

"Achieving Acquisition Excellence Via Effective Systems Engineering"

*An Independent Perspective...
From a former PM & PEO*

NDIA 13th Annual Systems Engineering Conference

26 Oct 10

Purpose

To offer some thoughts on how System Engineering can (should) contribute as ...

*“The DoD seeks to **improve the acquisition process** and overall program execution of military systems, to provide greater, more effective and reliable warfighting capability, **at affordable cost and within reasonable schedules.**”*

Summary- Upfront bottomline

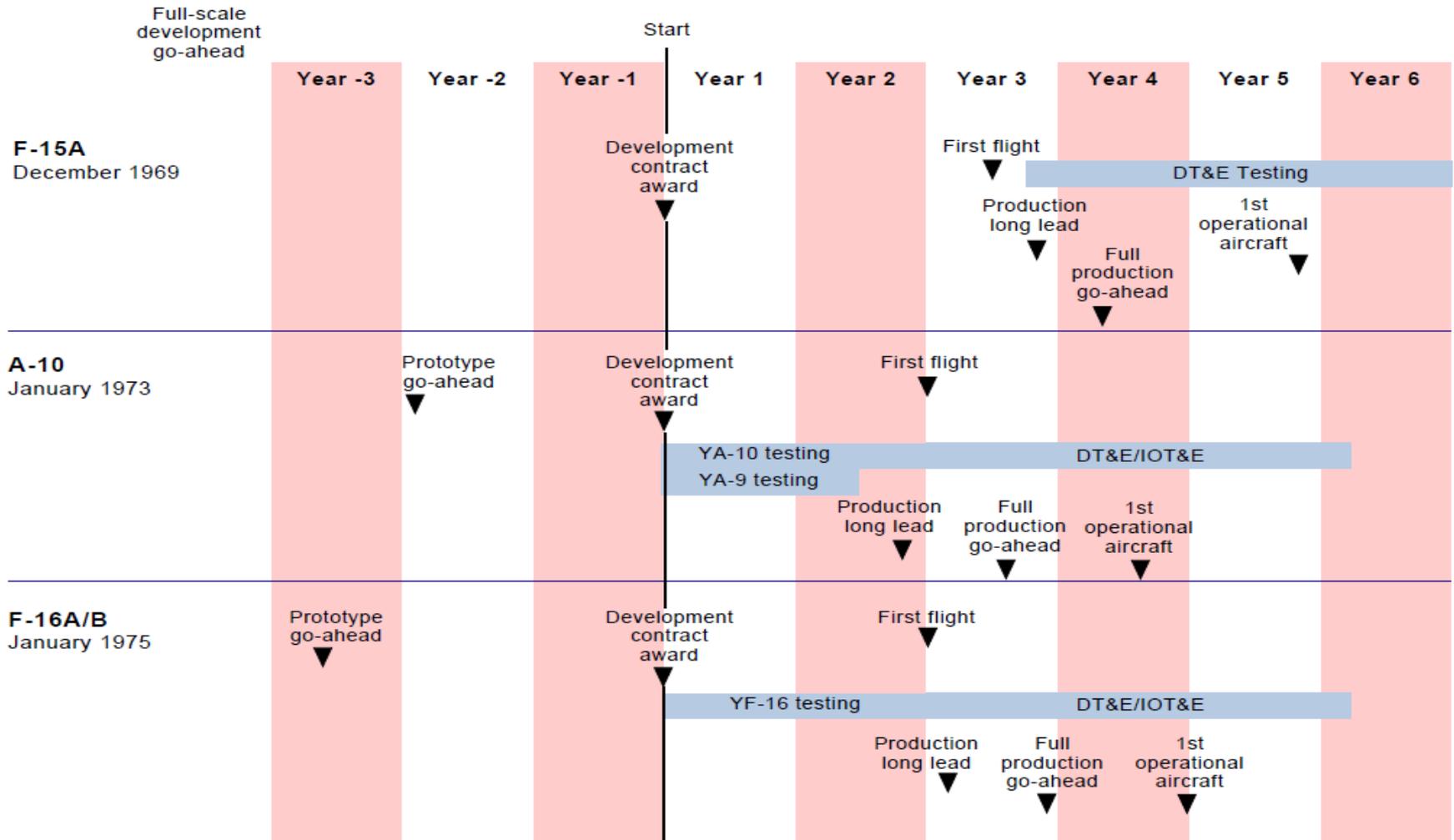
- Acquisition excellence can (only) be achieved with
 - An executable acquisition strategy
 - An enforceable (incentivized) contract strategy
 - Sufficient system engineering to support the above
- Sound System Engineering is necessary to establish
 - Adequate understanding of capability needs
 - Understanding of best available materiel solutions
 - Foundation for technical implementation of designs
 - Clarity of detail for producing and sustaining systems

What's past is prologue.

