



SYSTEMS  
Development &  
Maturity Laboratory

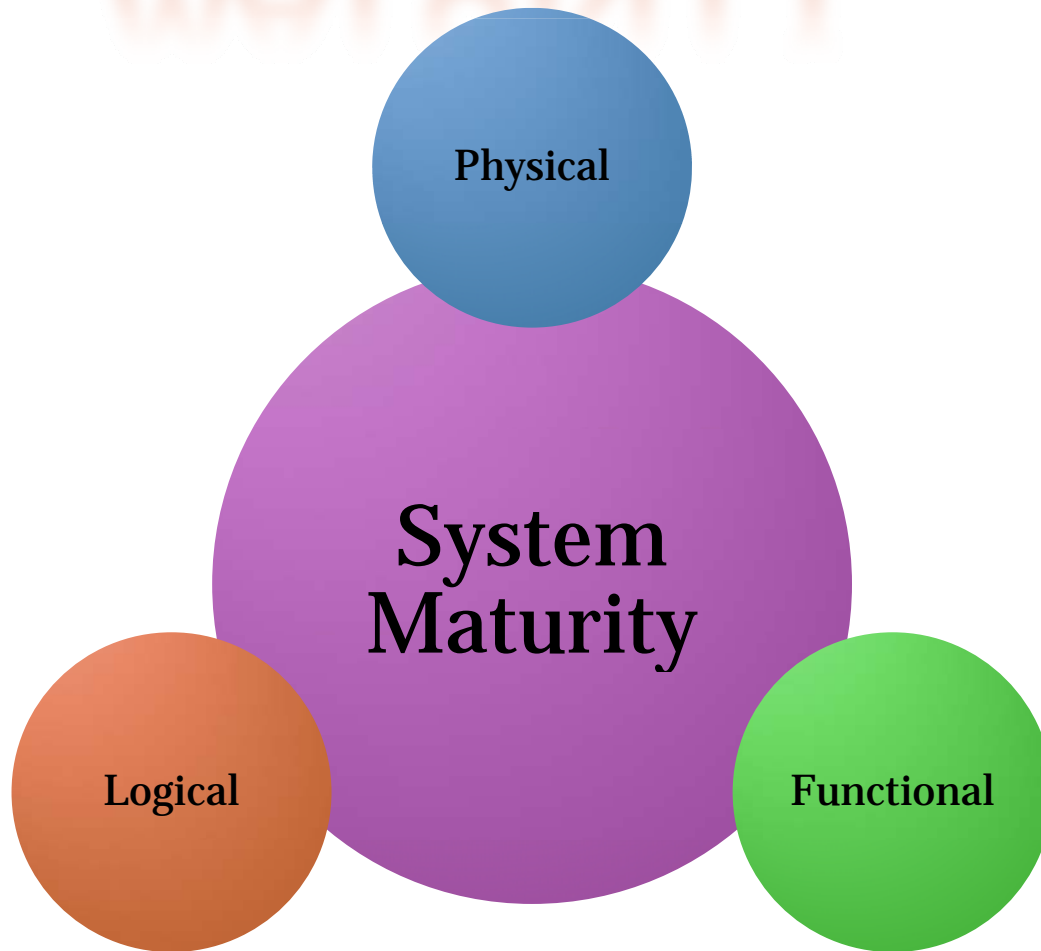
# Analysis of Alternatives in System Capability Satisficing for Effective Acquisition

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# MATURITY



Indicates how a system responds to the circumstances or environment in an appropriate and adaptive manner.

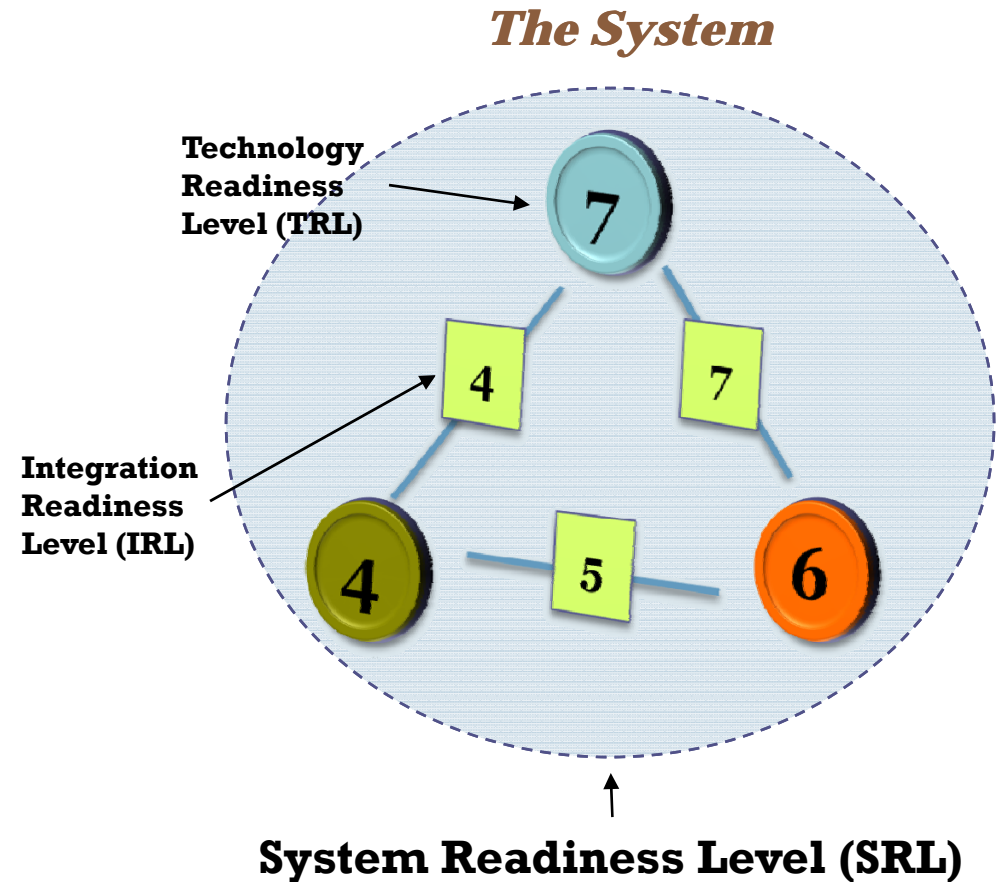
This response is designed (In some instances learned) and not determined by the system's age.

