

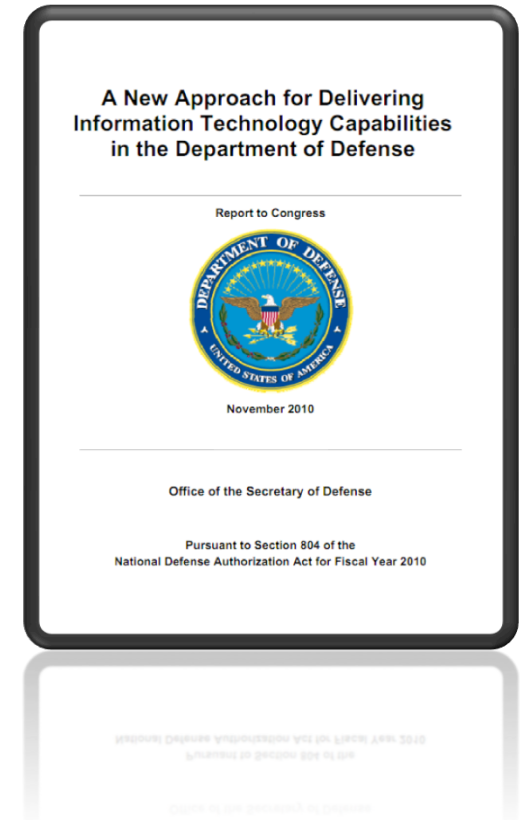
Solving Einstein's Dilemma with a Rapid Integration,  
Innovation, Process (RI2P)

## **DCGS ENTERPRISE BUILDING A BETTER MOUSETRAP**

John Snevely

# The Baby is Ugly

- Undeniably, the status quo Defense IT acquisition process does not adequately serve war fighters at the tactical edge.
- Simply trying harder with the same organizations and processes will not fix the problem.
- Hence, the Secretary of Defense has mandated fundamental change.
  - Early continuous user-involvement
  - Rapid prototyping
  - Incremental delivery
  - Modular Open System Approach (MOSA)

