Introduction to the DoD System Requirements Analysis Guide

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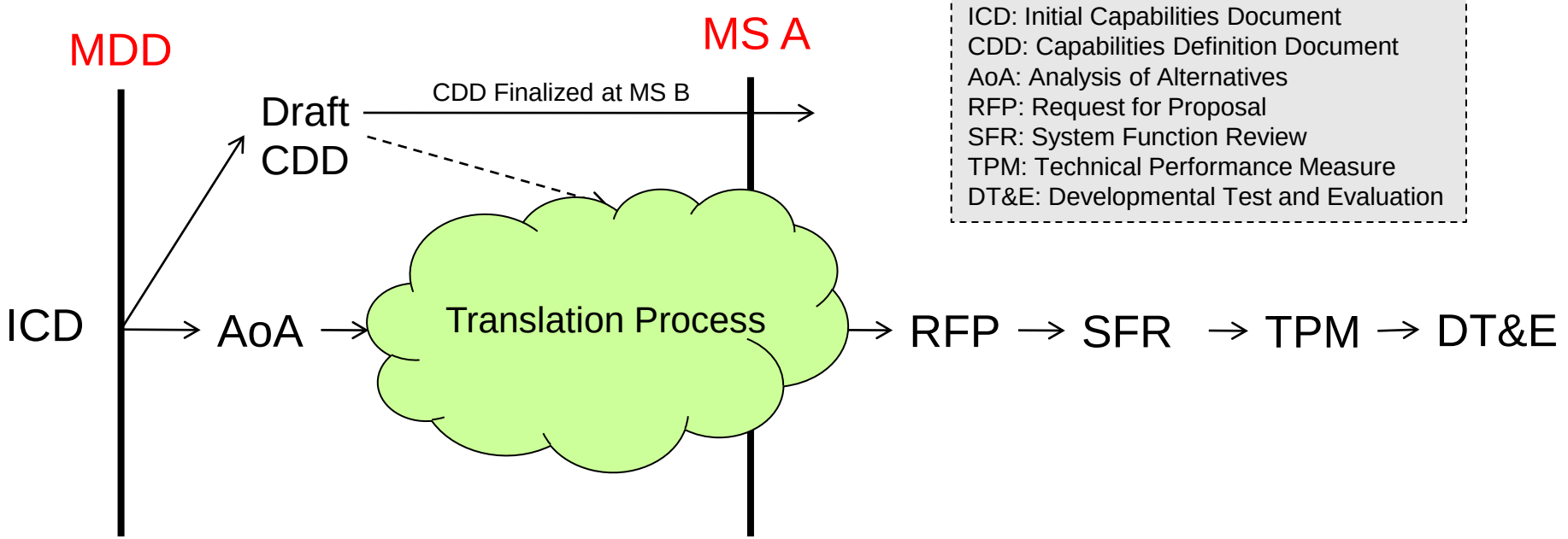
Agenda

- DoD SE Acquisition Requirements Definition Challenges
- Basis for Establishing a DoD System Requirements Analysis (SRA) Guide
- Application of SRA – An Acquisition Perspective
- Overview of the SRA Guide Concepts and Approach
- Summary and Path Forward
- Questions

Translation Capability to Requirements

MDD: Material Development Decision
MS A: Milestone A
ICD: Initial Capabilities Document
CDD: Capabilities Definition Document
AoA: Analysis of Alternatives
RFP: Request for Proposal
SFR: System Function Review
TPM: Technical Performance Measure
DT&E: Developmental Test and Evaluation



Capability

- The ability to achieve a desired effect under specified standards and conditions through combinations of means and ways to perform a set of tasks [CJCSI/M 3010 series].

Requirement

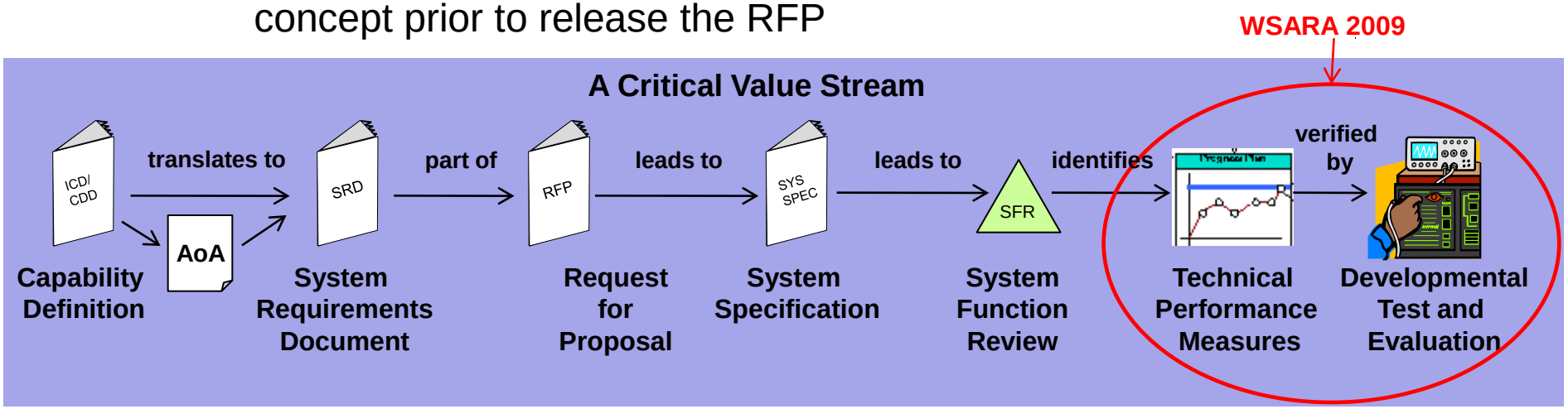
- Characteristics that identify the accomplishment levels needed to achieve specific objectives under a given set of conditions
- States what the system is supposed to do but not specify how the system is to perform
- Binding statements in a document or in a contract (CLR 252)