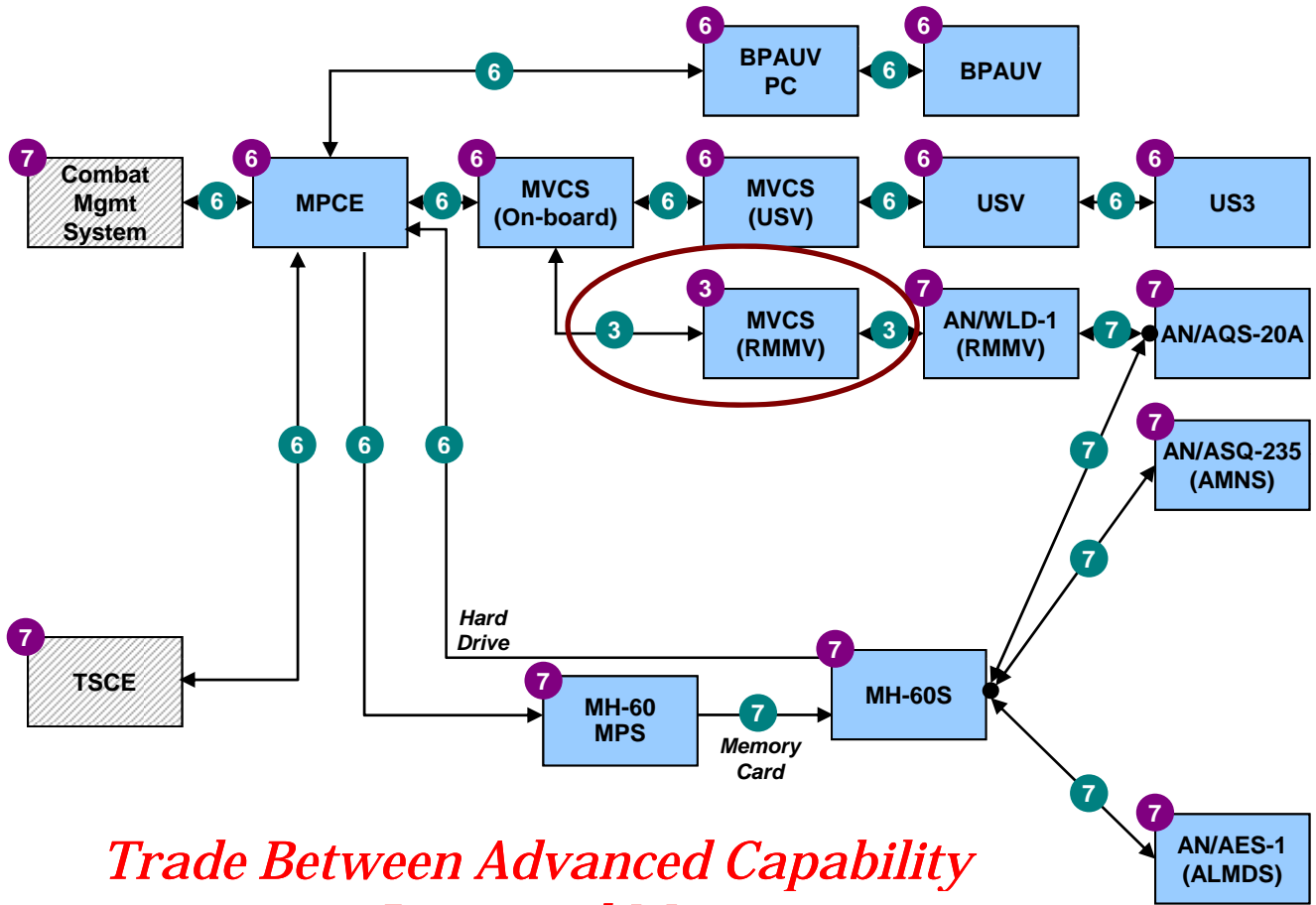
Encompasses being aware of the correct time and place to deploy and knowing when to operate appropriately according to the situation

# Systems Evolution and Lifecycle Management

## Value Proposition:

- To provide a system-level view of development maturity with opportunities to drill down to element-level contributions
- To allow managers to evaluate system development in real-time and take proactive measures
- To create highly adaptive methods, processes, and tools to use on a wide array of system engineering development efforts