William Shakespeare

Acquisition Excellence

Development Schedule for Three Fighters



*It's ain't what people don't know that
makes them dangerous...*

it's what they do know that ain't so!

Unknown...but claimed by many!

Acquisition Process Improvements

- Key 5000.02 changes which impact program starts
 - Set capability needs based on achievable solutions
 - Plan evolutionary Acquisition Strategies
 - Complete system level Preliminary Design Review (PDR) prior to MS-B with two (or more) contractors
- Weapon System Acquisition Reform Act of 2009
 - Increased emphasis on Independent Cost Estimates
 - Established joint guidance for Director of Development Test & Evaluation and Director of Systems Engineering
 - Jointly report on adequacy of early involvement in developing program plans and acquisition strategies
 - Added **Development Planning** to Systems Engineering

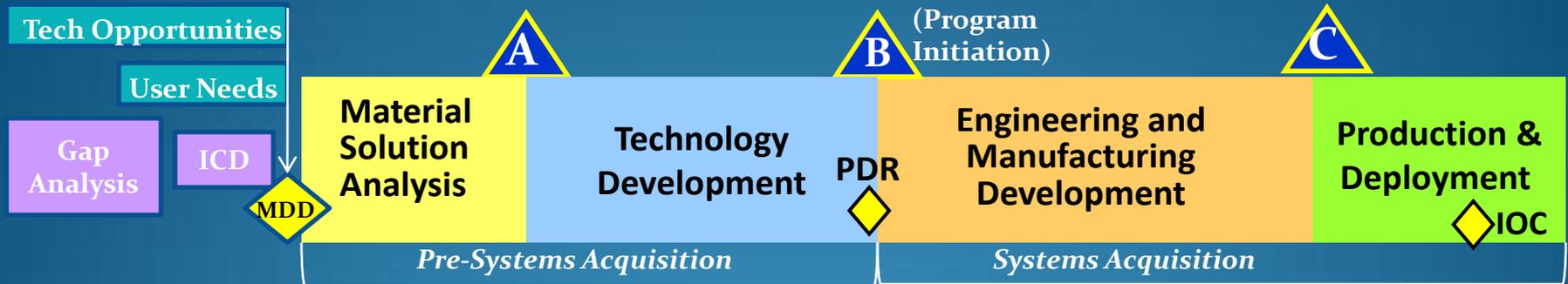
Start the right thing...right!

Acquisition Process Improvement

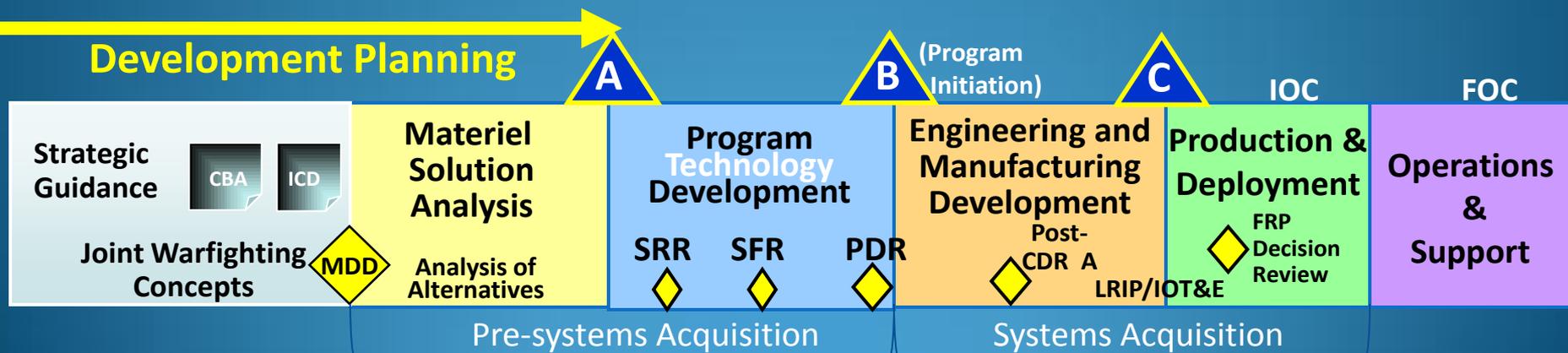
- AT&L Memo for Acquisition Professionals – 14 Sep 10
- Addresses several areas that re-enforce need for increased **Systems Engineering ...Development Planning**
 - Mandate **affordability** as a requirement (KPP)
 - Drive productivity growth through Will Cost & Should Cost management...by each element of program cost
 - **Eliminate redundancy** within warfighter portfolios
 - Make production rates economical and hold them stable
 - **Set shorter program timelines** and manage to them
 - **Increase the use of Fixed Price Incentive Firm Target (FPIF) contract type** where appropriate using a 50/50 share line and 120 percent ceiling as a point of departure
 - Reinvigorate industry's independent research and development and protect the defense technology base