DoD SE Acquisition Requirements Definition Challenges

- **Good requirements definition practices are core to good systems engineering**
  - Current DoD guidance needs to be strengthened: e.g. Better application of logical architecture approaches
  - Too often the contractor does the transformation from Capabilities to System Requirements incurring latent discovery of issues and risks
  - Congress is demanding the definition of Technical Parameters and being verified by DT&E
- **Current Systems Engineering Plan Guidance**
  - No emphasis on CONOPS development or Mission Analysis: A key enabler for good system requirements analysis
  - Too much emphasis on requirements management but not enough on requirements analysis approach
- **NDIA identifies requirements as one of its top issues:**
  - "Requirements are not always well-managed, including the **effective translation from capabilities statements into executable requirements** to achieve successful acquisition programs." (2006 Task Group Report: Top Five Systems Engineering Issues Within DoD and Defense Industry)

System Requirements Analysis Guide (New)

- **What is System Requirements Analysis (SRA)?**
  - Structured approach to translating the user's need into a technical definition of the system
- **Why renewed emphasis in DoD System Requirements Analysis?**
  - Establish rigorous approach to translating user capabilities to technical requirements (System Requirements Document)
  - Expose as many risks and issues as possible to a preferred system concept prior to release the RFP



WSARA: Weapon Systems Acquisition Reform Act (PL111-23)

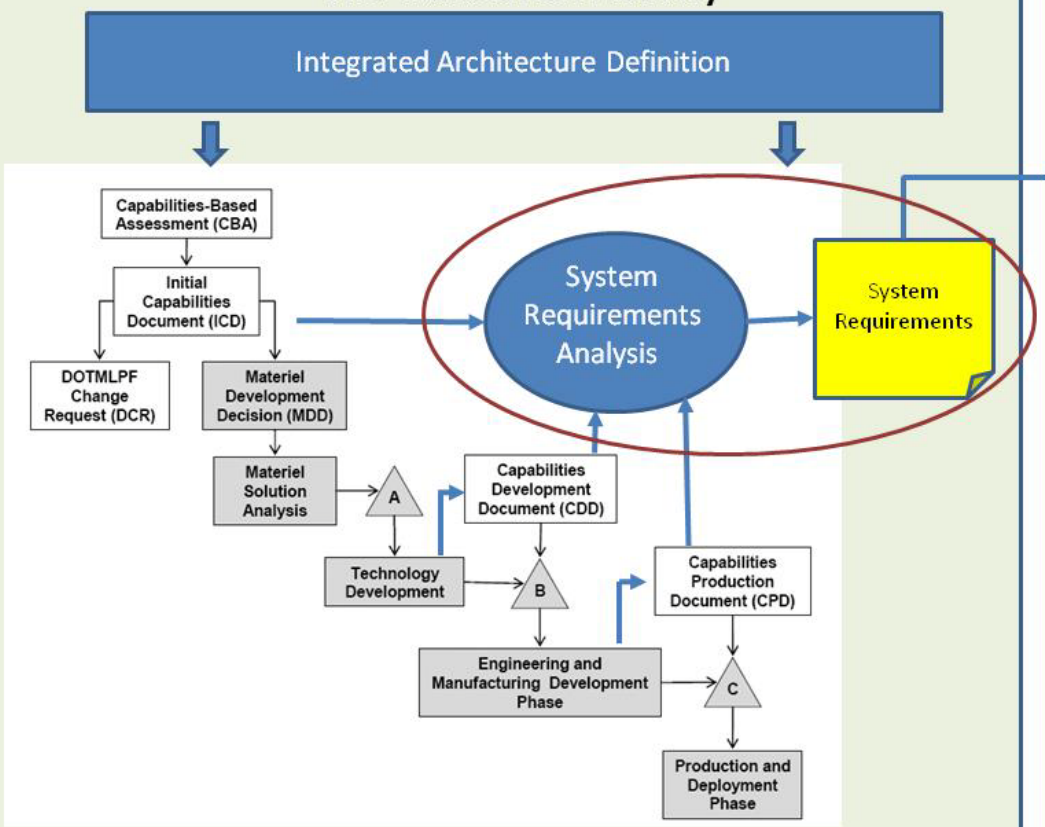
System Requirements Analysis Guide

Objectives:

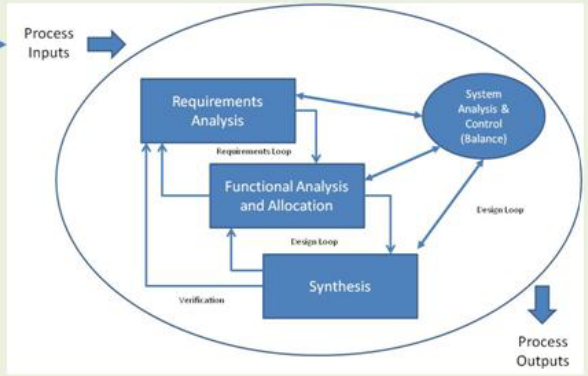
- Provide guidance to Government SEs in planning and executing the development of system requirements throughout the acquisition lifecycle
- Clarify the technical data expectations that supports technical baseline definition through (MS C) Initial Product Baseline
- Describe methods and techniques on how to "transform" requirements:
  - Capabilities ➡ System Requirements
  - System Requirements ➡ Subsystems Requirements
- Provide insights and references on "how" to develop a functional and physical architecture to support requirements definition and trade studies

System Requirements Analysis (Translation of Capabilities to Requirements)

DoD JCIDS and System Requirements Analysis "The Translation Activity"



