



Air Force Research Laboratory



Integrity ★ Service ★ Excellence

Strategic Planning For Precision Engagement

20 March 2012

Mark “Slick” Simpson
Senior Strategy Analyst
AFRL/RWPB

AFRL Munitions Directorate



Vision:

Global leader in advancing weapons science and technology

Mission:

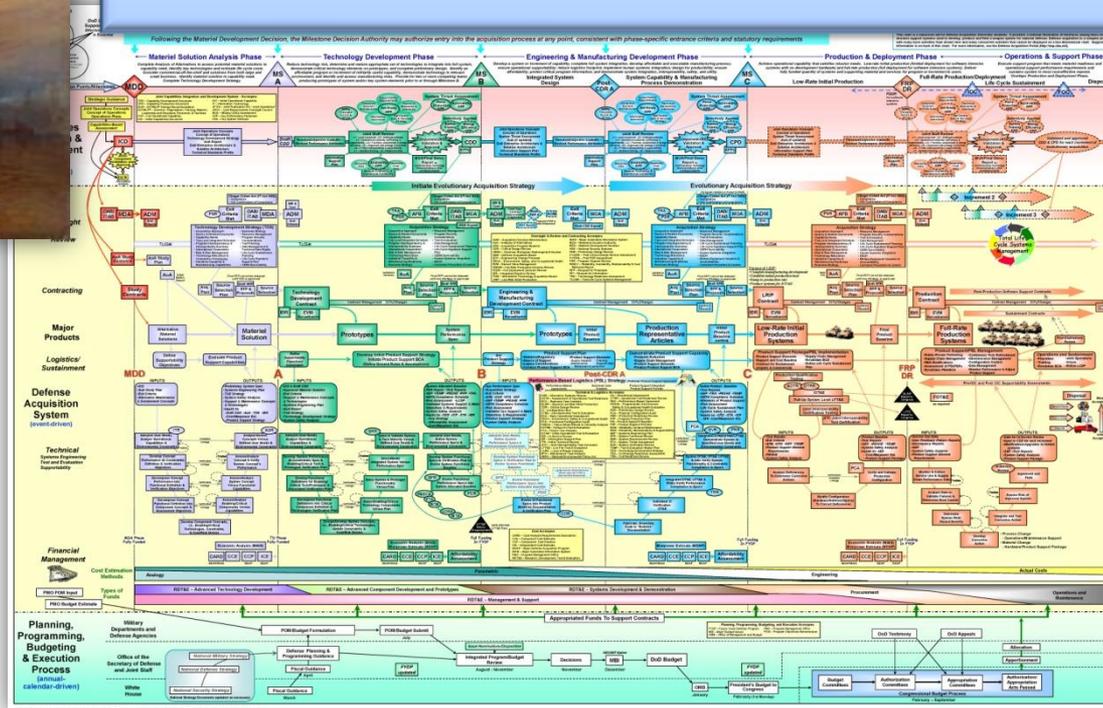
Lead the discovery, development, integration, and transition of affordable weapons technology, enabling the warfighter to win across all domains



Time For Change



“If you are not changing more internally than the external environment is changing, then you are moving backwards. If you don't like change, you are going to like irrelevancy even less!”
Dr John Daly



Question: Are we willing to accept the system of the past as the way ahead into an uncertain future?





A Requirement to Innovate



- **Emerging strategies & systems represent a disruptive innovation directly targeted against the free world**
- **To remain effective, partners in the Weapons S&T Enterprise must continue to change, adapt, and innovate by:**
 - **Collaborating and leveraging technology investments ... and ...**
 - **Shaping the “enterprise” to conceptualize the next generation(s) of weapons ... and ...**
 - **Be the oracle of core weapon technologies and operational access capabilities**
- **Prepare for an uncertain future and investigate game-changing technologies to affordably transition the art-of-the possible into military capabilities ...**