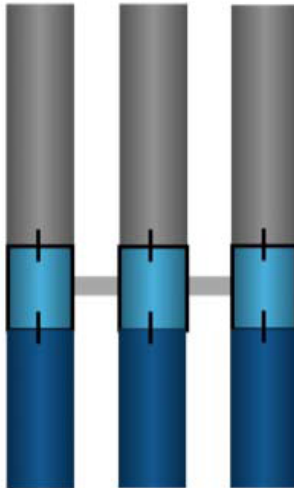


# Evolution of Architectures

Stove Pipes → Open Middleware → Open Services

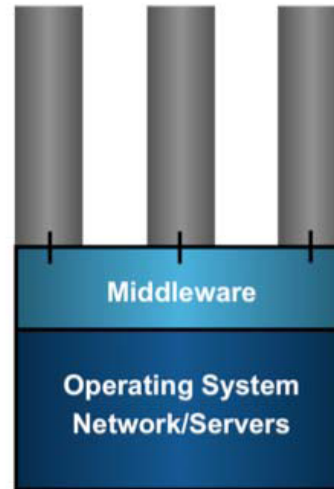
1970 / 1980

Stove-piped systems



1990 / 2000

Middleware glued to mission applications



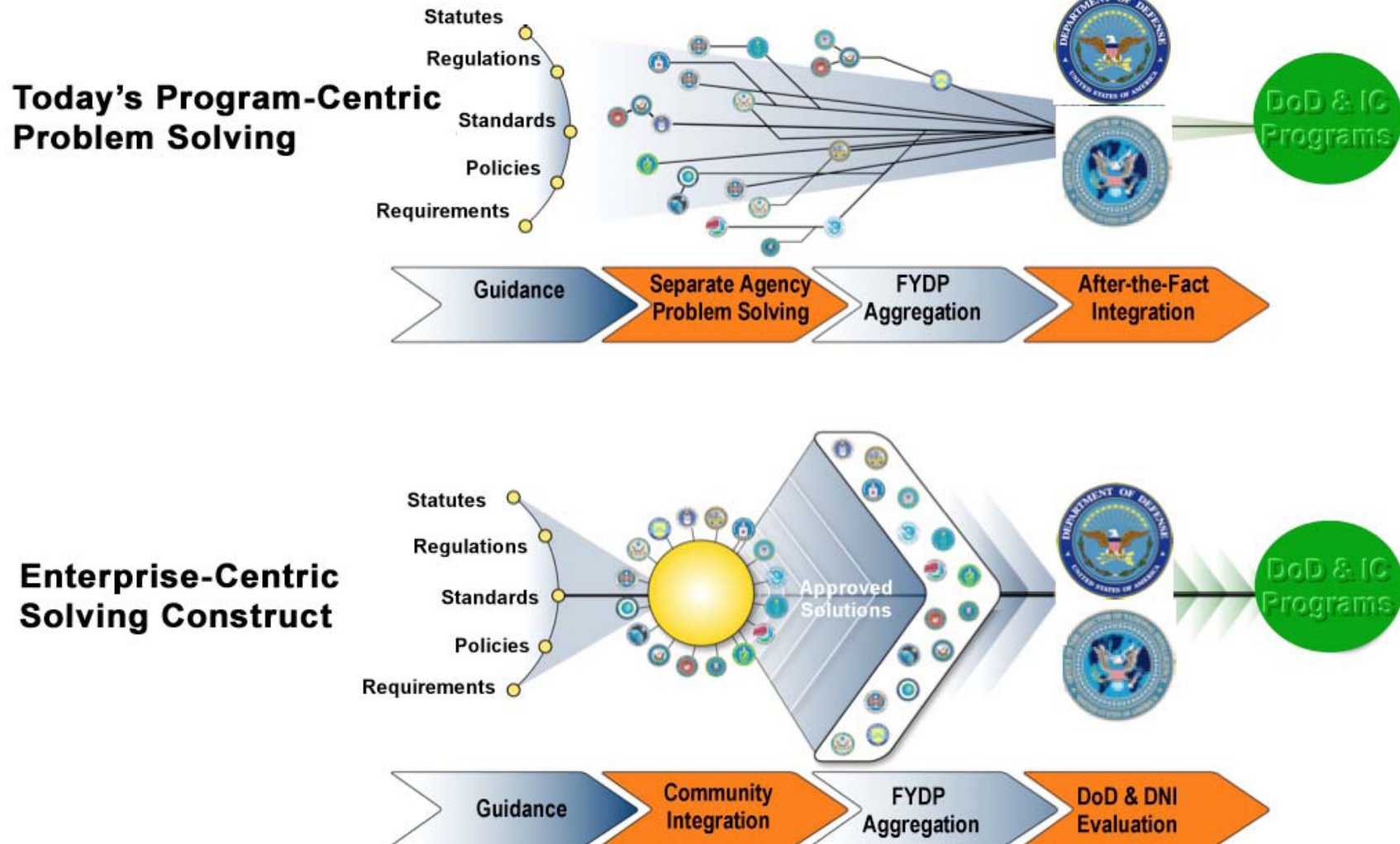
Today

Service-oriented architecture (SOA)  
Shared applications and services



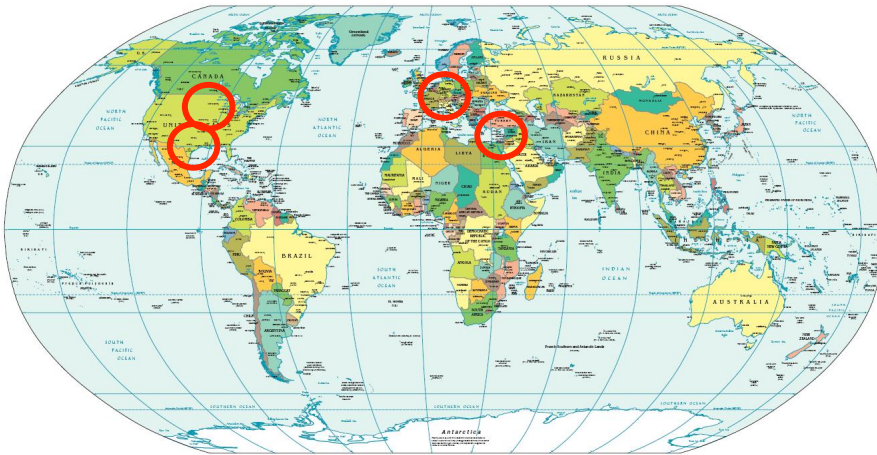
Future

# Enterprise Level Decision Making





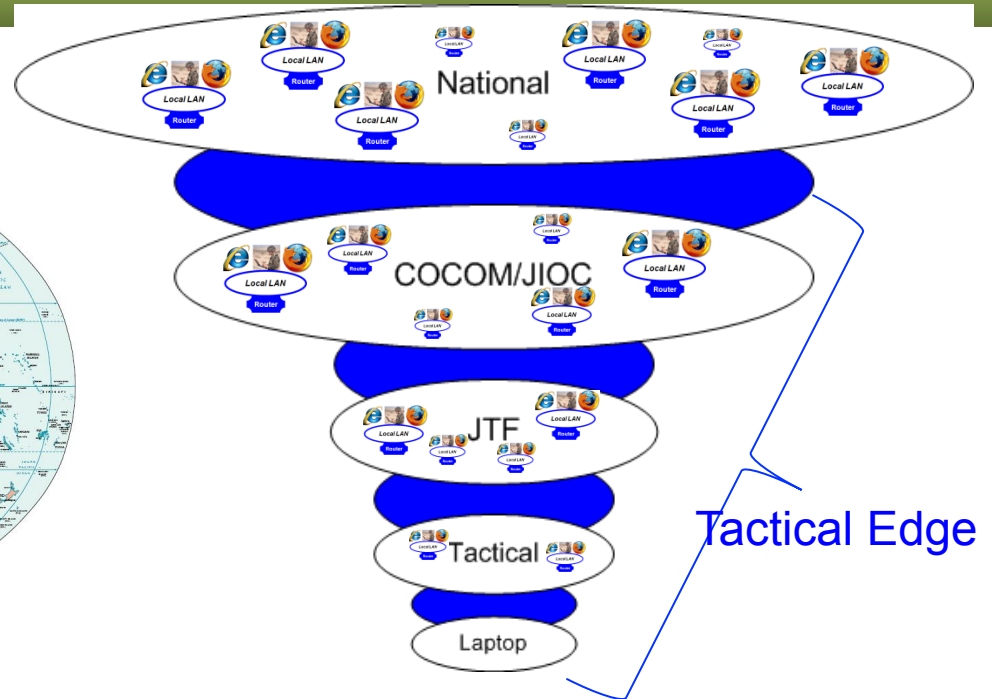
# Tactical & Global



## A Single Enterprise

All services consolidated to DECC  
Columbus and other central sites. Tactical  
edge supported with unlimited reliable  
communications.

6212 NCES Vision



## Enterprise of Enterprises

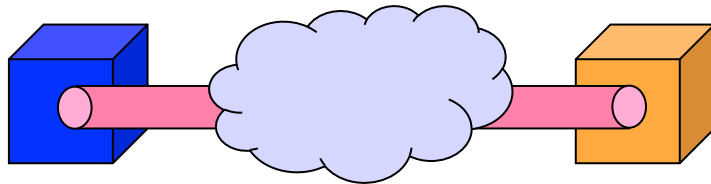
Each enterprise capable of independent  
operations in the face of disadvantaged,  
disconnected, or denied communications or  
destroyed infrastructure.

DCGS-Enterprise Vision

Intelligence vs Information

# Interoperability

## System Interoperability

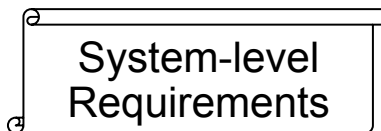


Can I talk to a specific system through the cloud?

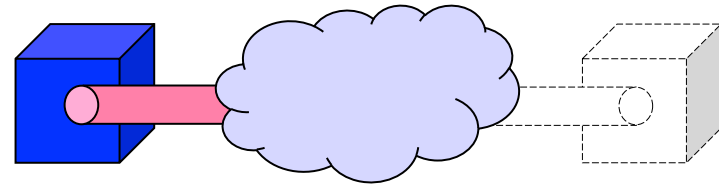
Example: Will this PC work with that printer?

SLAs (point to point agreements)

Point to Point Interoperability  
With Anticipated Users



## Net-Centric Interoperability



Can I talk to anything in the cloud based on my interoperable interface?

Example: A network printer that can talk to any PC on the LAN.

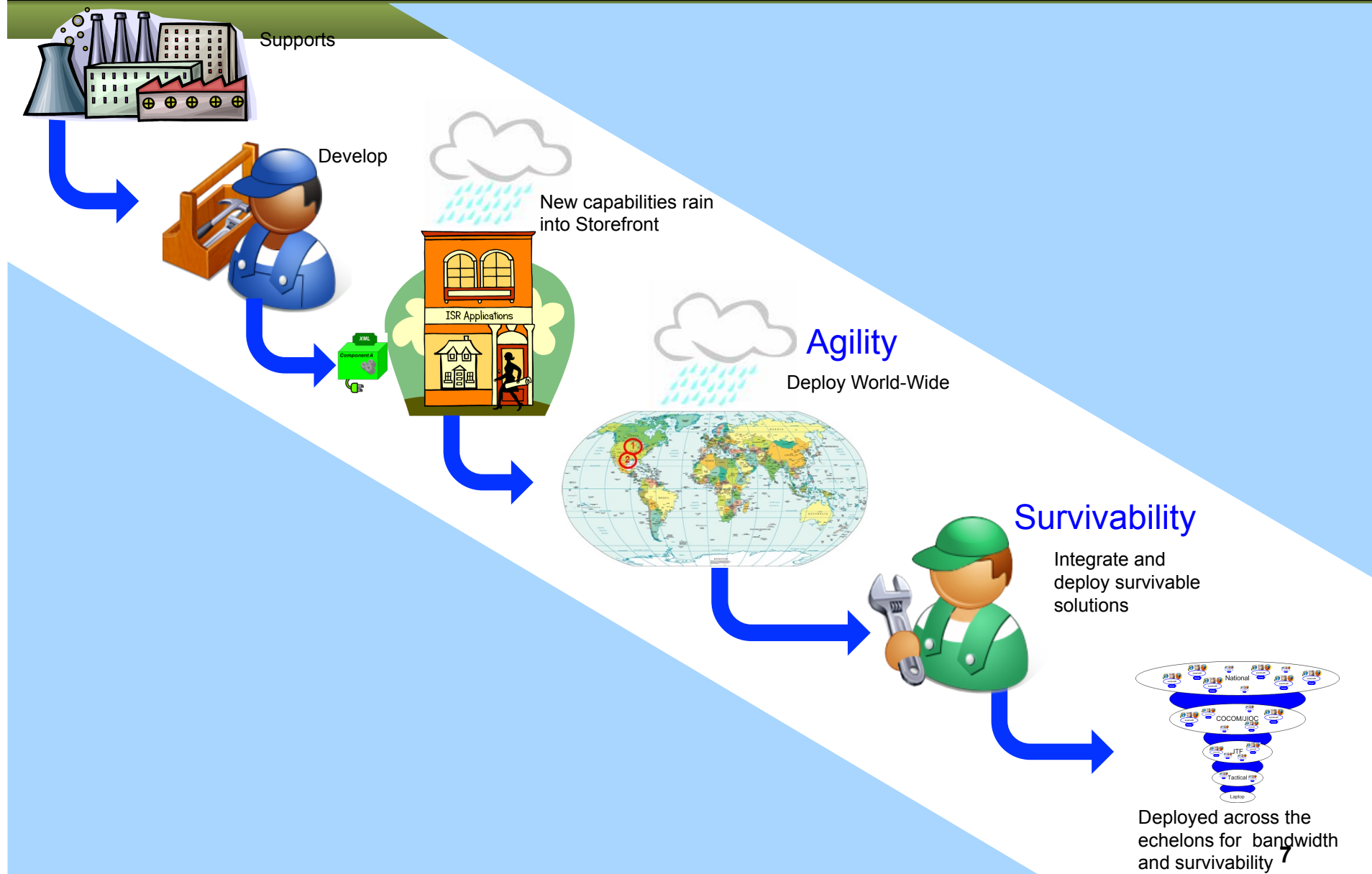
Standards-based data/services

Potential Interoperability  
with Unanticipated Users



You need to test for both types of interoperability!

# Agile Alley



# Transformational Catalyst?



[www.macefusion.com](http://www.macefusion.com)

# Multi-Agency Collaborative Environment (MACE)

- Organization
  - Established by DOD CIO/ASD NII and in cooperation with the OSD Special Capabilities Office (SCO)
    - *Transitioning to ISSO and OSD (ATL) Joint Interoperability*
- Mission
  - To create data sharing partnerships across the federal government
- Goal
  - Achieve greater levels of situational awareness and enable more accurate and timely decision making across the DoD and Federal Agencies

# MACE

## National Defense Authorization Act



1B

Union Calendar No. 279

111TH CONGRESS  
2D SESSION

**H. R. 5136**

[Report No. 111-491]

To authorize appropriations for fiscal year 2011 for military activities of the Department of Defense, to prescribe military personnel strengths for such fiscal year, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

APRIL 26, 2010

Mr. SELTON (for himself and Mr. McKEON) (both by request) introduced the following bill, which was referred to the Committee on Armed Services

MAY 21, 2010

Reported with amendments, committed to the Committee of the Whole House on the State of the Union, and ordered to be printed

[Strike out all after the enacting clause and insert the part printed in italics]

[For text of introduced bill, see copy of bill as introduced on April 26, 2010]

### *Multi-Agency Collaboration Environment*

The committee is aware that the office of the Assistant Secretary of Defense for Networks and Information Integration sponsored a program intended to break down interagency information stovepipes and promote greater information sharing among the Department of Defense and its partners. The Multi-Agency Collaboration Environment (MACE) is an innovative effort to address many of the information sharing problems identified by the 9/11 Commission which continue to plague the U.S. Government. MACE provides a unique proving ground for federated information sharing architectures and techniques. Equally important, the contracting paradigm for MACE is a radical departure for the Department, and offers a potential future standard that leverages Darwinian principles in support of information systems program management. The committee plans to closely monitor the progress of MACE, and encourages the Department to make greater use of this capability.

