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- Security
- Facilities
- Breaks & Lunch
- Breakout Room
 - West Room
 - OCS
 - CVAD
 - East Room
 - Fire
 - Vision



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Agenda



0730-0830	Sign in	All
0830-0845	Intro & Admin	Steve Knott
0845-0930	GSS Overview & Program Formulation	Steve Knott
0930-1000	Requirements Planning	Debbie DiCesare
1000-1015	Break	All
1015-1130	Occupant Protection Roadmap	Mark Germundson
1130-1300	Lunch	All
1300-1415	Hit & Kill Avoidance Roadmap	Jeff Jaster
1415-1430	Break	All
1430- 1530	Ballistic Protection Roadmap	Jeff Koshko
1530- 1545	Wrap up	Steve Knott

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Ground System Survivability FY12 Advance Planning Briefing to Industry



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Steve Knott
Associate Director,
Ground System Survivability

14 JUN 11



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Why We're Having GSS APBI

- GSS is engaged continuously by Industry on technology & capability....two situations occur:
 - *Technology and/or capability doesn't always match our investments or timelines are not synchronized.*
 - *When GSS doesn't act on the engagement its perceived by Industry that we suffer from “not invented here” syndrome.*
- We want to be transparent to Industry and get the best products for the Warfighter.
 - *We are threat driven*
 - *We are focused on SWaP-C*
 - *We make decisions based on data*

Communication will help Industry & TARDEC achieve greater mission success

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What You Should Walk Away With

- Who we are.
- What our mission is.
- How we plan.
- What we are investing in.
- When we plan to work these efforts.
- Ideas on how you can help us help the Warfighter.



This is the first of an annual event.....It may not be perfect, so we want the feed back to help us help you.

susan.l.rose-vincent.ctr@mail.mil

TARDEC Mission



- Provides full life-cycle engineering support and is provider-of-first-choice for all DOD ground combat and combat support vehicle systems.
- Develops and integrates the right technology solutions to improve Current Force effectiveness and provide superior capabilities for the Future Force.



Responsible for Research, Development and Engineering Support to **3,300** Army systems and many of the Army's and DOD's Top Joint Warfighter Development Programs

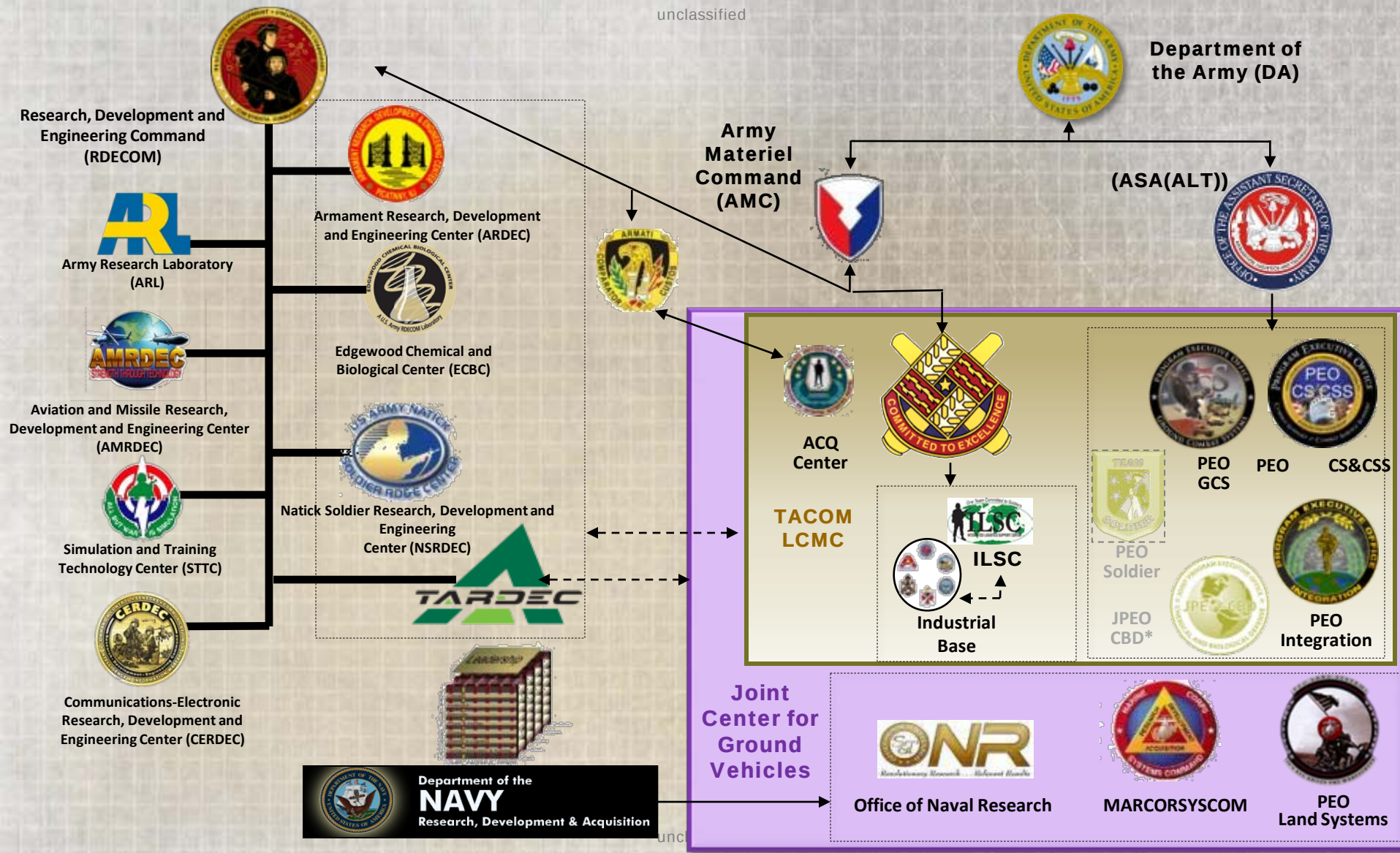
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Ground Systems Enterprise

