - Tactical Behaviors
 - Safely Operable in Mixed Force (Mounted/Unmounted, Manned/Unmanned)



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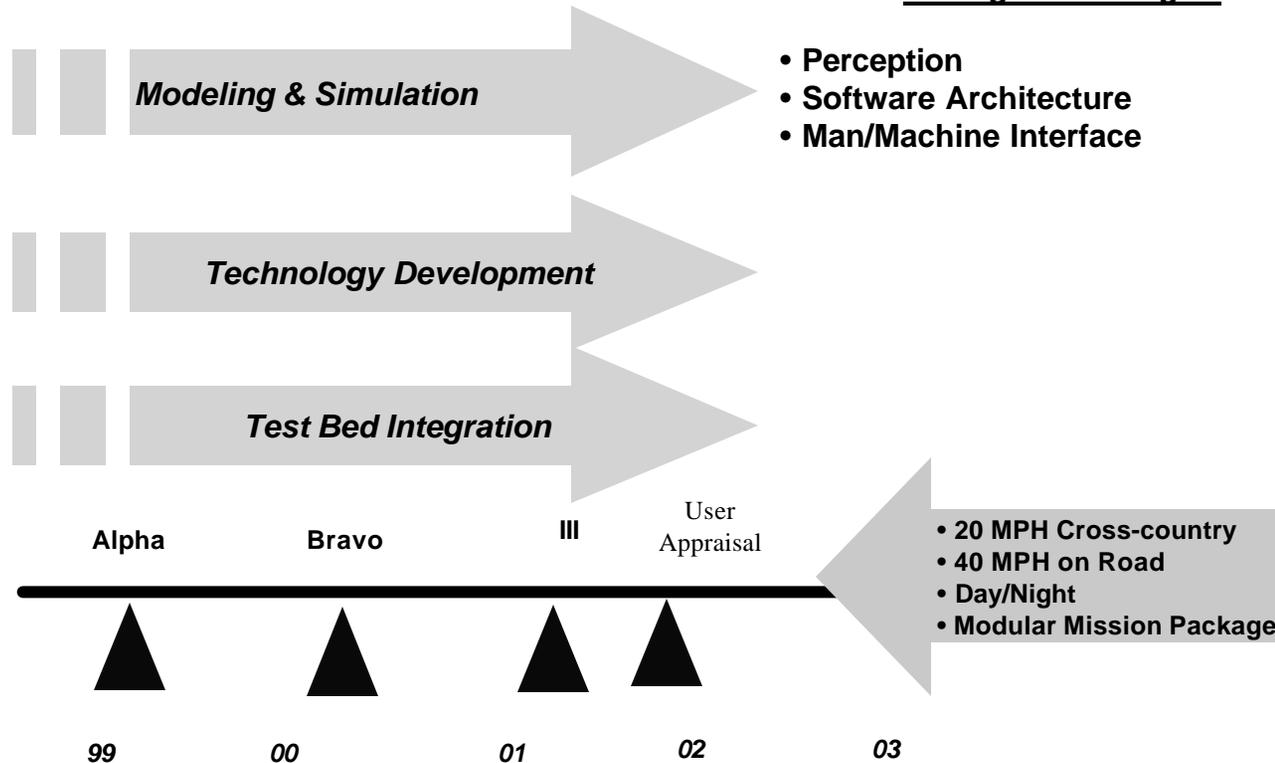
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Game Plan

Pacing Technologies





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Demo III Experimental Unmanned Vehicle (XUV) DEMO A Configuration





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XUV DEMO B Configuration





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XUV DEMO III Final Configuration



