



# TARDEC Overview

Pete DiSante  
National Automotive Center

Spring 2014





U.S. ARMY  
**RDECOM**  
TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

# Organizational Structure



**AMRDEC**  
Aviation and  
Missile  
Research  
Development  
and  
Engineering  
Center

**ARDEC**  
Armament  
Research,  
Development  
and  
Engineering  
Center

**ARL**  
Army  
Research  
Laboratory

**CERDEC**  
Communicati  
ons-  
Electronics  
Research,  
Development  
and  
Engineering  
Center

**ECBC**  
Edgewood  
Chemical  
Biological  
Center

**NSRDEC**  
Natick  
Soldier  
Research,  
Development  
and  
Engineering  
Center

**TARDEC**  
Tank  
Automotive  
Research,  
Development  
and  
Engineering  
Center



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## Mission & Vision



### **MISSION:**

Develop, integrate and sustain the right technology solutions for all manned and unmanned Department of Defense(DOD) ground systems and combat support systems to improve Current Force effectiveness and provide superior capabilities for the Future Force.

### **VISION:**

The first choice of technology and engineering expertise for ground vehicle systems and support equipment – today and tomorrow.

**We help our Warfighters succeed and come home alive**



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TECHNOLOGY DRIVEN. COMBAT READY. COLLEGE.

# Strategic Relationships



## **Connected**

to World-Class Automotive Engineering Universities

## **Defense Industry**

Ground Systems Hub

## **Direct Linkage**

to World-Class Automotive Research and Development

## **Strategic Engagement**

with 1st, 2nd and 3rd Tier Automotive Supplier Network

**Recognized conduit to RDECOM and the Ground Vehicle Community**



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# TARDEC Organizational Structure



**Dr. Paul D. Rogers**  
TARDEC Director

Executive Assistant  
Special Assistant

Chief Scientist  
Military Deputy  
Chief of Staff  
Deputy Chief of Staff  
Ground Domain Planning & Integration  
Secretary to General Staff  
Business Development

**Mr. Magid Athnasios**  
Executive Director, Systems  
Integration & Engineering

Project Manager  
Executive Officer  
Executive Assistant

**Ms. Jennifer Hitchcock**  
Executive Director, Research  
& Technology Integration

**Mr. Ken Ciarelli**  
Deputy Executive Director,  
RTI

**Dr. Bruce Brendle**  
Deputy Executive Director  
Center System Integration

AD Proj. Man. & Ops.  
AD Engineered Solutions  
AD Prototype Int.

**Mr. Chuck Coutteau**  
Deputy Executive Director  
Ground System Engineering  
Support

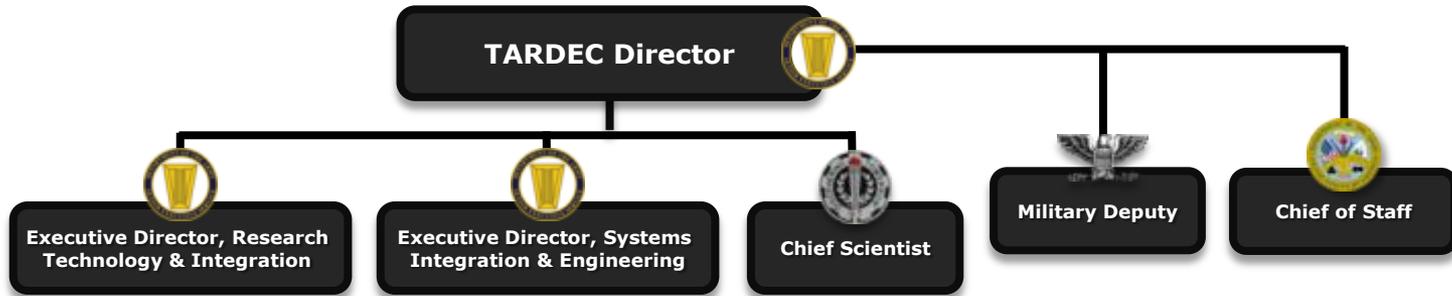
AD Prod. Sys. Sup.  
AD Sustainment & Platform Int.  
AD Force Projection  
AD I. Base & Adv. Man.  
AD CM/DM