***Information is the critical enabler in today's fight***

# MACE Value Proposition

- *Creating Partnerships across all of Government demonstrating the power of data sharing*
  - Putting people with capabilities together with people looking for solutions
- *Fostering an enterprise approach to data sharing*
  - Supporting organizations with their requirements to turn data into knowledge
  - Making data compliant and accessible to users from across a community of interest
  - Exposing capabilities to our mission partners promoting reuse and operational/financial efficiencies

## MULTI-AGENCY COLLABORATION ENVIRONMENT (MACE) DESIGNATION

The Multi-Agency Collaboration Environment (MACE) effort has been initiated by the Assistant Secretary of Defense (Networks and Information Integration)/Department of Defense Chief Information Officer (ASD(NII)/DoD CIO), with the assistance of the OSD Special Capabilities Office (SCO), as a capability to enable organizations to adapt their technology, data, and processes to meet their current mission challenges. The MACE provides a rapid application development "proving ground" staffed by experienced personnel who use proven processes to design, engineer, test and certify solutions that are compliant with Federal and DoD information enterprise architecture policy and guidance.

An objective of the MACE pilot is to implement a data sharing and collaboration framework that serves the DoD and other Federal Agencies. To that end, participating organizations will make available their government-developed, certified and accredited tools and applications to the MACE, and the MACE will, as requested, tailor and modify those tools and applications to support specific customer needs. The MACE will be reimbursed by participating customers as part of their planned execution for the program(s) of record. Individual efforts will be executed under approved and agreed upon signed Memorandum(s) of Agreement (MOA) between the MACE and the sponsoring government agencies. Each contractual engagement between the MACE and its sponsoring agencies will remain "separate and severable". Formal cost, schedule, and performance reviews will be conducted on a bi-annual basis by the undersigned.

Oversight for all MACE activities will be provided by the Director, Enterprise Services and Integration, OASD(NII)/DoD CIO. The OSD Special Capabilities Office (SCO) will support financial tracking and oversight for all funding actions and monitor progress of execution.

 3/10/10  
Ms. Cheryl Roby Date  
PD ASD/NII  
DoD Chief Information Officer

 3 MAR 2010  
Mr. Brian Hobbins Date  
OSD SCO

# Benefit of Performing Work @ MACE

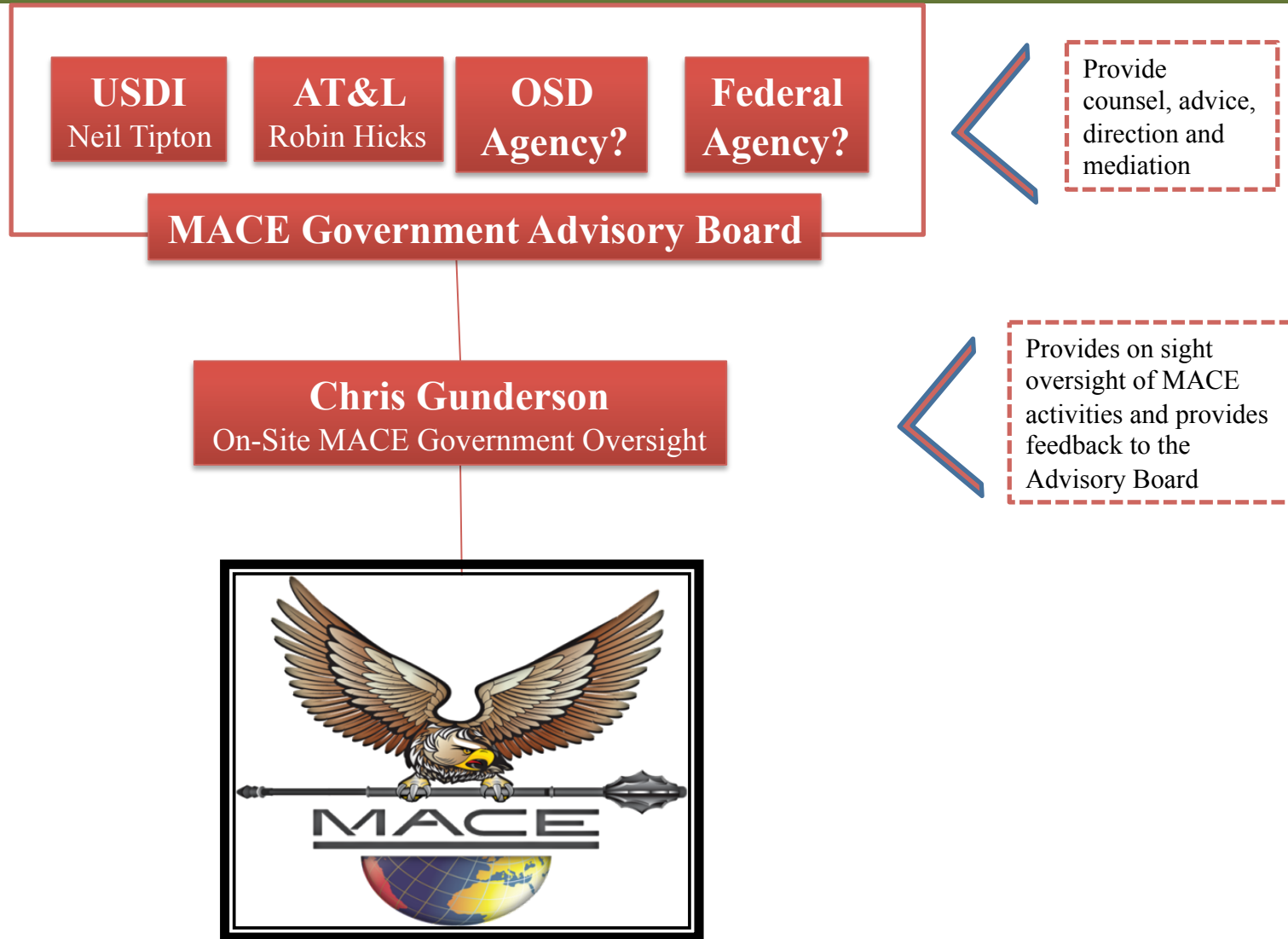
- Designed to support Agile development
- Open environment for development
  - “Off Government site” flexibility
- All contract work is non-proprietary
- Partnerships
  - DoD and Federal Agency participation and oversight
    - *PM-ISE, USDI, DHS, ATF, USAF, DOD*
- Facility
  - Purpose built facility to foster collaboration
  - No lease required
    - *1 week to 3 months to 3 years*
- Cost Efficiency
  - Potential cost sharing across efforts
  - Leverage other team’s lessons learned
  - Matrix FTE/Surge support



# 2009-2012 DIB Accomplishments

- DIB now operational at over 100 service/agency nodes world-wide
- DIB has lead to a 325% increase in the volume and number of data federations across DoD
- Estimated cost avoidance savings of \$54 million dollars per DIB version
- Four times faster release cycle when compared to traditional acquisition methods
- DIB 4.0 delivers technology leap with DDF
  - Basis for DI2E “data layer”
  - Rapid integration of new data sources and formats

# Government Oversight Option



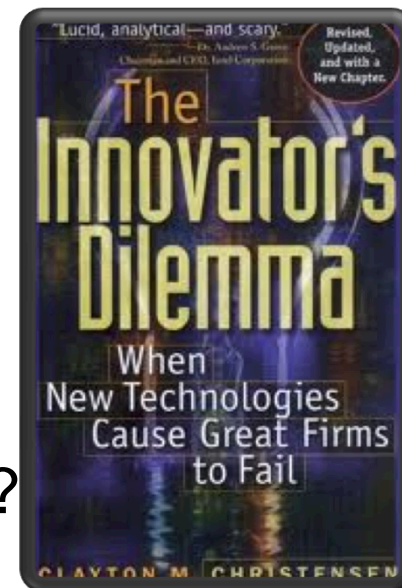
# Solving Einstein's Dilemma with a Rapid Integration, Innovation, Process (RI2P)