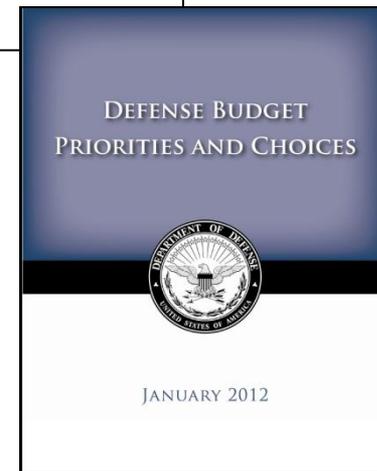
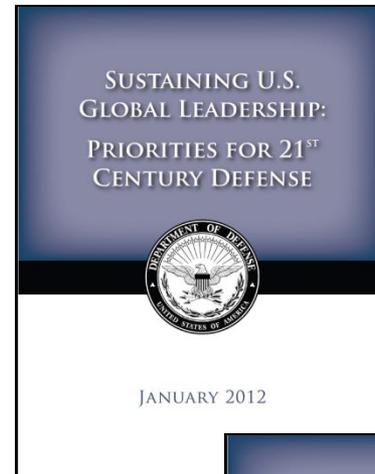
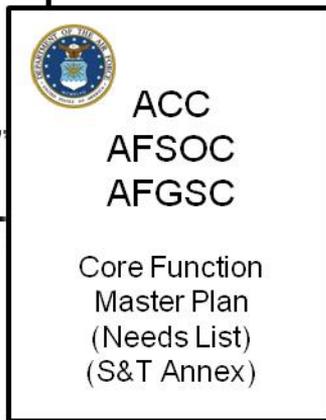
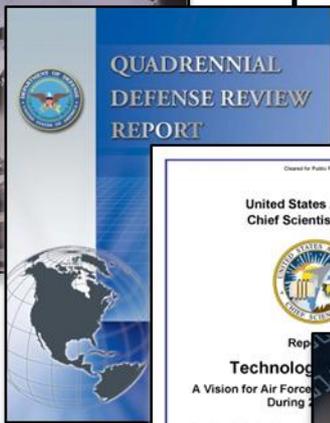
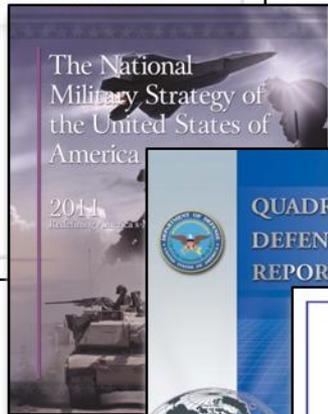
Create technology options that address urgent warfighter needs and provide new capabilities in support of Air Force Service Core Functions

