

Reference Architecture And The JCIDS Process

Network Centric Systems

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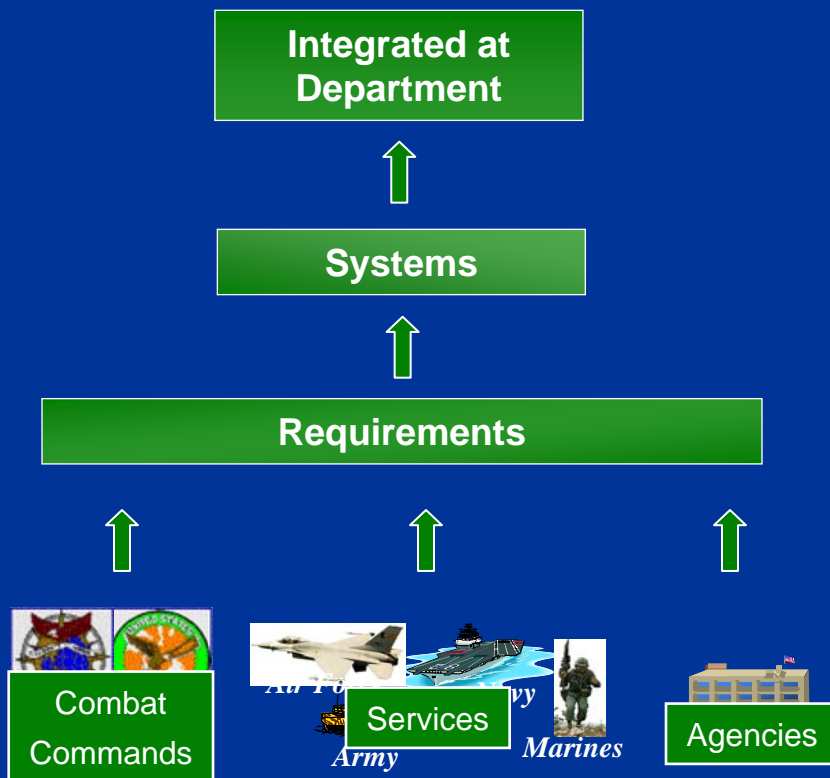
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Agenda

- DoD Transformation
- What is a reference architecture?
- Why develop Reference Architectures
- Acquisition processes
- Putting It All Together
- How to Use a Reference Architecture in Acquisition
- Summary