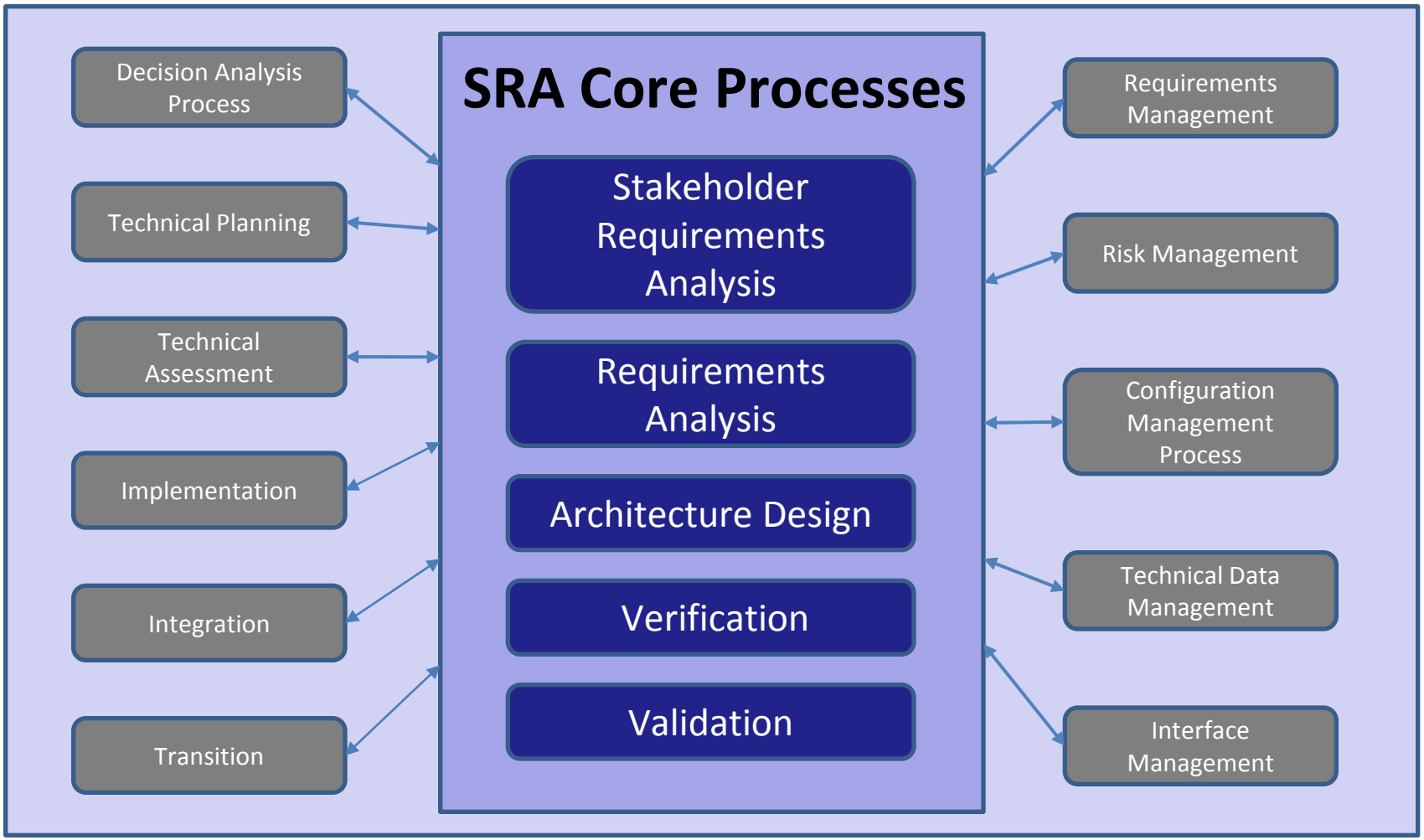
Contractor Notional SE Process



Specifications

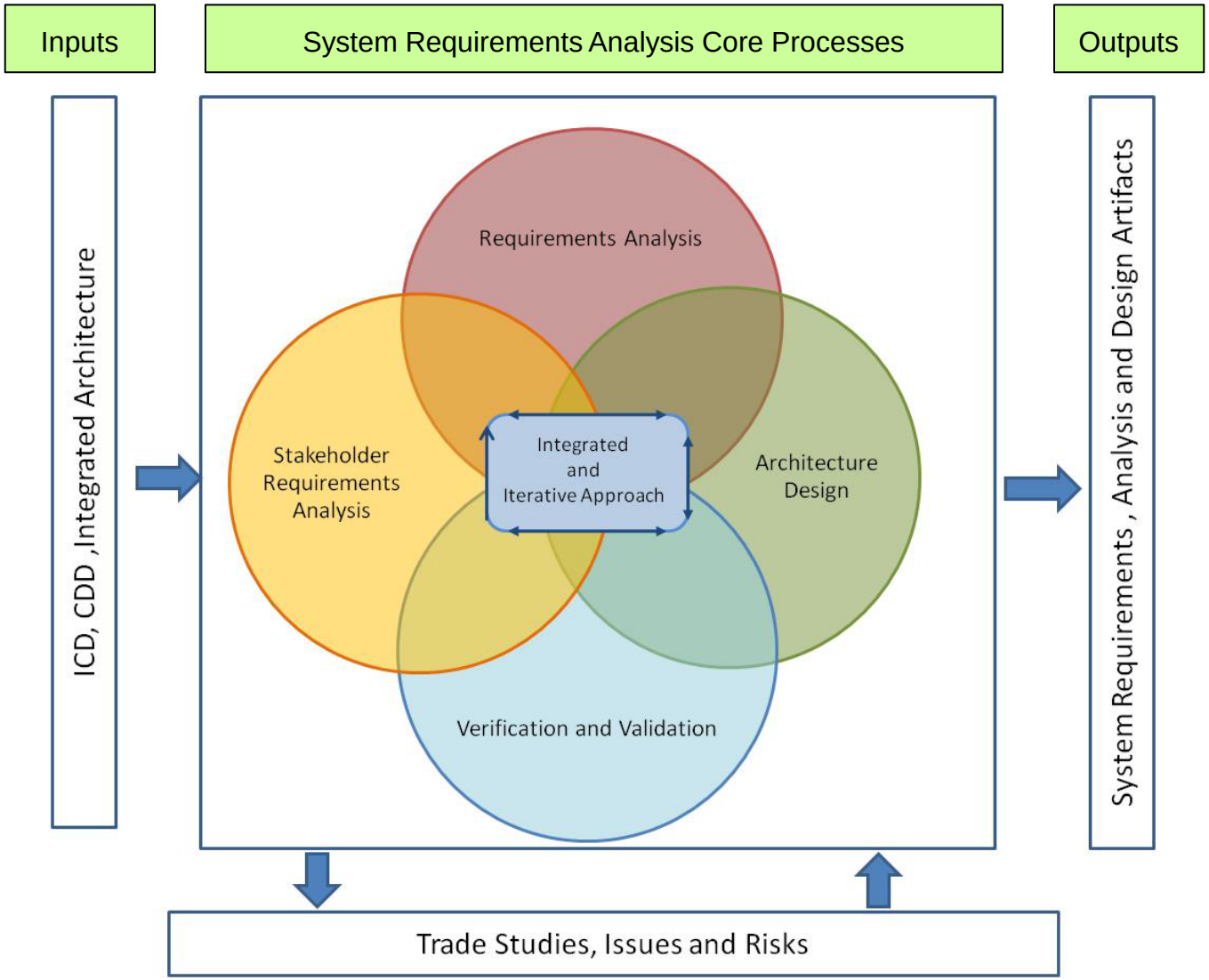
Sys Spec | Subsys Specs | Comp Specs | SRS