2011 Air Force S&T Plan





Strategy to Task Approach





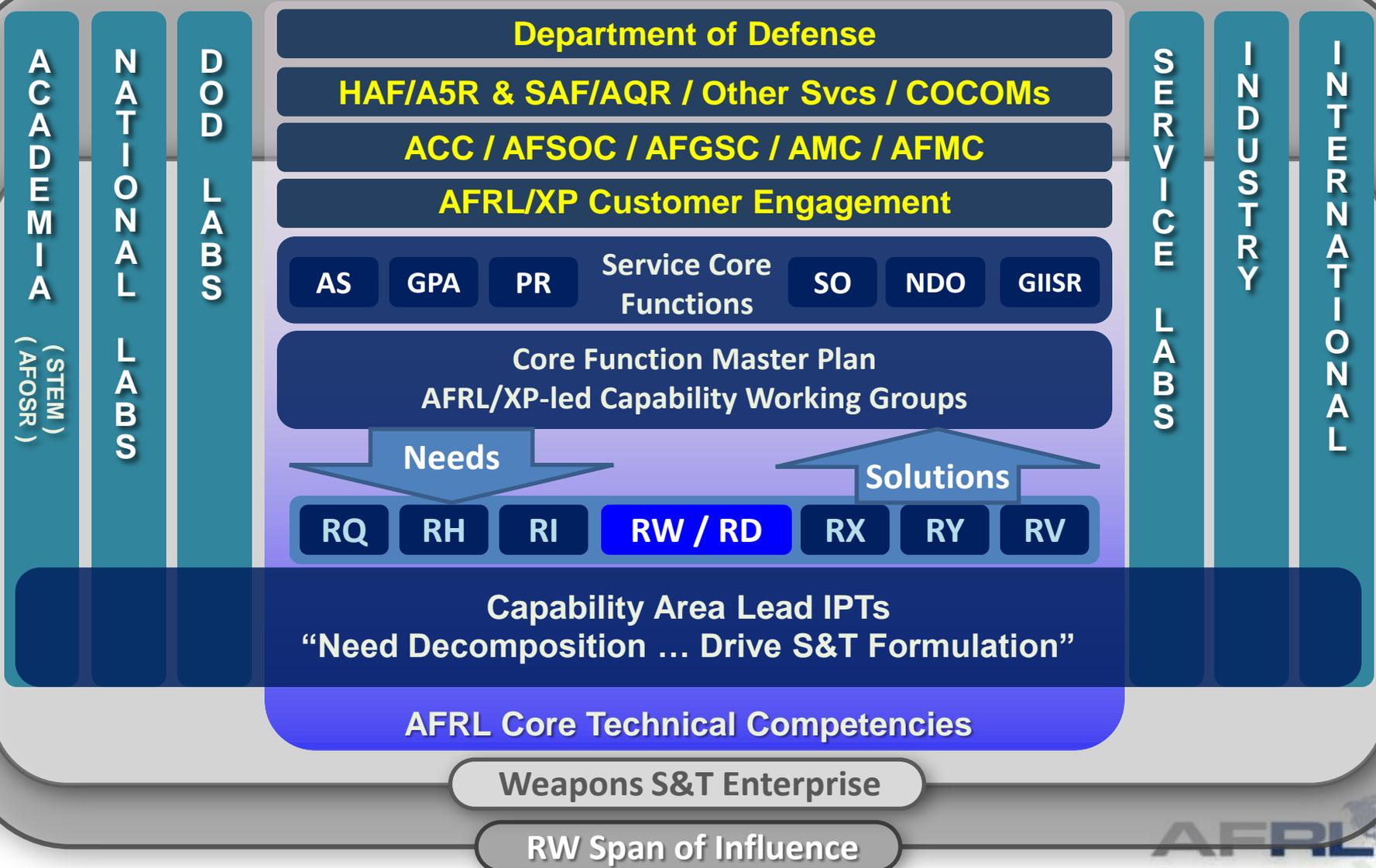
Weapons S&T Enterprise

Integration Spectrum



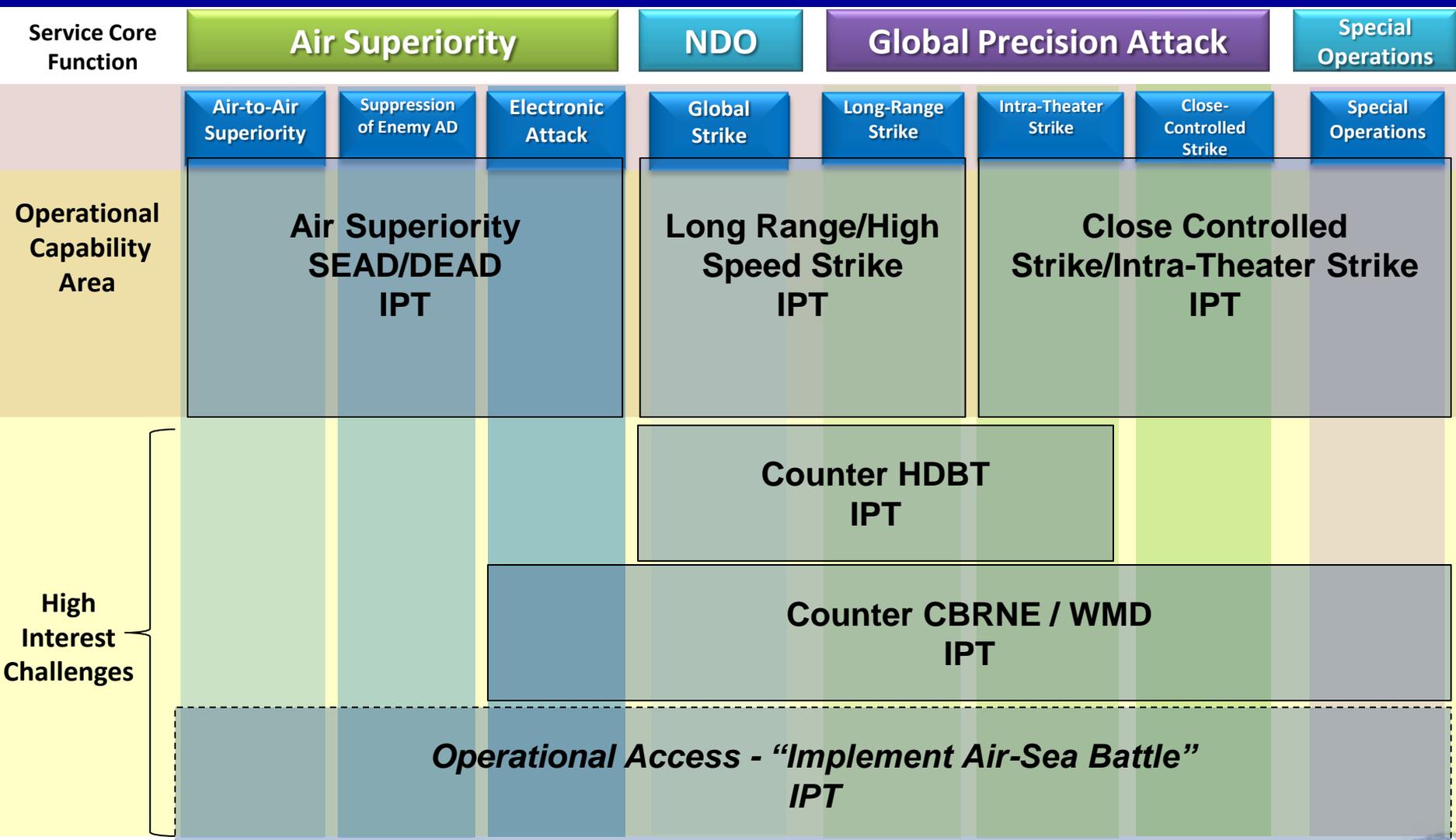


RW Span of Influence





Mapping Weapon Capability Area IPTs to the AF Service Core Functions





5th & 6th Generation S&T Drivers



- **Increased Capability / Capacity Focus with Future Threat Aware Approach – Peer Technology Focus**
- **Highly Contested Airspace – Anti Access / Area Denial**
- **Optimizing 5th/4th Generation Mixed Capabilities**
- **GPS Denied Environments**
- **Understanding with the Warfighter the Value of Speed in all Airspace**
- **Sensors Forward Optimization for Targeting**
- **Modular Bay Concepts for LRS-B**
- **Directed Energy / Non-Kinetic Effects for F-X & LRS-B**
- **Enhanced Lethality Warheads & Effects**
- **Cooperative Effects**



Weapons to Enable 5th/6th Gen Aircraft



- Emerging A2AD strategies & systems represent a disruptive innovation directly targeted against the American way of war...
 - “... the most difficult operational challenge US forces will face...”
 - “A military that cannot gain operational access ... loses utility as an instrument of national power.”

--JOAC, 22 Nov 2011



2010

2020

2035

USAF

F-22

B-2

Threat

- 4th + Gen Adv Fighters
- Advanced EA
- Capable, mobile, Double Digit IADS with embedded self-protection

USAF

F-22

F-35

B-2

Threat

- 5th Gen Adv Fighters (PAK-FA, XXJ)
- Advanced EA
- Dense, Networked, Double/Triple Digit IADS with embedded self-protection