	MP SRL	MP SRL w/o Sea Frame
MP 1	0.60	0.57

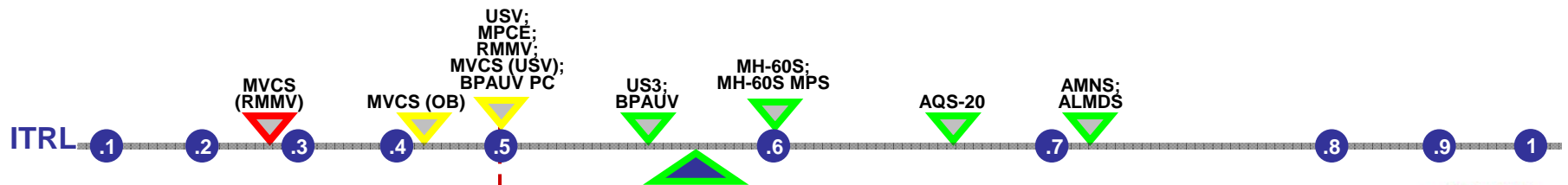
**LEGEND**

- MP Technology
- Sea Frame System
- Current Mission Package SRL Status
- Previous Mission Package SRL Status
- Current Mission System SRL Status
- 1 Technology Readiness Level
- 1 Integration Maturity Level
- 1 System Readiness Level Demarcation
- Scheduled Position