Guidance to Reality

DoDI 5000.02 2 Dec 2008

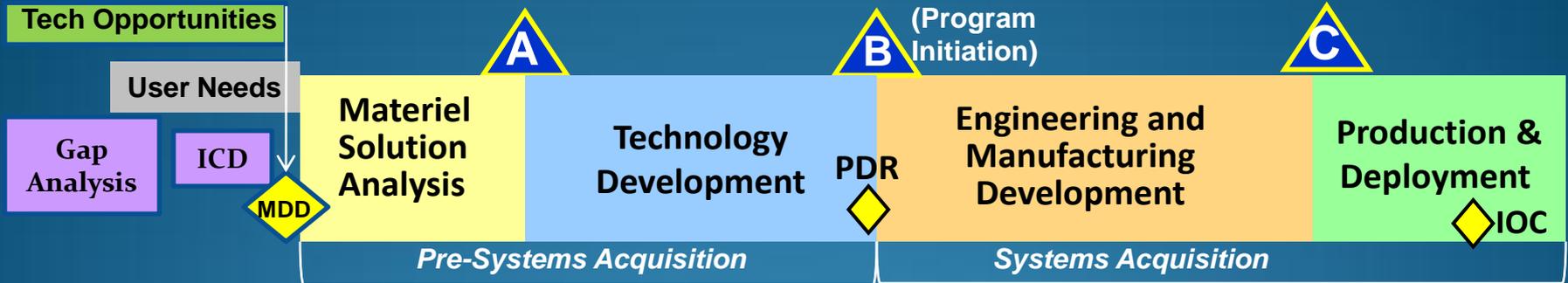


Current Operating Model (In the Practical Sense)

