A Decision-Focused Model for DoD Development Planning

A Step Toward Uncovering and Targeting the Real Program Shapers

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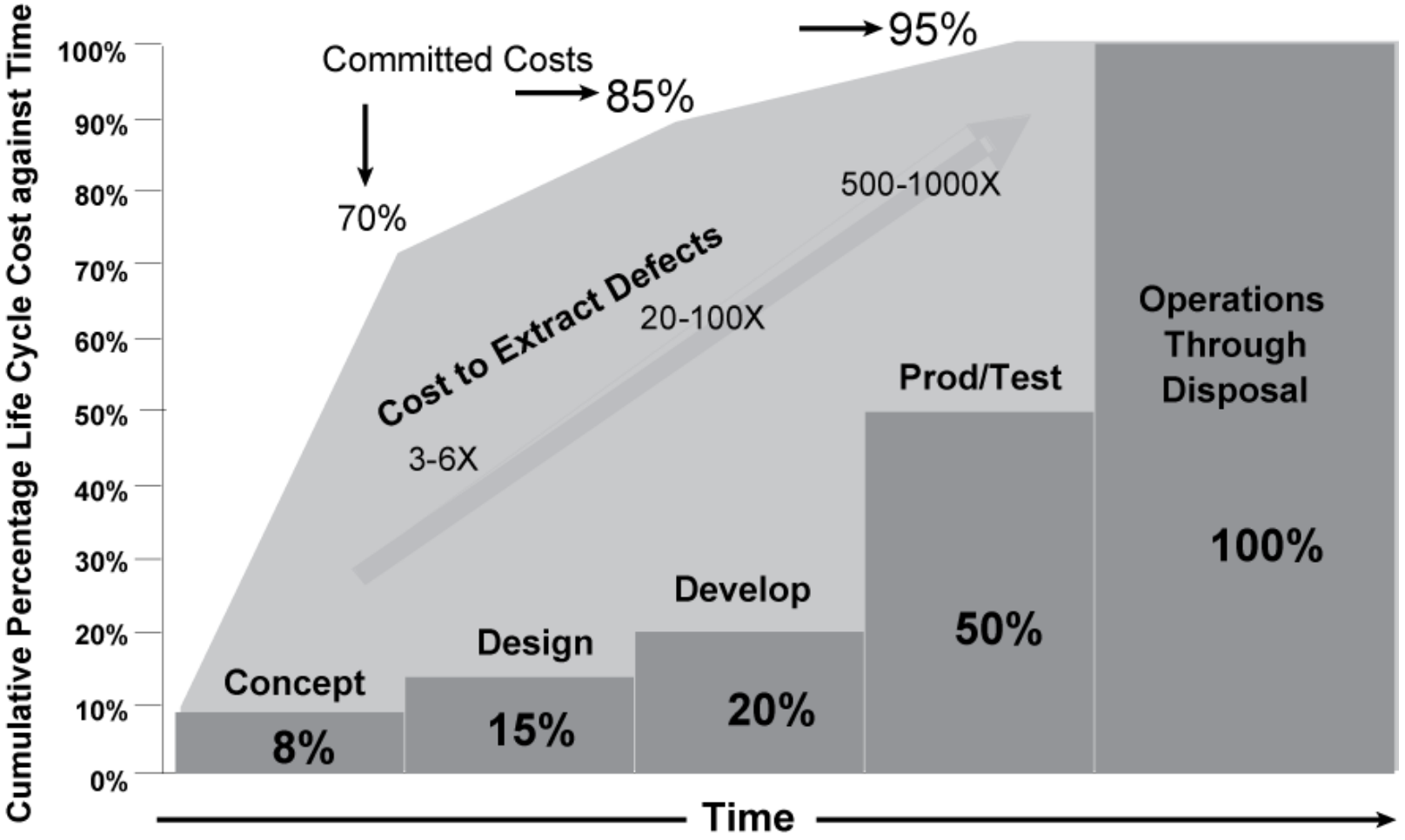
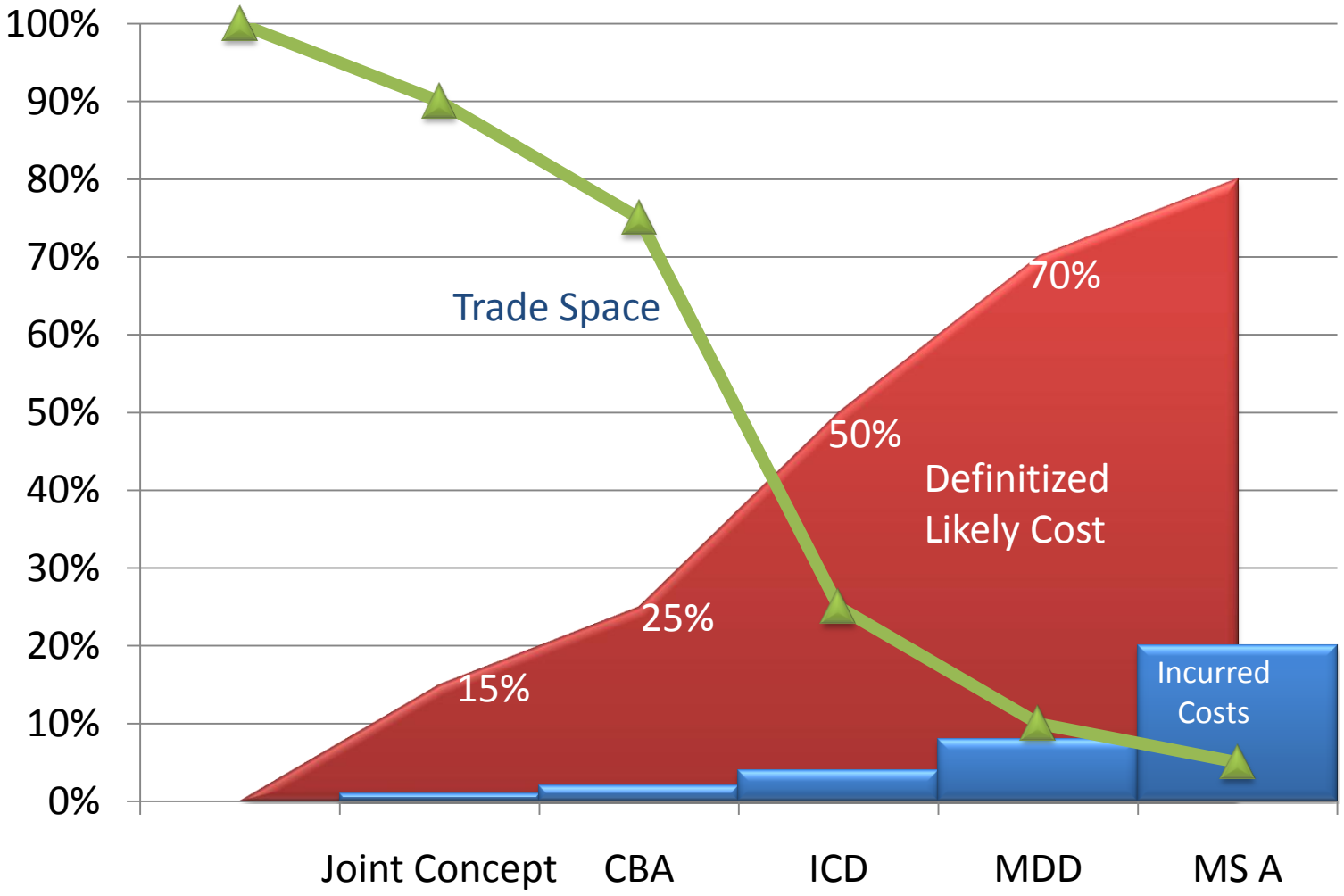
You've Seen This for SE Investment