System Requirements Analysis Overview and Key Thoughts

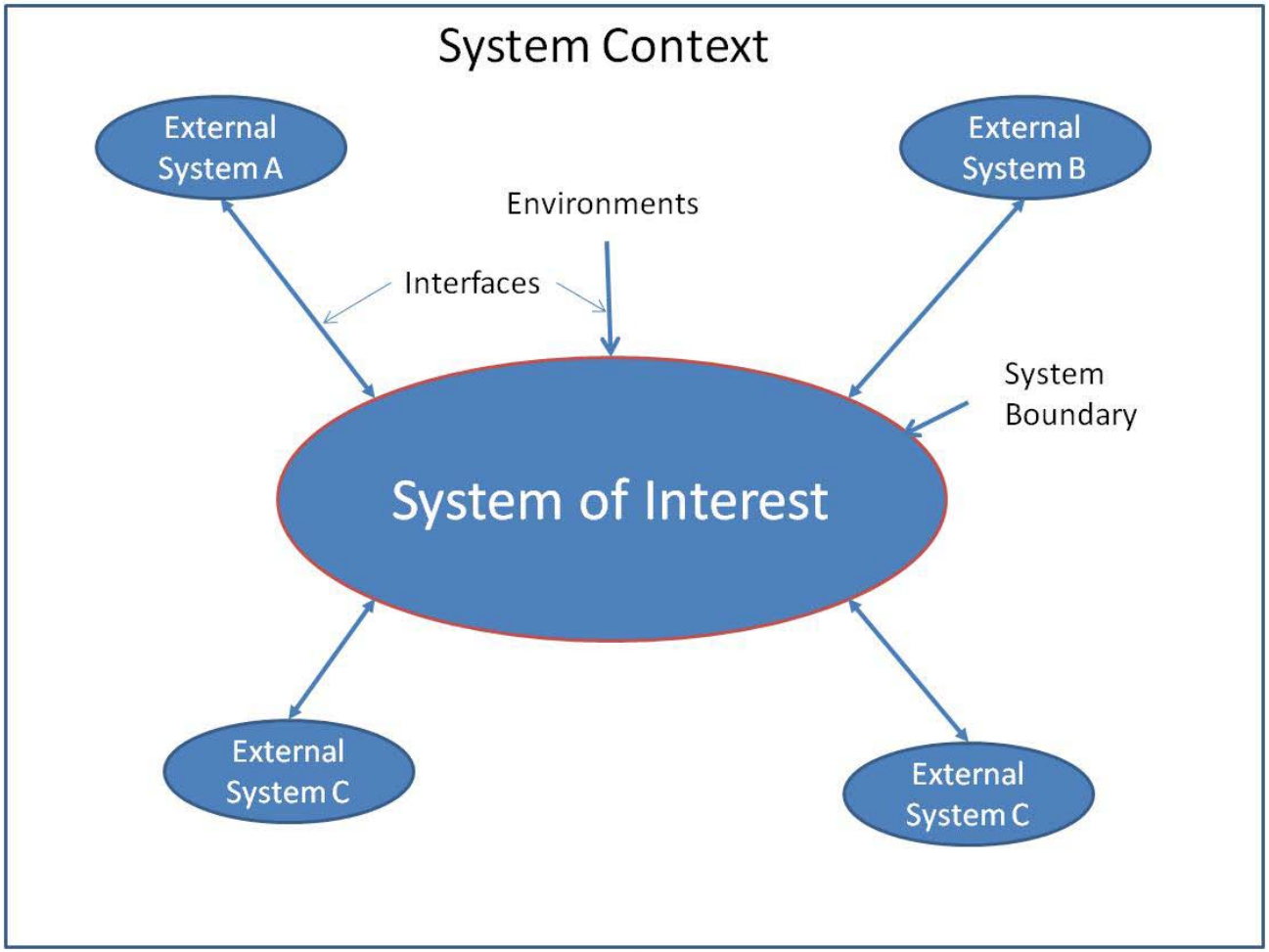


SRA core processes that provide the greatest influence in requirements definition