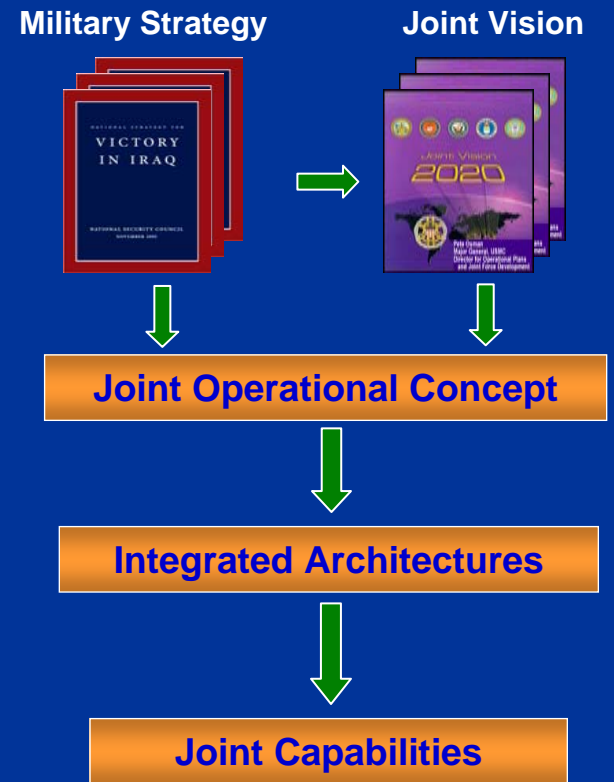
Acquisition Theology

Requirements Generation System



Bottom Up, Often Stovepipes

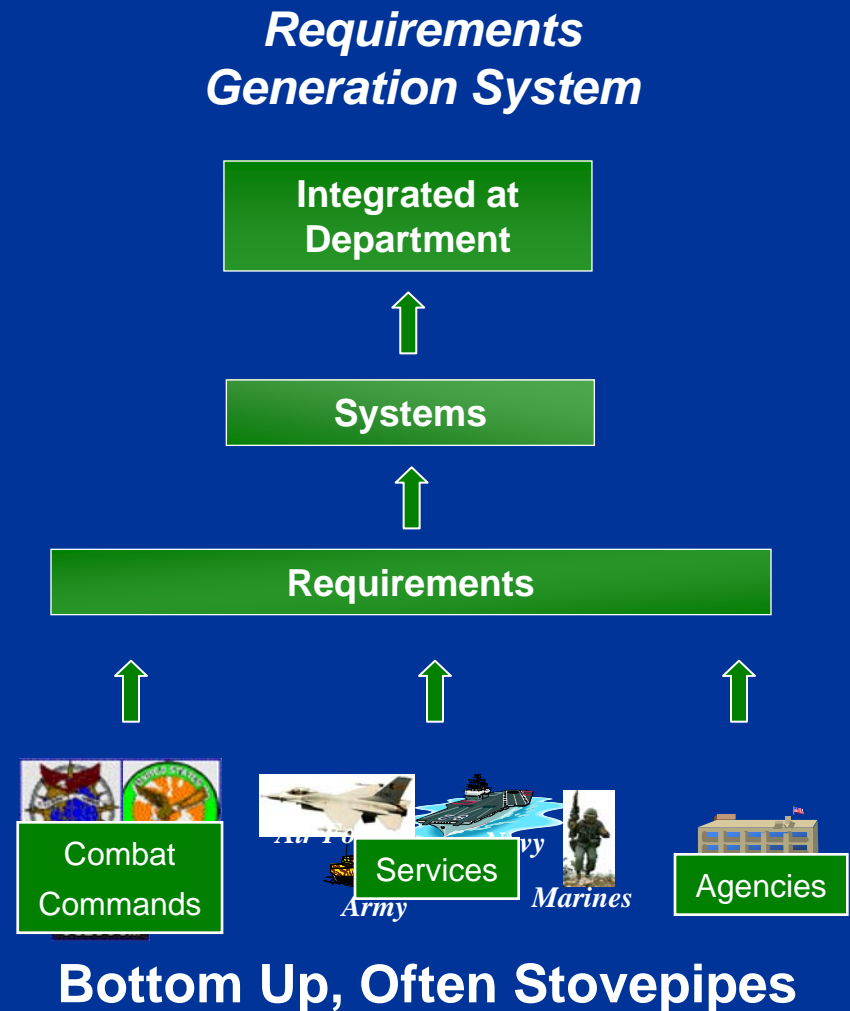
JCIDS



Top Down, Born Joint

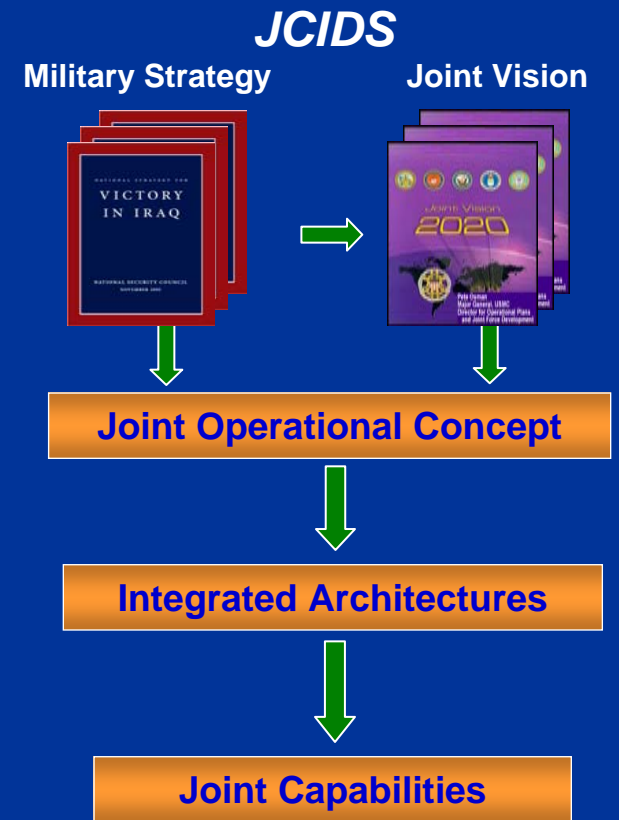
Requirements Based Acquisition

- Requirements Service Not Joint Focused
- Lacked Construct For Objective Analysis
- Systems Not Necessarily Integrated
- Program Duplication Across Services
- Evolutionary Acquisition Not Institutionalized
- Joint Warfighting Needs Not A Priority



JCIDS Capability Based Acquisition

- Methodology To Identify Capabilities Gaps
- Mandate Broader Review Of Proposals
- Engage The Acquisition Community Early
- Define Non-materiel And Materiel Solutions
- Prioritize Capability Gaps And Proposals
- Coordination With Departments And Agencies



Top Down, Born Joint

What is an Architecture?

An “official” definition:

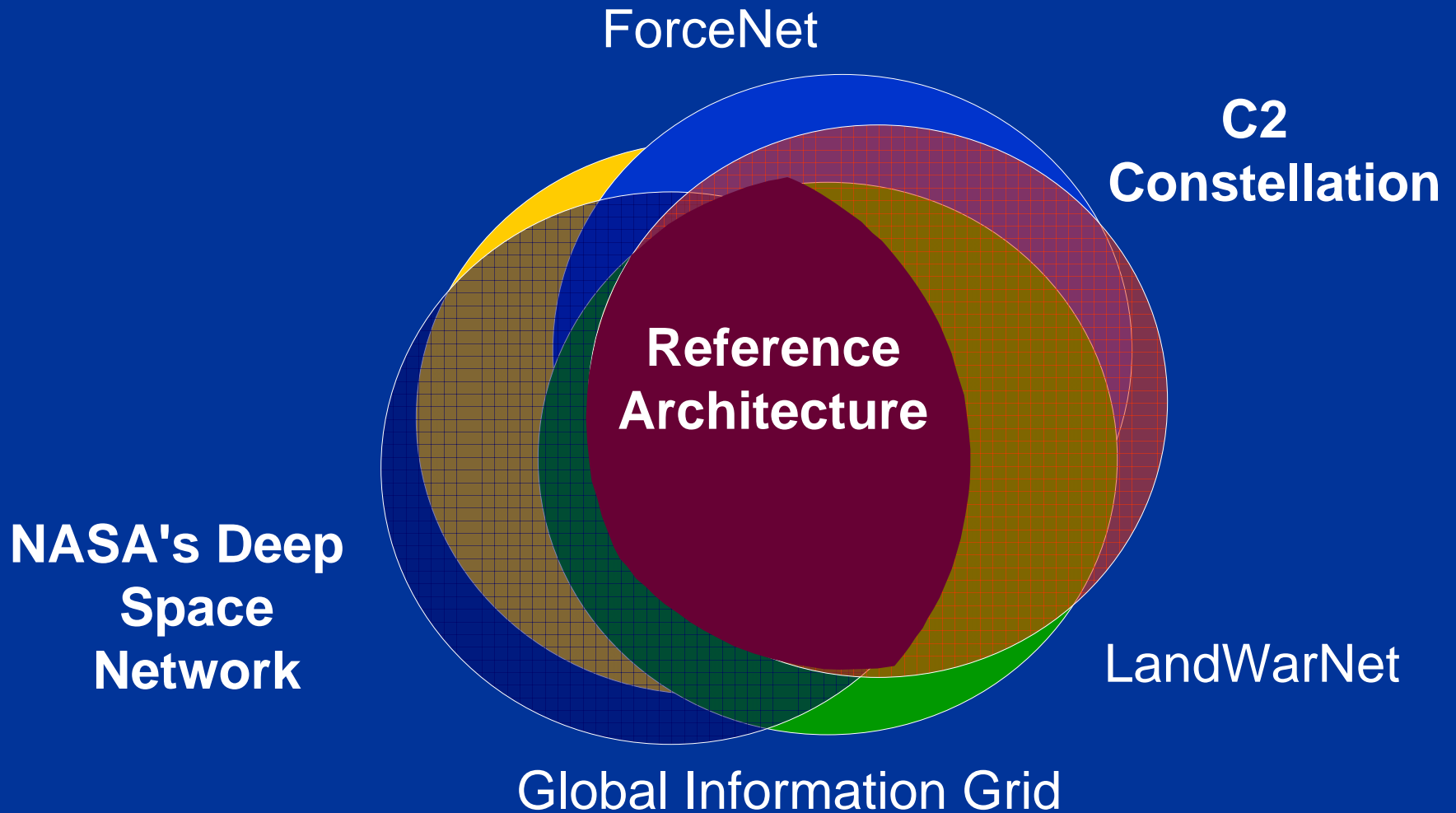
An architecture is “the structure of components, their relationships, and the principles and guidelines governing their design and evolution over time.”

*- C4ISR Architecture Framework, Version 2.0,
derived from IEEE*

What Is a Reference Architecture?

- A Reference Architecture (RA) Is the *Normalized* Architecture of Several End Systems That Share One or More Common Domains, Containing a Set of Architectural Best Practices for Use by Architecture Teams in Your Organization.
- RAs Provide an *Advanced Point of Departure* for Implementing Solutions So That Each Implementation Reduces:
 - Cost by
 - Taking Advantage of Opportunities for Reuse of Services, Products, Data Definitions, Etc.
 - Schedule by
 - Starting With a Common Set of Artifacts to Be Tailored for Implementation
 - Risk by
 - Providing Consistent Decomposition and Design Patterns
 - Utilizing Related Expertise and Reuse of Proven Artifacts
 - Exploiting Lessons Learned

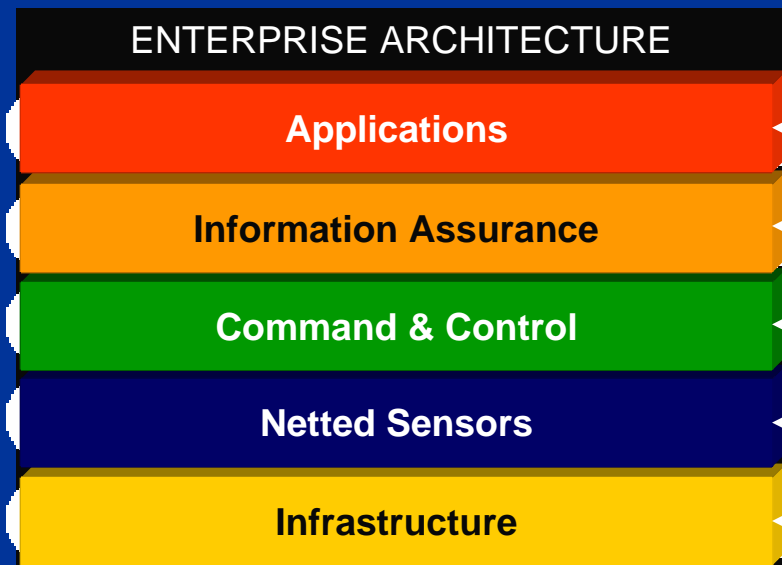
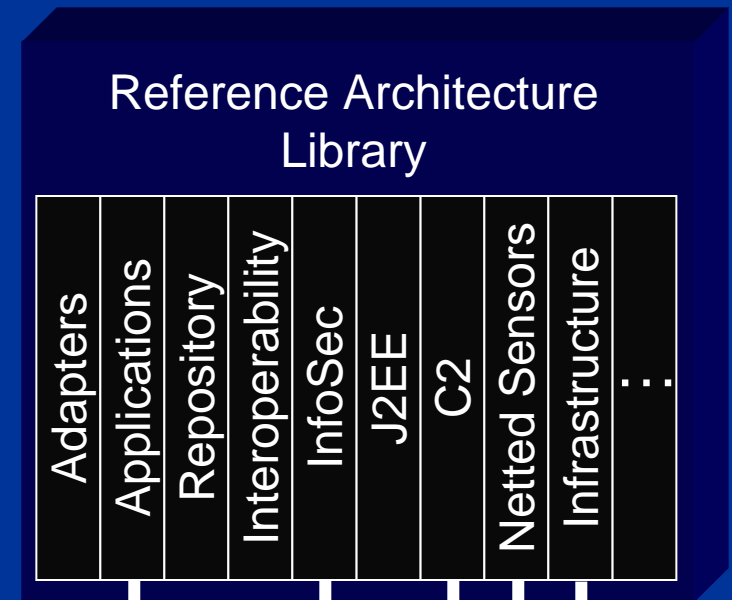
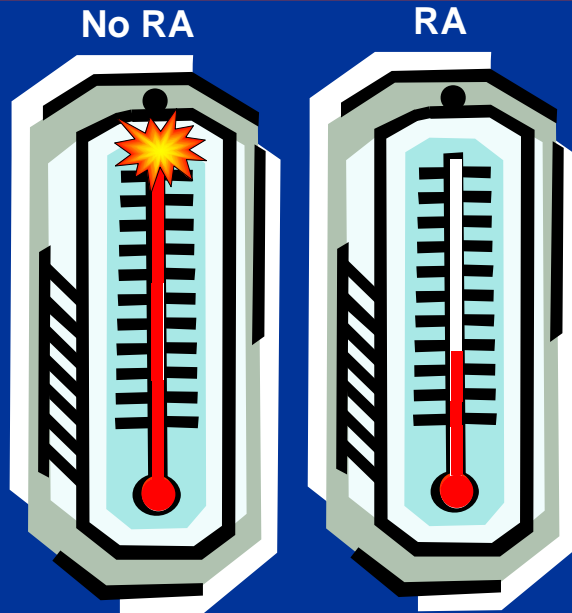
What Is a Reference Architecture?