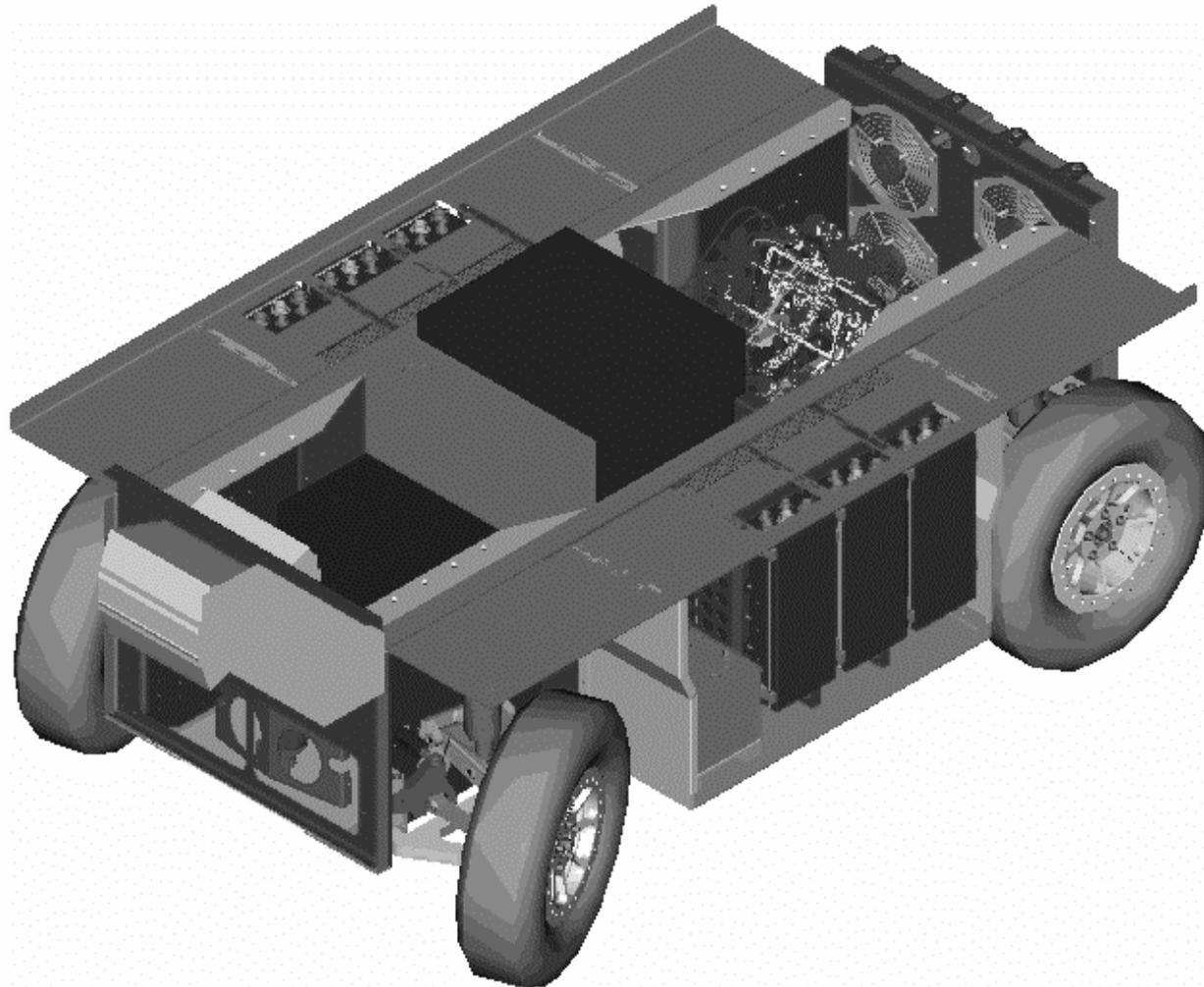


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Platform





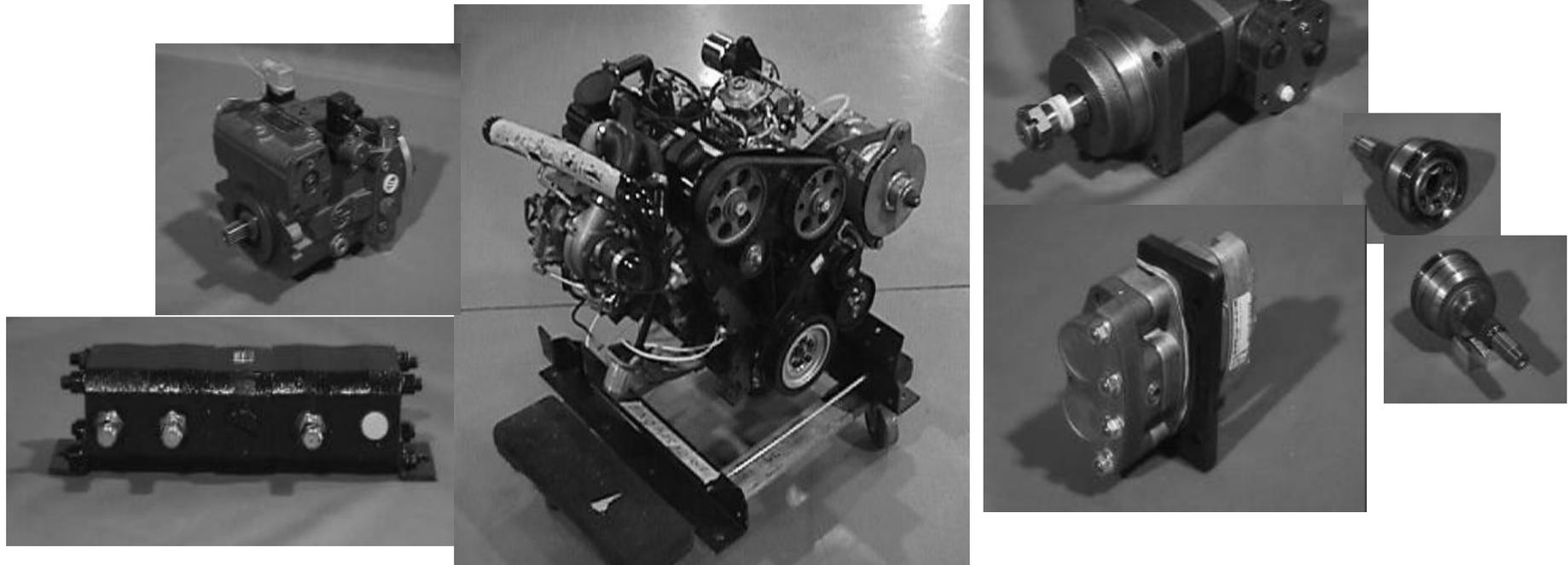
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Platform - Powertrain