System Requirements Analysis An Integrated Approach

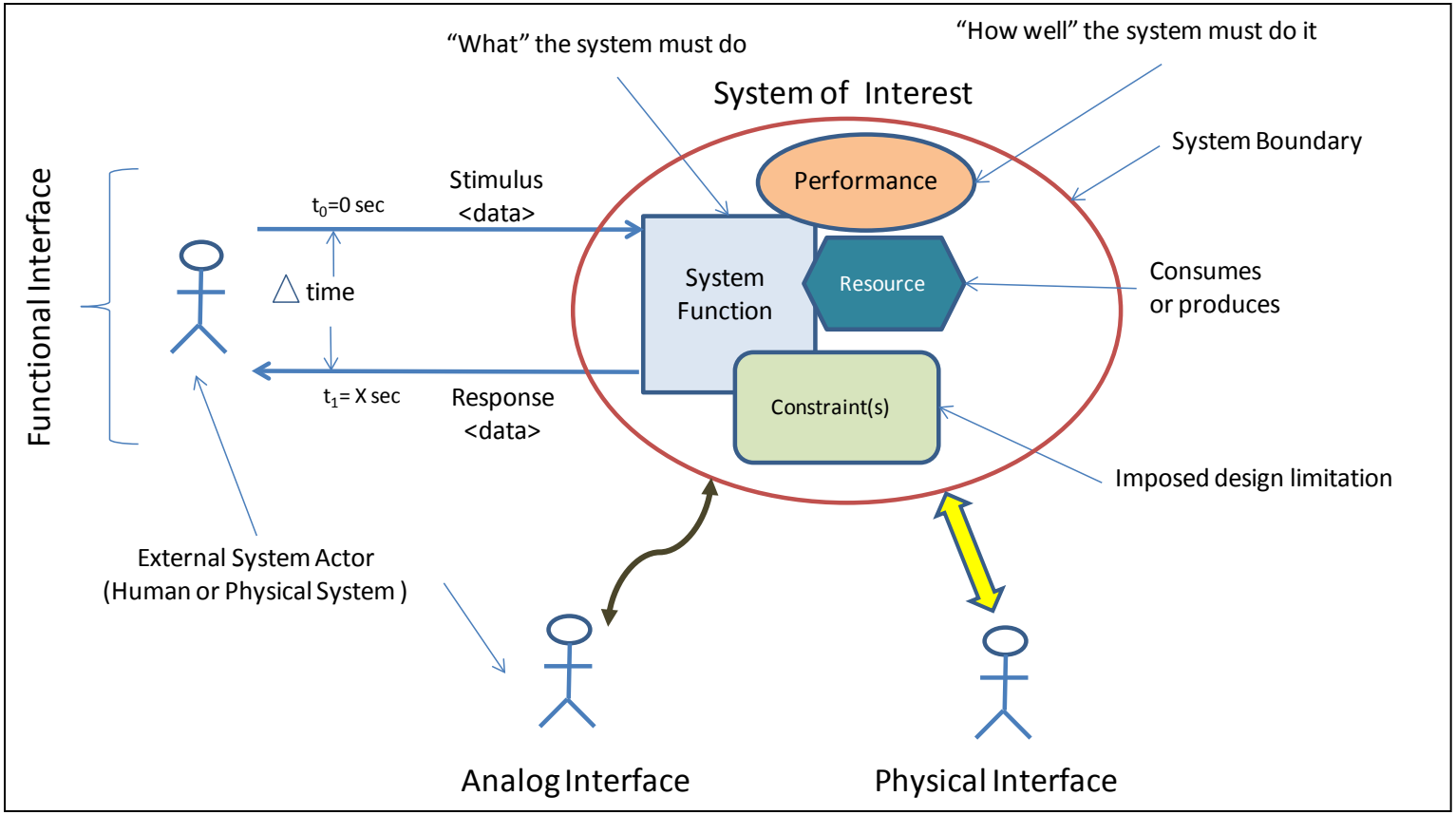


Fundamental SRA Concepts - 1 (System Context)