Multi-Agency Collaborative Environment...not your  
Father's System Command

Chris Gunderson

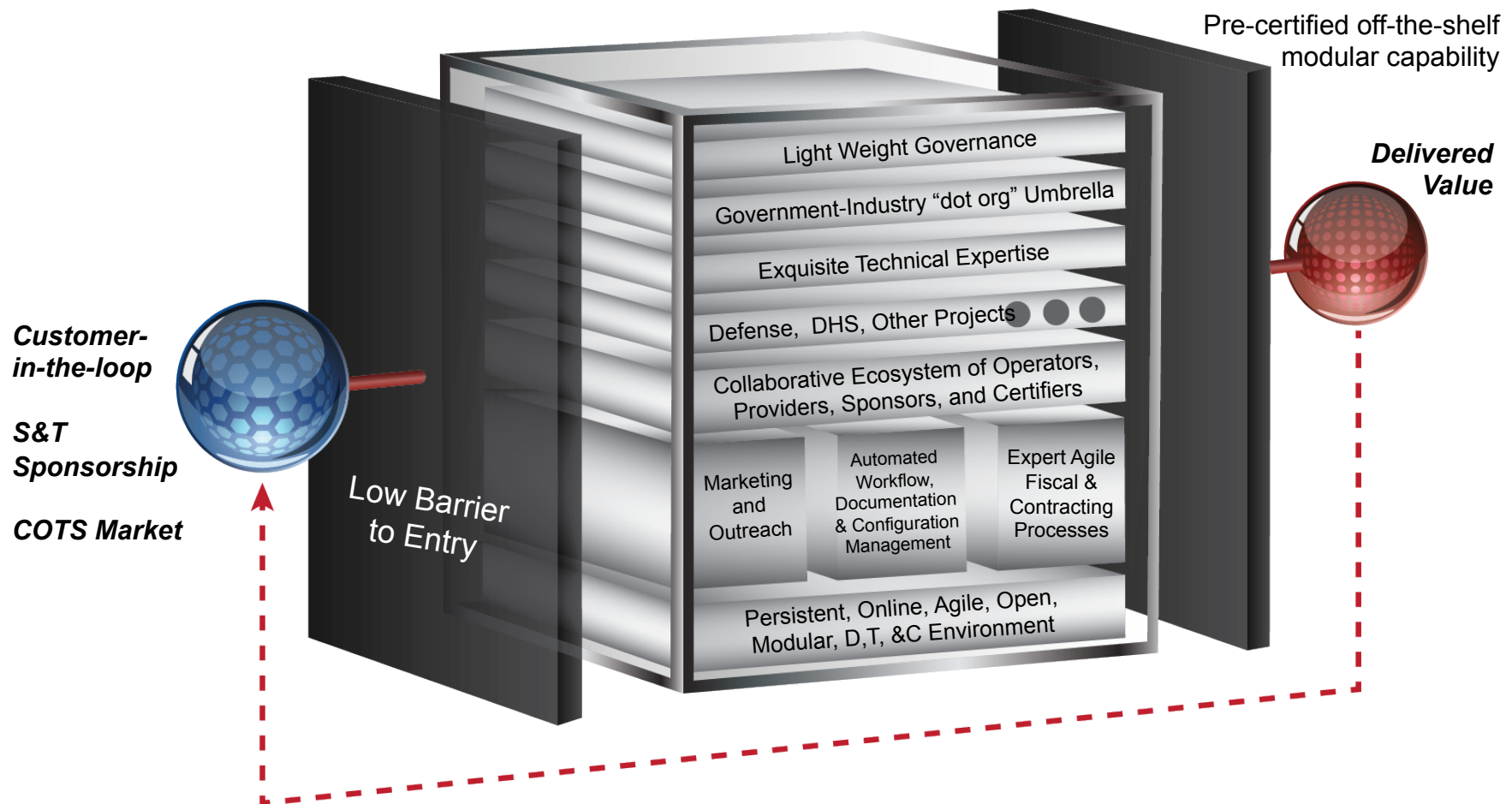
# How Will MACE Avoid Einstein's Rake?

- Target and measure potential improvements?
- Incentivize collaboration across various similar efforts?
- Harness the efforts of the COTS ecosystem?
- Federate across build-time acquisition activities and runtime tactical and garrison environments?
- Overcome the tyranny of Moore's Law despite Defense acquisition inertia?