- 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





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XUV Sideslope Capability



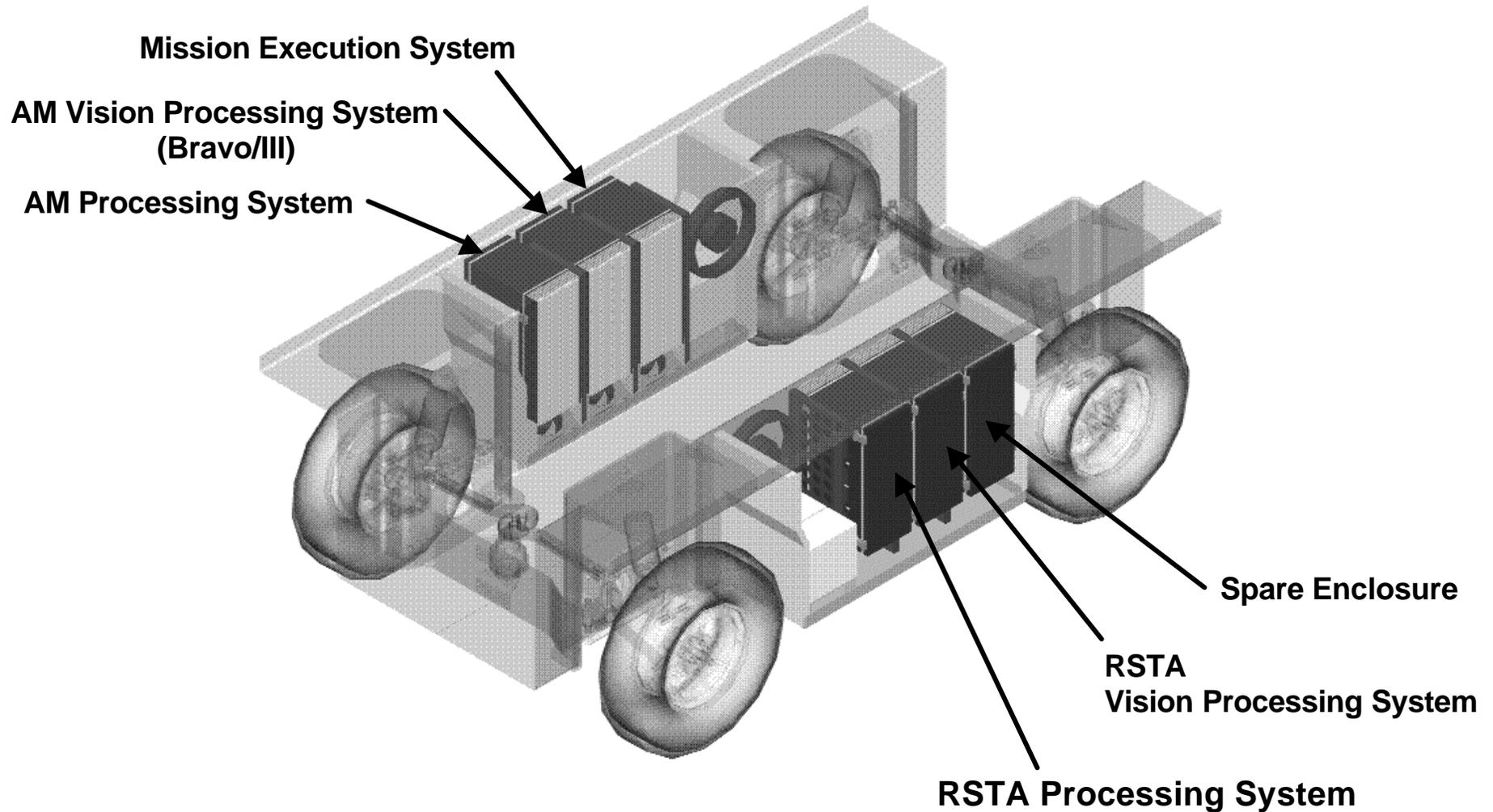


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Vetronics - Processing Enclosures