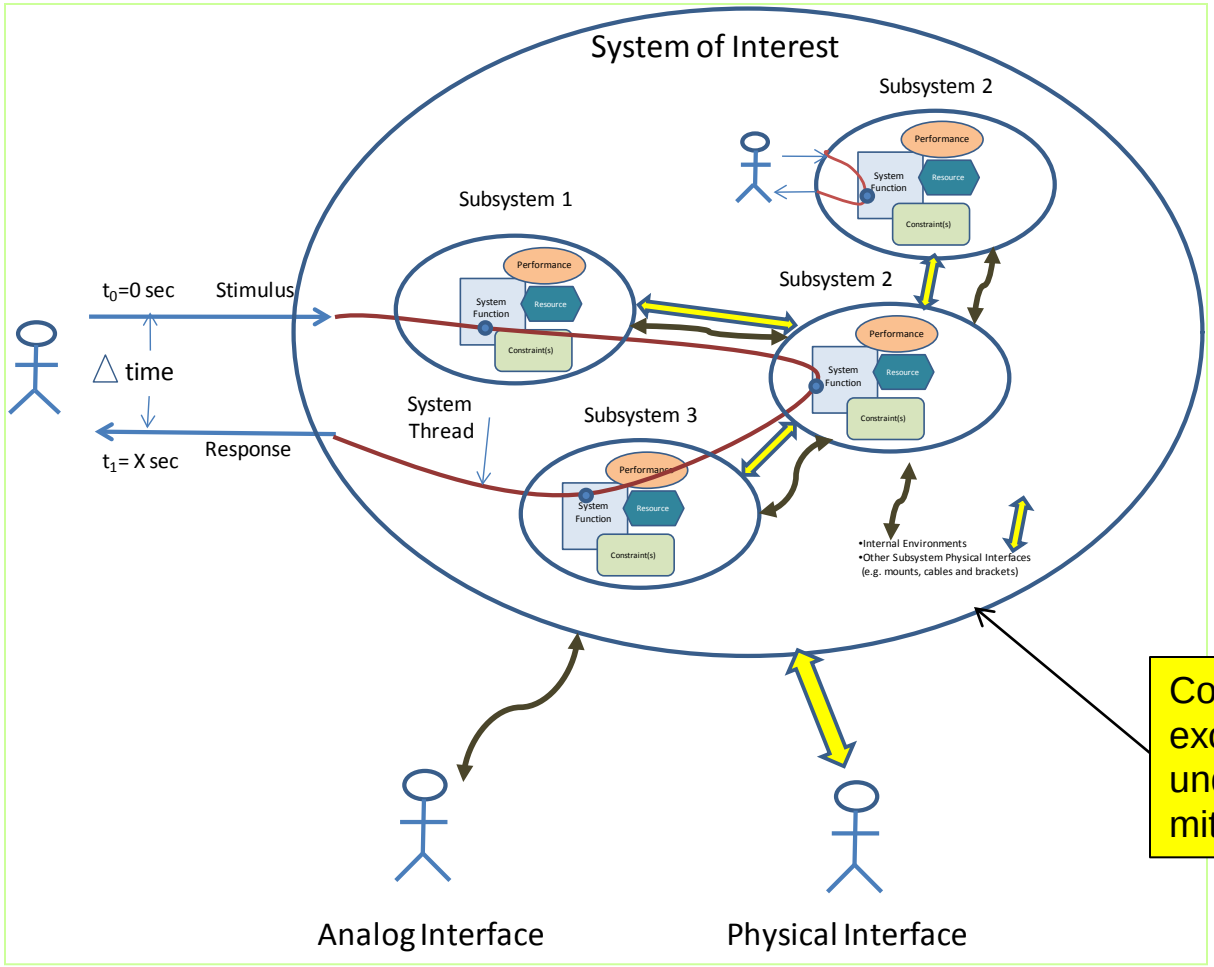


It is key to work with the stakeholders to get this right.

Fundamental Concepts – 2 Specification Language

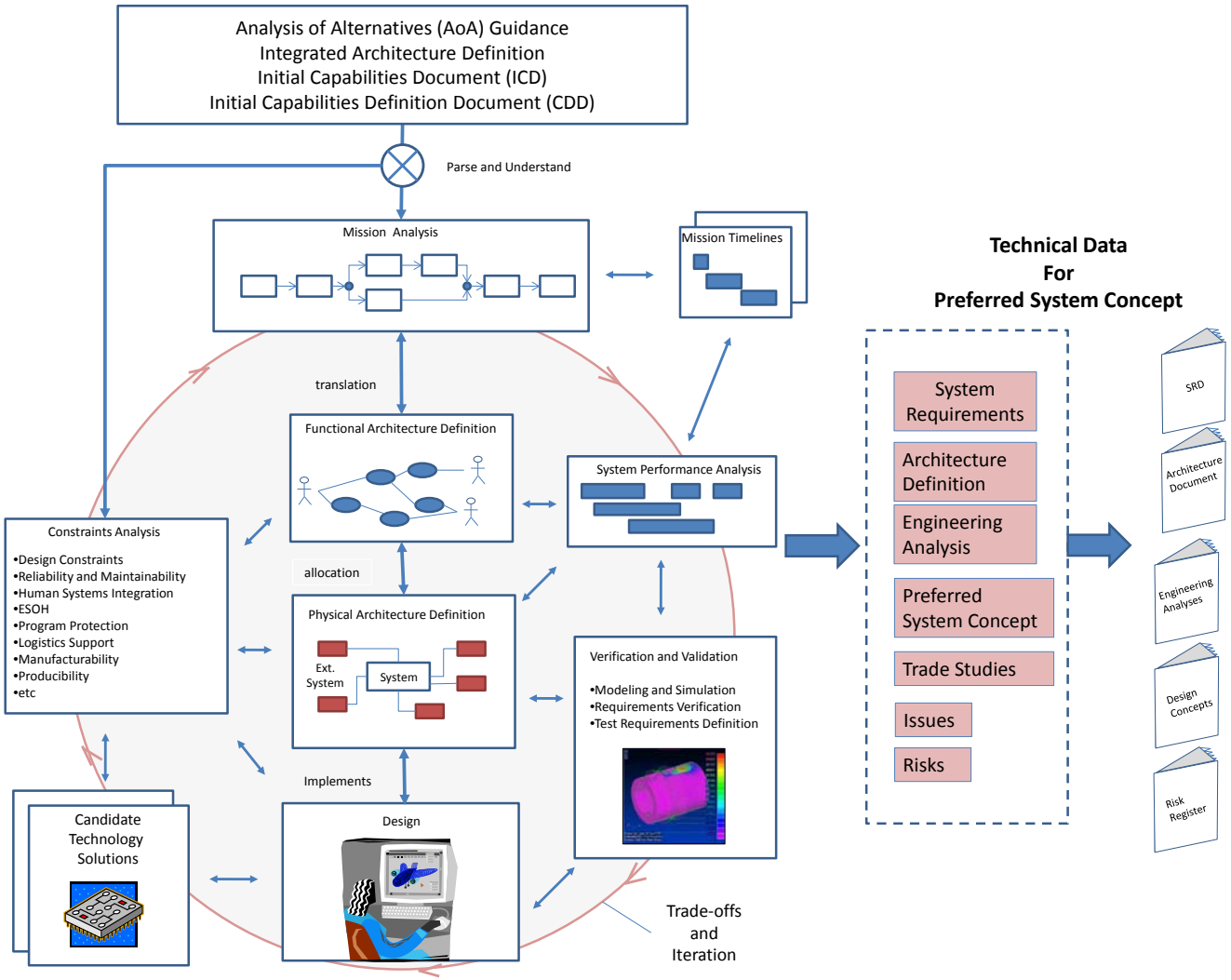


Fundamental Concepts – 3
System Partitioning, Decomposition and Allocation, Behavior and System Threads