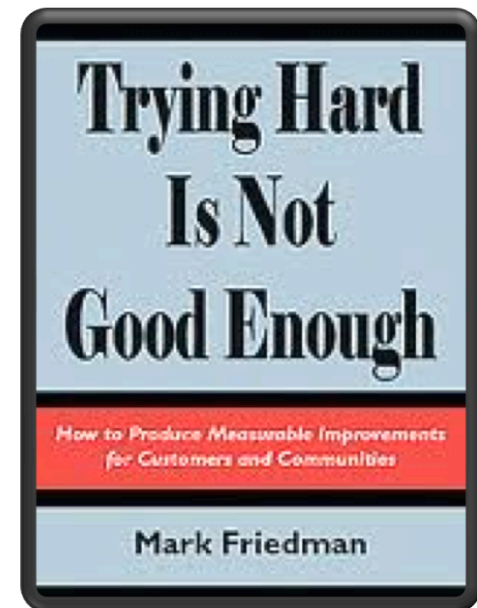
**& Einstein's**

# MACE Innovation Engine

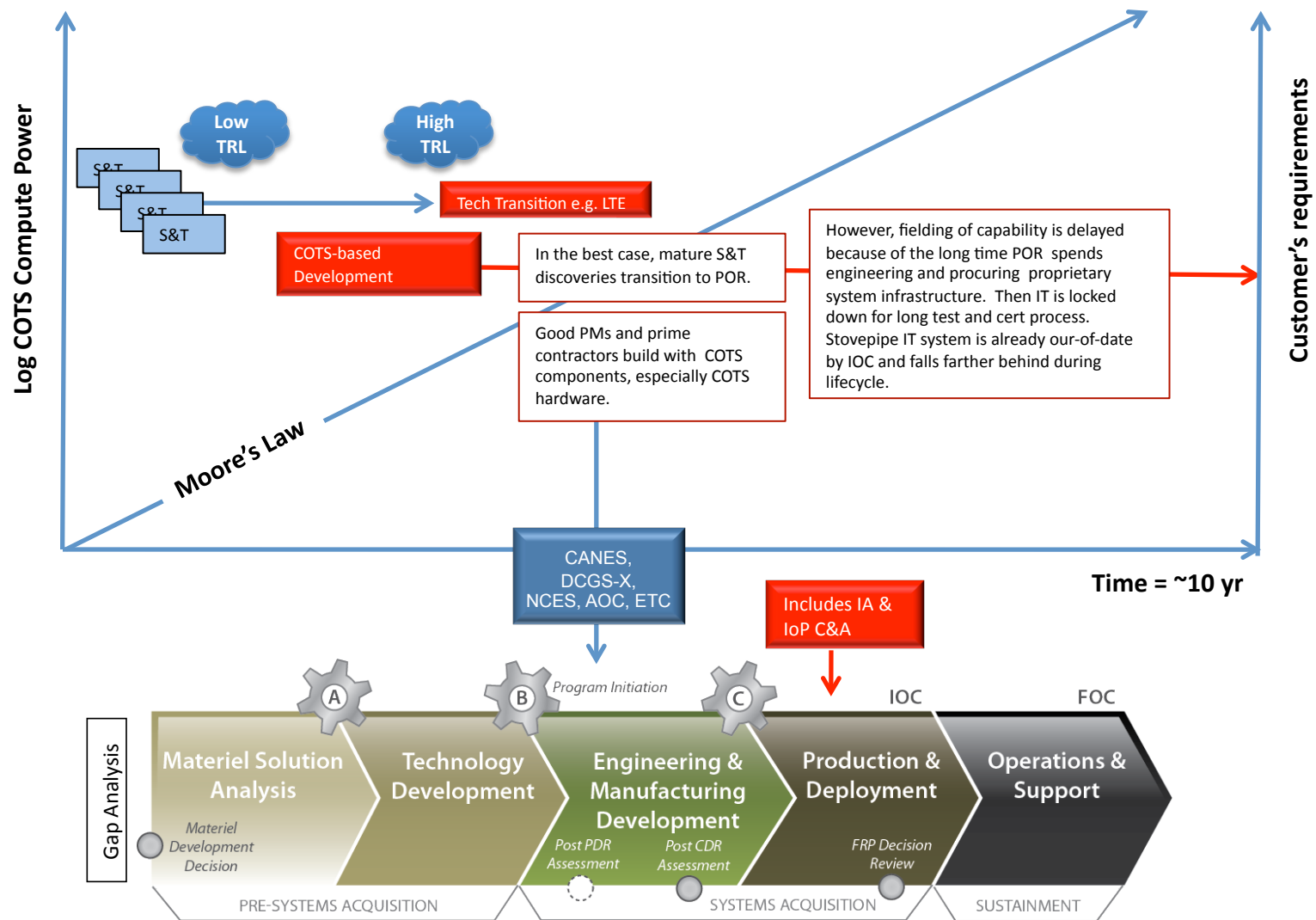


# IT Transition

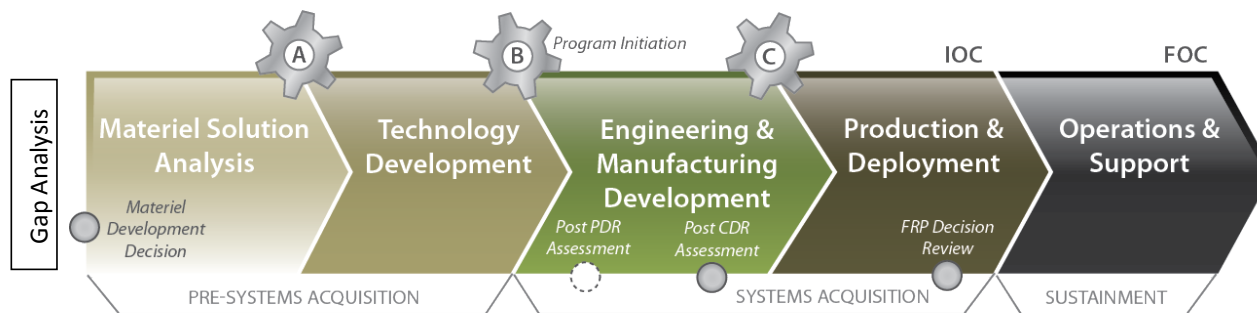
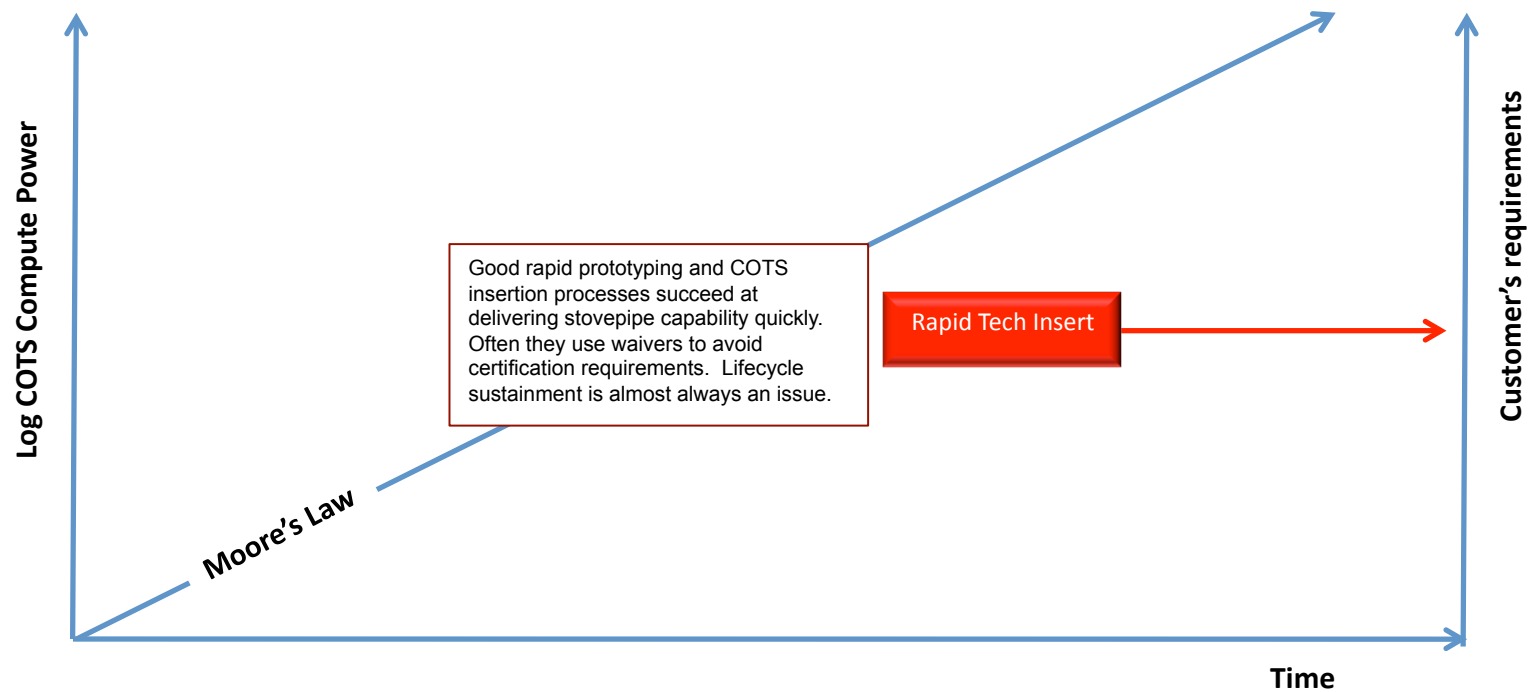
- The “to-be” objective: Deliver better capability to the field, sustainably, and securely, *while the technology is still cutting edge*.
- The “as-is” best practice:
  - Transition S&T to POR, which eventually delivers to the field.
  - POR employs COTS-based development, but locks in a perishable “stack” during long, expensive, serial DT&C process. Delivers out-of-date technology.
  - Alternatively, rapid tech insertion processes deliver prototypes, or COTS, to the field quickly, but generally without enterprise interoperability or sustainability.



# Status Quo

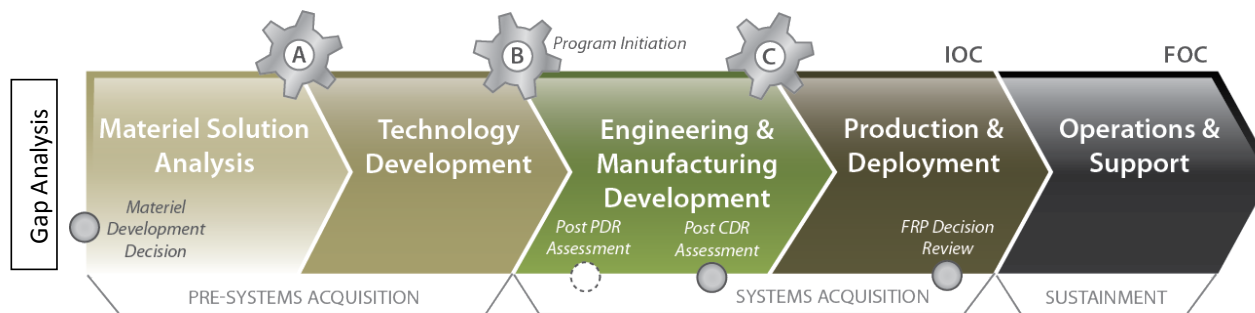
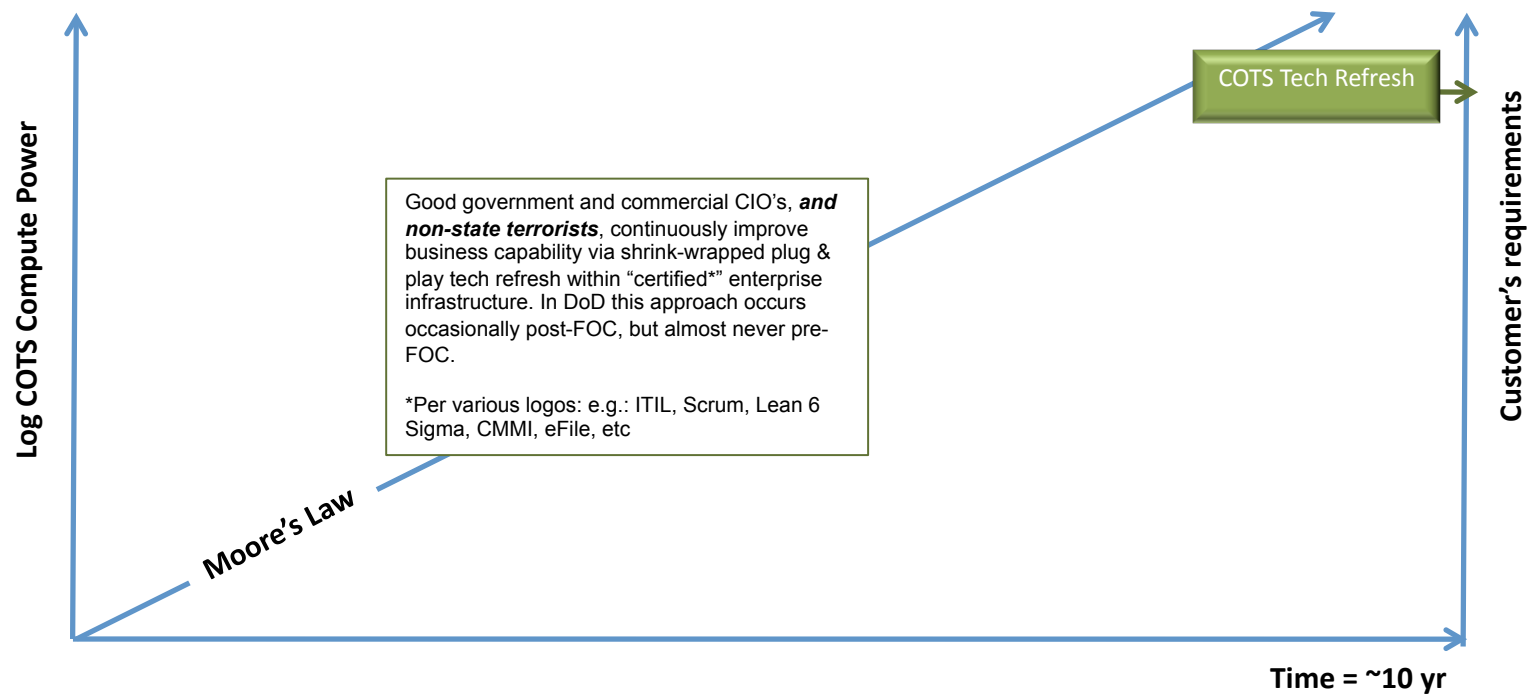


