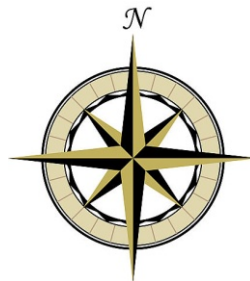


# ***Pre-Milestone-A Cost Analysis: Progress, Challenges, and Change***

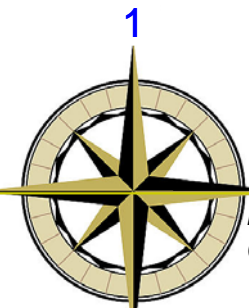
***SCEA Conference and Workshop***



***M. Roper***

***Office of the Deputy Assistant Secretary of the Army for Cost and  
Economics (ODASA-CE)***

***June 2008***



# Presentation Outline

ODASA-CE

## ➤ Background Information

- ❖ Pre-Milestone A Cost Estimating
- ❖ Capability-Based Cost Estimating
- ❖ Analysis Data Evolution
- ❖ Analysis Inputs and Likely Cost Range

## ➤ Desired End State

## ➤ Three Elements: Overview and Issues

- ❖ CKB Overarching Structure
- ❖ A Joint Tool
- ❖ DoD Capability Paradigms & Linkages
- ❖ Issues Within the Analysis Community

## ➤ Path Forward

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# What Is a Pre-Milestone-A Cost Estimate?

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- **Analysis That Uses Information Known Prior to Milestone A to Create a Cost Estimate**
  - **Theoretical Worst Case Scenario: Capabilities Only**
  - **If We Know More, We Can Improve Fidelity**
- **Quality Cost Analysis Within a Compressed Timeline, Consistent With Early Decision-Making**
- **A Risk-Informed Estimate That Provides a Likely Cost Range**

**Pre-Milestone-A Cost Analysis Needed to Inform  
Early Investment Decisions**

3



# What is Capability-Based Cost Estimating?

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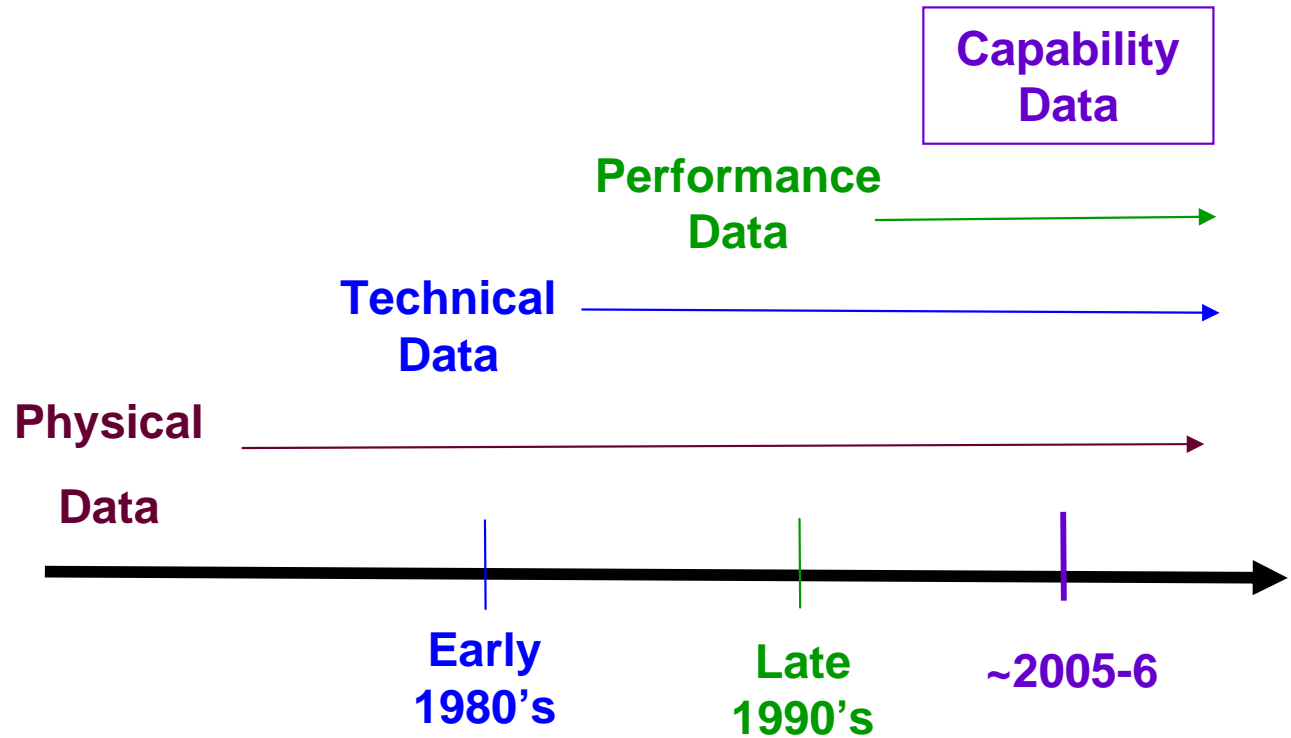
**The Idea: We Can Use the Capabilities of Current Systems and Their Associated Costs to Provide Cost Estimates For Capability-Gap-Filling Solutions**