Why Reference Architectures?

- Reduces cost, schedule, and risk through an established set of core modules that may be tailored to meet Government's mission needs
- Demonstrating current performance through proven and mature solutions
- Provides a common set of demonstrated capabilities, industry is able to engage the customer intelligently and quickly provide a solution to customer needs
- Present an approach that is communicated with a common language

How to Use a Reference Architecture



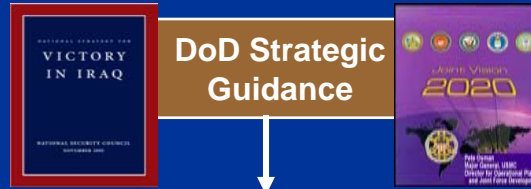
RA's reduce time to market by reducing cost, schedule, and risk

Acquisition Processes

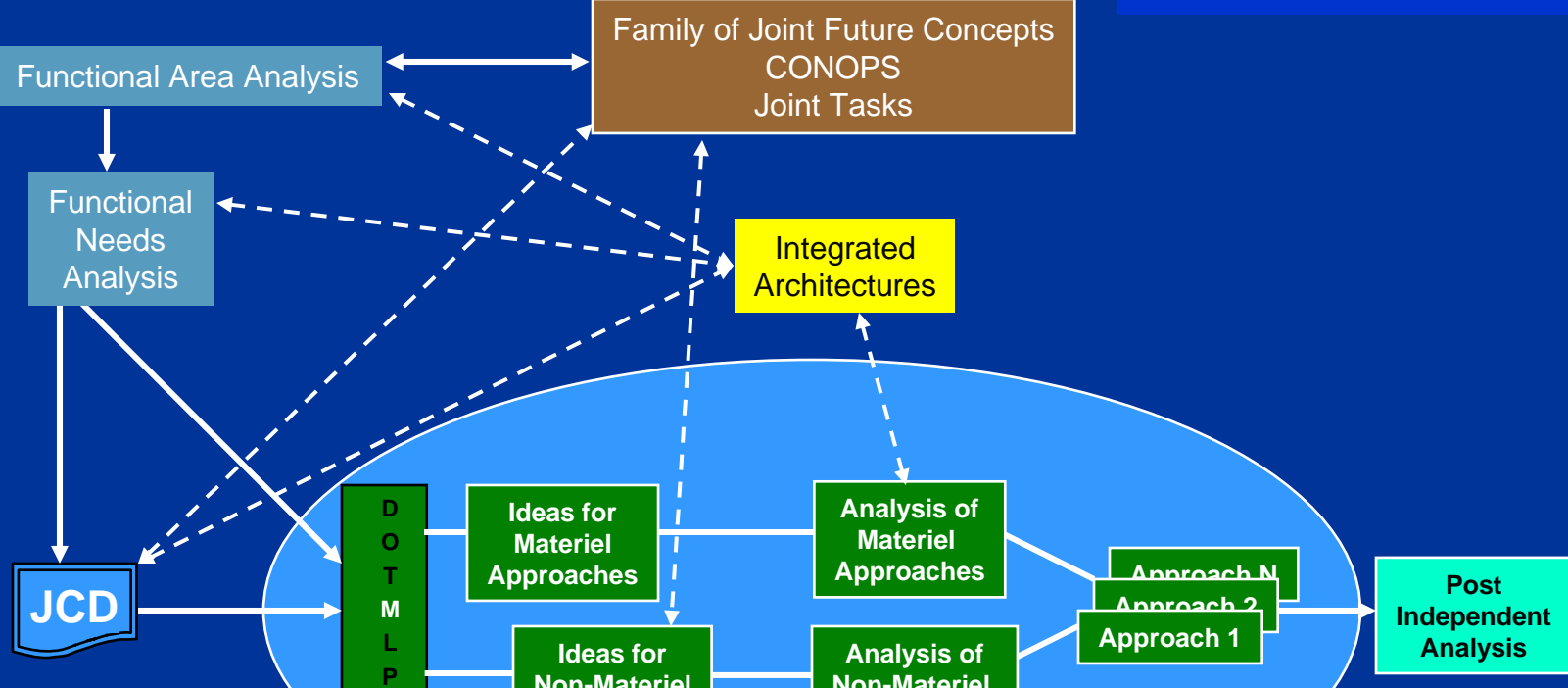
- **Joint Capabilities Integrated Development System (JCIDS)**
 - Top-down process
 - Methodology to identify capabilities gaps
 - Mandate broader review of proposals
 - Engage the acquisition community early
 - Define non-materiel and materiel solutions
 - Prioritize capability gaps and proposals
 - Coordination with departments and agencies
- **Joint Rapid Acquisition Cell (JRAC)**
 - Quickly address in order to prevent combat related loss of life and/or mission failure
 - Based on unforeseen military requirements that must be resolved in days, weeks or months
 - Provides policies and procedures for initiation, review, evaluation, approval and follow-up of combatant commander urgent operational needs request