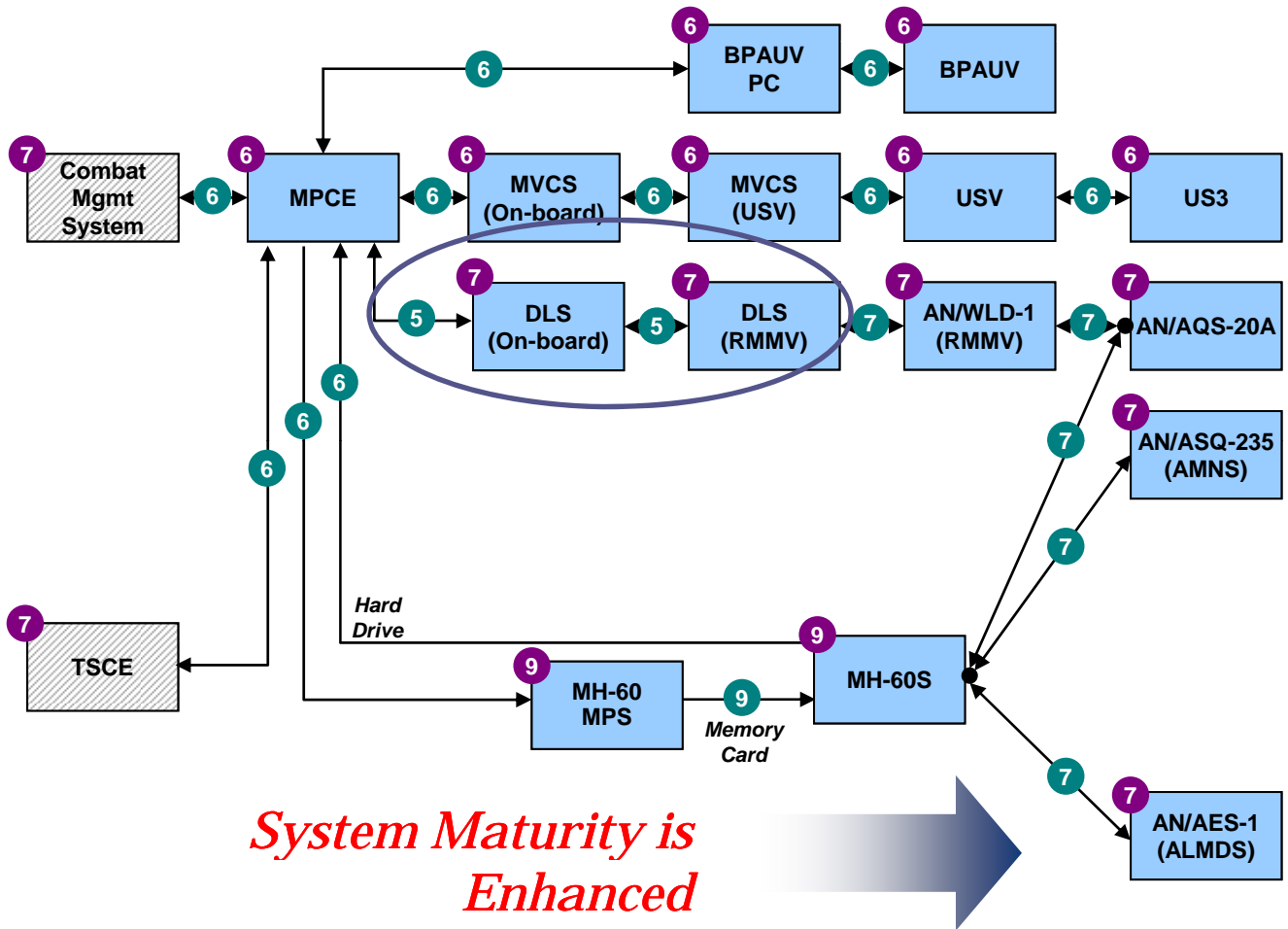
*Risk to Cost and/or Schedule*

- Low
- Medium
- High

## Trade Between Advanced Capability or Increased Maturity



Example provided by Northrop Grumman in support of the US Navy PMS 420 Program  
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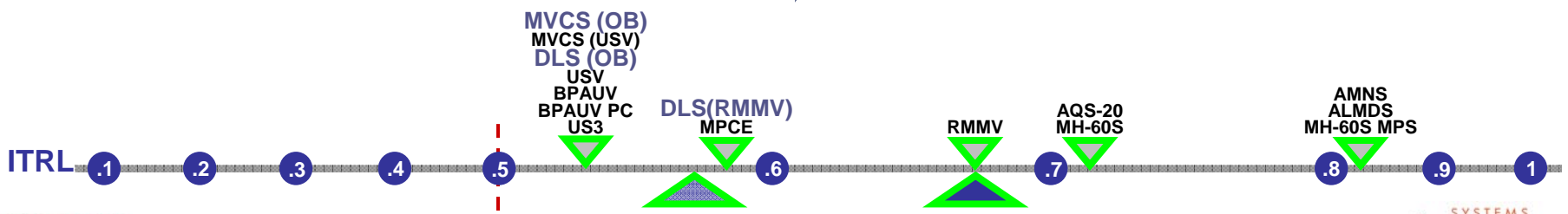


	MP SRL	MP SRL w/o Sea Frame
MP 1	0.64	0.67

**LEGEND**

- MP Technology (Blue box)
- Sea Frame System (Hatched box)
- Current Mission Package SRL Status (Blue triangle)
- Previous Mission Package SRL Status (Hatched triangle)
- Current Mission System SRL Status (Grey triangle)
- Technology Readiness Level (Purple circle)
- Integration Maturity Level (Green circle)
- System Readiness Level Demarcation (Blue circle)
- Scheduled Position (Red dashed line)
- Risk to Cost and/or Schedule:
  - Low (Green inverted triangle)
  - Medium (Yellow inverted triangle)
  - High (Red inverted triangle)

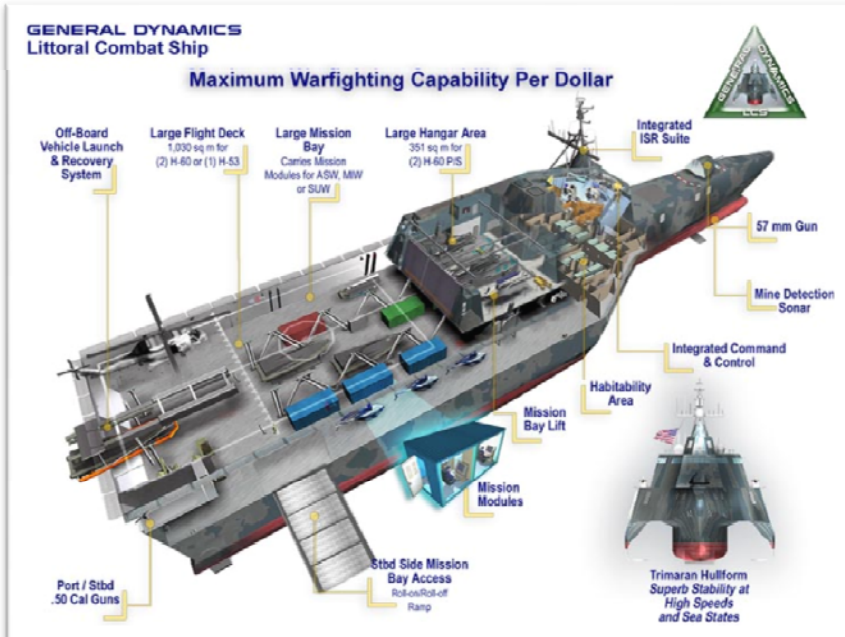
*System Maturity is Enhanced*



Example provided by Northrop Grumman in support of the US Navy PMS 420 Program  
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# Multi-Function, Multi-Capability (MFMC) System Development



# A simple MFMC system-the Swiss Army Knife

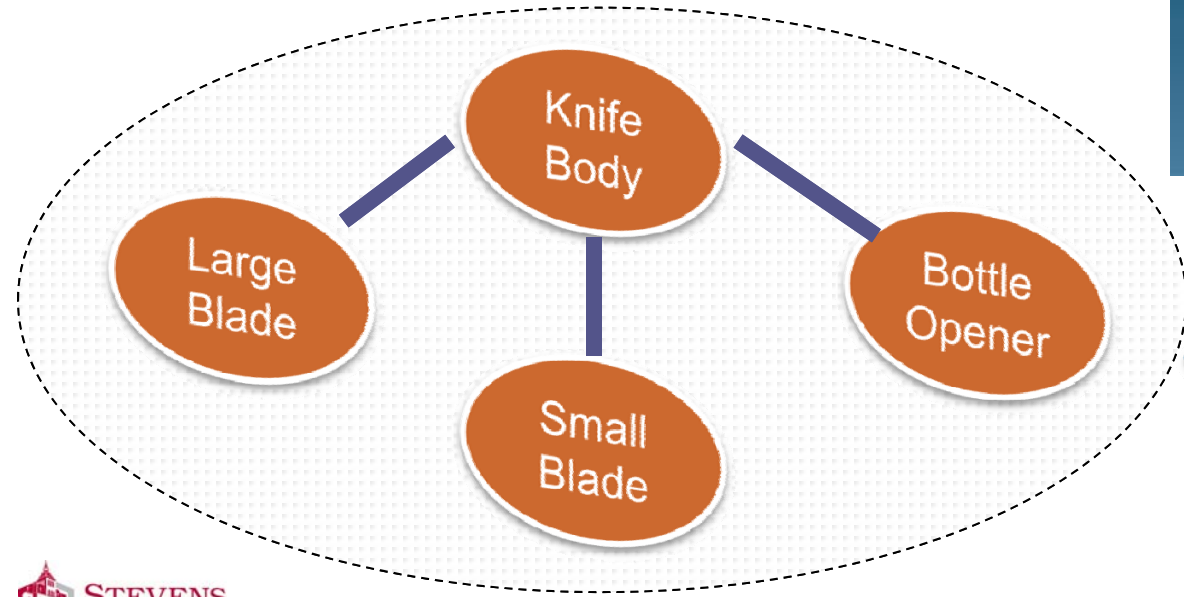
Same function,  
different  
capabilities

