



Emerging Capability & Prototyping

A Path Toward Agility, Innovation & Affordability

Mr. Earl Wyatt

**Deputy Assistant Secretary of Defense, Rapid Fielding
Office of the Assistant Secretary of Defense (Research and Engineering)**



Strategic Guidance

Quest for agility, innovation, and affordability

“As we end today’s wars and reshape our Armed Forces, we will ensure that our military is agile, flexible, and ready for the full range of contingencies.”

*“This country is at a strategic turning point after a decade of war and, therefore, we are shaping a Joint Force for the future that will be smaller and leaner, but will be **agile, flexible, ready, and technologically advanced.**”*

– Sustaining US Global Leadership: Priorities for the 21st Century Defense

“We are continuing our efforts in the following seven areas to achieve greater efficiency and productivity in defense spending:

1. **Achieve affordable programs;**
2. Control costs throughout the product lifecycle;
3. **Incentivize productivity and innovation in industry and Government;**
4. Eliminate unproductive processes and bureaucracy;
5. **Promote effective competition;**
6. Improve tradecraft in acquisition of services; and
7. Improve the professionalism of the total acquisition workforce.”

– Better Buying Power 2.0

*“The goal of Reliance 21 is to ensure that the DoD S&T community **provides solutions and advice** to the Department’s senior-level decision makers, warfighters, Congress, and other stakeholders **in the most effective and efficient manner possible.** This is achieved through an ecosystem and infrastructure that enables **information sharing, alignment of effort, coordination of priorities, and support for scientists and engineers across the Department.**”*

– Reliance 21, January 2014

*“When there is a **strong threat-based or operationally driven need to field a capability solution in the shortest time,** MDAs are authorized to **implement streamlined procedures** designed to accelerate acquisition system responsiveness. Statutory requirements will be complied with, unless waived in accordance with relevant provisions.”*

– Interim DoDI 5000.02, November 26, 2013

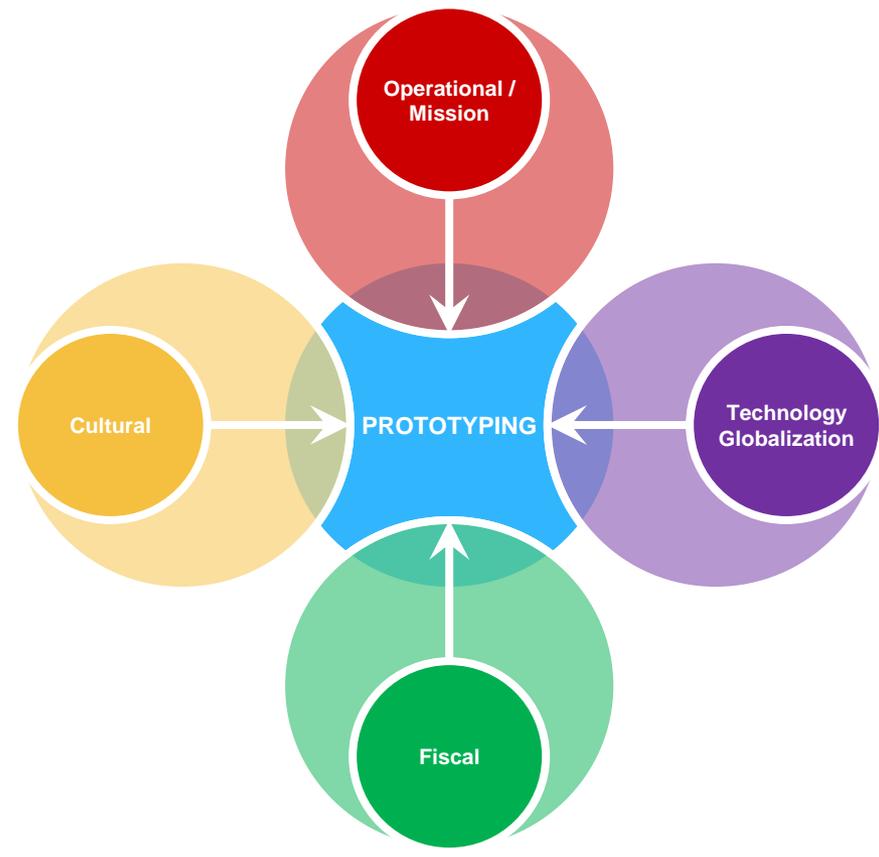
*“Staying ahead of security challenges requires that we **continue to innovate, not only in the technologies we develop,** but in the way the U.S. forces operate. Innovation – within the Department and working with other U.S. departments and agencies and with international partners – will be center stage as we adapt to meet future challenges.”*