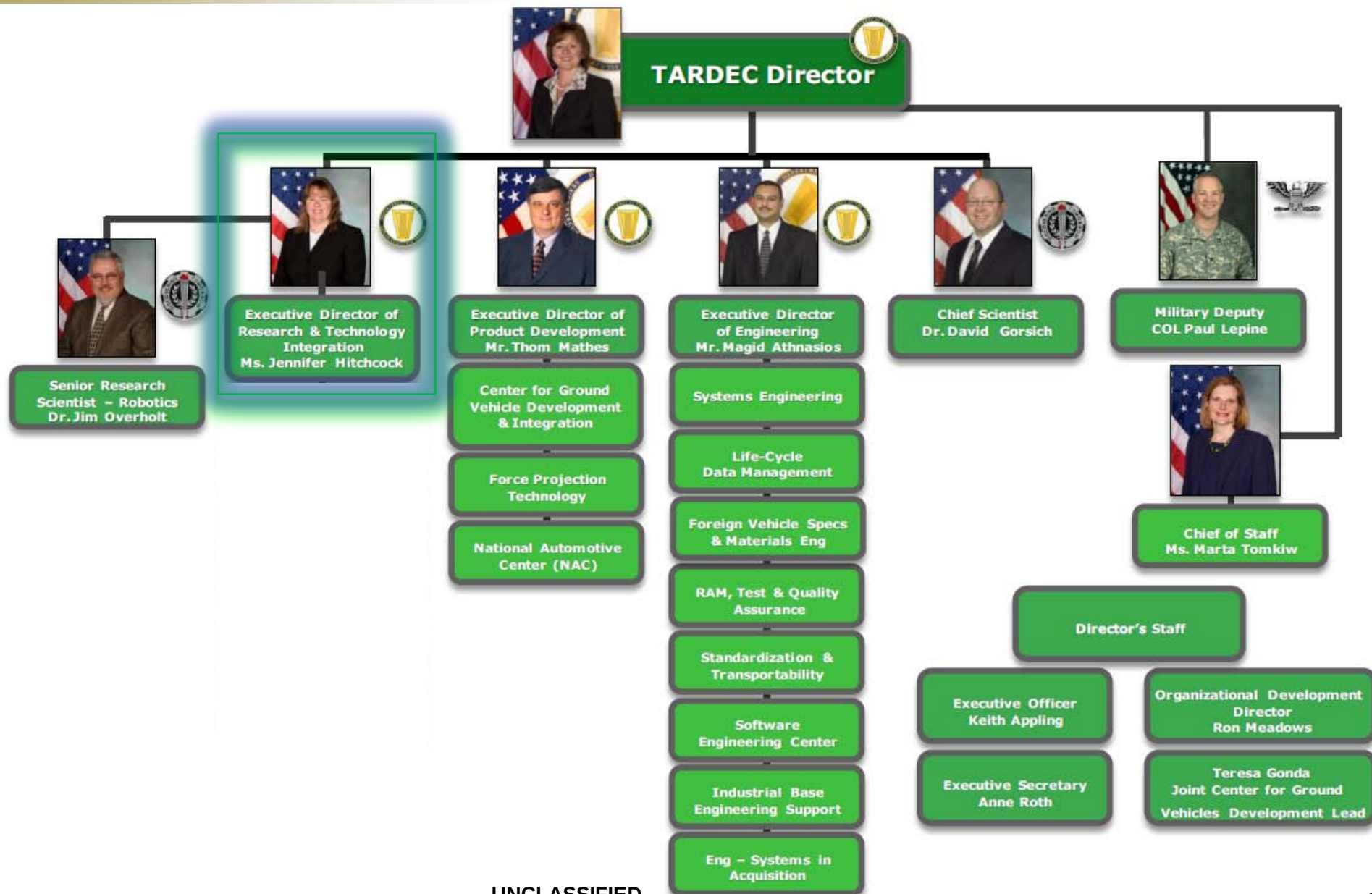


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TARDEC Chain of Command





Robust Technology Development & Integration



Ground Systems
Survivability Integration

Vehicle Electronics &
Architecture Integration

Ground Systems
Power & Mobility Integration

Maturation of Ground Robotics
& Vehicle Situational Awareness

Development of Force
Projection Technology

Systems Engineering & Integration Excellence Across the Life Cycle

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Vision

Demonstrate and be recognized as the Army ground vehicle survivability integration leaders.