Different  
functions

Large blade:  
cut

Small blade:  
cut

Bottle opener:  
open bottles

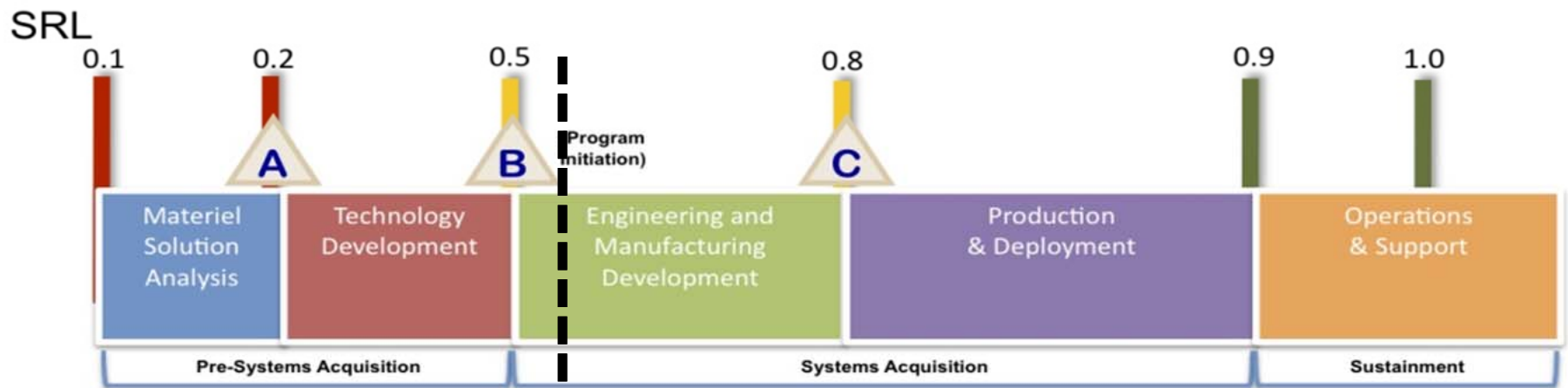
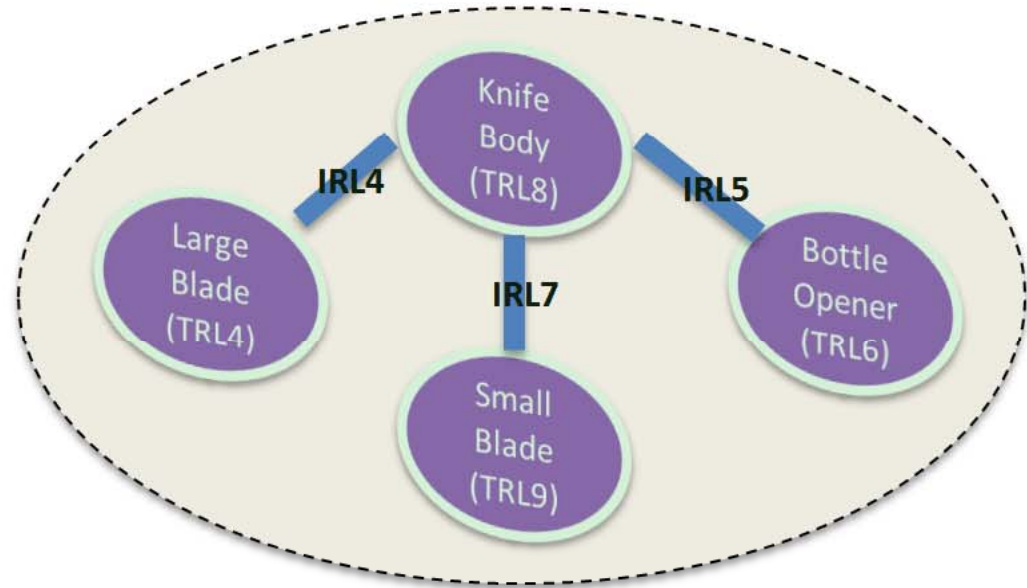