# Status Quo

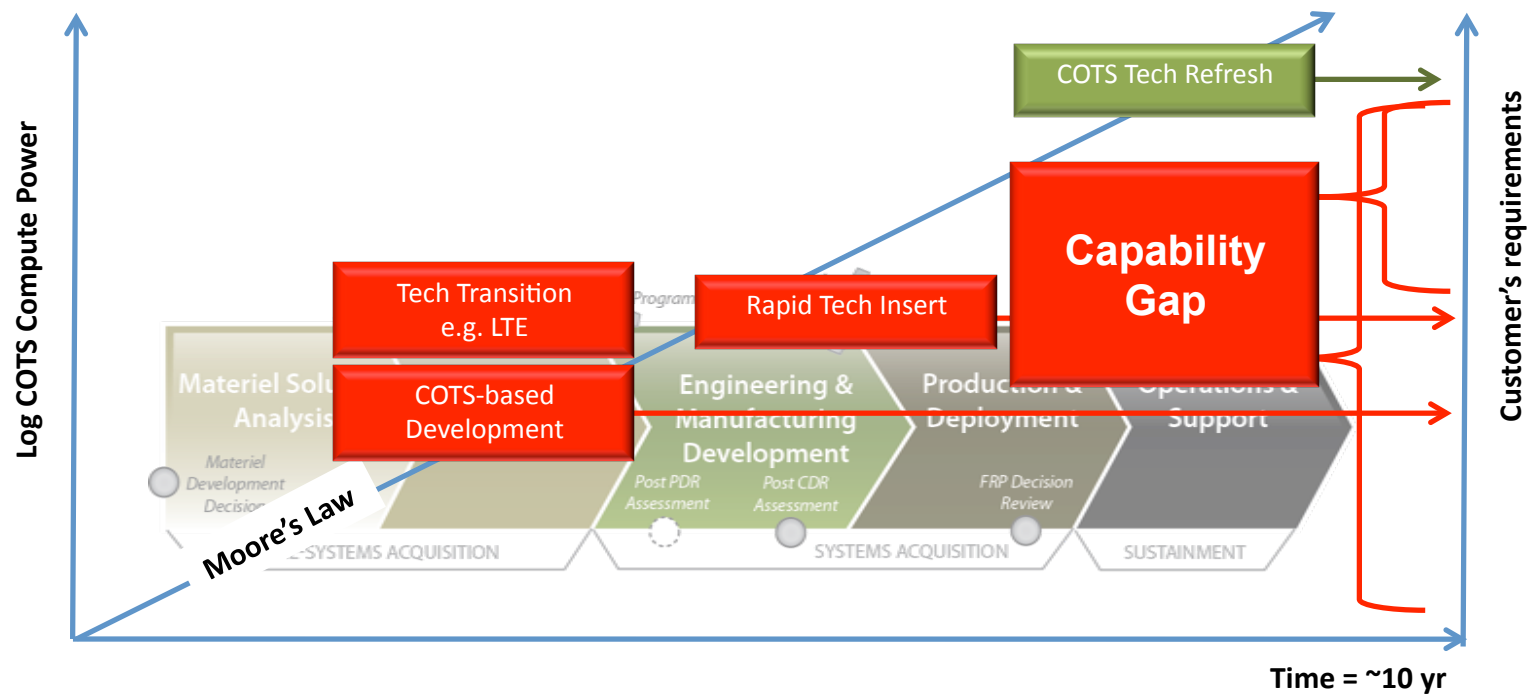




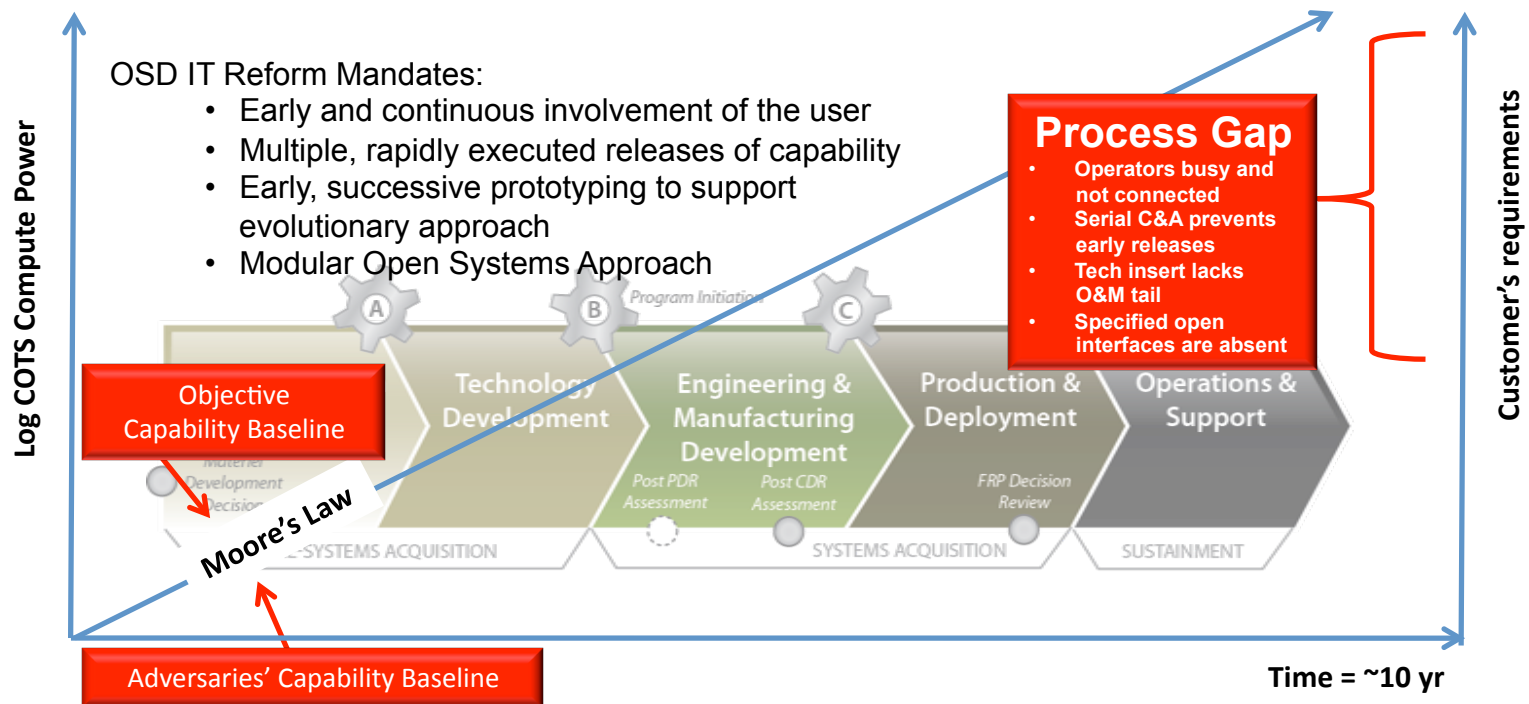
# Status Quo



# Status Quo

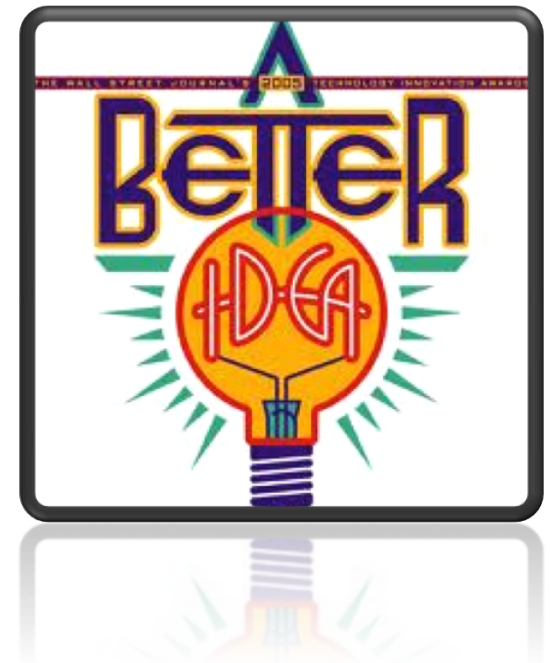


# Status Quo



# Necessary IT Transition Process

- Small increments of capability delivered, sustainably, to both operational customers, and systems in development, simultaneously
  - Developed capability “plugs in” directly and sustainably to enterprise
    - *Enterprise open interfaces must actually exist and be fully specified*
    - *Agile certification performed in parallel to agile development so cutting edge capability may legally plug in to live networks*
      - Approved IA and IoP controls must exist in the real-time IT infrastructure, and be inheritable by applications
      - Components must be Certified-off-the-Shelf, i.e. readily reusable per “approved products” catalogs and convenient procurement vehicles