USAF

F-22 (fewer #) / F-X

F-35

LRS-B

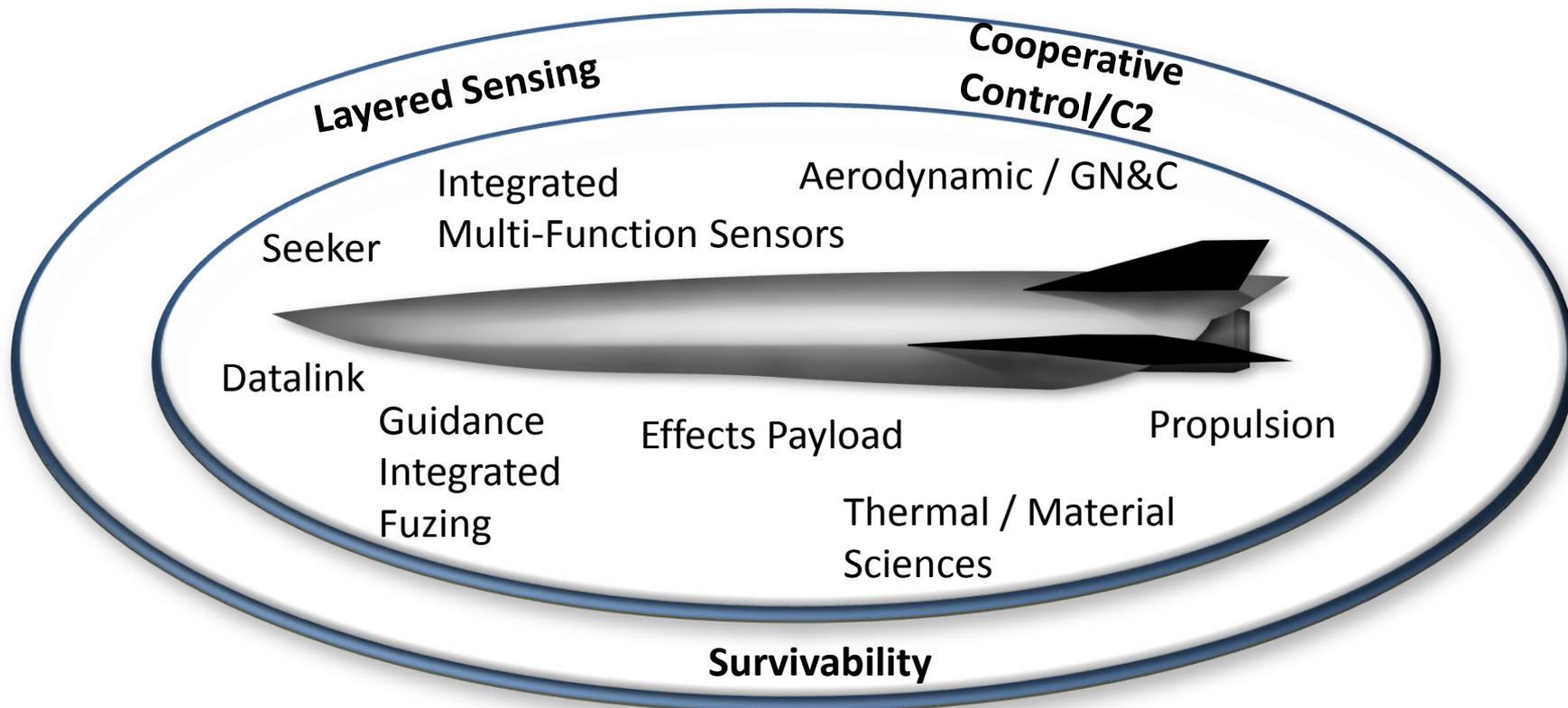
Threat

- 5th + Gen Adv Fighter (+#s)
- Next Gen Advanced EA
- Sophisticated, Dense, Networked, Triple Digit IADS, passive detection, embedded self-protection, DE, and Cyber