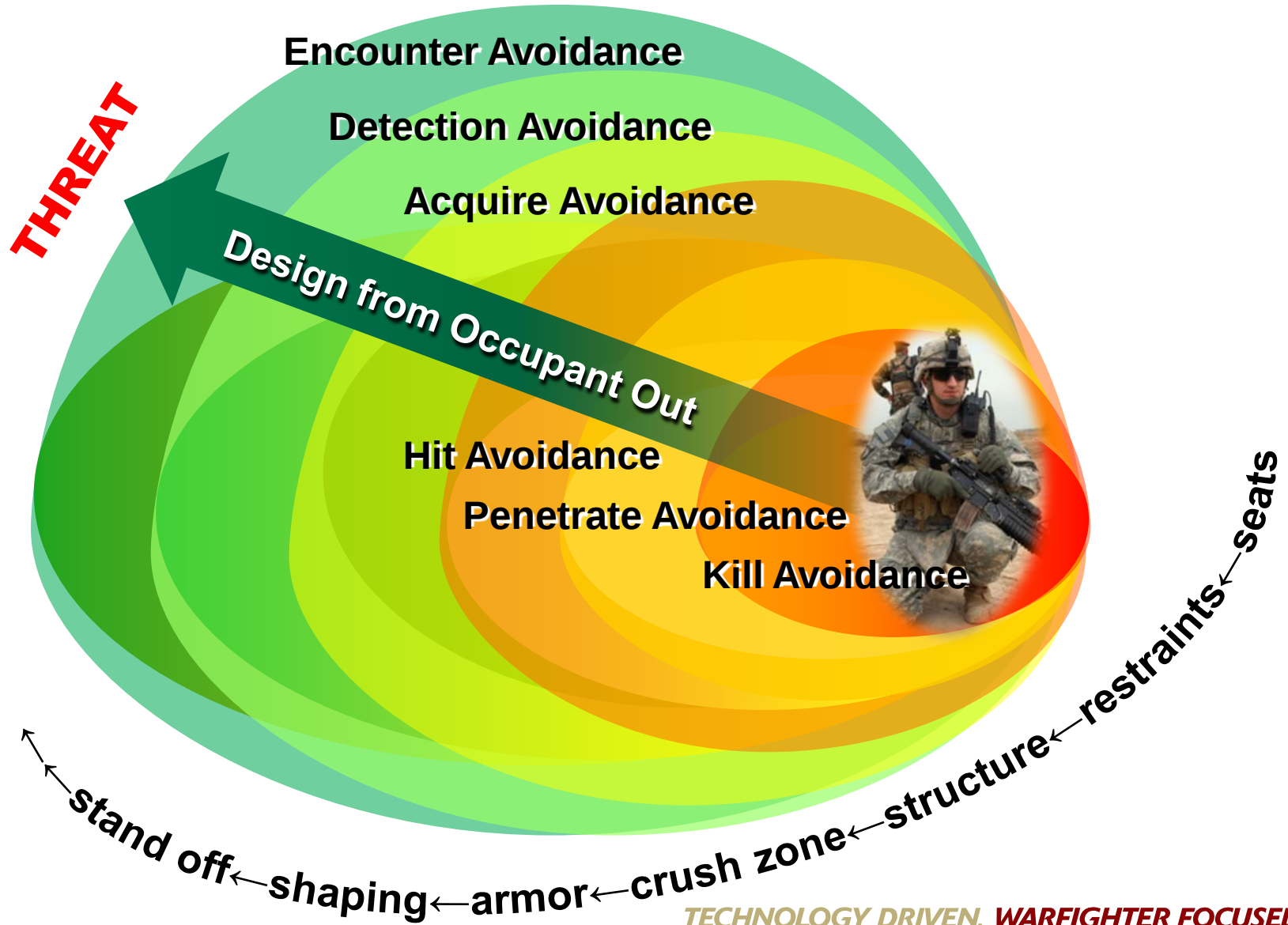
Mission

Design for *Occupant Centric Survivability* via maturation & integration of technology



Occupant Centric Survivability

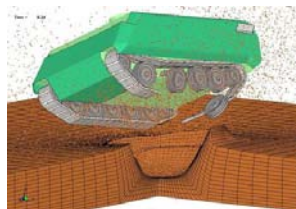
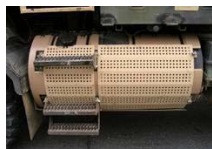
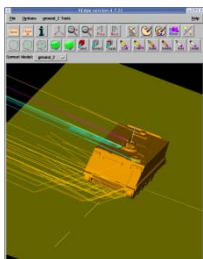
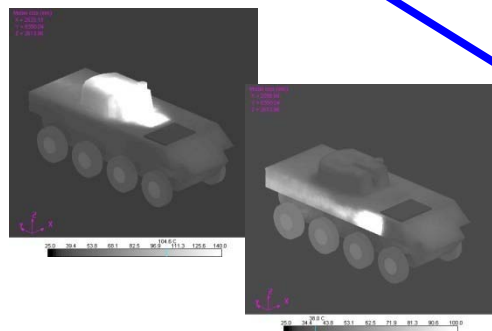
Designing from the Inside Out



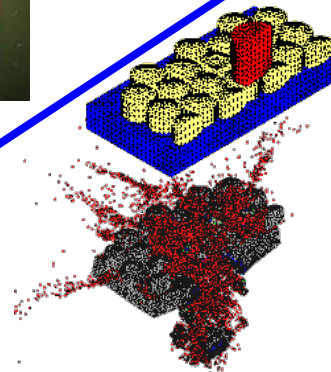
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GSS Core Competencies

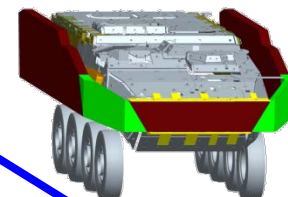
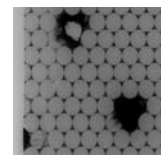
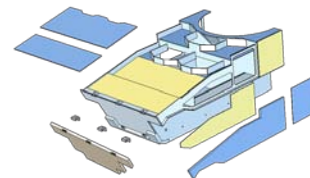
Detection Avoidance



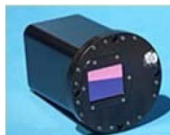
Kill Avoidance



Penetration Avoidance



System Optimization



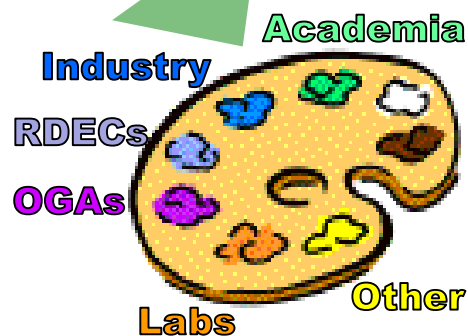
Hit Avoidance

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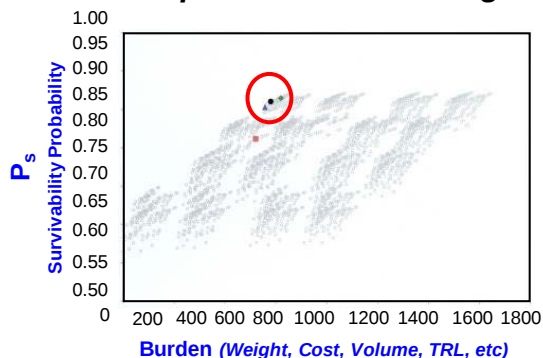
Requirements