– Quadrennial Defense Review 2014



Challenges

- **Spectrum of operational needs**
 - 18th Century Piracy — 21st Century Cyber
- **Prioritization of mission areas**
- **Exploring potential military use of non-military technology**
- **Constrained fiscal environment**
- **Cultural changes**
 - Nature of warfighting
 - Industry mind-set





Prototyping as a Path to Agility, Innovation, and Affordability



AGILITY

Paul MacCready wins the Kremer prize in 1977 for human powered flight by designing an aircraft that can quickly be reconfigured, saving time during the prototyping process.



INNOVATION

Declining budgets following WWI coincided with the rise of air power.
HMS Hermes is the first official aircraft carrier.



AFFORDABILITY

In 1947, Chuck Yeager breaks the sound barrier in the Bell X-1 prototype – the start of big budget prototyping efforts.

A proven tool for:

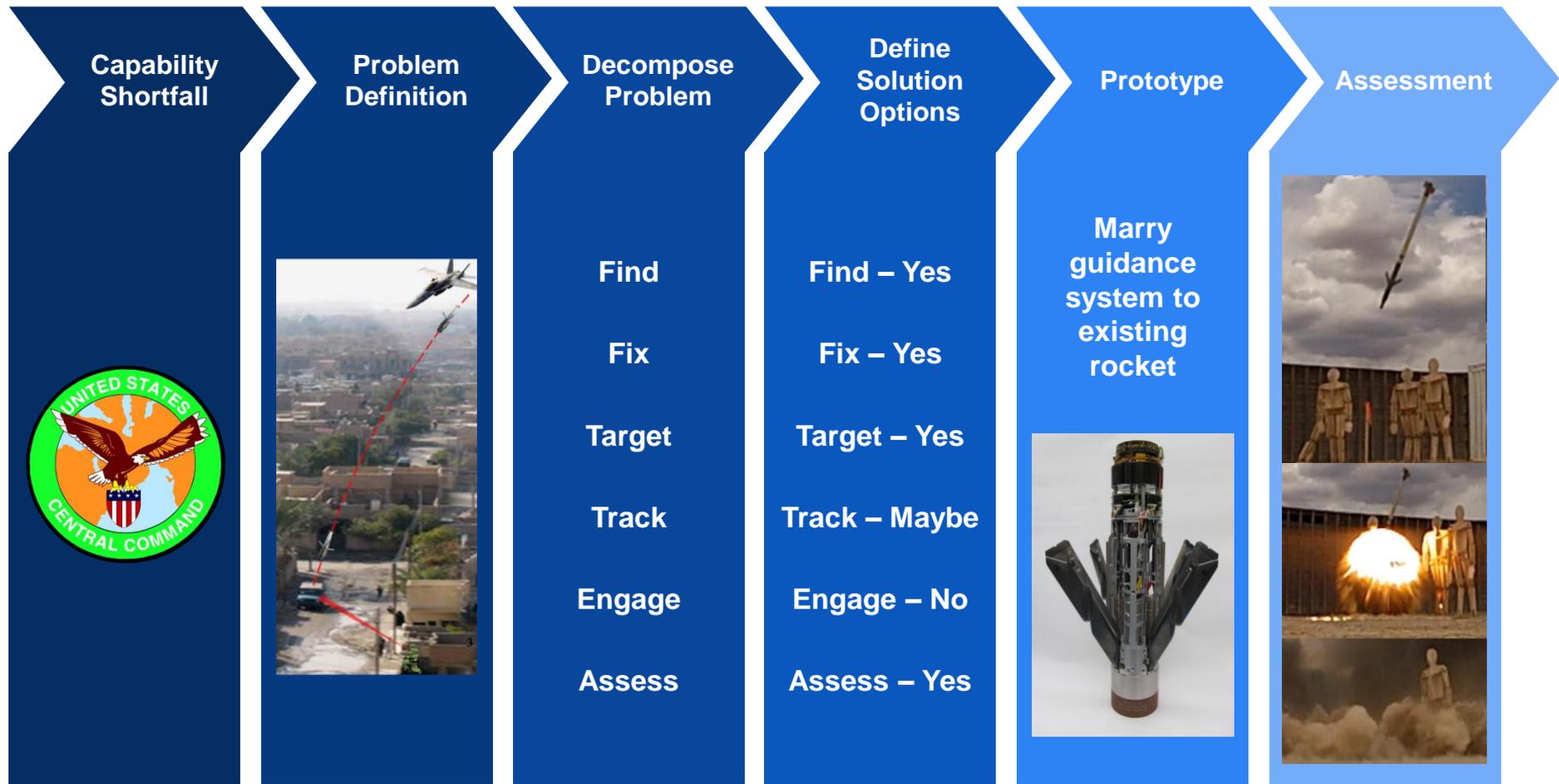
- Technical risk reduction
- Demonstrating feasibility
- Measuring operational value
- Advancing technical skill sets
- Advancing the state of practice in unique disciplines