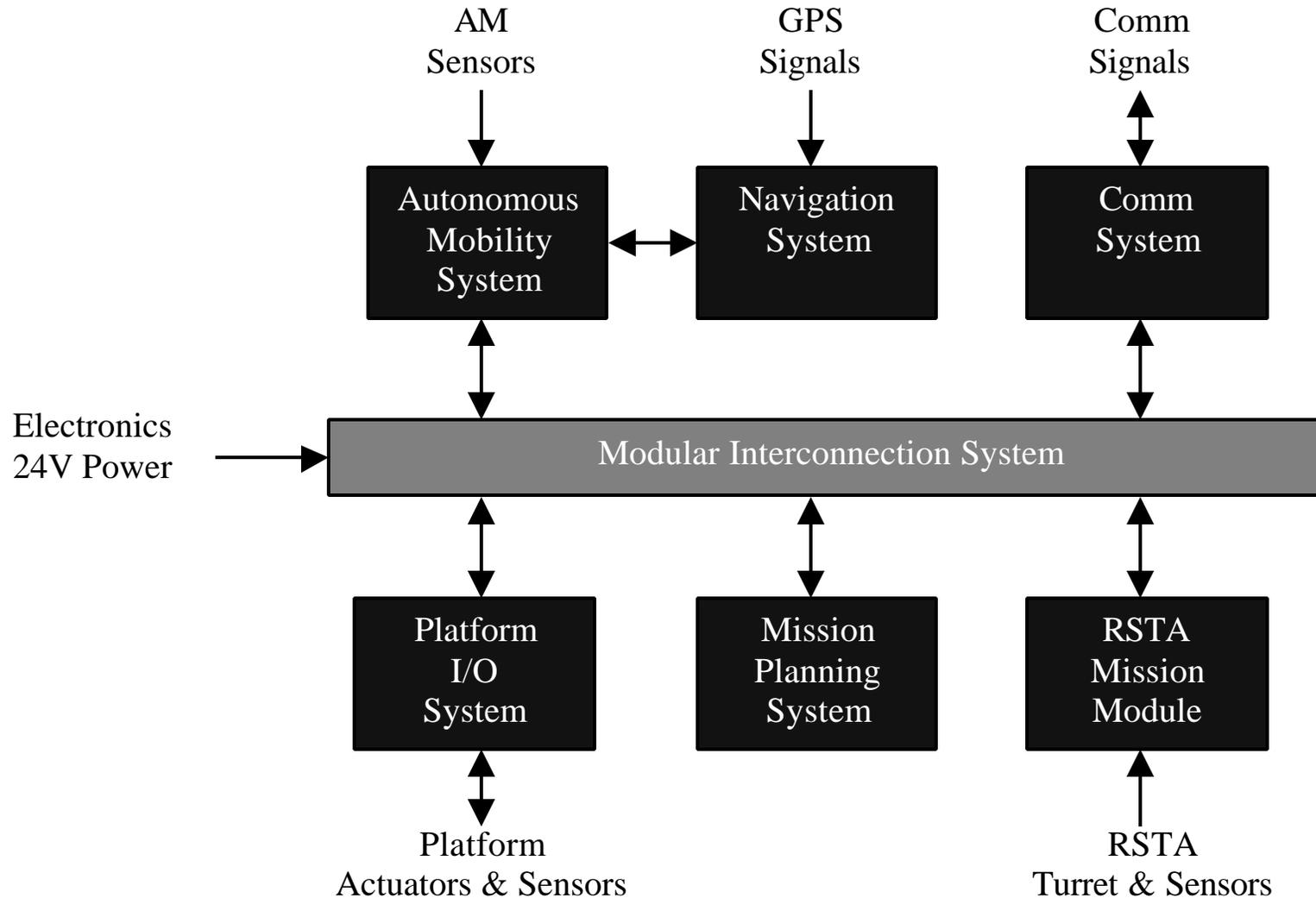


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Vetronics