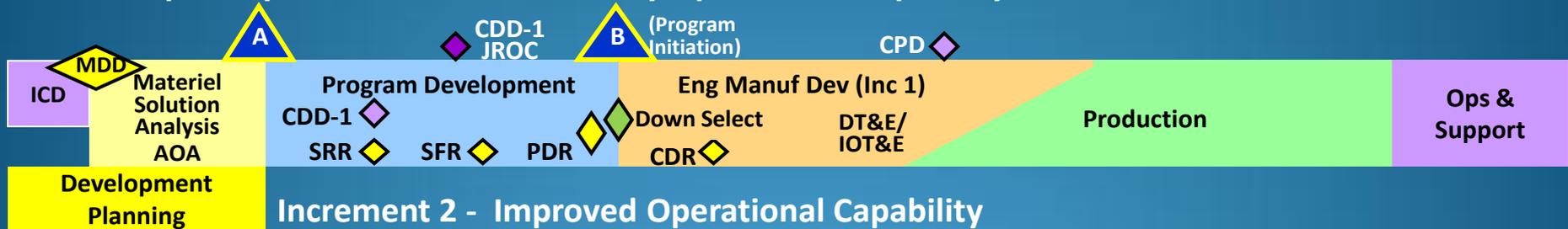


Guidance to Evolutionary Acquisition

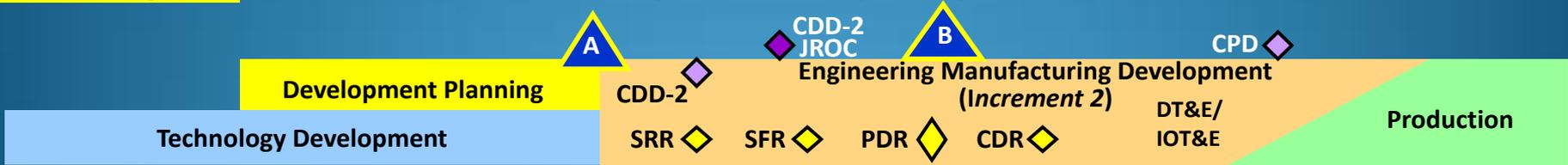
DoDI 5000.02 2 Dec 2008



New Capability Need – Increment 1 Early Operational Capability



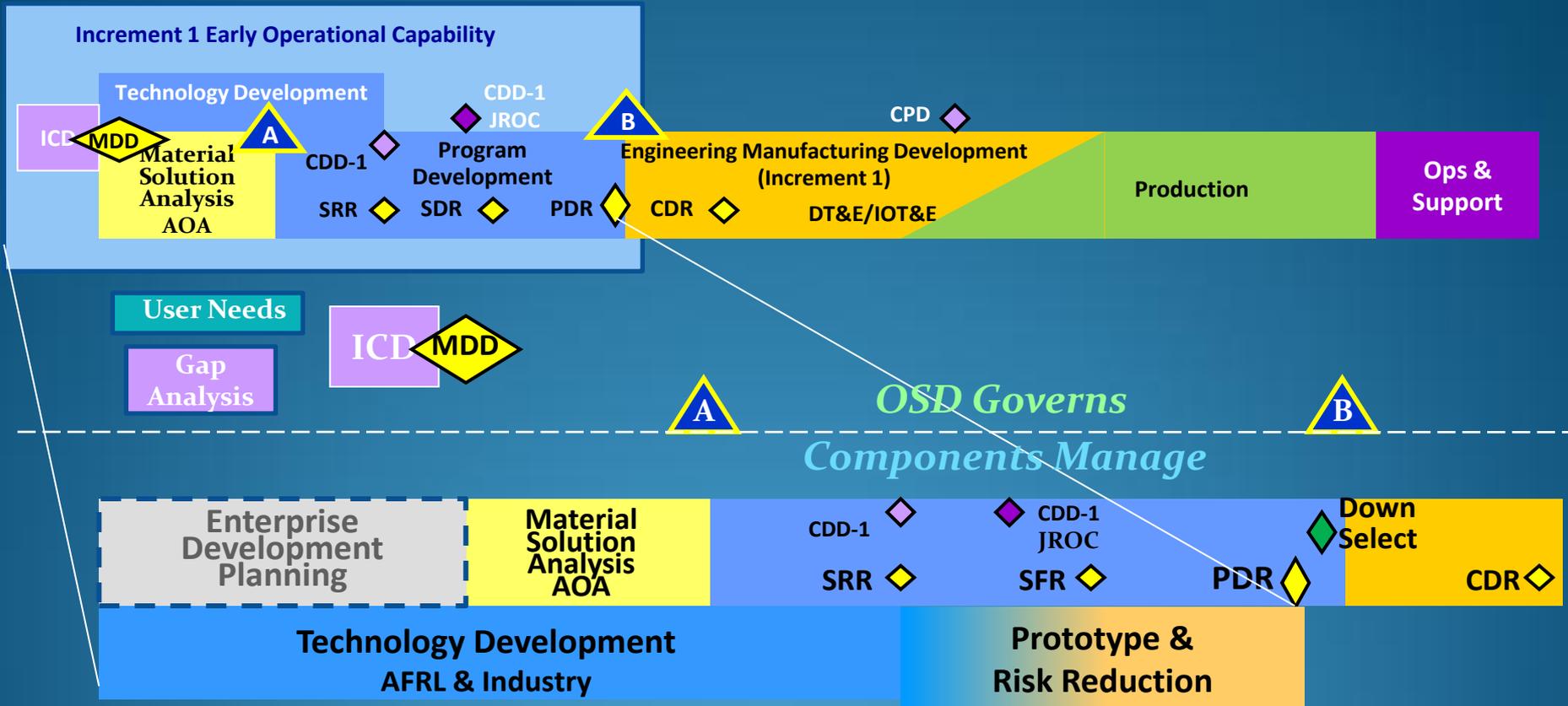
Increment 2 - Improved Operational Capability



Increment 3 – Advanced Operational Capability



Increment 1 Pre-Systems Acquisition



Enterprise Development Planning is the missing key element at Component Level

- Capability Based Analysis ...Support JCS Capability Based Assessments
- Technology Integration and Standardization
- Program Planning (Systems of Systems)
- Analysis of Alternatives support to services in conjunction with OSD