Joint Capability Integrated Development System (JCIDS)

Assess current and programmed joint capabilities to accomplish the tasks



Using the as-is architecture and the target architecture analyze the mission scenario when looking for discrepancies.

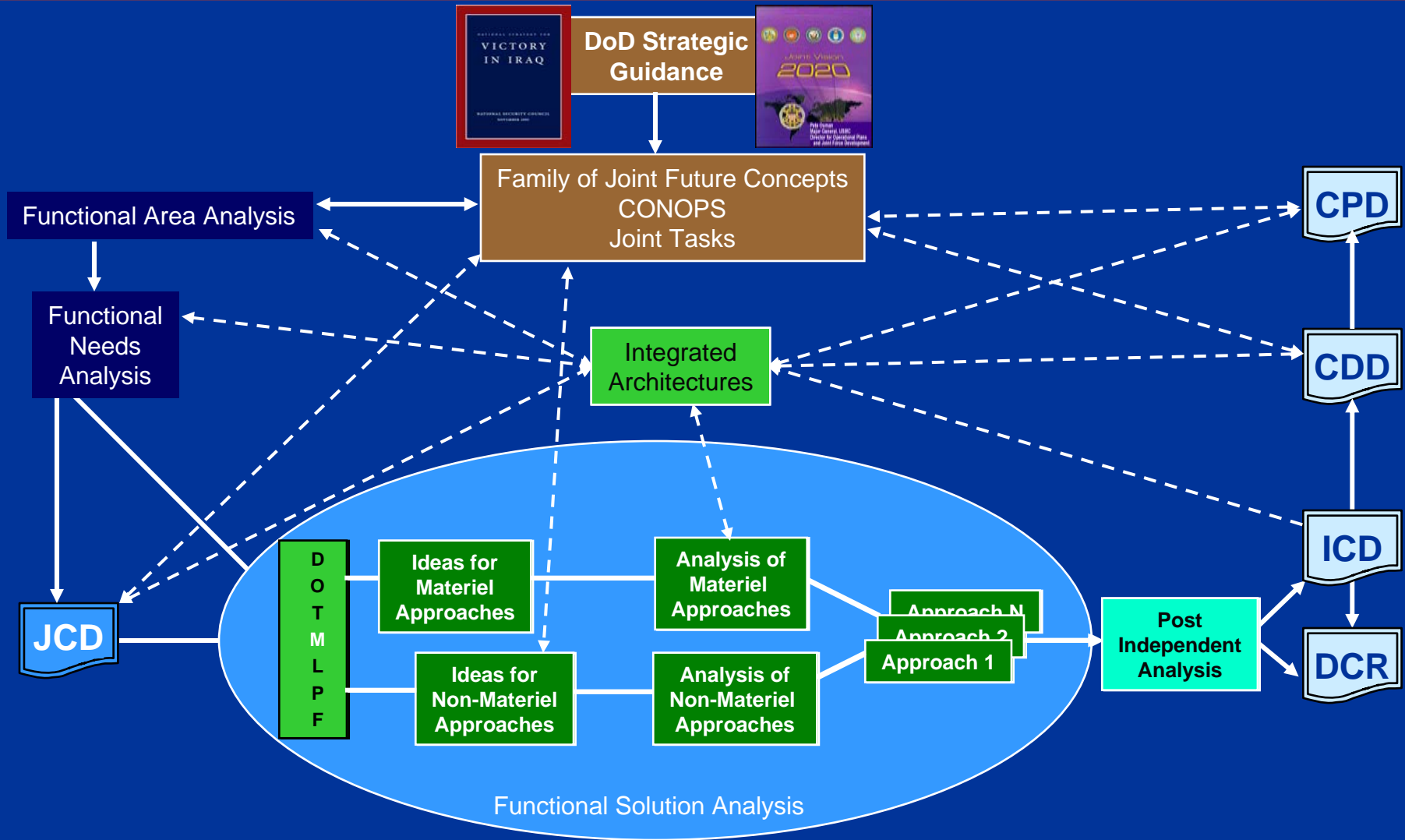


From analysis generate a prioritized list of questions to be answered – Or will it require a hybrid solution?