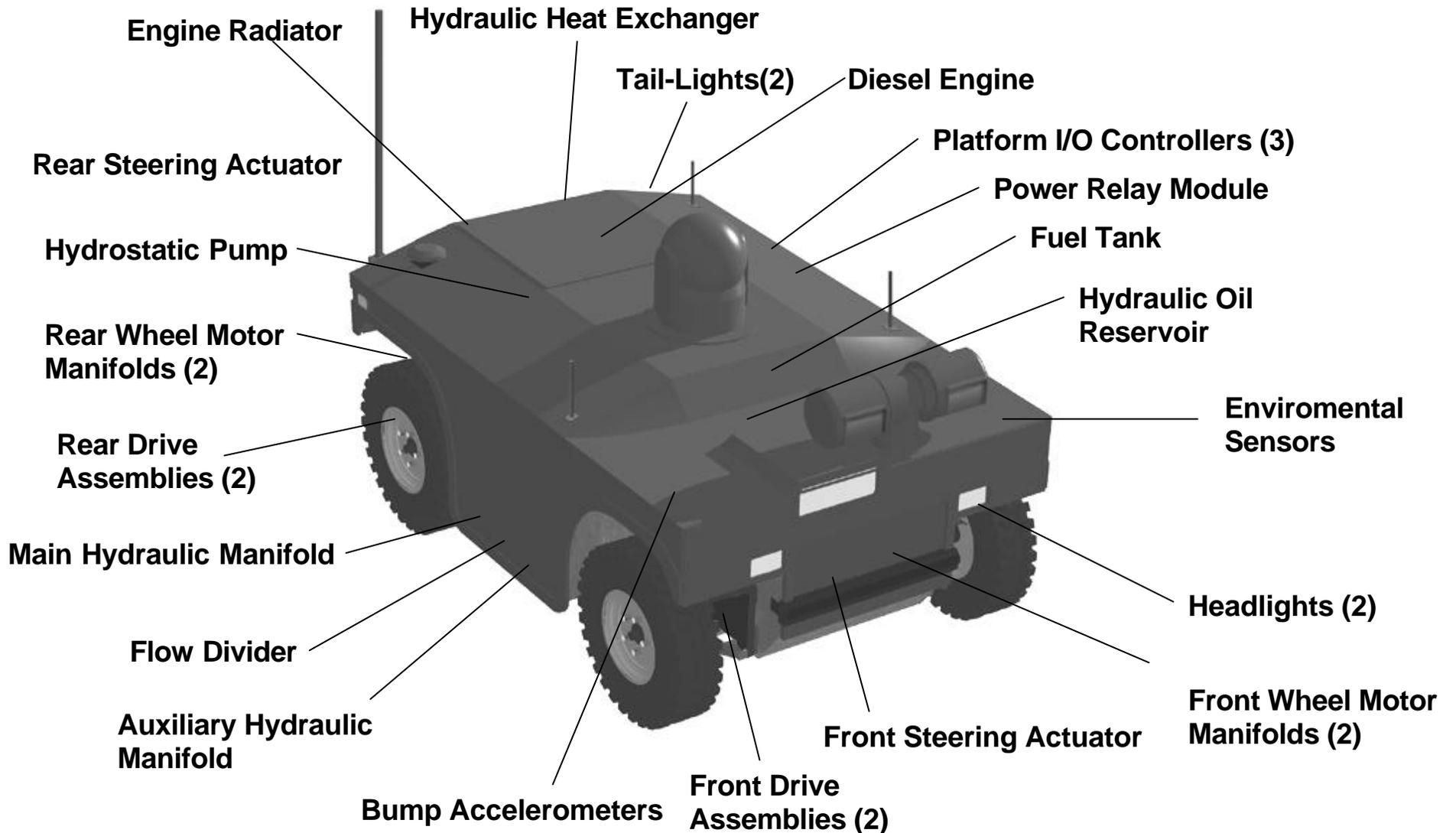




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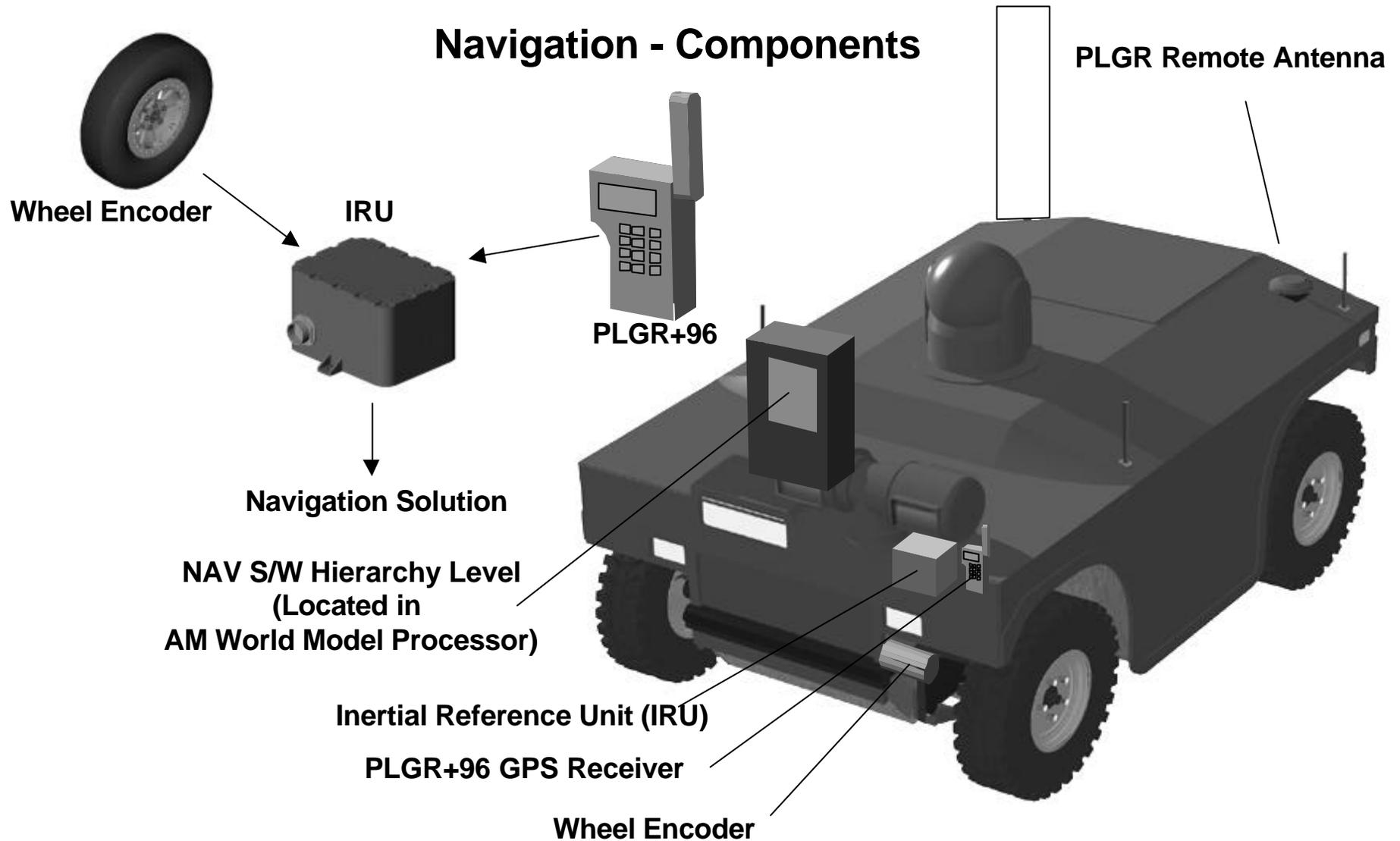