Future Weapons will be Complex Air Vehicles



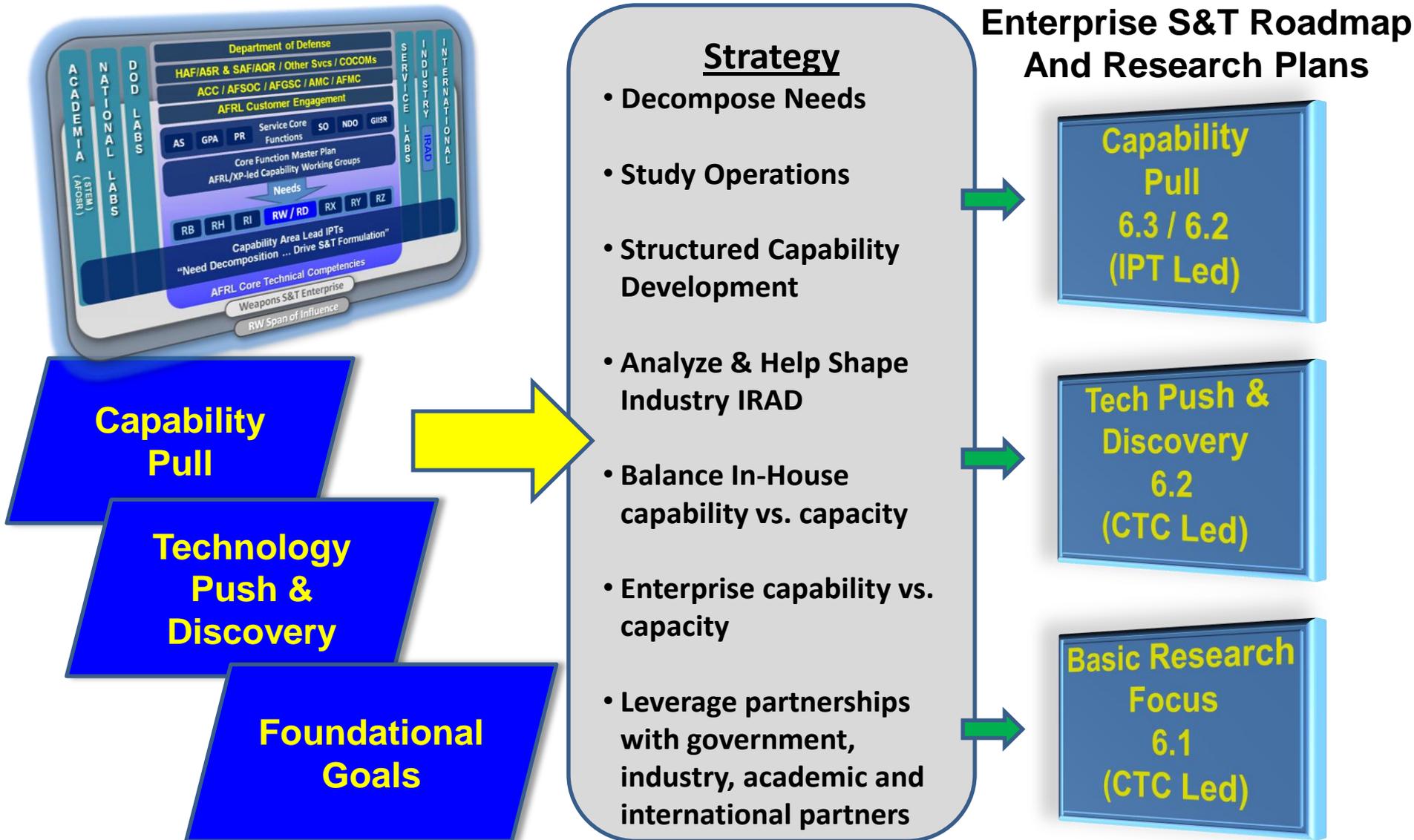
All AFRL TDs INVOLVED
M&S and Systems Engineering Underpins the Enterprise





