A Systems Engineering Model for Roadmap Alignment
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1. Discuss problem space
2. Discuss condition of problem space
3. Discuss affinity process
4. Discuss architectural function
5. Roadmap alignment
Things evolve at their own rate!

Aligning moving parts

Aligning Science & Technology to specific capabilities and platforms

Ground System Integration Domain (GSID)

Information Management

Knowledge Engineering

“We Systems Engineered Our Own Problem Solution”
Things do not align themselves!

What is already in the plan for upgrades?

What does the customer say they want for now?

Where should TARDEC invest?

Which emerging threats need real solutions?

What is the top capability gap?
Things do not align themselves!
DEVELOPING THE FRAMEWORK

**Defining the Taxonomy**

- Maintain Warfighter Needs
- Maintain RDECOM technology/solution taxonomy
- Maintain platforms taxonomy
- Capture S&T program portfolio

**Functions**

- Provide context for capability needs
- Plan capability evolution
- Identify capabilities gaps
- Prioritize capabilities gaps
- Identify enabling technologies
- Identify common needs
- Refine capabilities needs
- Plan technology evolution
- Identify technology investments
- Identify technology dependencies
- Plan platform evolution
- Allocate capabilities to platform upgrades
- Plan programs
- Re-plan programs
- Track program status

**Informs S&T Portfolio Decisions**

- Defining the Taxonomy

**Time-align capabilities and enabling technologies**

- Performance-align capabilities and enabling technologies

**Time-align technologies and prerequisite programs**

- Performance-align technologies and prerequisite programs

**Time-align interdependent technologies**

- Performance-align interdependent technologies
OUR STRUCTURED APPROACH LEADS TO STABILIZATION

Capabilities (High Level)  

Platform context  

Capability Gaps (Voice of customer)  

“delta” capabilities  

Portfolio mapping  

Technology Links  

Solutions Portfolio  

Investments  

Platform context  

Programs:  

DATA DRIVEN!
FUNCTIONAL ARCHITECTURE

Data Elements

- **CAPABILITY**
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- **VOICE OF CUSTOMER**
  - Maintain RDECOM technology/solution taxonomy
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  - Time-align technologies and prerequisite programs
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- **PLATFORM**
  - Maintain platforms taxonomy
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- **TECHNOLOGY**

- **PROGRAMS**

Informs S&T Portfolio Decisions

Maintain Warfighter Needs

Capture S&T program portfolio
BALANCING

Market “Pull” ................................................................. Technology “Push”

War fighter Needs Capability Gaps
• Prioritize
• Identify Common
• Decompose

Requirements “Model”
• Functional
• Performance
• Platform Constraints

Batch/Event Driven

Technology Focus Areas
• Power and Energy
• Mobility & Logistics
• Lethality

Continuous Ownership model

Function
KPP
SWaP
Platform
Cost

Function
KPP
SWaP
Platform
Cost

ALIGN
Decisions:
D1: What is our vehicle/platform roadmap? Which capability gaps will be filled in which increments (customer)
D2: What capability gaps will TARDEC attempt to fill? With which technologies and solution sets? (TARDEC)
D3: How will we integrate our technology enablers into high-value (multi-use) solution sets? (TARDEC)
D4: What portfolio of programs (investments) will best deliver the technologies and solutions that meet the warfighters’ needs? (TARDEC)

Gather summaries of existing ATOs, SBIRs, Congressional Adds and identify their deliverables in terms of technology maturation (KPPs + TRLs)

Gather and refine existing roadmaps + technologies ideas from SMEs

Wire together technology enablers to form solution sets

Gather existing Vehicle roadmaps, capabilities allocated to increments and SWaP constraints

Identify opportunities by analyzing PM 1-N lists, TFT Tech Gaps and WFOs

Decompose capability gaps into functions and KPPs using source requirements documents (due diligence to confirm alignment)
1. Everyone will fall into one of the alignment realms
2. Using non-conventional SE processes
3. Anything can be aligned
4. Structured information model - ready-for-use pattern
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Maintain RDECOM technology/solution taxonomy

Allocate capabilities to platform upgrades

Capture S&T program portfolio
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TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.
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