Development Planning Opportunities

Concept Development and Engineering

Focused SoS analysis and development of advanced systems concepts to support needs when they arise



Concept Evaluation and Refinement

Ensure optimal material solutions are identified with sound understanding of risks and opportunities

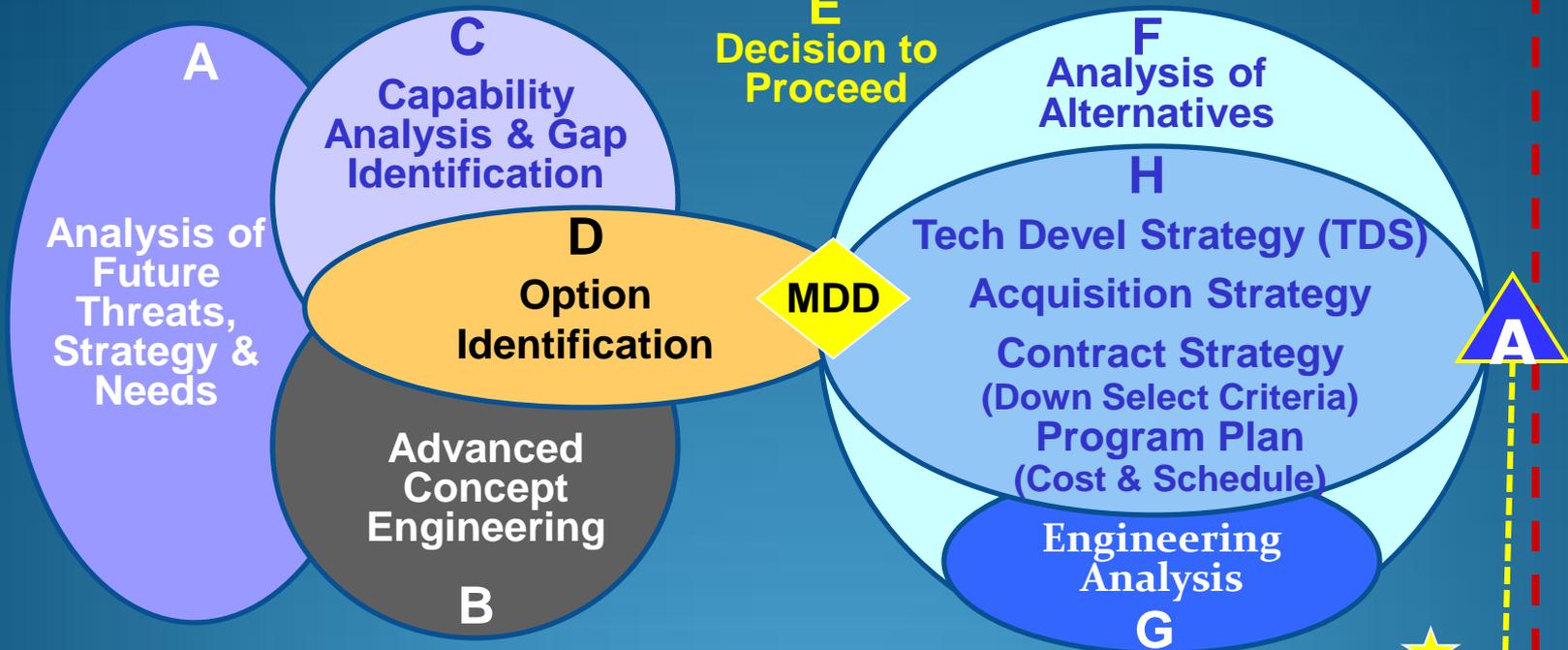


Systems Engineering Support for Increased Interaction between Users and Developers