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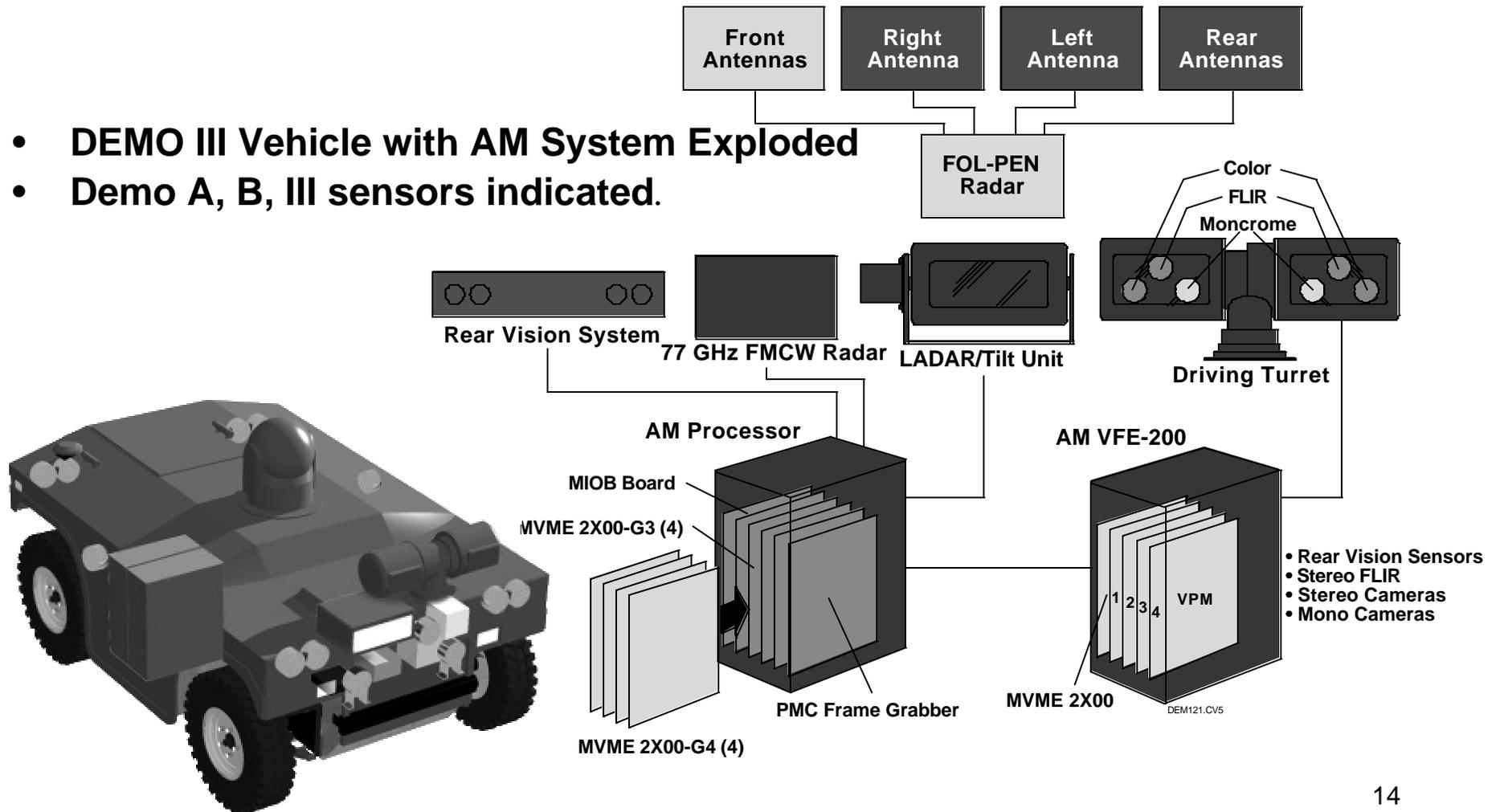
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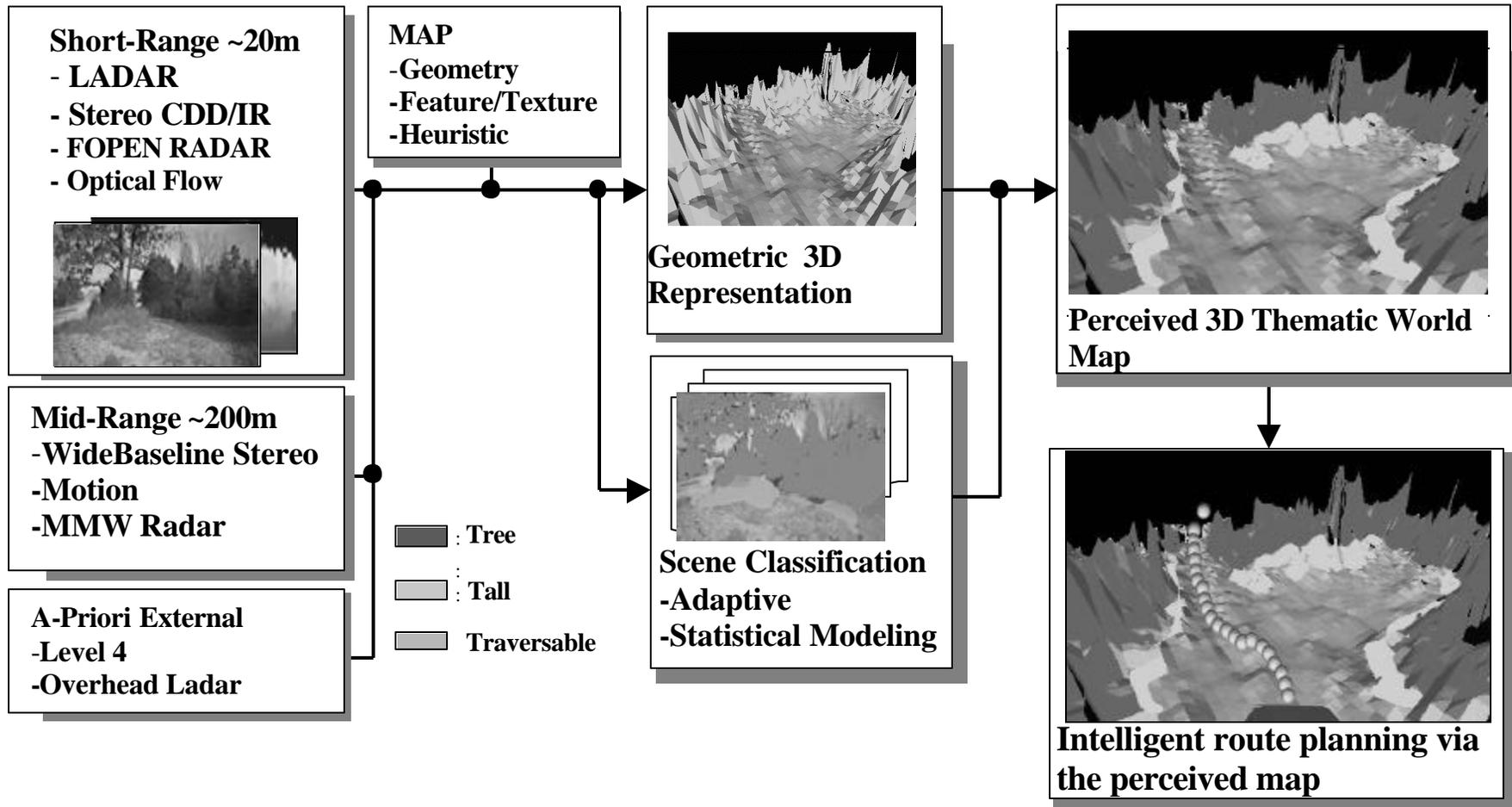
Autonomous Mobility on the XUV

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





Autonomous Mobility on the XUV





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RSTA on the XUV

RSTA Sensor Integration Plan.