**Mr. Steve Knott**  
Deputy Executive Director  
Ground System Engineering  
Assessment & Assurance

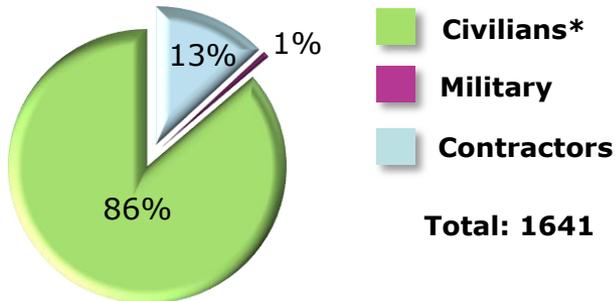
AD RAM & Quality  
AD Analytics  
AD Physical Simulation & Test  
AD HPC & Data Mgt.  
AD Systems Eng. and Int.  
AD Advanced Concepts

Chief Robotics  
Project Manager  
Executive Assistant

AD VEA  
AD SEC  
AD GVPM  
AD GSS  
AD GVR  
Dir. NAC  
AD Special Projects Office



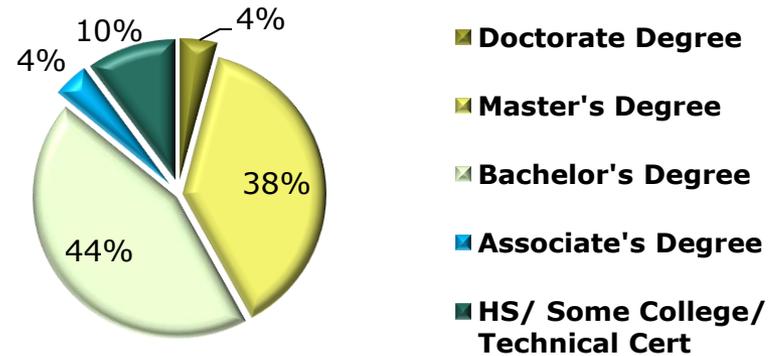
## Total Workforce



\*Includes permanent/term employees, local interns, STEPs, and local SCEPs (in a pay status).

## Education

(Does Not Include Contractors)



**TARDEC has a proven, technically proficient workforce that meets mission requirements.**



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# Supporting the Army's Top Priorities



## TARDEC supports Seven of the Army's Eleven Persistent Challenges



*Greater force protection for Soldier, air and ground platforms*



*Ease overburdened Soldiers in small units*

*Timely mission command & tactical intelligence to provide situation awareness and communications in all environments*



*Reduce logistics burden of storing, transporting, distributing and retrograde of materials*