Simplified System  
Architecture

# Example- apply it to the Swiss Army Knife (TRLs and IRLs are notional)

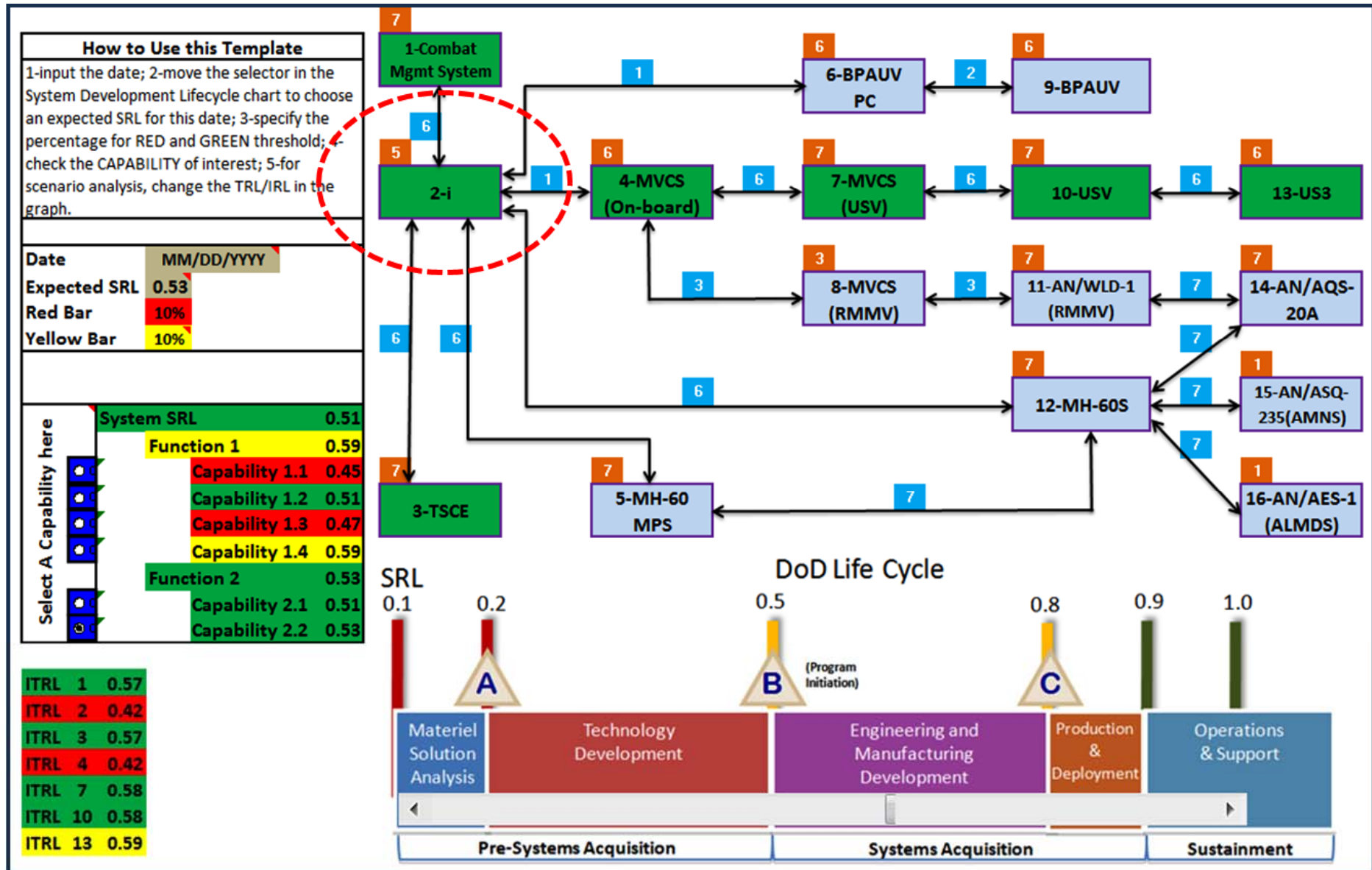
**Date** 1/20/2011  
**Expected SRL** 0.55