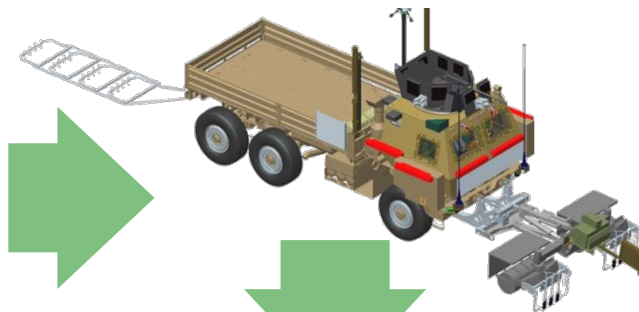
*It's about balancing
integration, mission, threat & technology*



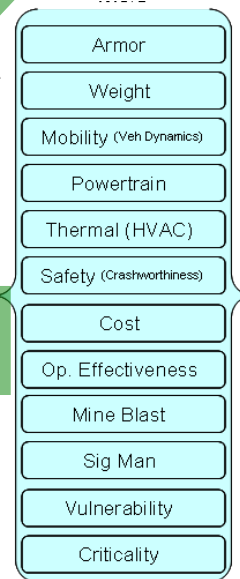
Optimization Modeling



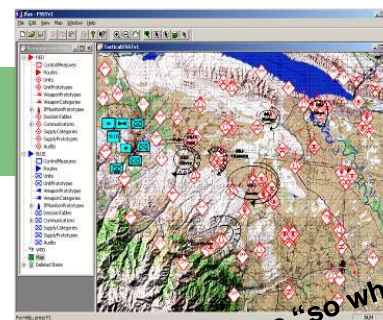
Vehicle Integration & Design Studies (SWAP-C)



M&S



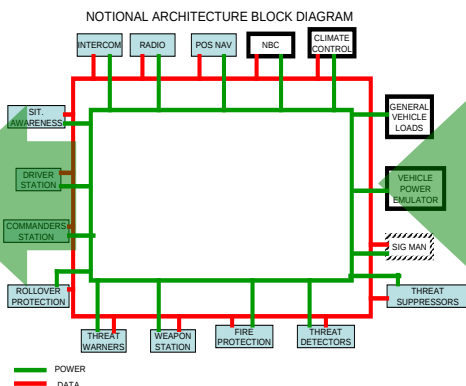
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The "so what" test