# Analysis Data Evolution

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Data Usage in Cost Analysis



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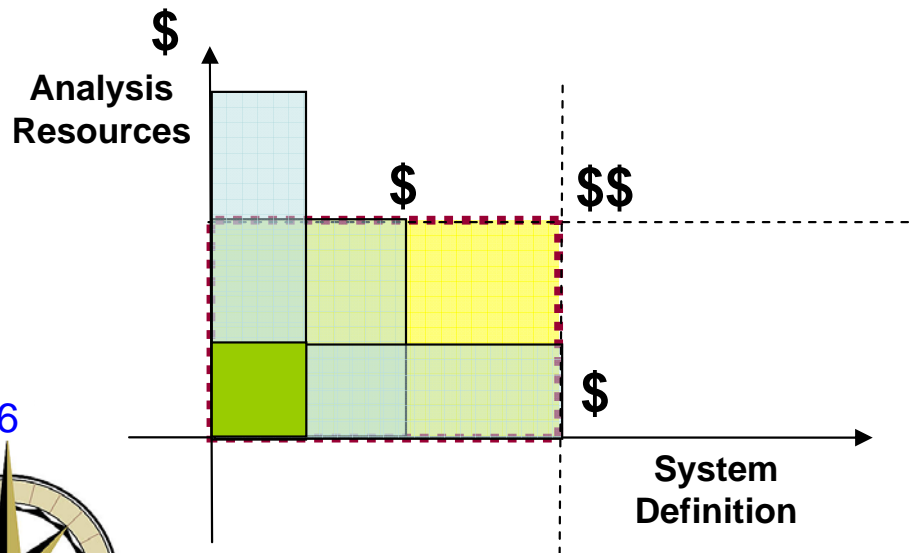
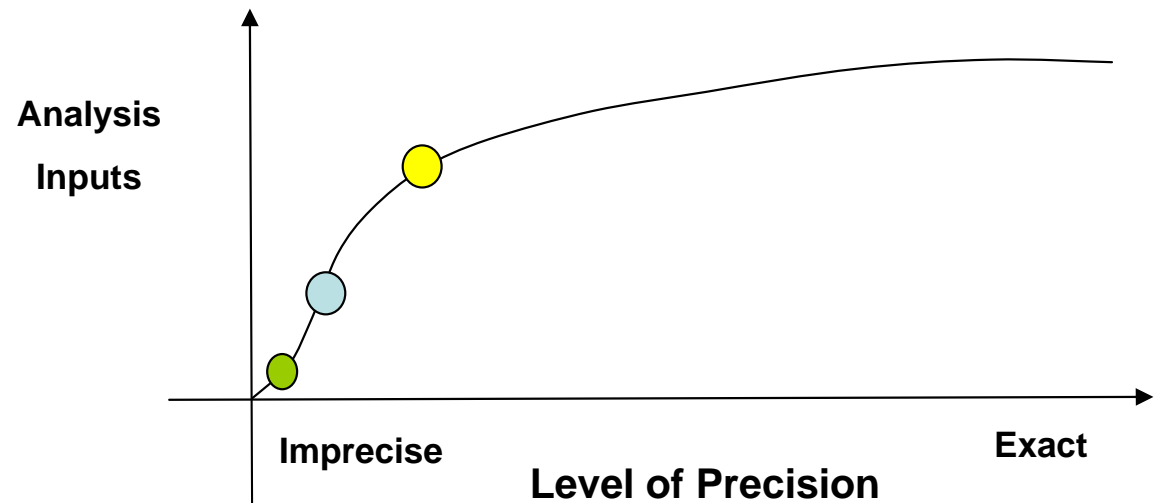


Pre-Milestone-A Costing

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# Analysis Inputs and Precision