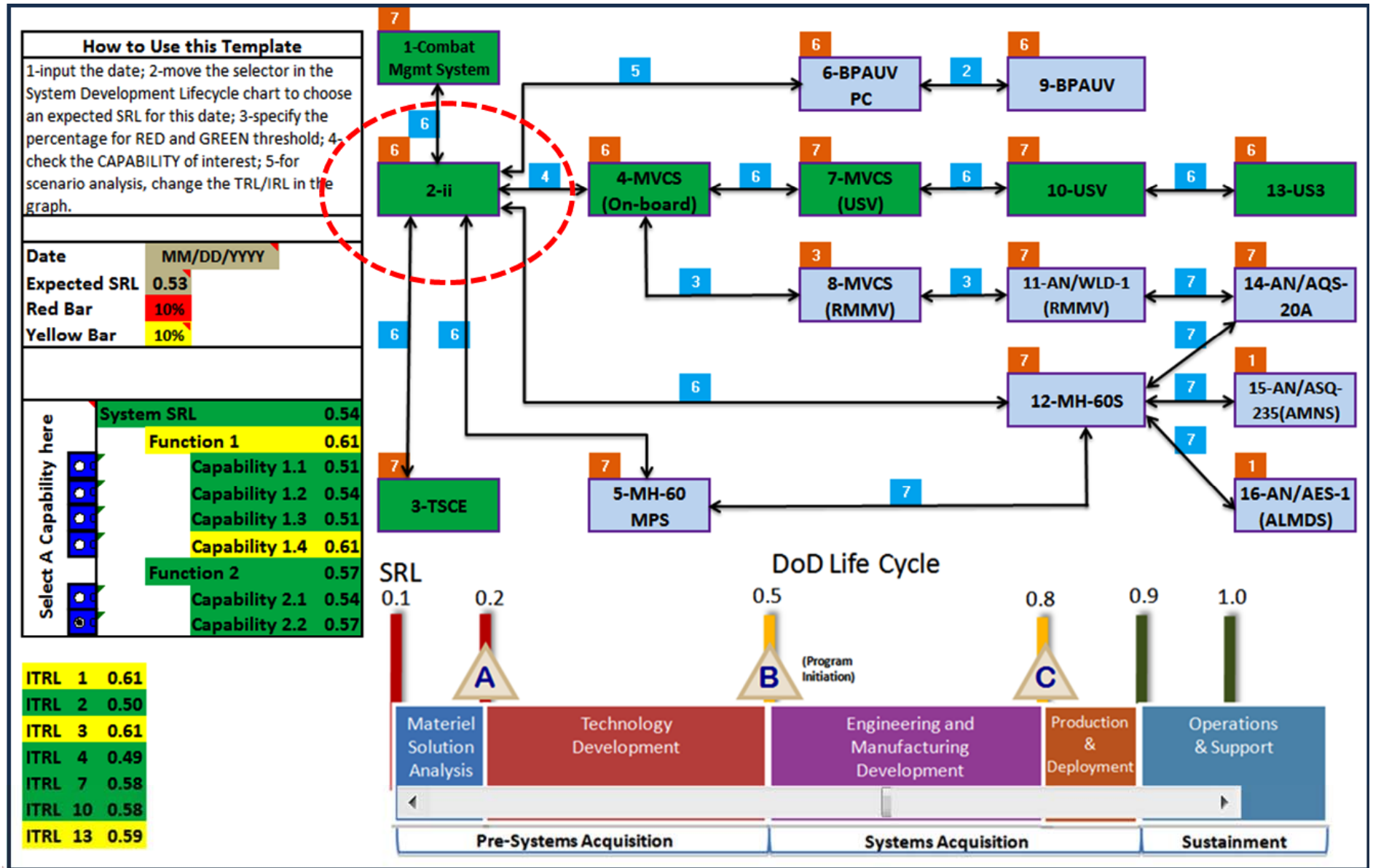
System SRL	0.64
Function- Cutting	0.84
Capability-Small Blade	0.84
<b>Capability-Large Blade</b>	<b>0.48</b>
ITRL-Knife Body	0.54
<b>ITRL-Large Blade</b>	<b>0.42</b>
Function- Bottle Opening	0.60
Capability-Bottle Open	0.60