- Timeframe under consideration

The post independent analysis chooses the best approach and the acquisition process begins

JCIDS Feeds the Acquisition Process

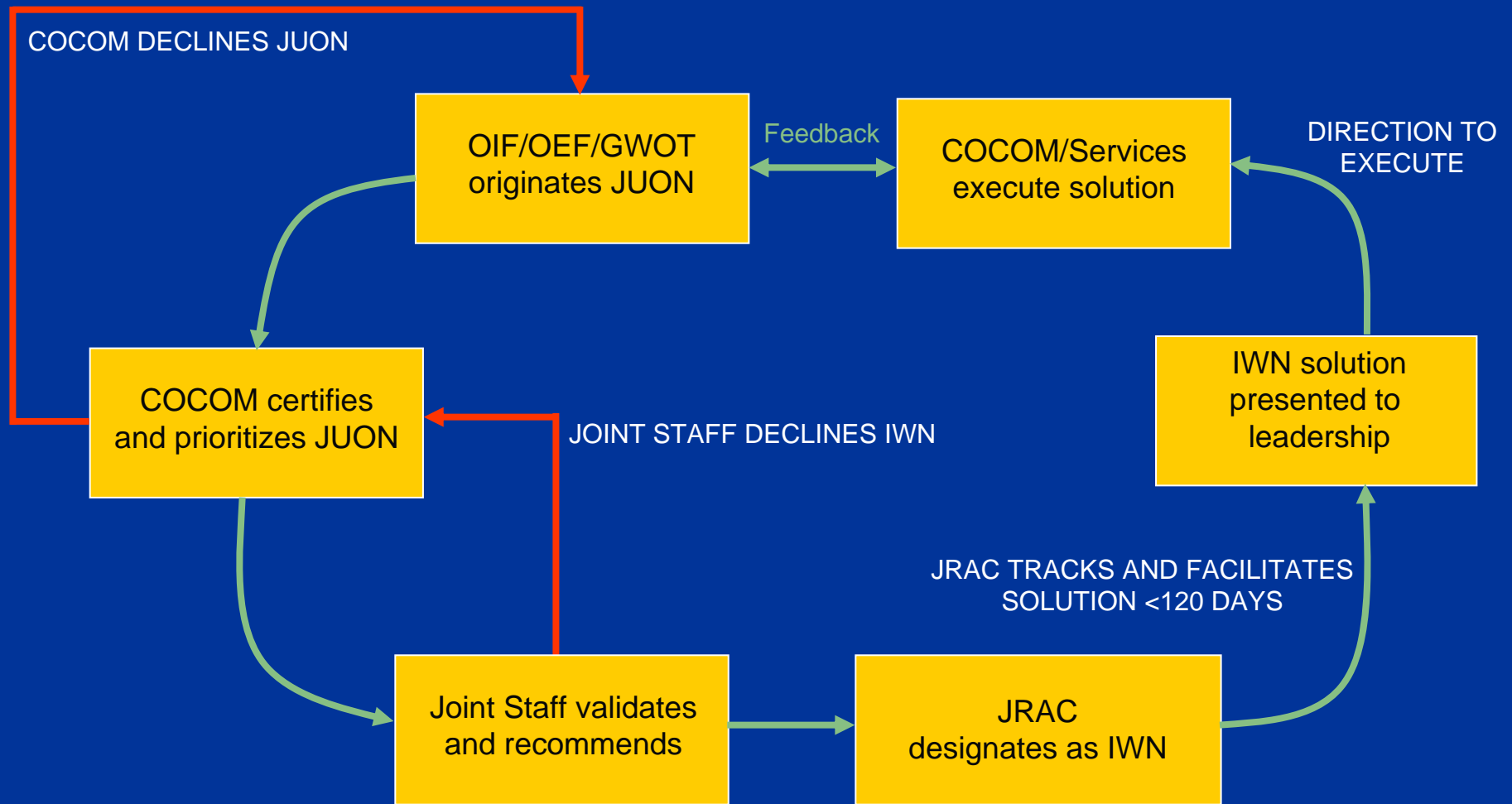


JRAC Policy

- Rapidly validate a resource deployed and/or employed combatant commander's Joint Urgent Operational Needs (JUON)
- Quickly address Immediate Warfighter Need (IWN) in order to prevent combat related loss of life and /or mission failure
- Considered as joint in nature and outside of the scope of existing DoD 5000 Series and services processes
- Not intended to compete with any of the current service processes but rather to complement them
- Not intended to replace any other Joint Staff process but potentially leverage these processes and focus them in support of combatant commander JUONs

Supports Current Force Acquisition

JRAC – Process Flow



Provide the warfighter with the best in product through an integrated multi-vendor solution