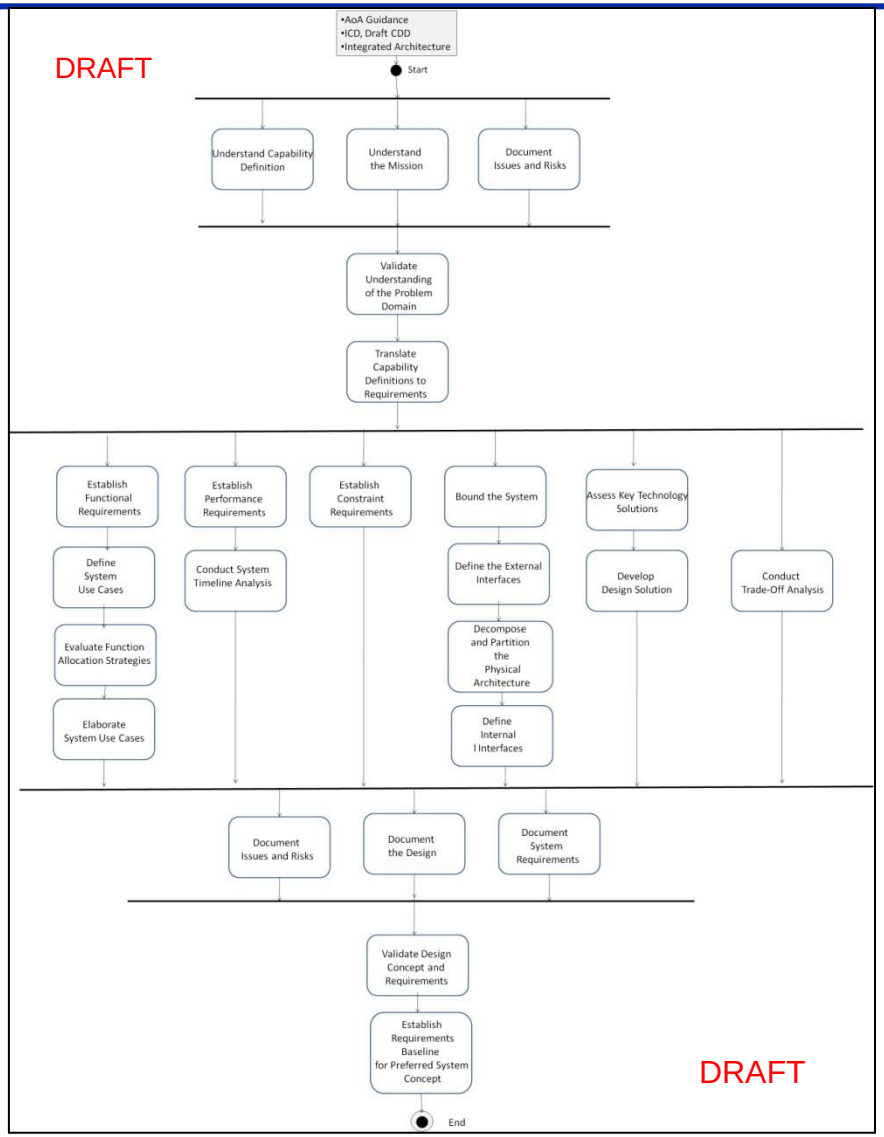


Conduct design excursions to understand and mitigate risk.

Fundamental Concepts – 4
Key SRA Analysis Relationships (From Abstract to Concrete)