# Value-based Acquisition Framework (VAF)

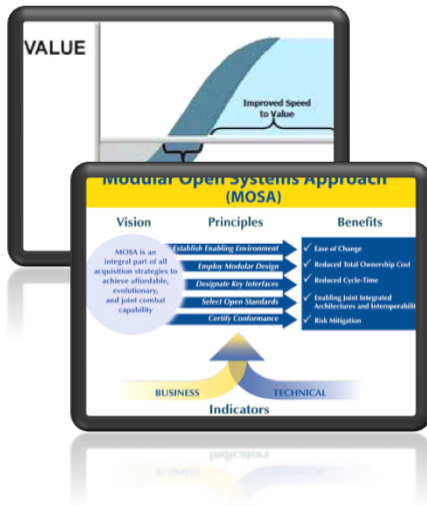
- System of systems (SoS) constructed via open standard reference architecture
- Enterprise interoperability model is platform-independent
  - Runtime interoperability means SoS information exchange performance is testably correlated to targeted enterprise mission outcomes (i.e. Delivered Information Value (DIV))
  - Build time interoperability means subsystems are constructed with readily procured, open standard, lifecycle supported, pre-certified components
- Objective is Max DIV *per* rapid delivery cycle *per* cost

# IT Box Acquisition Strategy



Business Case Analysis

Enterprise Value-Based Metrics



Light Weight Governance

IT BOX

Continuously Delivered, Off-the-Shelf, Easily Procured, Certified, Sustained, Capability Modules

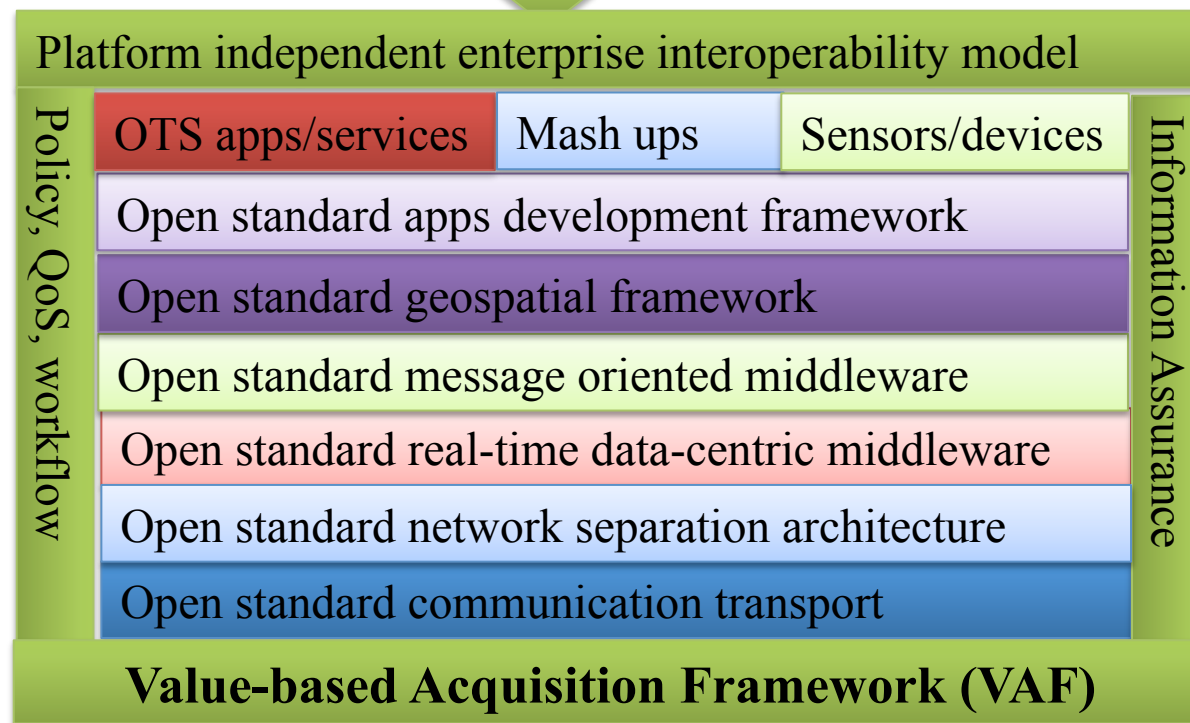
Level Funding for Common Computing Environment

Value Proposition

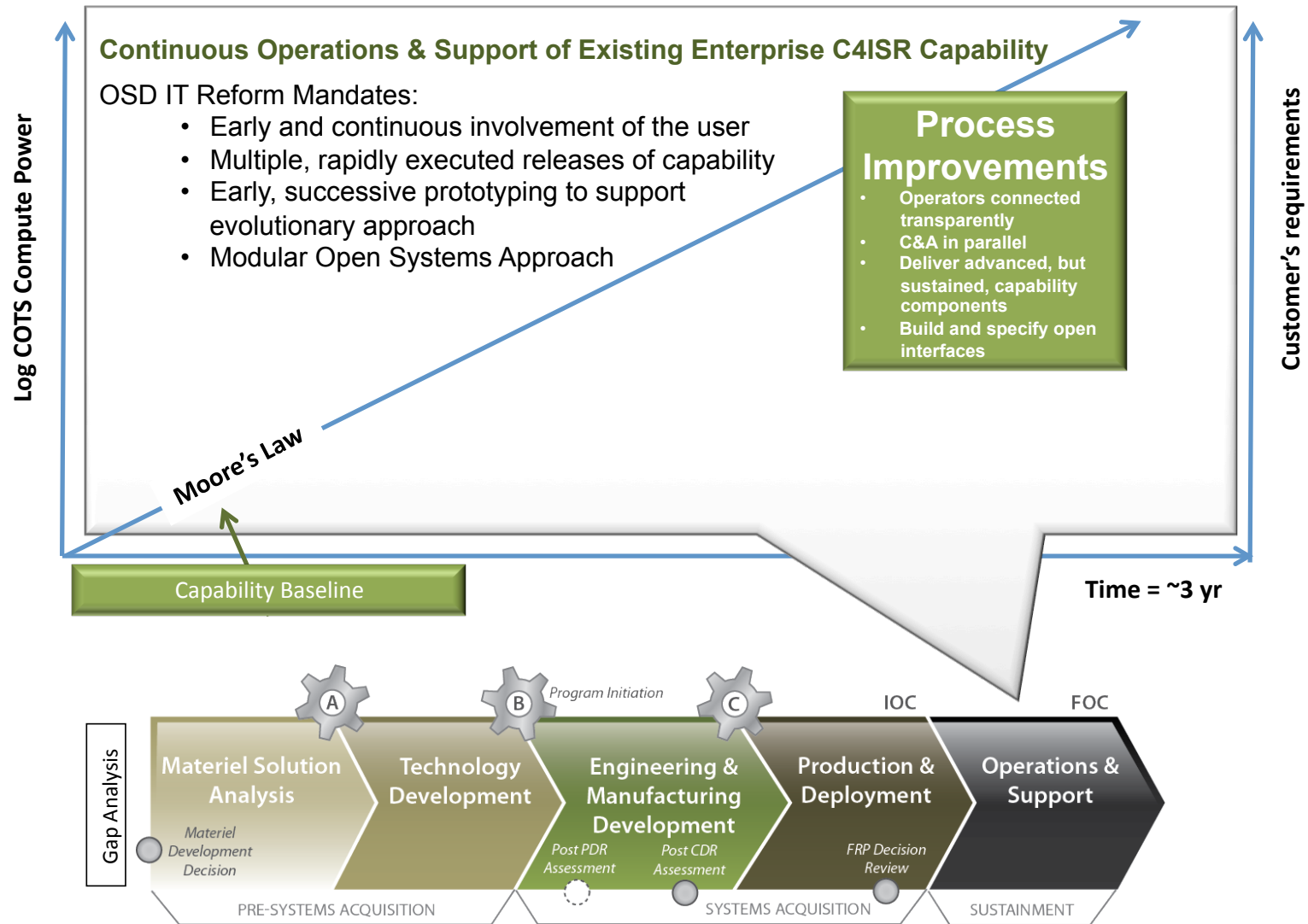


# VAF Reference Model

Delivered Information Value (DIV) = f(Customer-in-the-loop => Operational priorities => Critical mission threads => Measurable targeted effects) => Semantic interoperability model