Prototype Integration



System Integration Lab (SIL) & Maturation

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Our Lane



Partners

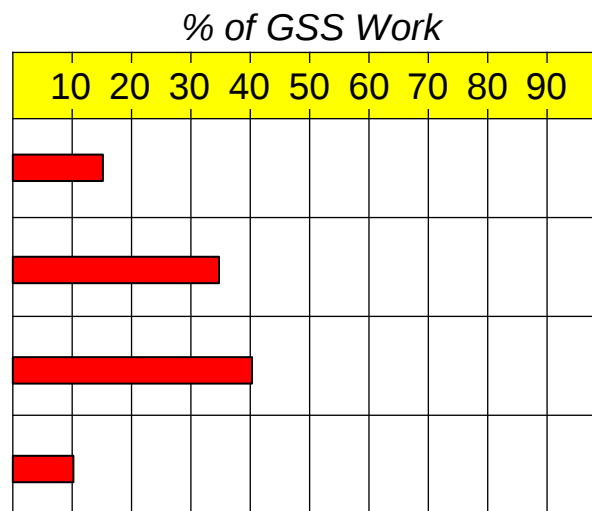
Requirements

TRL 4 – Tech Research

TRL 5 – Tech Development

TRL 6 – Tech Demo

TRL 7 – Operational Demo



TRL 6 Transition

TRL 4 Technologies

Industry

RDECs

OGAs

Academia

Labs

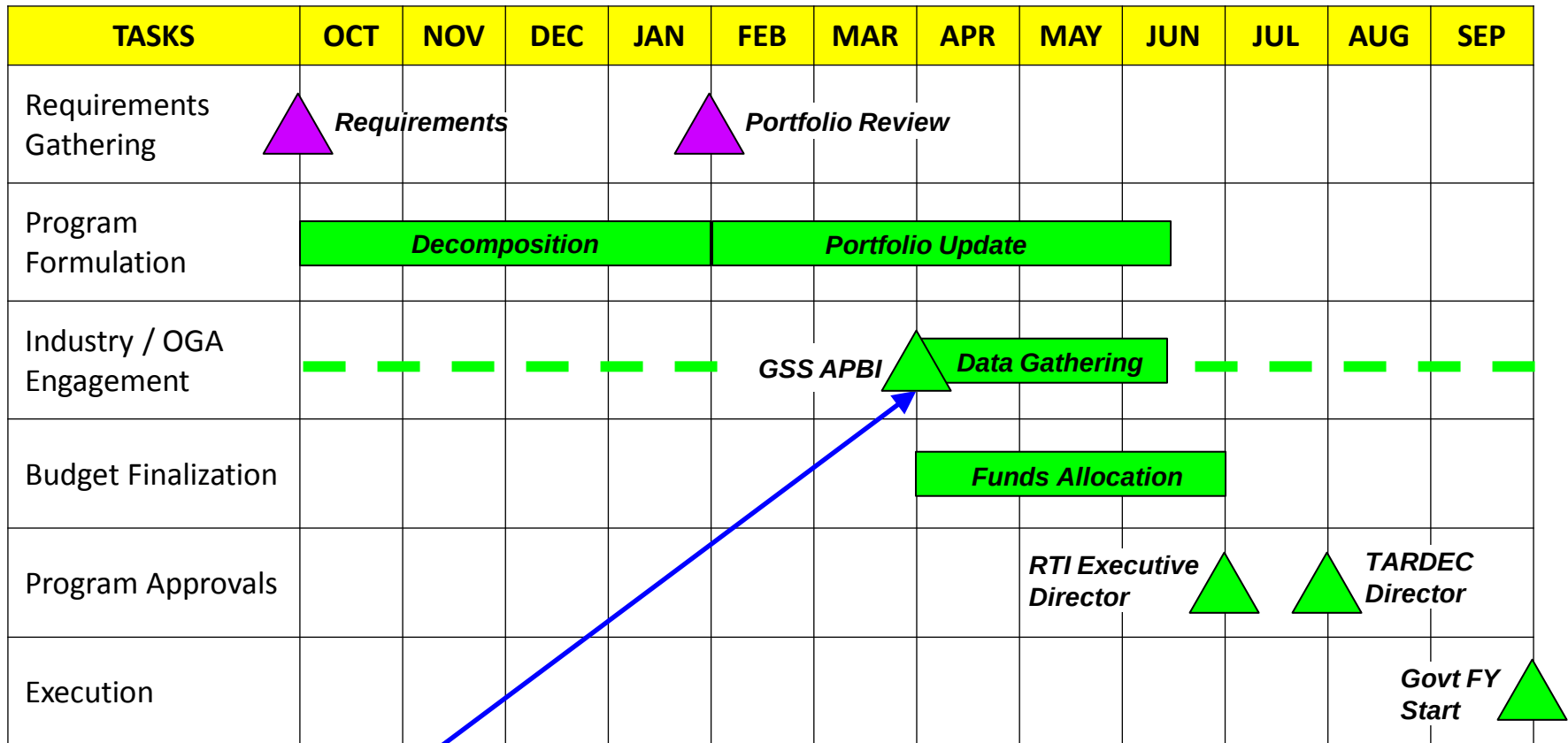
Other

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TRL Definitions

DA Technology Readiness Level	Description	GSS's Basic Definition
4. Component and/or breadboard validation in laboratory environment.	Basic technological components are integrated to establish that they will work together . This is relatively "low fidelity" compared to the eventual system. Examples include integration of "ad hoc" hardware in the laboratory .	<u>Demonstrate it Works!</u> Armor Example – coupon 22 out of 22 shots with no perforations.
5. Component and/or breadboard validation in relevant environment.	Fidelity of breadboard technology increases significantly. The basic technological components are integrated with reasonably realistic supporting elements so it can be tested in a simulated environment . Examples include "high fidelity" laboratory integration of components.	<u>Demonstrate it's environmentally sound under MIL-STD-810 !</u> Armor Example – coupon 22 out of 22 shots with no perforations in hot, cold, UV, weathering, shock & vibration, drop, etc.
6. System/subsystem model or prototype demonstration in a relevant environment.	Representative model or prototype system , which is well beyond that of TRL 5, is tested in a relevant environment . Represents a major step up in a technology's demonstrated readiness. Examples include testing a prototype in a high-fidelity laboratory environment or in simulated operational environment.	<u>Integrate on the vehicle system and run it at the Army proving grounds!</u> Run approx 3K miles and verify performance.
7. System prototype demonstration in an operational environment.	Prototype near, or at, planned operational system. Represents a major step up from TRL 6, requiring demonstration of an actual system prototype in an operational environment such as an aircraft, vehicle, or space. Examples include testing the prototype in a test bed aircraft.	<u>Soldier T&E !</u> Limited User Test (LUT) or like

GSS Budgeting Process



Critical Step

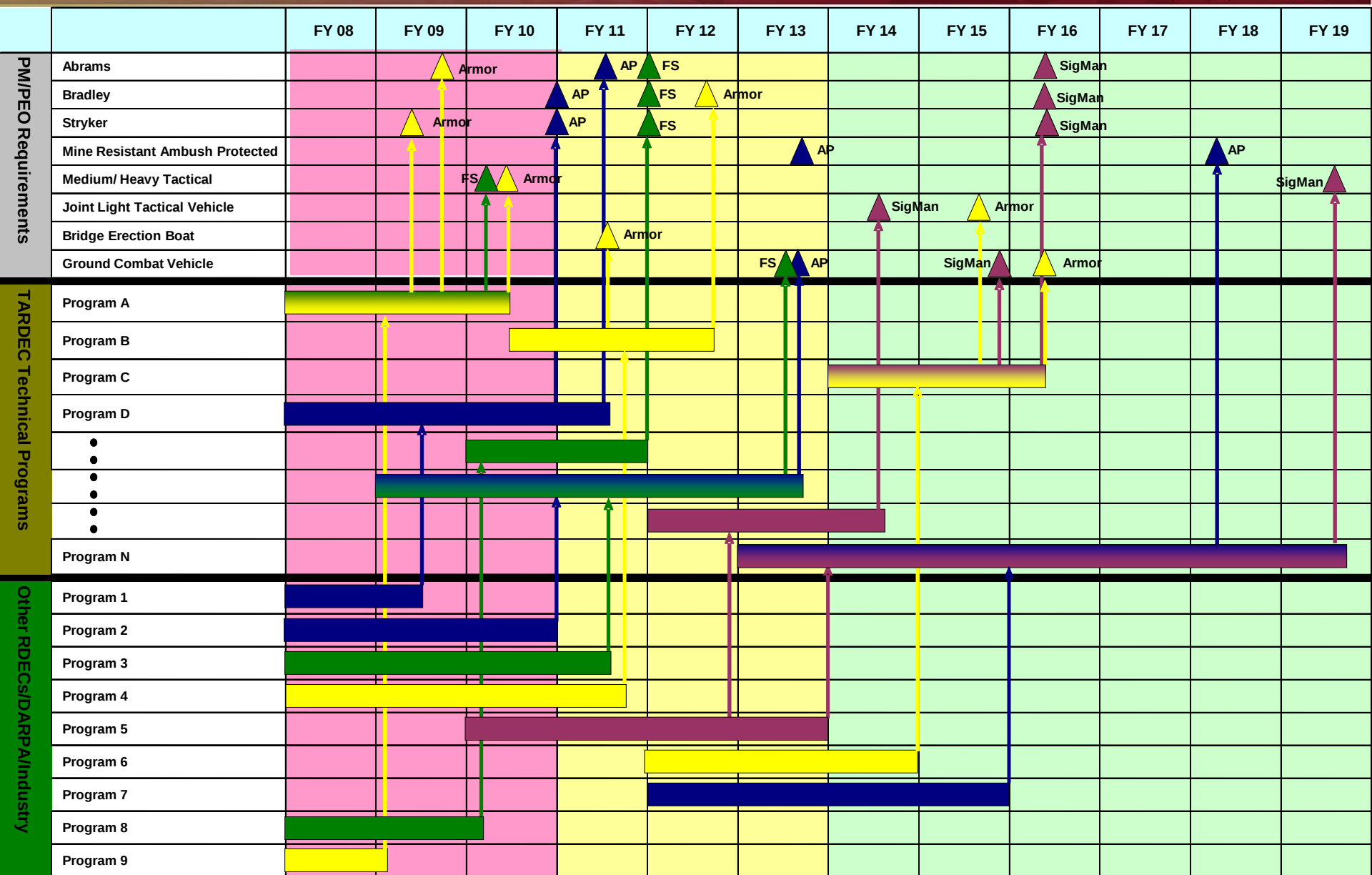
- *We don't know it all*
- *Need the best solution for the requirement*
- *Need to be efficient by leveraging partners*
- *Must let everyone know where we are going*
- *Drive competition – better price*