- Cost Estimate Precision Ranges from Completely *Imprecise* to *Exact*
- Inputs to the Cost Process Will Affect the Level of Precision
  - Analysis Resources
  - System Definition



**Greater Precision Can Be Obtained By Adding Analysis Resources and/or System Definition---**

*But Do We Really Need This For a Milestone A Decision? Will the Additional System Definition Even Be Available?*



# Desired End State

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➤ *To Have a Fully-Populated, Fully-Automated Capabilities Knowledge Base Data Warehouse, Complete With Tools for Analysis*

➤ *To Educate, Strengthen, and Stimulate the Analysis Community to be Receptive of and Adept in Pre-Milestone-A Cost Estimating Techniques*

➤ *To Have a Robust, Balanced Capability Analysis Architecture That is Widely Accepted and Utilized in the Analysis Community*



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Pre-Milestone-A  
Costing

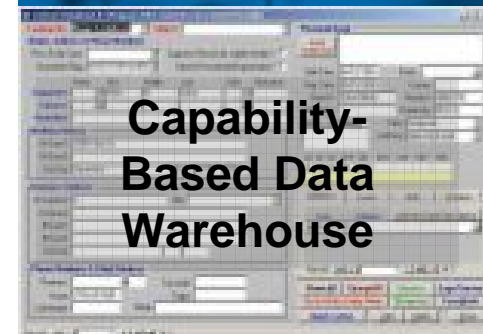
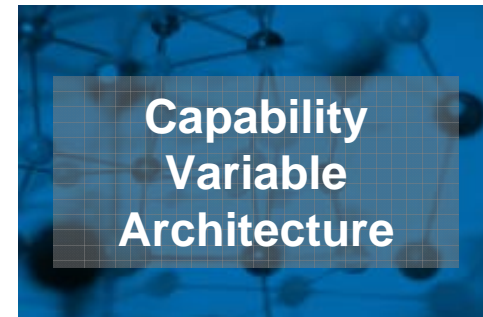
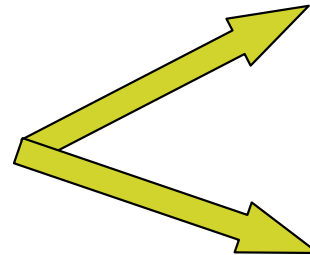
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# The Three Elements

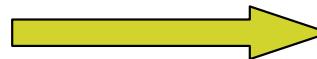
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- ➔ There are Three Elements that Make Pre-Milestone-A and Capability-Based Cost Estimating Possible

*Our ODASA-CE-sponsored research enables these two*



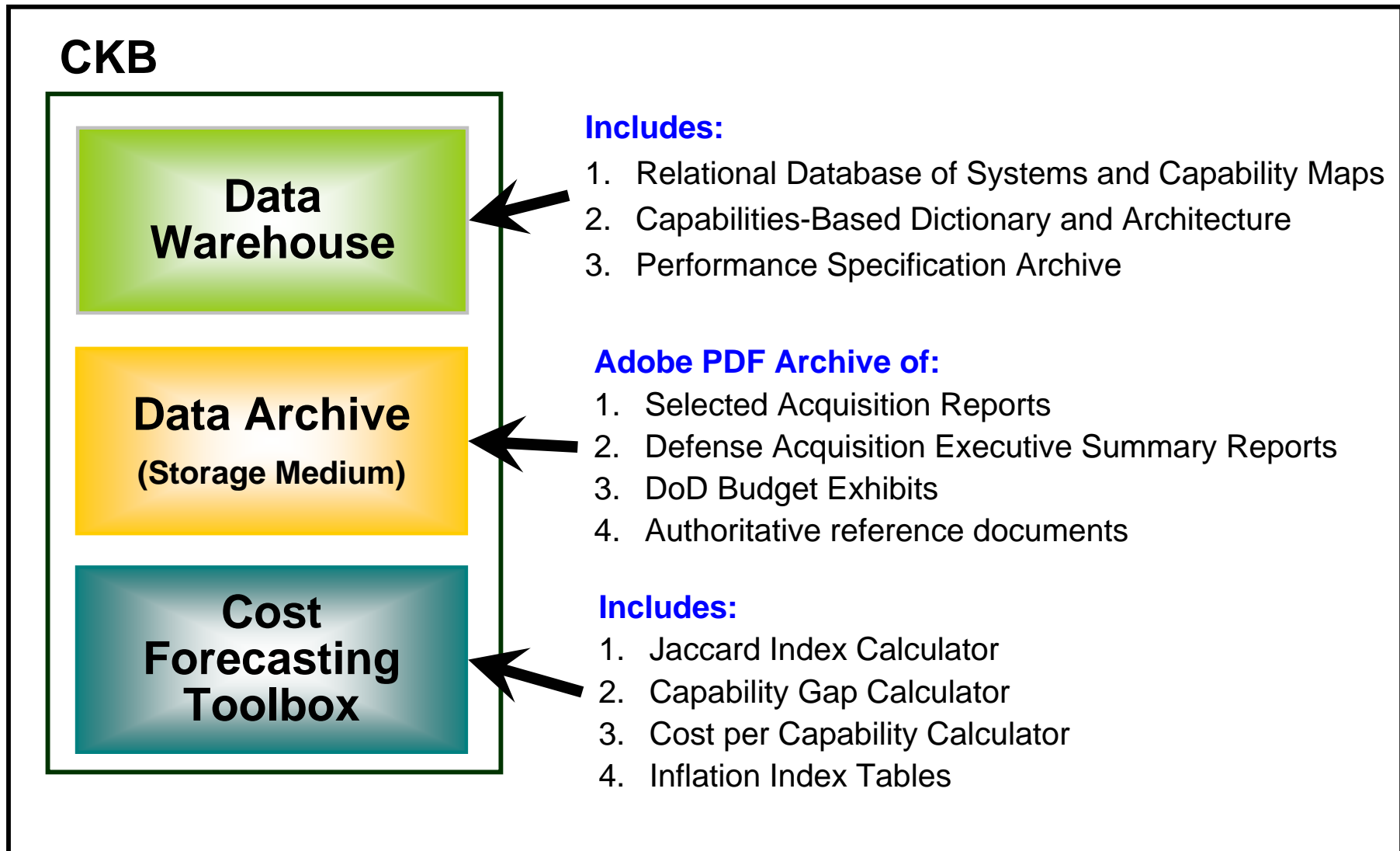
*Our external outreach efforts and initiatives work to develop this*