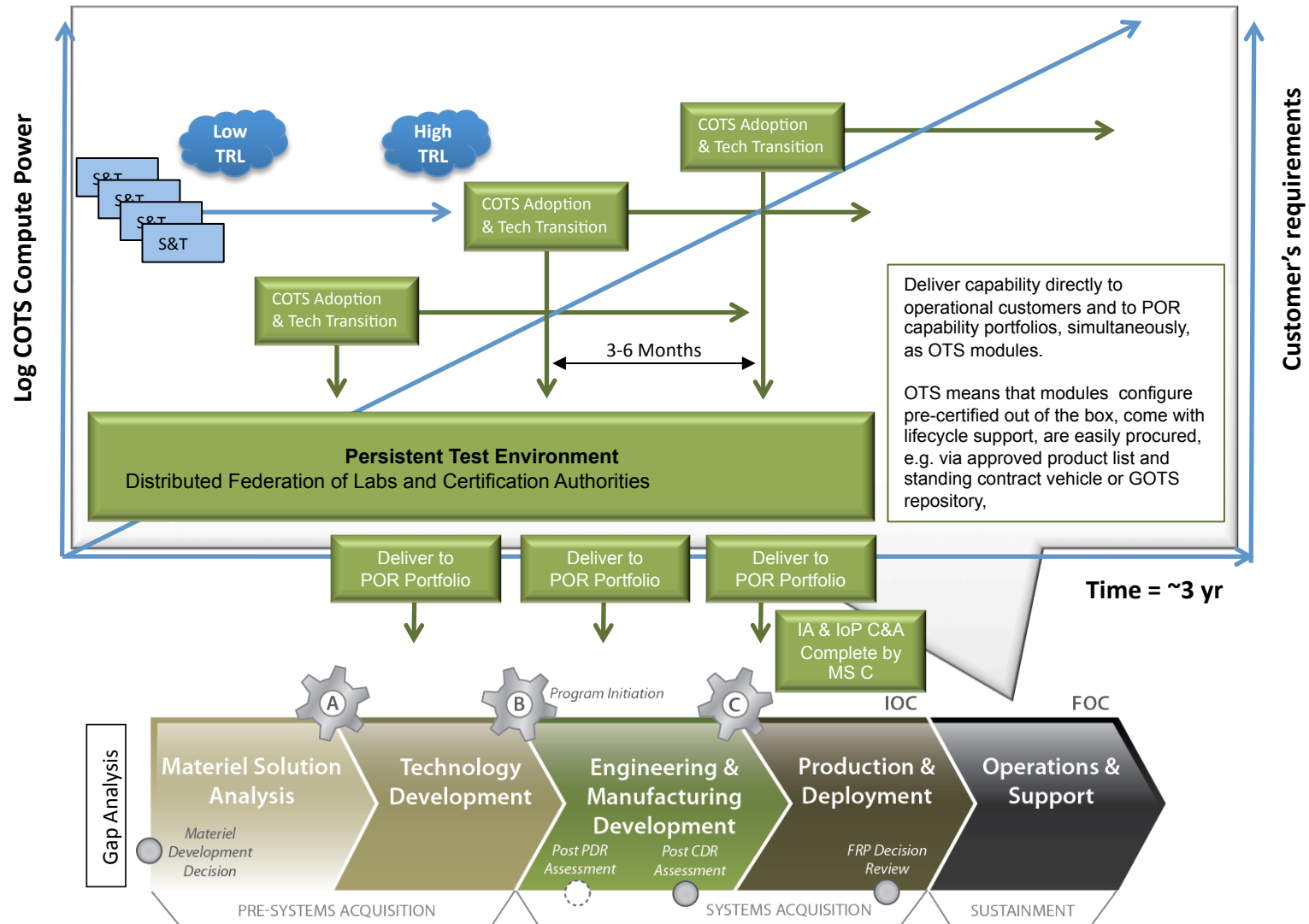


# To Be Process





# To Be Process



# Industry Outreach: AFCEA A3I “Plug Fests”

- Rigorous demonstrations of plug-and-and-play open standard Off-the-Shelf (OTS) IT value added
  - Improves both capability delivered, and acquisition efficiency
    - *Delivers actionable intelligence into critical decision cycles in time to assure effective outcomes.*
    - *Addresses well-documented inability to field IT on pace with Moore’s Law.*
      - Implements IT Box

Provides transparency and incentivizes COTS focus on government requirements and process.

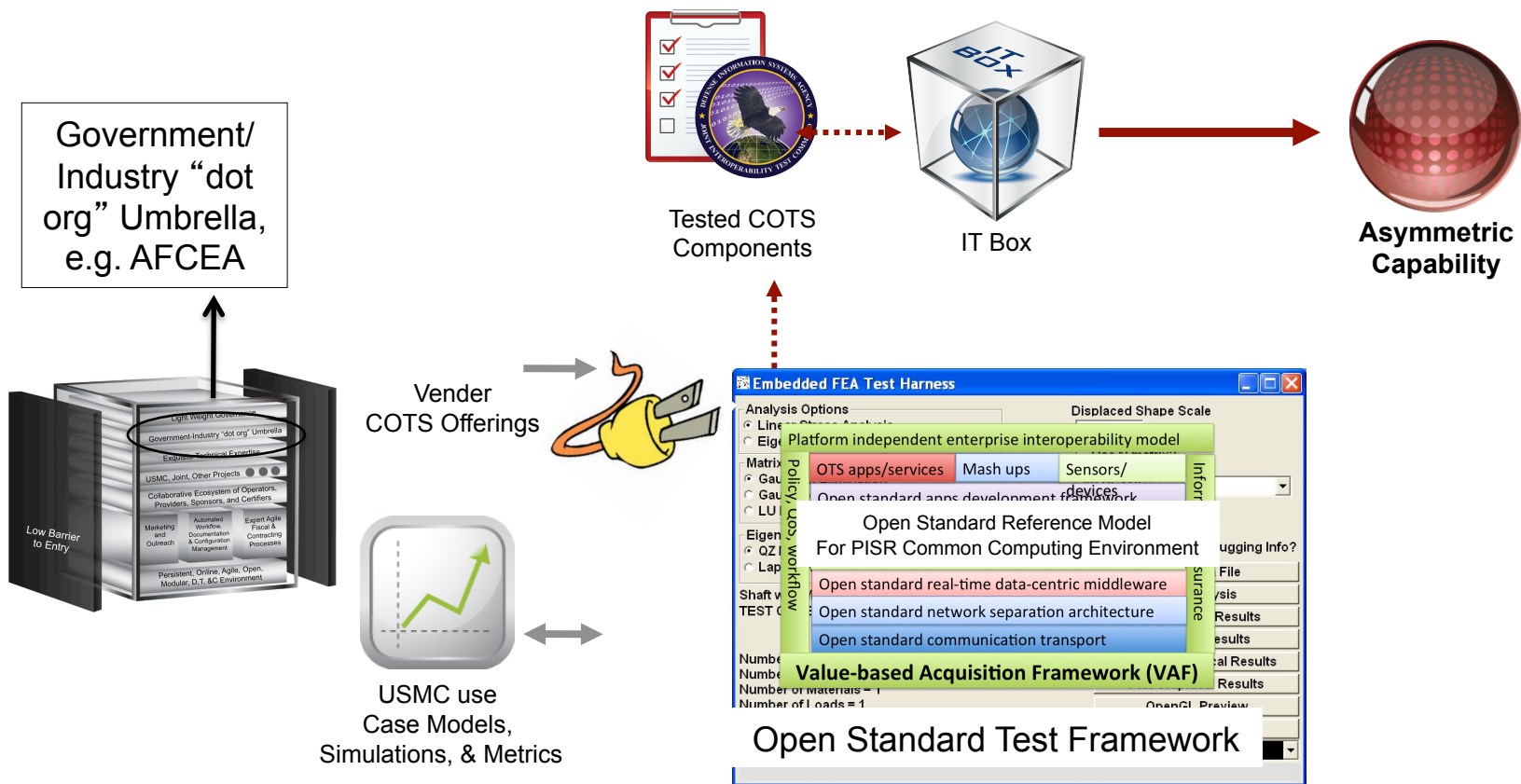
# What's a Plug Fest?

- Industrial best practice
  - Demonstrate that offerings “plug in” to a Common Computing Environment (CCE)
  - Proves value added to customer-defined use cases.
  - Requires well-defined open standards
- AFCEA/ISIL A3I Plug Fest
  - Implements JCIDS “IT Box” (JROCM 008-08)
  - Tactical edge ISR use cases provided by uniformed Marines.
  - COTS vendors compose run time MCISR-E CCE reference implementation
    - *Complies with Defense Intelligence Information Enterprise (DI2E) and OSD AT&L UAV Control System (UCS) open standards*
    - *Includes pre-certified Information Assurance (IA) components.*
  - “Mash up challenge” demonstrates speed-to-capability via open standard CCE
  - Objective is that Plug Fest demos will achieve JITC certification and “Pre-approved Product” status.
  - 1<sup>st</sup> A3I Plug Fest in continuing series at AFCEA “TechNet Land Forces” Tucson 27-29 Mar

# Plug Fest “Plug” = Value-based Acquisition Framework (VAF)

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# C4ISR Industry Interoperability Engagement: Plug Fest



# Demo at AFCEA Plug Fest Booth, Tucson Mar 27-29