Enable DoD to affordably:

- Explore the realm of the possible without commitment to follow-on procurement
- Cost-effectively enhance interoperability and reduce lifecycle costs
- Devise / demonstrate a hedge against technical uncertainty or unanticipated threat



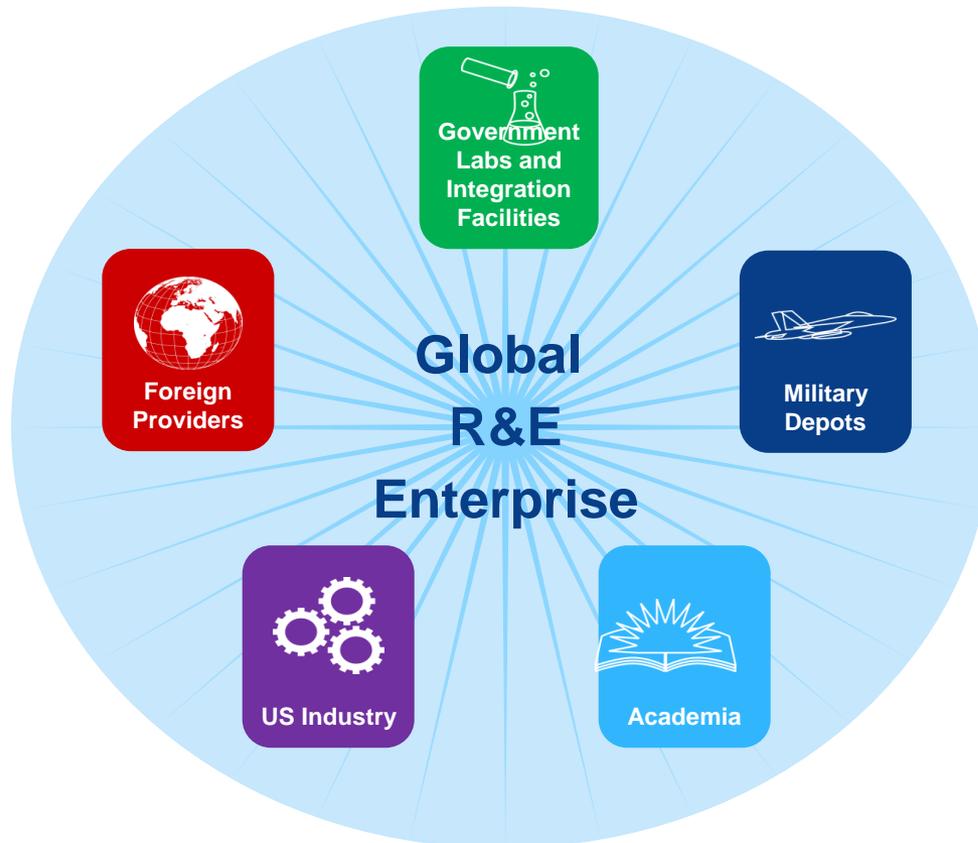
Methodology





Global R&E Enterprise

Foreign Comparative Testing

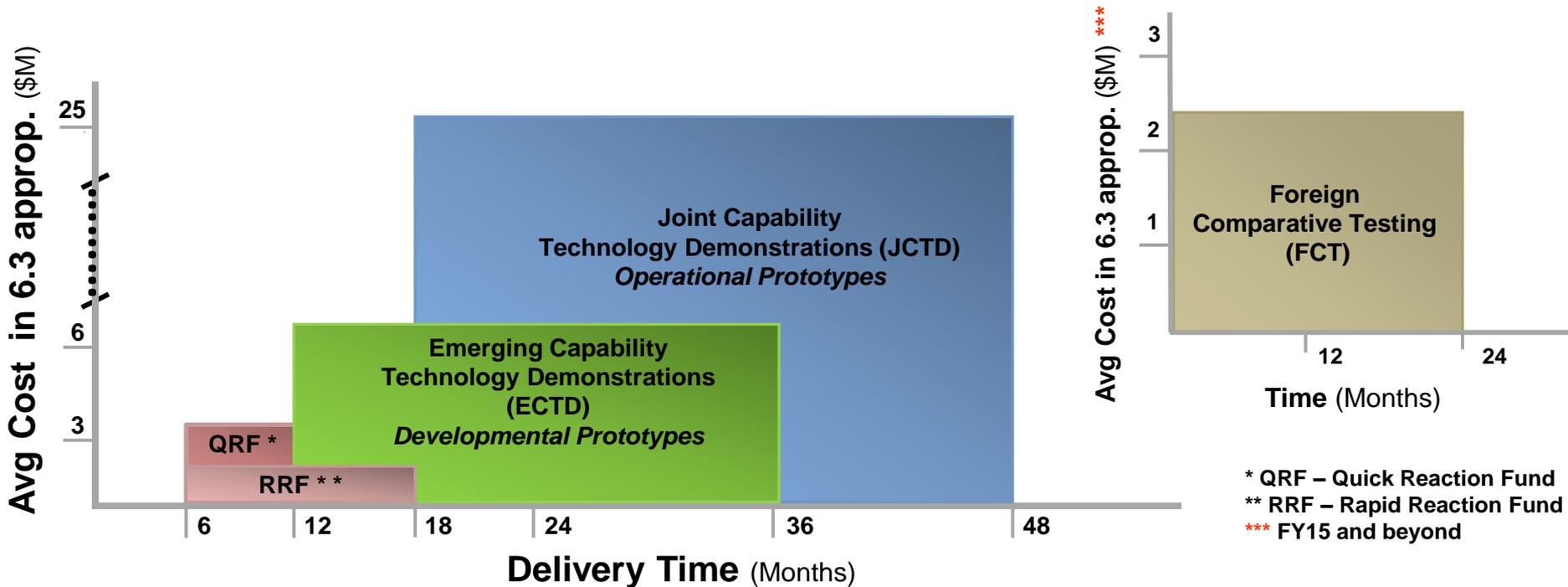




RF Program Elements & Parameters



Project Parameters – Avg Cost & Time



Foreign Comparative Testing (FCT)

Col Hans Miller
571-372-6825

Joint Capability Technology Demos (JCTD)

Mrs Robin Hicks
703-697-4056

Emerging Capabilities Technology Demonstrations (ECTD)

Mr Glenn Fogg
703-697-4239

Quick Reaction Special Projects (QRSP)

Mr Glenn Fogg
703-697-4239