# The Capabilities Knowledge Base

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Source: Technomics Partner



# CKB: A Joint Analysis Tool

ODASA-CE

Although the CKB is being developed by ODASA-CE within the Army, it is intended to be a joint-service, department-wide tool.

Its structure and architecture apply to all system types within DoD.

- USD AT&L Authoritative Data Sources
  - Kaleidoscope; and
  - DAMIR.



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# Capability Variables and the DoD Capability Paradigm

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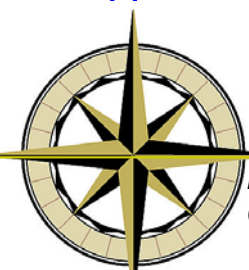
**ODASA-CE**


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- The Capabilities Within the System Capabilities Architecture (SCA) Must Be Specific, Distinguishable, Well-Defined, and Analysis-Ready in Order to Enable Parametric and Other Boolean Logic Analysis Methods

Capability	Definition	Example(s)
<b>1. Maneuver – Environment</b>	An entity that maneuvers via the ground, water, or air.	Vehicles; ships; and aircraft.
1.1 Ground	An entity that maneuvers on the ground.	Ground vehicles and tanks (ex: Joint Light Tactical Vehicle -- JLTV).
1.2 Water	An entity that maneuvers in the water.	Ships and submarines.
1.2.1 Surface	An entity that maneuvers on the surface of the water.	Ships (ex: DDG 51).
1.2.2 Submerged	An entity that maneuvers below the surface of the water.	Submarines (ex: SSN-774 Virginia NSSN).
1.3 Air	An entity that maneuvers in the air.	Aircraft; helicopters; and rockets
1.3.1 Endoatmospheric	An entity that maneuvers within the air of the Earth's atmosphere.	Aircraft; helicopters; and unmanned aerial vehicles (UAVs). Ex: C-130J Hercules.
1.3.2 Exoatmospheric	An entity that maneuvers beyond the air of the Earth's atmosphere (i.e. space).	Shuttles; rockets; and other spacecraft (ex: Titan IV, Expendable Launch Vehicle -- ELV).
<b>2. Control</b>	An entity of any type that is controlled.	Ground vehicles; ships; UAVs; and UGVs.
2.1 Manned	An entity of any type that is manned or controlled by a person within the entity.	Any manned water, ground, or air vehicle (ex: Stryker).
2.2 Unmanned	An entity of any type that is not controlled by a person within the entity.	Unmanned aerial vehicles (UAVs) or any unmanned ground or water entity (ex: VTUAV -- Fire Scout).