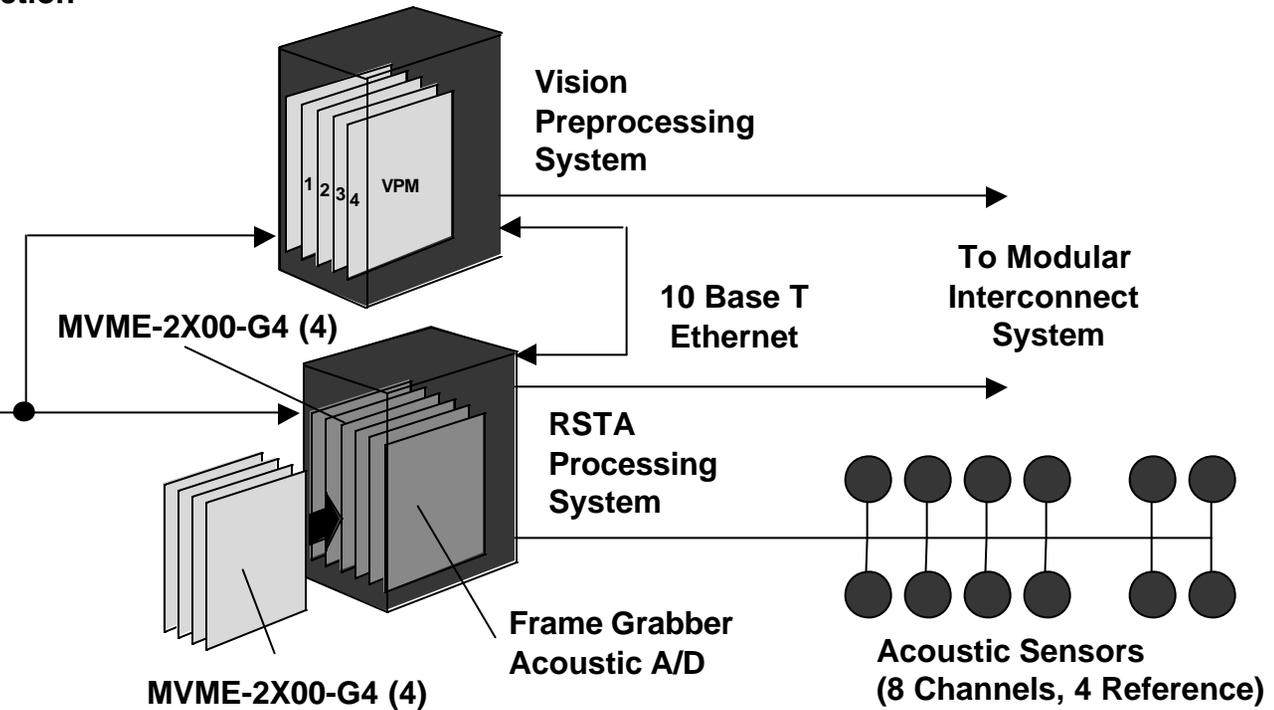
AM Sensors	Alpha	Bravo	III
Wescam 14QS Gimbal	X	X	X
Acoustic Sensor Array	X	X	X
Acoustic Noise Cancellation		X	X
Additional Cueing Sensors		X	X
Self-Protection Sensors		X	X
Mast Assembly		X	X