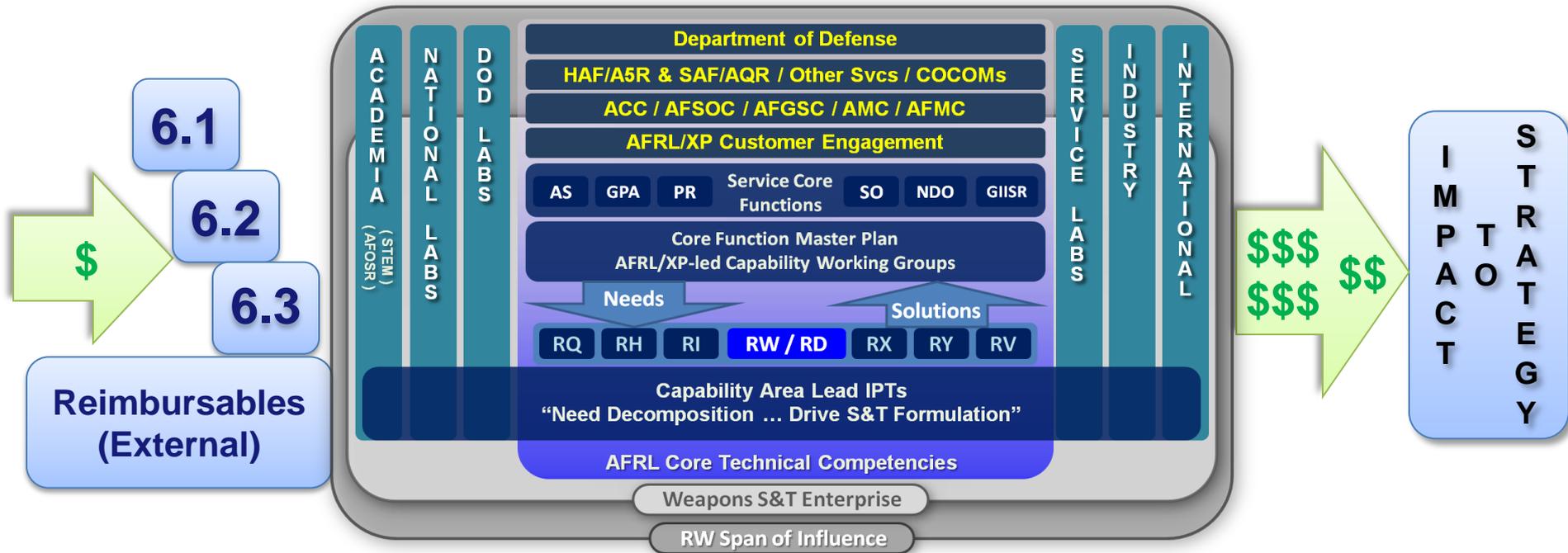
Strategic Steps

Embrace “Enterprise” in our Roadmaps





Addressing the Challenge Leveraging Investments



The Enterprise “Battlespace” has a multiplicative impact on the value of a dollar invested in weapons S&T



DI

Double the
Speed ... Innovation ... Solutions

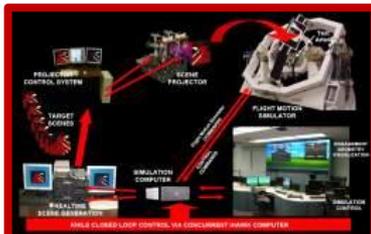


of
ne





Questions



Munitions Systems Effects

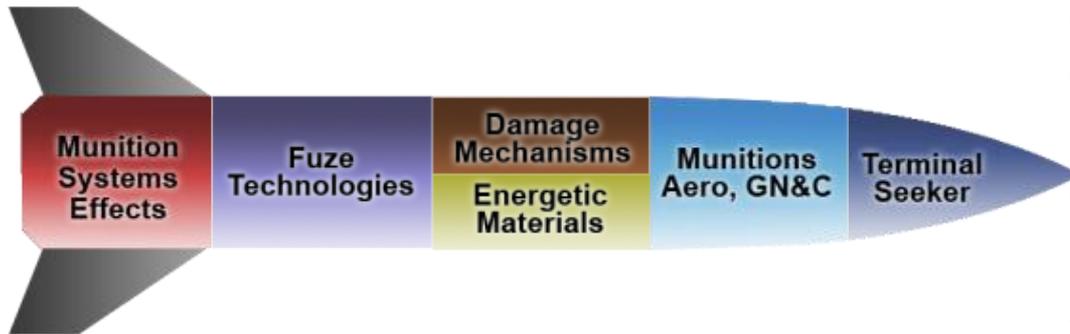


Fuze Technologies



Damage Mechanisms

MUNITIONS DIRECTORATE CORE TECHNICAL COMPETENCIES



- Target Reacquisition & Navigation Theory
- Physical Effects Sim
- Virtual Environment Sim
- Energetic Materials
- Weapon-Target Interaction
- Munitions & PE Seekers
- Physics Conservation
- Application Systems
- Optimization & Effects Coupling
- Computational Physics
- Aerodynamics & Design

Energetic Materials



Munitions Aero, GN&C



Terminal Seekers