*Create operational overmatch (enhanced lethality and accuracy)*



*Achieve operational maneuverability in all environments and at high op-tempo*



*Enable ability to operate in CBRNE environment*

*Improve early detection of TBI*

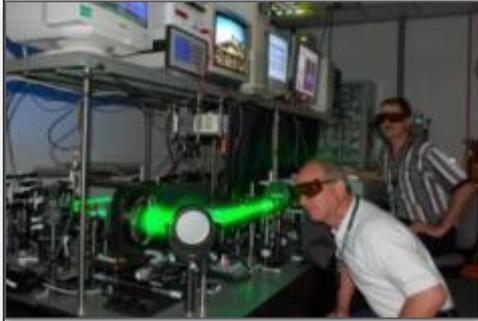


*Improve operational energy*

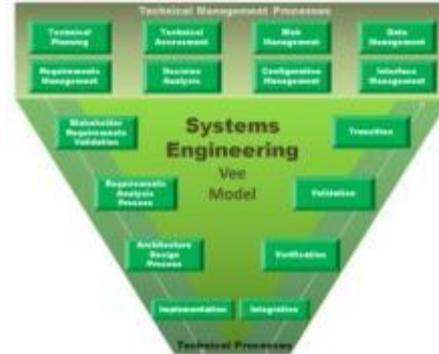
*Improve individual & team training*



*Reduce life cycle cost of future Army capabilities*



**Research/Technology  
Development**



**Systems Engineering**



**Product Development**

**Integration**



**Production Support**

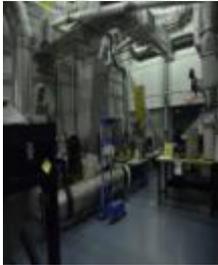


**Field Support**





**Power & Energy  
Vehicle Environmental  
Lab (PEVEL)**



**Air Filtration  
Lab**



**Calorimeter Lab**



**Power Lab**



**Thermal  
Management Lab**



**Fuel Cell Lab**



**Electric  
Components Lab**



**Energy Storage  
Lab**



**Fuels & POL  
Research  
Laboratories**



**Bridging Technology  
Laboratory at Selfridge  
Air National Guard Base**



**Fresh Water Test Facility at  
Selfridge Air National Guard  
Base**



**Water Quality  
Laboratory**



**Army Petroleum Laboratory (APL)  
located at DLA Distribution  
Susquehanna, PA (DDSP)**



**TARDEC Fuels & Lubricants  
Research Facility at  
Southwest Research  
Institute (GOCO)**



**Survivability Armor  
Ballistic Lab (SABL)**



**Large Robotics  
Integration Cell**



**Reconfigurable  
N-Post Simulator**



**Vehicle Inertial  
Properties  
Evaluation Rig**



**VICTORY SII**

**TARDEC's operations have a resource value of over \$1.1B and occupy 936,000 square feet of laboratory space on the Detroit Arsenal.**



- Warren (MI)
- Southwest Research Institute (SWRI) (TX)  
(GOCO = Government Owned-Contractor Operated)
- Selfridge (MI)
- Susquehanna (PA)

Penn. Texas Michigan Michigan

- Ground Systems Power and Energy Laboratory (GSPEL)
- Vehicle Full Load Cooling Test Chamber
- Crew Station/Turret Motion Base Simulator (CS/TMBS)
- Ride Motion Simulator
- System-level Analysis Capability
- Center for Systems Integration (CSI)
- Vehicle Inertial Properties Evaluation Rig (VIPER)
- Mission Equipment Vibration Table (MEVT)
- Suspension Parameter Identification Device and Evaluation Rig (SPIDER)
- Tire, Run-Flat, and Roadwheel Simulation Laboratory (TR2SL)
- Elastomer Improvement Laboratory
- Fuels & Lubricants Laboratory
- Fresh Water Test Facility
- Bridge Dynamic Structural Load Simulation Laboratory
- TARDEC Fuels and Lubricants Research Facility (TFLRF) (GOCO with SWRI)
- Quality Surveillance Laboratory (Army Petroleum Laboratory; APL)



The three principal ways TARDEC provides value to its stakeholders are through these **Value Streams**



The Strategy will direct and pace **technology discovery, development, demonstration** and **transition** to secure Enduring Value and continued battlefield dominance of the Army's current and future ground systems.



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# Why is TARDEC's 30-Year Strategy Important?



The Strategy will **Direct** and **Pace** technology discovery, development, demonstration, and transition to ensure battlefield dominance through the **Enduring Value** of the Army's current and future Ground Systems



## **Purposeful Engagement**

- Industry
- Academia
- International

## **Purposeful Investment**

- Human Capital
- Laboratories & Equipment
- IT Infrastructure

## **Purposeful Management**

- Portfolio
- Enabling Business Processes
- External/Internal Communications

**Shaping the future to fundamentally change the way we fight**

## Combat Vehicle Prototype (CVP)

Focusing technology efforts to position the Army for the next generation combat vehicle...

- Provide leap ahead technology enabled capability to the combat vehicle fleet
- Reduce Risk to future combat vehicle program of record
- Inform future combat vehicle requirements
- Sustain advanced concept design teams in the defense industrial base



## Autonomy-Enabled Systems

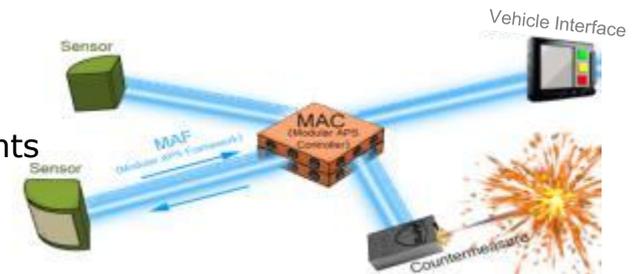
Focusing on:

- Manned-unmanned teaming for mounted and dismounted units
- Coordinated unmanned air and unmanned ground systems operations
- Improved 360 degree vision
- Development of optionally-manned and unmanned vehicles
- Applied robotics for installation and base operations

## Modular Active Protection Systems (MAPS)

Focusing on the challenges of transitioning APS, and the development of the HW/SW that enables integration of tailored APS subsystem suites.