- Mapped SCA to Recognized DoD Capability and Activity Structures
- **JCA: Joint Capability Areas**
  - **JIAS: Joint Integrated Activity Set**
  - **FCB: Functional Capabilities Boards**
  - **UJTL: Universal Joint Task List**



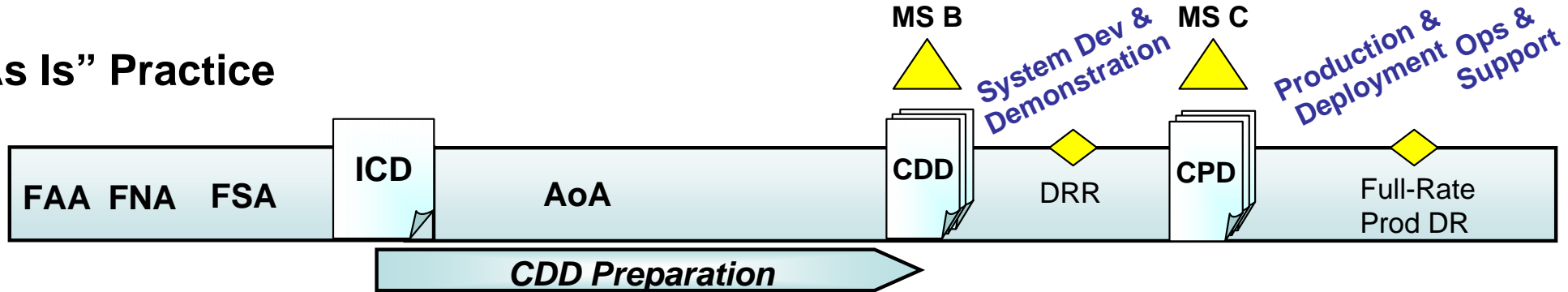
# Issues Within the Analysis Community

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➤ Typically, acquisition programs surface first for Milestone B ---- all indicators tell us this is about to change

➤ We will be seeing more Milestone A decision points, and therefore, Pre-Milestone-A Cost Analysis will be required for these investment decisions

## “As Is” Practice

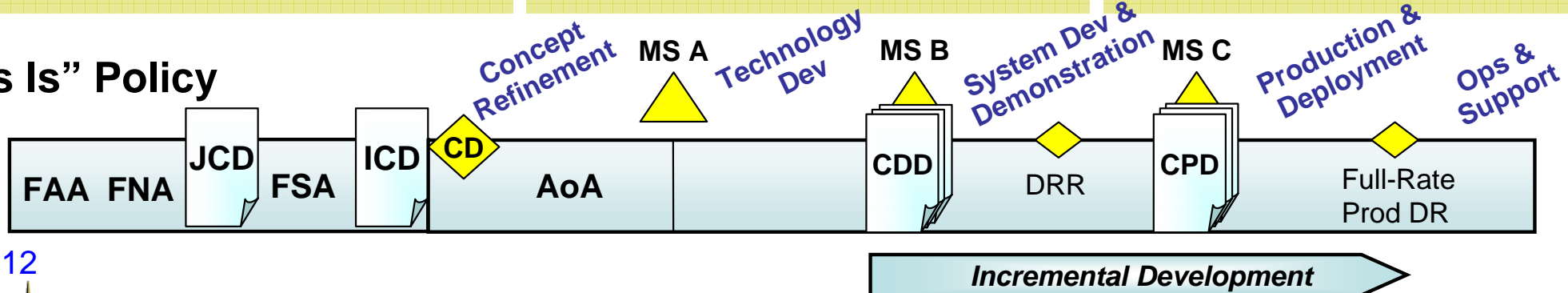


➤ At Milestone A, systems are not well-defined ---- Pre-Milestone-A analysis must be tailored to the information available at Milestone A

➤ For some, there is an expectation that analysis will be of a high level of detail that may not be appropriate for Milestone A

➤ Analysts, customers, and leadership must be receptive and adept at Pre-Milestone-A and capability-based analysis

## “As Is” Policy



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Graphic Source: Booz Allen Hamilton

Pre-Milestone-A Costing

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# Path Forward

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- Continue Development of the CKB
- Work To Gain Consensus for the System Capabilities Architecture, Enabling Department-wide, Capability-Based Cost Analysis
- Work To Establish a Cost Culture Where Leadership and Analysts Require Early Cost Information for Investment Decision-Making
- Utilize Enhanced CKB For Pre-Milestone-A Costing Efforts



# Back Up

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*Pre-Milestone-A  
Costing*

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