Systems Engineering/Development Planning

Concept Exploration and Development

Concept Evaluation and Refinement



Strategic Guidance

Joint Concepts



Material Solution Analysis

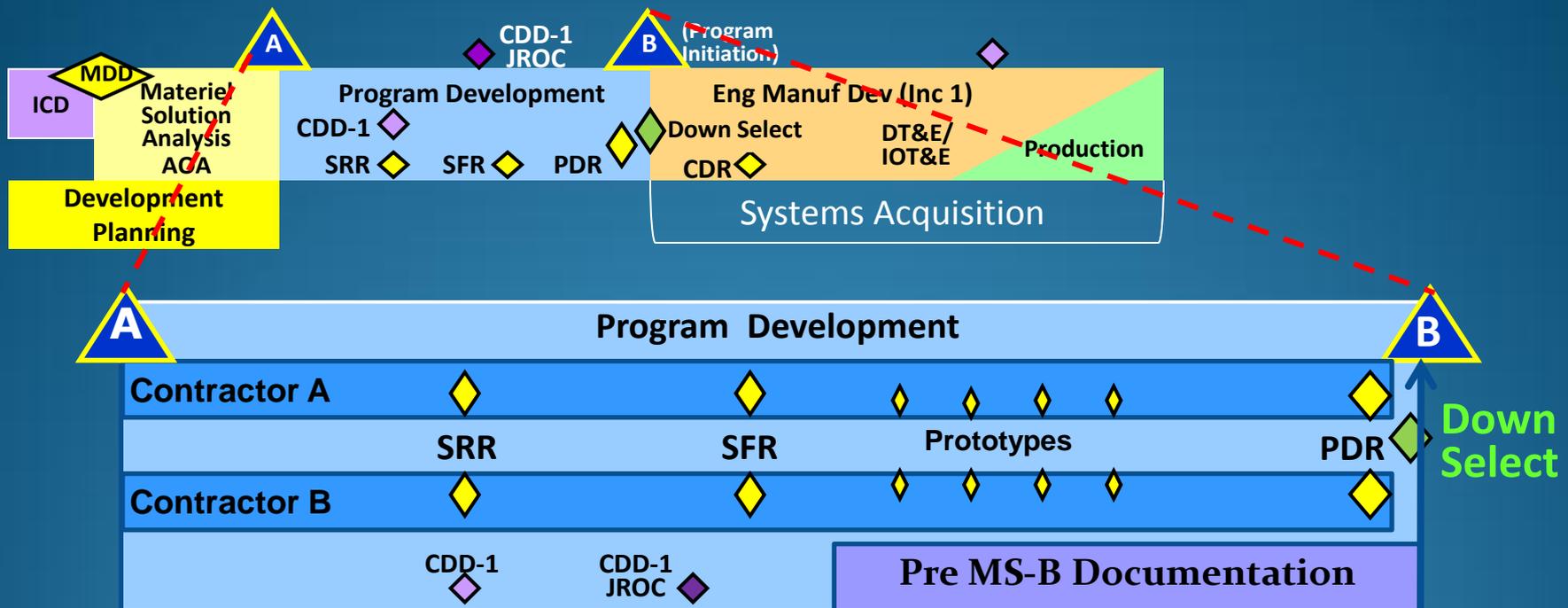


Technology Development

A: OSD/JCS/Intell/Components/Industry
B: Components/Materiel Centers/Industry
C: JCS/Components/Materiel Centers
D: OSD/JCS/Intell/Components/Mat Center

F: Materiel Center/ Selected Industry
G: Materiel Center/Selected Industry
H: Materiel Center/Selected Industry

System Engineering - Getting to MS-B



SRR

- CDD-1 / Draft SRD
- Design concepts
- Risks identification
- Contractor SEP
- Contractor TES
- Draft Program Plan
- Define Mgt systems (IMP/IMS/EVMS)
- Subcontractor Mgt Plan
- Design Cost Estimate

SFR

- Systems Requirements Document
- Functional design (CI Spec)
- Capability Verification Plan (CVP)
- Prototype Plan
- Approved SEP
- Draft TEMP
- Demo'd Mgt systems (IMP/IMS/EVMS)
- EMD program proposal
- Production Program Plan
- Updated Cost Estimate

Contract Down Select Strategy

CDD-1 becomes requirements baseline for SFR completion



SFR Gate (Knowledge Point) for Phase 1B

- *CDD establishes basis for*
 - *System Requirements Document (SRD)*
 - *System functional performance allocation*
 - *Capability Verification Plan (CVP)*
- *Contractors demonstrate ability to meet the SRD requirements with functional design and acceptable CVP to proceed to Phase 1B*

Four Gates to Contract Award

CDD- Establish Govt. capability needs

SFR- Complete Functional Design (CI) to meet CDD

PDR- Complete Detail Design (CI), reduce risk

Down Select- Acceptable Phase 2 proposal based on Phase 1 performance



PDR Gate (Knowledge Point) for Down-Select and MS-B

- *Contractor provides Configuration Item Design & CVP which satisfies the SRD (CDD) and meets the Down Select Criteria*
- *Contractor reduces risks as planned within budgeted resources*
- *Contractor demonstrates acceptable management performance in executing their Program Plan*
- *Contractor submits an acceptable Program Plan and proposal*