- Establishes a common starting point for all APS systems, a common basis for all vehicles
- Provides a structure that enables tailoring to meet needs and constraints
- "Best of Breed" component flexibility
- Potential component commonality between vehicles
- Growth capability and designed for safety





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# National Automotive Center (NAC)

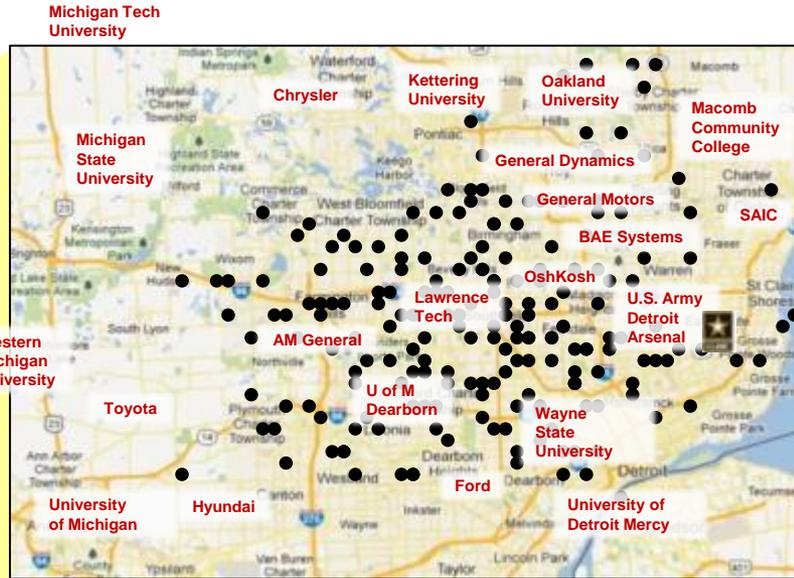


**Chartered by Secretary of the Army 21 June 1993**

**Mission:** *“The Center will serve as the Army focal point for the development of dual-use automotive technologies and their application to military ground vehicles. It will focus on facilitating joint efforts between industry, government and academia in basic research, collaboration, technology, industrial base development and professional development.”*

**“Leveraging Opportunities to Fill Technology Gaps.”**

Recognized conduit  
connecting RDECOM and the  
Ground Vehicle Community



Carnegie Mellon  
University



Chartered by  
Secretary of the Army  
21 June 1993

 PEO GCS	 PEO CS&CSS	 TACOM LCMC	 PEO Land Systems
<b>Created Joint Center JAN 2010</b>			
	 MARCORSYSCOM	 Office of Naval Research	 ILSC



AVPTA Chartered 18 July, 2011

Partnering is critical to the success of our long-term strategy



# National Automotive Center: What do we do?



**The NAC seeks solutions to close TARDEC's Technology gaps by reaching out to academia, other Government agencies and non-military industry partners.**

*Seeking solutions for Ground System needs*

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# What the NAC looks for



## Industry



- Best practices
- Speed of innovation
- Volume of product
- Small business creativity
- Requirements and Standards
- Technology Transition

## Academia



- Cutting-edge research
- Innovative ideas
- Basic Research
- Unique testing equipment and facilities



## Government

- Combined research
- Inter-agency
  - Pooled funding
  - Technology collaboration



## Other Government Agencies

- Joint solicitations with Department of Energy in energy efficient vehicle technologies.
- Joint collaboration with Department of Transportation in advanced safety and autonomous solutions
- Facilitate National Guard technology evaluations
- Scouting solutions in DoD research laboratories

## Academia

- Find and foster R&D technologies and approaches
- Connecting research and small business
- Soldier Innovations Workshops

## Industry

- Sponsor vehicle specific user forums
- Co-development of technology for commercial and military applications
- Industry association partnerships



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# Engagement Methods & Pathways



## Cooperative Research and Development Agreement (CRADA)

- Established between federal labs and commercial, academic or nonprofit partners to facilitate technology transfer between the parties for mutual benefit
  - GM Fuel Cell

## Test Service Agreement (TSA)

- Is a technology transfer mechanism that enables federal laboratories to perform work for hire.
  - Dodge Truck Testing on the Vehicle Inertial Properties Evaluation Rig (VIPER)

## Small Business Technology Transfer (STTR)

- Is a program that expands funding opportunities in the federal innovation research and development (R&D) arena.

## Pathways to TARDEC

- Automation Alley
- MEDC
- PTACs
- 21st Century Truck
- Automotive Research Center
- SAE
- Detroit Auto Show
- Management Briefing Seminar





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# Doing Business with TARDEC



**TARDEC's Ground Vehicle Gateway  
is YOUR entry point!**

**Submit your technology for review  
<https://tardec.groundvehiclegateway.com>**





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# TARDEC Industry Days



**TARDEC**  
**INDUSTRY DAYS**  
april 1-2, 2014  
**INDUSTRY DAYS**  
READ THE INDUSTRY DAYS AGENDA AND 30-YEAR STRATEGY BROCHURE...