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Notional Process Output



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U.S. Army Research, Development and Engineering Command

Ground Domain Planning & Integration (GDP&I)

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Deborah DiCesare

**Associate Director, Ground Domain Planning and
Integration**

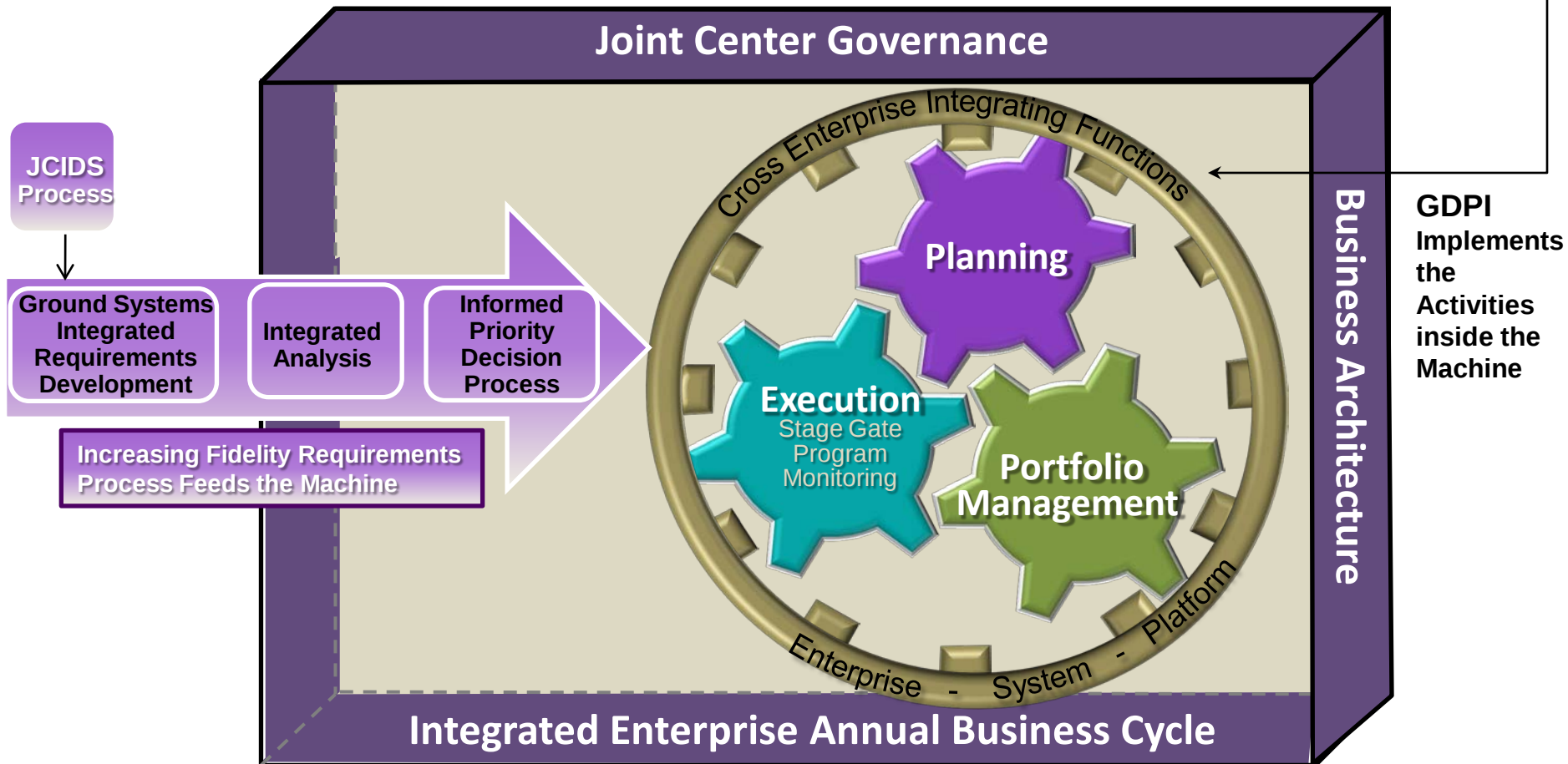
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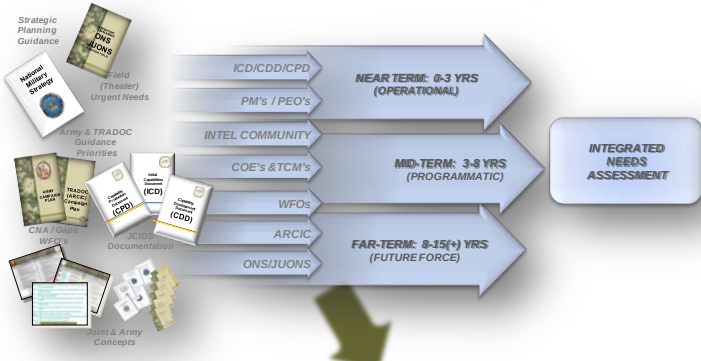
Developing an Integrated Enterprise Requires Integrated Planning Mechanisms

