Future Ground Vehicle Robotics

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(8) Autonomy-enabled systems. The application of emerging technology creates the potential for affordable, interoperable, autonomous, and semi-autonomous systems that improve the effectiveness of Soldiers and units. Autonomy-enabled systems will deploy as force multipliers at all echelons from the squad to the brigade combat teams. Future robotic technologies and unmanned ground systems (UGS) will augment Soldiers and increase unit capabilities, situational awareness, mobility, and speed of action. Artificial intelligence will enable the deployment of autonomous and semi-autonomous systems with the ability to learn. Decision aids will reduce the cognitive burden and help leaders make rapid decisions. Artificial intelligence may allow robots and automated systems to act with increased autonomy. Robotics will enable the future force by making forces more effective across wider areas, contributing to force protection, and providing increased capabilities to maintain overmatch.
Path to the Future

“Maturation, Integration, and Demonstration”

2020

Extend the Range of the Warfighter (2020)

2030

Autonomous Convoy Operations (2020-2025)

Combined Arms Maneuver (2030-2035)

2040

Combined Arms Maneuver

Manned

Unmanned

360° Vision

Driver Warning

Driver Assist/Active Safety

Optionally-Driven

Optionally-Manned

Unmanned

Human-Machine Interface (HMI)

Human-Robot Interface (HRI)

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Applications for Autonomy-Enabled Systems

“Unmanned Systems as Members of the Unit”

Reduce the Burden
- Robotic follower
- Optionally-manned vehicles
- Logistics re-supply
- Mundane tasks

Mitigate Risk
- Capabilities for C-IED
- Capabilities for CBRNE
- Active Safety Technologies
- Pilot Decision Aides

Prevent Surprise
- Unmanned Wingman
- All-terrain Surveillance
- 360 Situational Awareness

Operationalize” Autonomy-Enabled systems through Experimentation and Concept Development

Extend the Reach
- Single-user multi-robotic control
- UAV/UGV collaboration & control
- Extended range unmanned operations

Manned - Unmanned Teaming

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Near-Term Challenges:

- Development of Open Robotics Architecture
- Advanced Autonomous Behaviors and Software Development Tools
- Incorporating modeling and simulation into the design, development, and testing of unmanned ground systems
- User Acceptance
QUESTIONS?