FY14-15 Themes Under Consideration



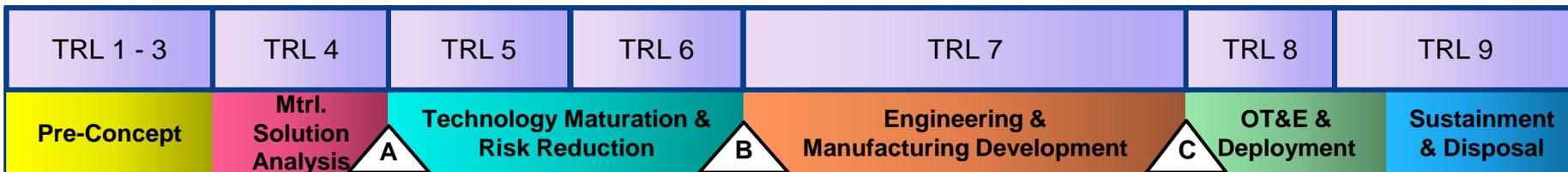
- **Space capability resilience**
- **Autonomous systems**
- **Electromagnetic spectrum agility**
- **Countering weapons of mass destruction**
- **Novel counters for force applications**



Backup



Categories



Developmental Prototypes

- Demonstrate feasibility of an integrated capability
- Provide evidence of overcoming specific technical risk barriers
- Develop sufficiently detailed cost data to enable cost-capability trades

Operational Prototypes

- Demonstrate military utility of integrated capability solutions
- Demonstrate robust fabrication processes
- Demonstrate performance in specific operational environments
- Define form, fit, function and “ilities”
- Enable business case analyses