Joint Center for Ground Vehicles: Creates a formalized mechanism with repeatable processes that provides the data needed for the partners to collaboratively plan across ground systems and develop robust shared systems integration capabilities, infrastructure, and projects that benefit all.

Ground Domain Planning and Integration: The implementer of integrated planning. The information integration hub for collaboration excellence across DoD Ground Vehicles.



Ground Domain Planning Process



Integrated Needs Analysis

- Gather, Analyze, Integrate Needs
- Identify and Prioritize Ground Domain Gaps aligned to Strategic Vectors and time-phased needs.



Identify and Prioritize Gaps

Integrated Strategic Project Planning

- Coordinate Tech Gaps
- Align Acquisition/ST&T Plans and Schedules
- Develop Ground Strategic Technology Plans & Roadmaps
- Annual POM Planning
- Annual Guidance



Align Investments to Meet Ground Domain Priorities

Balance Portfolio to align with Ground Domain Priorities

Manage and Execute Project Plan

Project Execution Management

- TARDEC Gated Evaluation Track (TARGET)
- Project Management Best Practice Standardization
- Project Governance
- Project Health Dashboard



Integrated Portfolio Management

- Assess Balance and Alignment to Strategy
- Refine Recommended Strategy

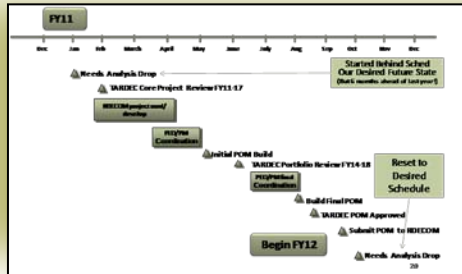


Integrated Portfolio Assessment

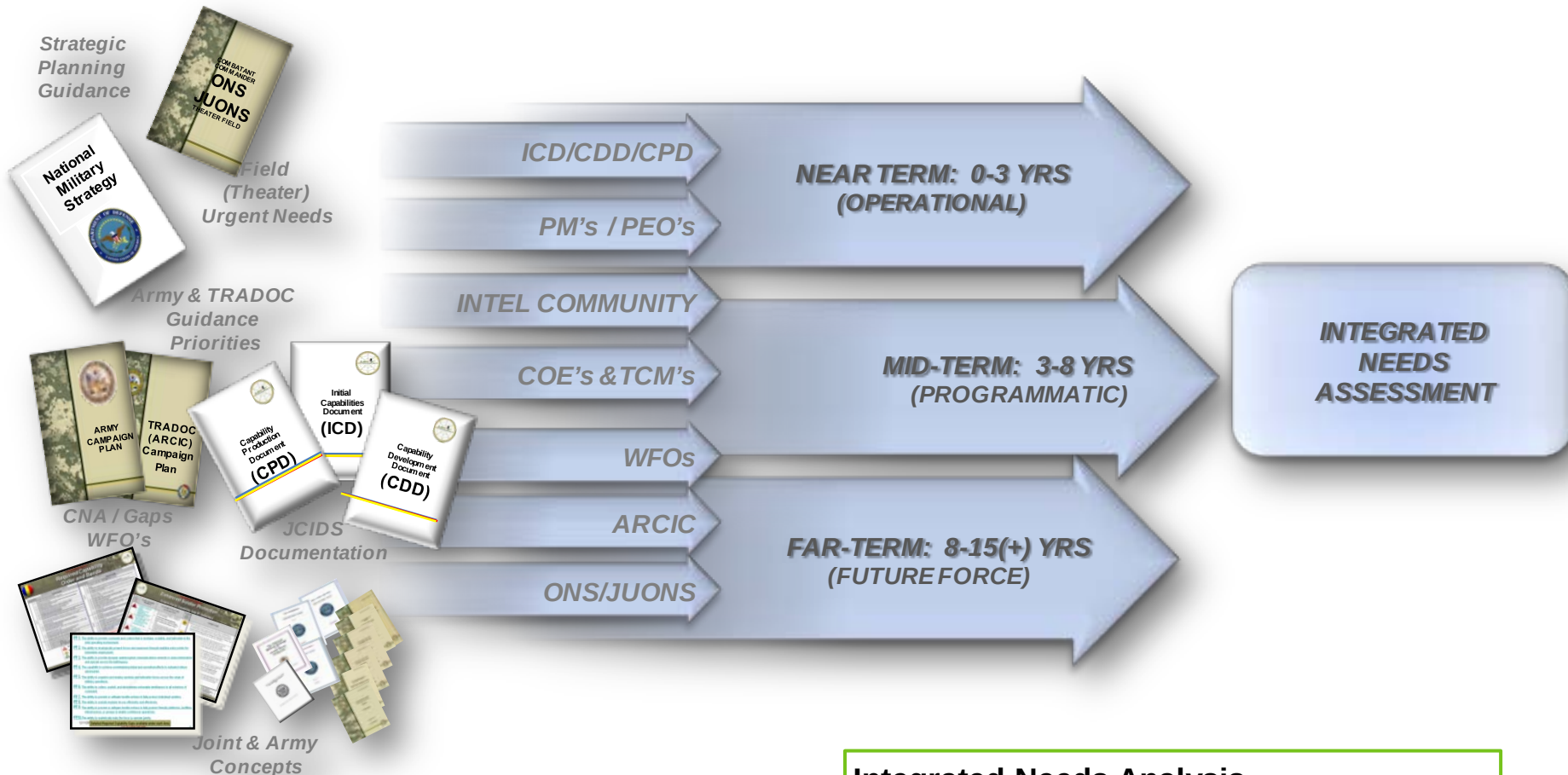
- Analyze portfolio balance and alignment for leadership and tech developers.
- Monitor portfolio health and assess impacts from changes.