Summary

- Acquisition excellence can (only) be achieved with
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- System Engineering necessary to establish
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 - Foundation for technical implementation of designs
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"A pessimist sees the difficulty in every
opportunity;
an optimist sees the opportunity in
every difficulty"

- Winston Churchill

Backups

Evolutionary Acquisition

New Capability Need – Increment 1 Early Operational Capability



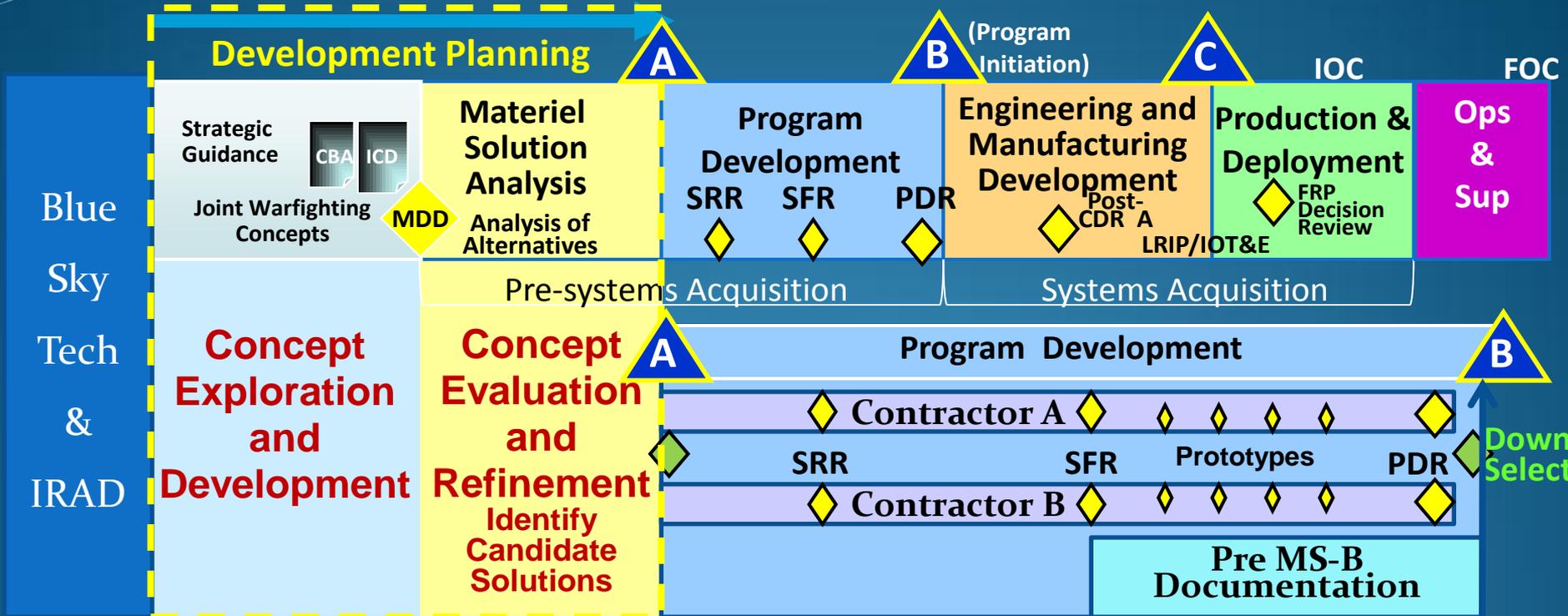
Increment 2 - Improved Operational Capability



Increment 3 – Advanced Operational Capability



Getting to MS-B



MDD

- Validate ICD approach
- Approve AoA Plan
- Technology Dev Plan
- Program Dev Plan
- Acq Strategy Framework
- Establish MS-A Criteria

MS-A

- Acq Strategy
- Contract Strategy
- Identify solutions & contractors
- Establish Down Select Criteria
- Confirm Cost & Schedule

SRR

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- Design concepts
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- Contractor SEP
- Contractor TES
- Draft Program Plan
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- Subcontractor Mgt Plan
- Initial Cost Estimate

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- Systems Requirements Document
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