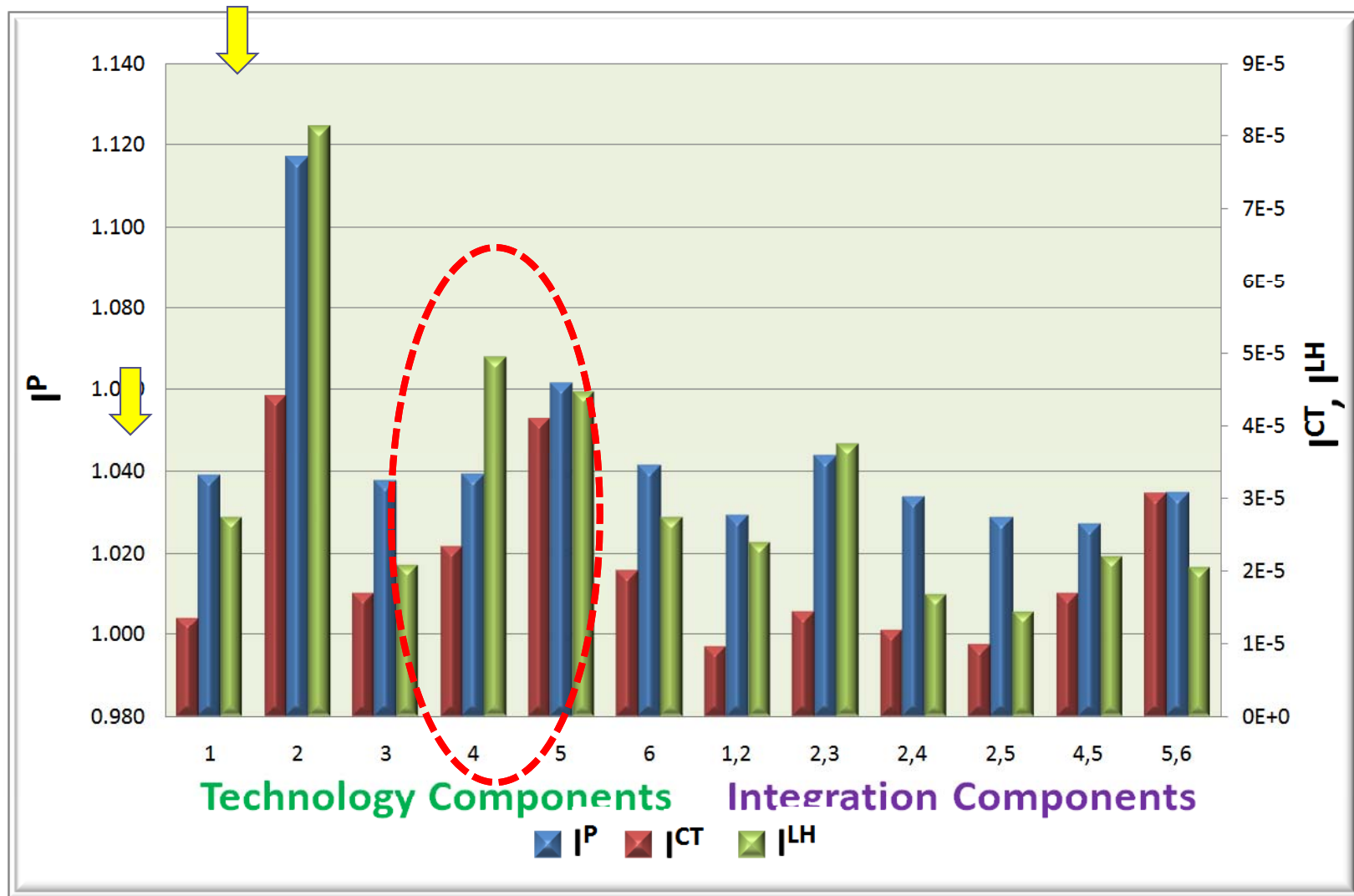
Expected SRL

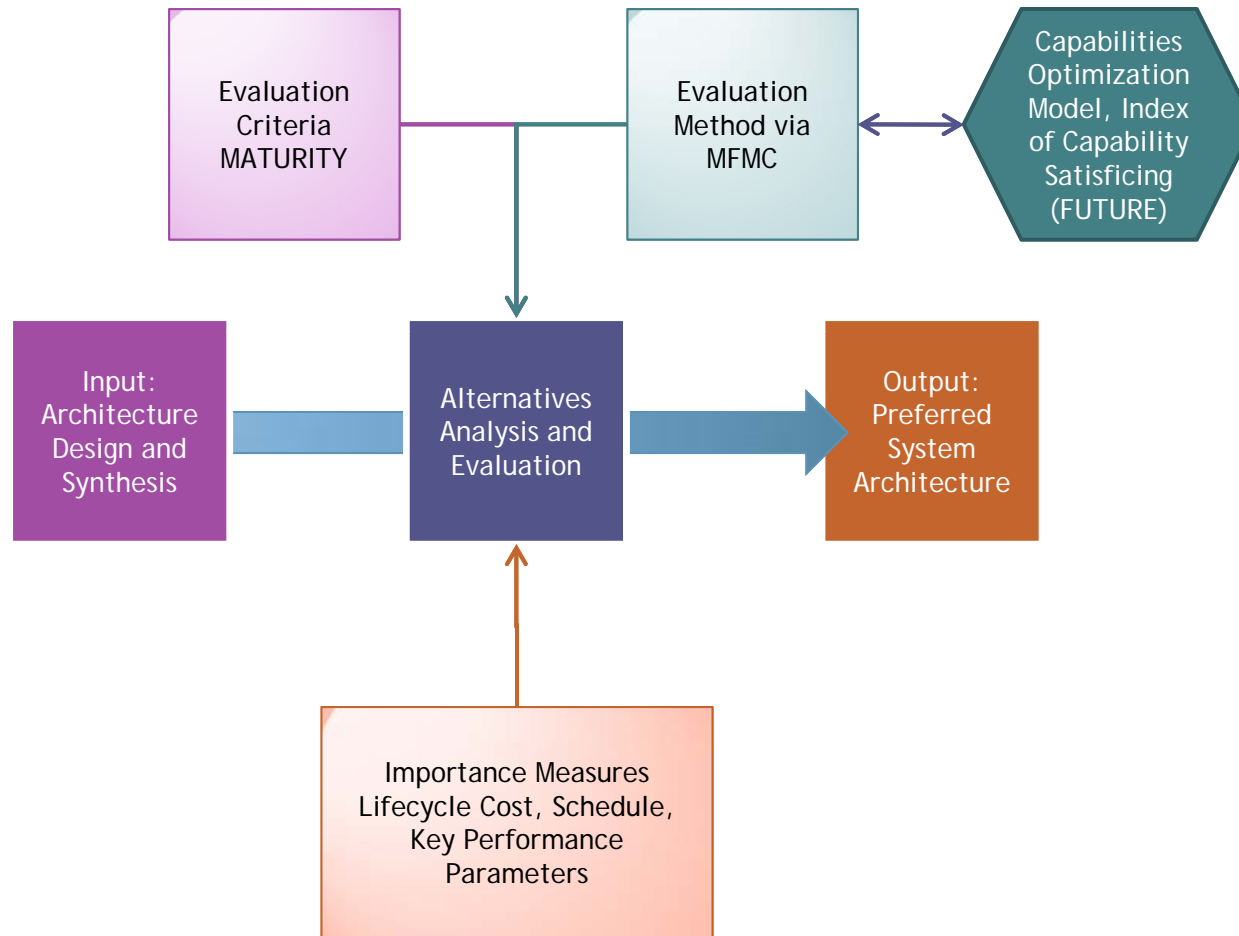






# Applying Component Importance Measures





# Special Thanks

- **Naval Postgraduate School, Acquisition Research Program**
- **U.S. Navy NAVSEA PMS 420**
- **Northrop Grumman, Lockheed Martin, U.S. Army RDECOM, U.S. Army ARDEC**