**Email for TARDEC:**

**[usarmy.detroit.rdecom.mbx.tardec-ground-vehicle-gateway@mail.mil](mailto:usarmy.detroit.rdecom.mbx.tardec-ground-vehicle-gateway@mail.mil)**

*If you would like charts from TARDEC Industry Days, send an email to above address with subject line:  
**Industry Day charts***





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# Ground Vehicle Systems Engineering & Technology Symposium (GVSETS)



Michigan Chapter  
**NDIA**  
National Defense Industrial Association

MICHIGAN CHAPTER | NATIONAL DEFENSE INDUSTRIAL ASSOCIATION

HOME ABOUT EVENTS INITIATIVES MEMBERSHIP CONTACT JOIN MAILING LIST

Upcoming Events ROTC Banquet MDEX GVSETS Call for Abstracts Photo Gallery Join NDIA

NDIA National



**6<sup>TH</sup> ANNUAL GVSETS**  
AUGUST 12-14, 2014  
GROUND VEHICLE SYSTEMS ENGINEERING & TECHNOLOGY SYMPOSIUM  
& ADVANCE PLANNING BRIEFING FOR INDUSTRY

<b>EVENT LOCATION</b> The Suburban Collection Showplace 46100 Grand River Ave. Novi, MI 48374	<b>MAIN SESSION</b> August 12
<b>ADVANCE PLANNING BRIEFING FOR INDUSTRY</b>	August 13
<b>TECHNICAL SESSIONS</b>	August 14



**GVSETS**

Announcing the 6th Annual GVSETS and TACOM LCMC Plans & Priorities Symposium!

August 12-14

"New location" – the new Hyatt Place at Suburban Showcase in Novi

Look for additional information that will be posted shortly regarding the new and improved GVSETS agenda and additional event features.

For additional information, please email – [gvsets@ndia-michigan.org](mailto:gvsets@ndia-michigan.org)

**CALL for ABSTRACTS Submission Deadline – May 8th**

GVSETS

**Call for Abstracts**

**GVSETS Past Events**

2013 Agenda

GVSETS Main Session

Plans and Priorities Mini Symposium

Power & Mobility

MSTV

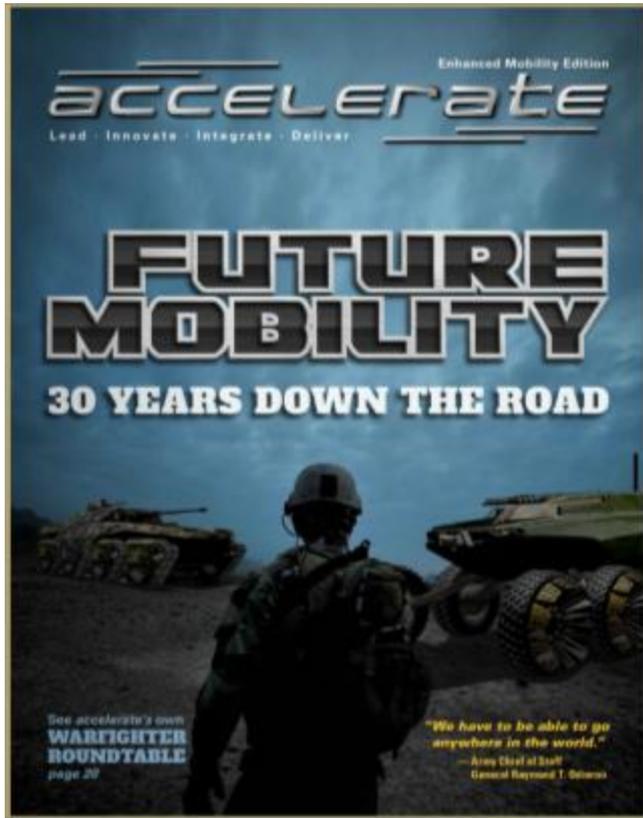


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# TARDEC Publications



<http://tardec.army.mil/publications/default.aspx>



Accelerate Magazine

Ground Systems Integrator - online newsletter

# National Automotive Center



*Seeking solutions for Ground System needs*

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*Email us: [Usarmy.detroit.rdecom.mbx.tardec-nac@mail.mil](mailto:Usarmy.detroit.rdecom.mbx.tardec-nac@mail.mil)*