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

**Self Protection
Sensors**

**Elevated
Mast
Assembly**





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RSTA Mission Module

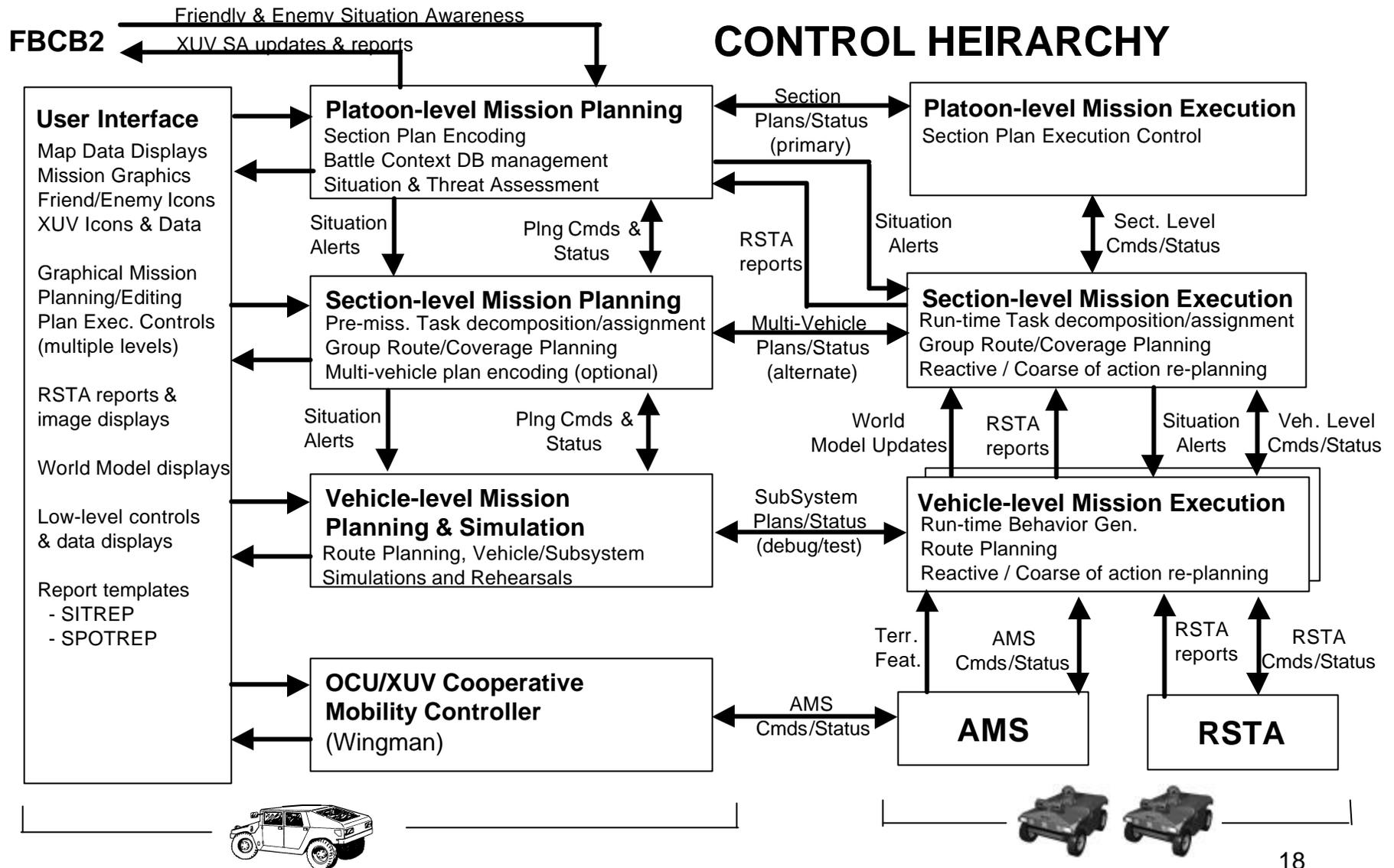




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Operator Control Unit - Hardware



16" diagonal LCD w/
NEMA 12 enclosure

Multi-position swing
arm for LCD

Rugged Keyboard

Electronics Box,
shock mounted

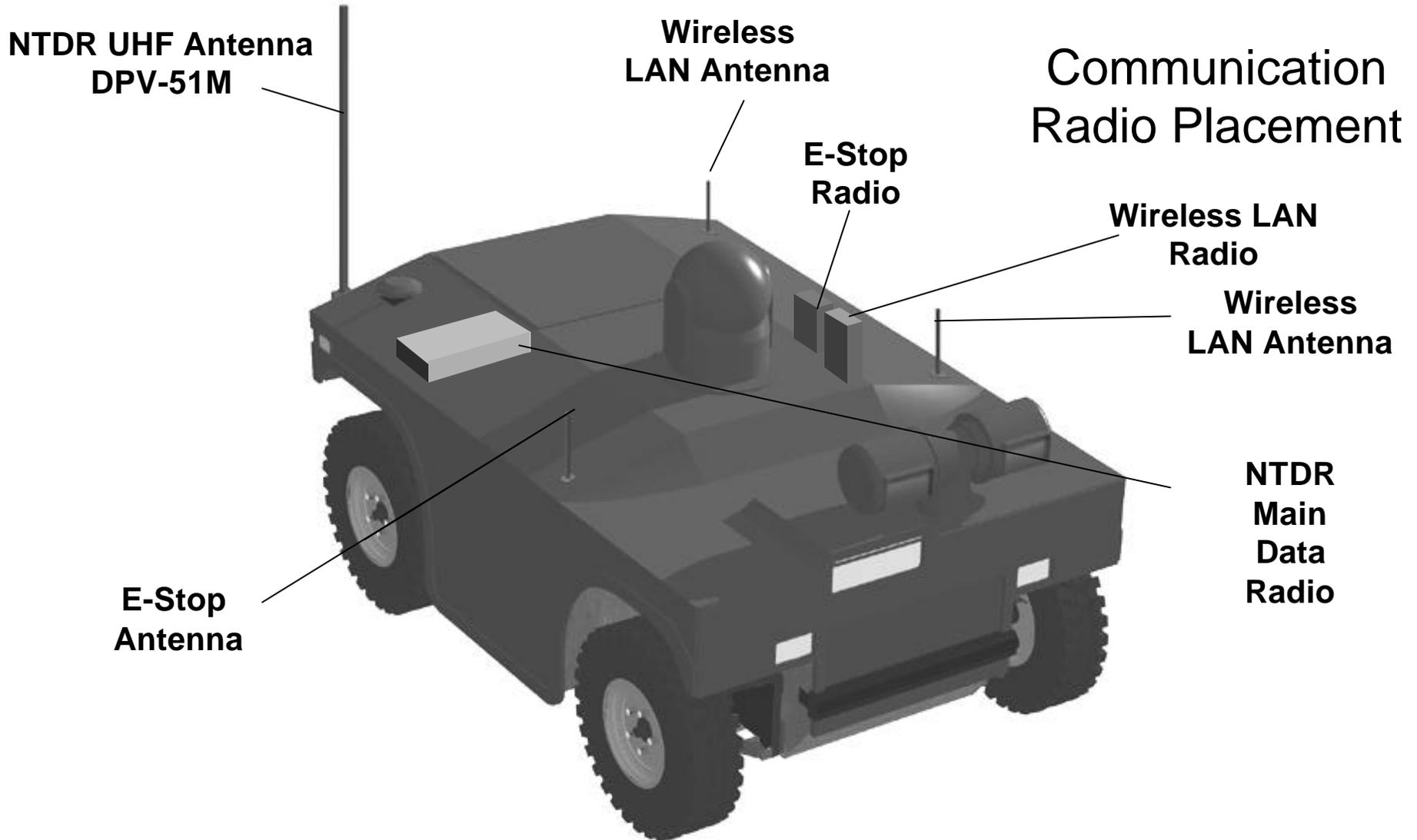




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JAVELIN FIRE AT REDSTONE BY UGV/S JPO