Putting it all together

Create
Solution



Tailor
Reference
Architecture



Generate
System
Requirements



Putting all together

Shop for
Multi-Vendor
Solution

Global Store



*Government
Contractors*

*Commercial
Vendors*

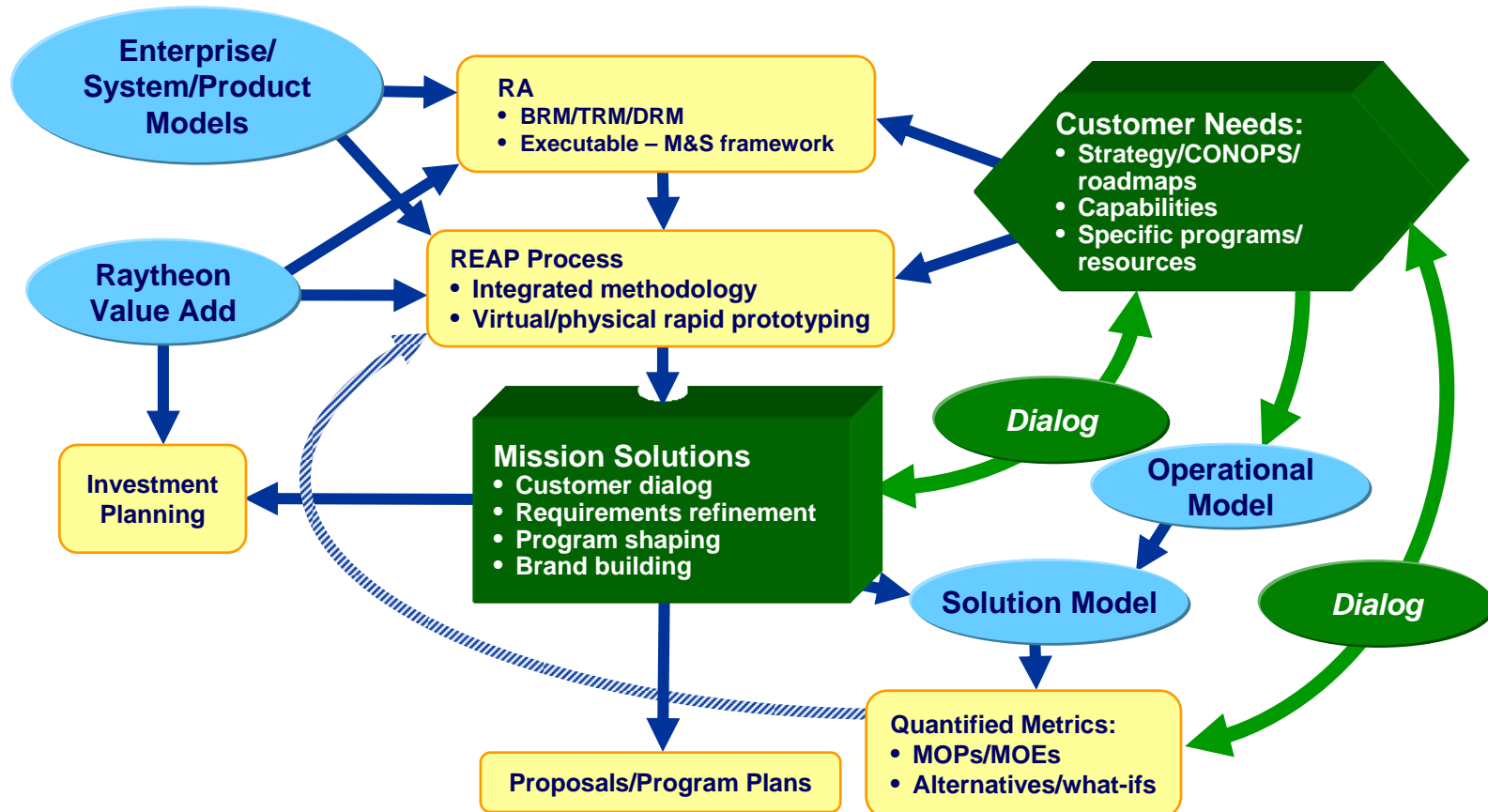
Build
Rapid Integrated
System Model



Demonstrate
Model to
Customer

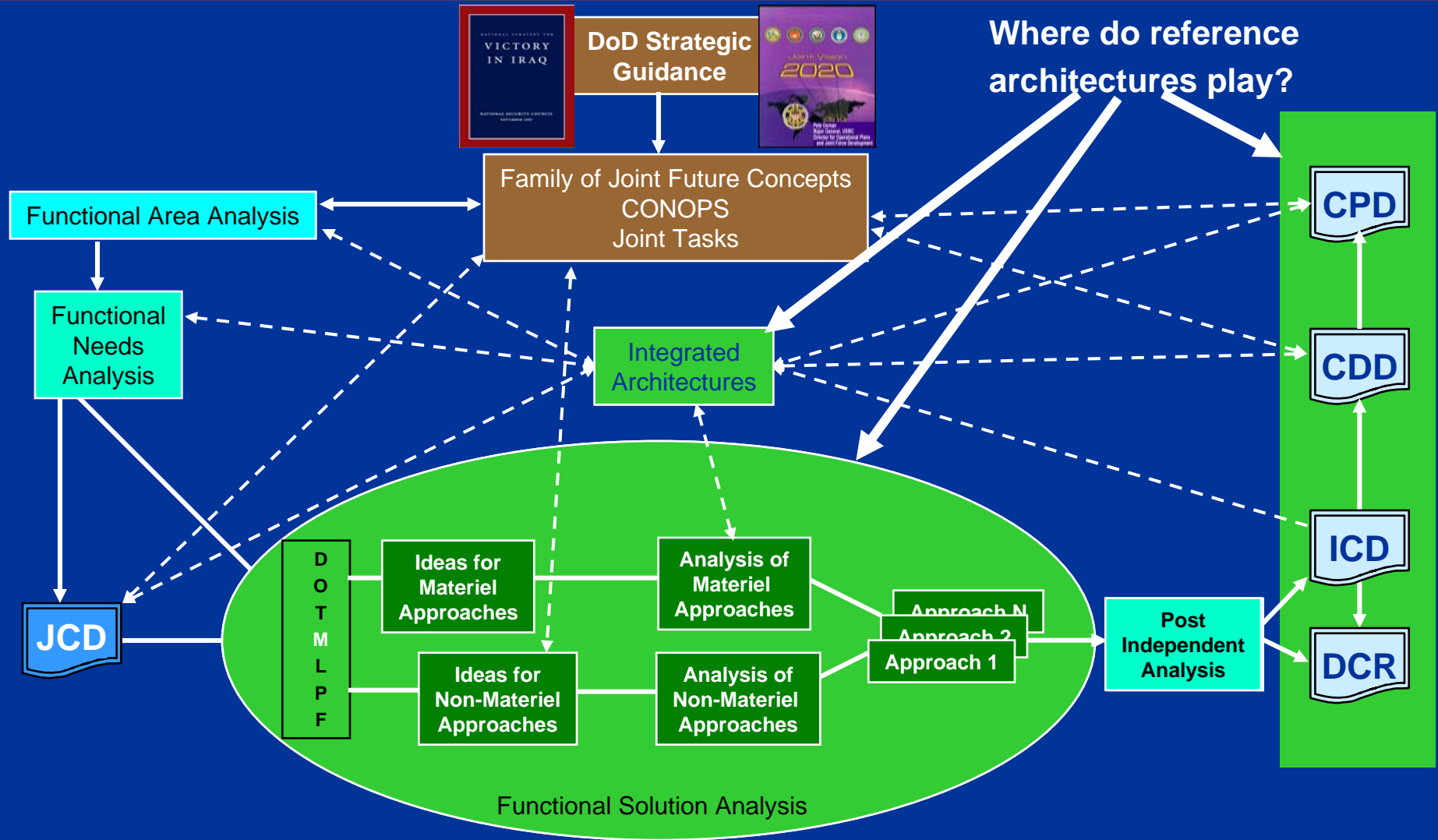


How to Use a Reference Architecture in Acquisition

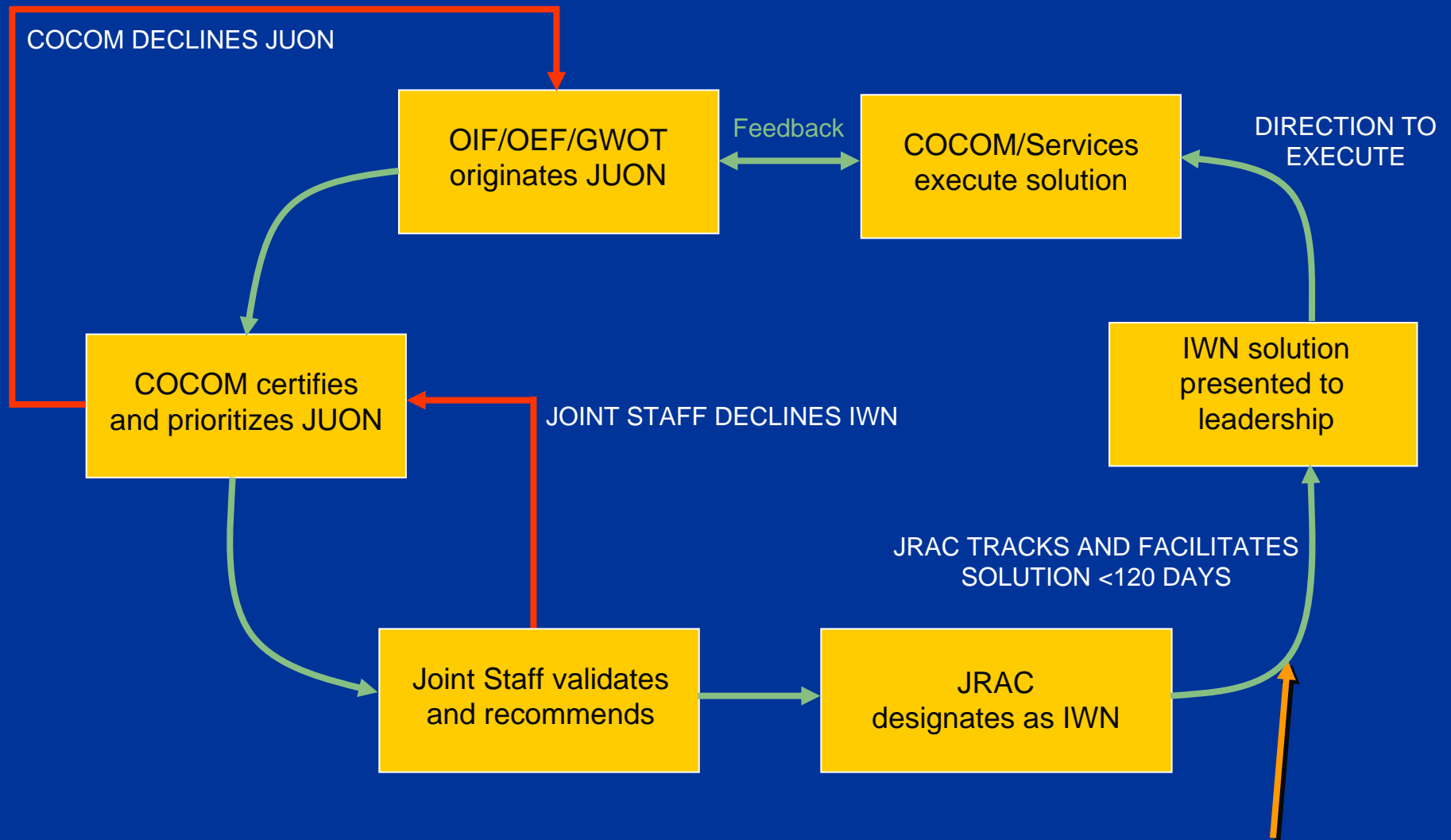


**RAs Improve Customer Communication
And Facilitate Strategic Planning**

RAs Support Transformation



RAs Support Current Force



Where do reference architectures play?

Summary

- RAs provide a *consistent point of departure* for implementing solutions so that each realization of the architecture:
 - Follows a consistent decomposition and design pattern
 - Reduces cost by
 - Exploiting opportunities for reuse of services, products, data definitions, etc.
 - Reduces schedule by
 - Starting with a core architecture to be tailored for implementation
 - Reduces risk by
 - Incorporating required global capabilities
 - Profits from lessons learned and related expertise

**Industry's investment in reference architectures
provides reduced cost, risk, and schedule**