Annual Integrated Planning Cycle



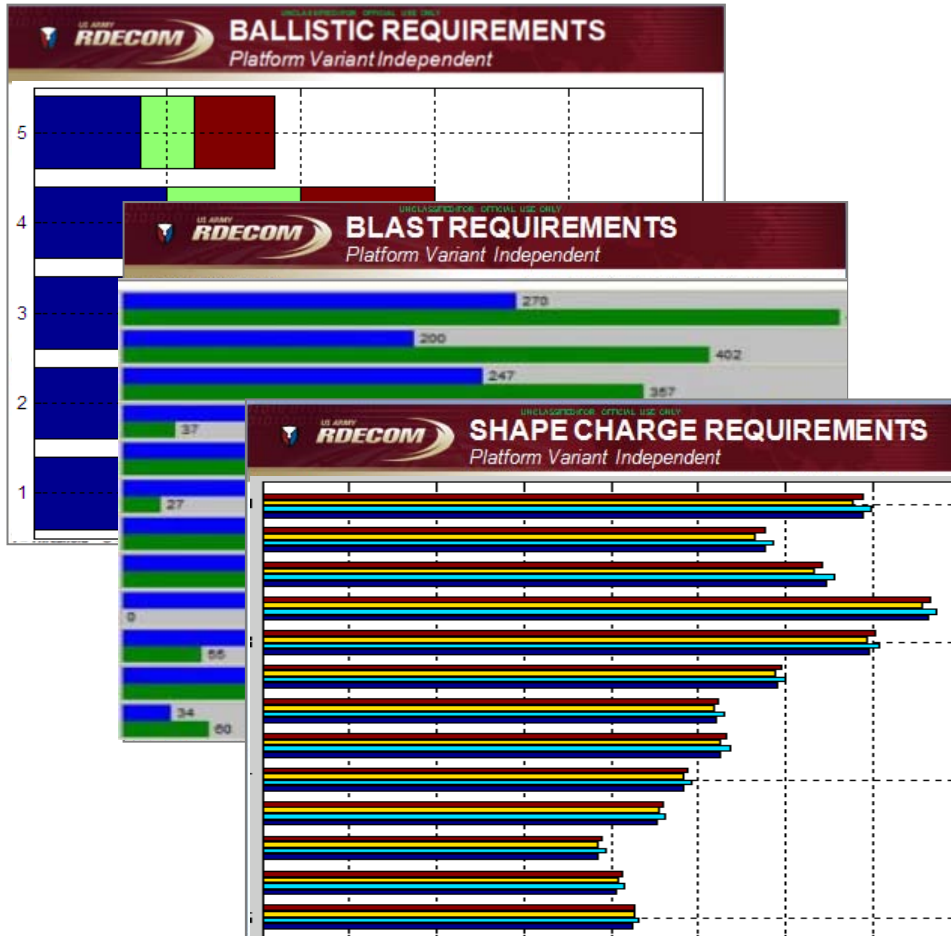
Integrated Needs Analysis



Integrated Needs Analysis

- Gather, Analyze, Integrate Needs
- Identify and Prioritize Ground Domain Gaps aligned to Strategic Vectors and time-phased needs.

Needs Analysis



- Monitor developing ground vehicle requirements (CDDs) as they mature.
- Provide material solution cost impacts of required capability to inform developing CDDs.
- Analyze developing threats and evaluate their impact on system survivability design.
- Look across platforms for opportunities to leverage common solutions.

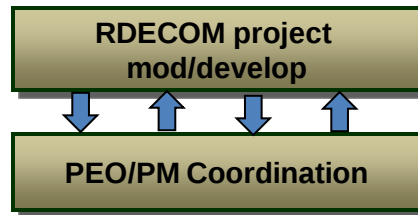
TARDEC is actively engaged with Requirements Developers as they define future ground vehicle survivability & force protection capability.

Annual Planning Cycle



△ Needs analysis drop

△ TARDEC Core Project Review Current FY +2



△ TARDEC Portfolio Review Current FY+3-5

△ Needs analysis drop

The output of this process is what's next



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GSS FY12-18 Roadmap



	Project Name	FY12	FY13	FY14	FY15	FY16	FY17	FY18
Occupant Survivability	Occupant Centric Survivability Program (OCS)							
	Blast Technology Development							
	WIAMan							
Armor	Advanced Combat Vehicle Armor Development (ACVAD)							
	Armor Development							
	Transparent Armor							
Hit Avoidance	RPG Active Protection (RAP)							
	ERAP							
	KE APS							
	VALOR							
Kill Avoidance	Common AFES Demonstrator							
	Advanced Fire Protection							
	Ground Combat Vehicle Vision Protection							
	Advanced Directed Energy Protection - Camera & Eyes							
	Short Pulse Energy Research							
	Threat Oriented Survivability Optimization (TOSOM)							

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- IRAD
- Cooperative Research and Development Agreement (CRADA):
- The Small Business Innovation Research (SBIR)
- Competitive Contract
- Sole Source Contract