System Requirements Analysis Guidance Approach

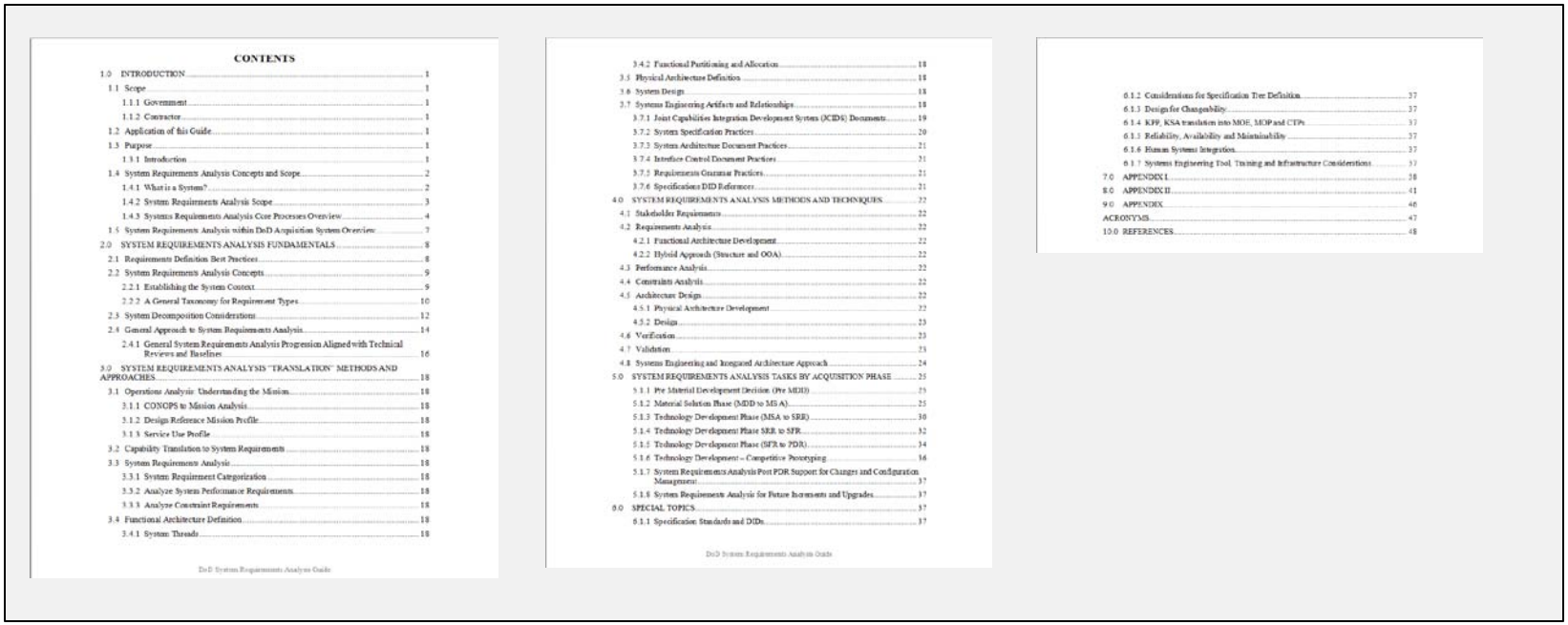


SRA Guide will include task descriptions, figures, templates, useful references supplemented with examples.

Summary and Path Forward

- **Summary**
  - Strengthen Government System Requirements Analysis rigor and discipline
  - Support for PMs and technical planning for early system definition
- **Path Forward**
  - Draft SRA Guide is expected to be available in Fall 2011

Draft DoD SRA Guide Table of Contents



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Questions

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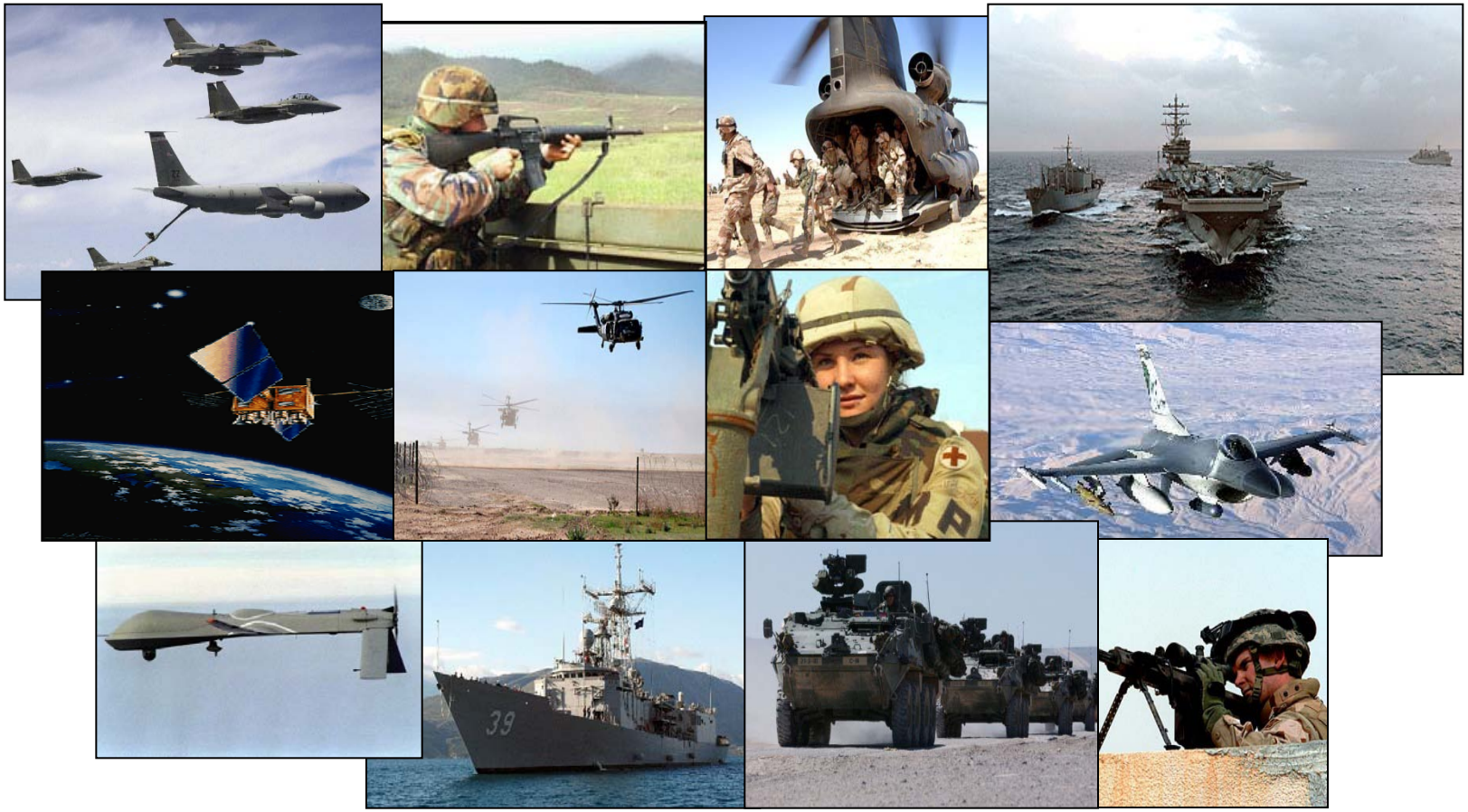
Systems Engineering: Critical to Program Success



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