Early Decisions Define Trade Space, Costs

Notional Analogy to SE Investment Graphic



Consider

- What determines which systems get built, funded, delivered to the warfighter?
- Can the developer community influence the selection of what it has to execute?

The “Hidden” Decisions

Activity Centers

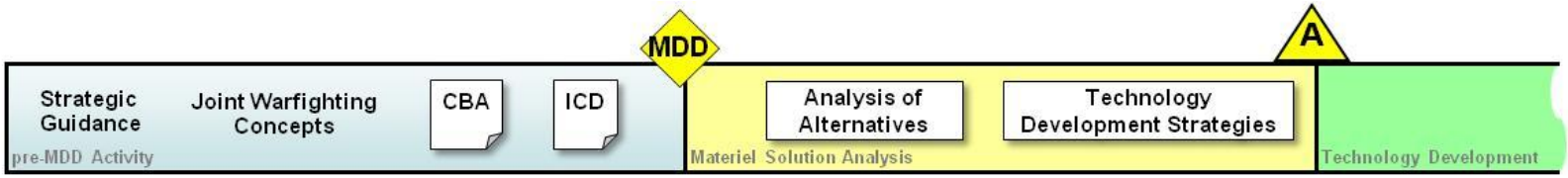
Industry (IR&D)

Service (MSA Phase Prep)

Service or COCOM (Concepts)

Sponsor (CBA)

ICD Writer



COCOM (Gaps)

CAPE (AoA)

MDA Decisions

Labs (S&T)

JROC (Reqts)

Possible Approaches to Development Planning

A. Concept-centric (e.g. air to ground laser)
   - Emphasizes alternative system descriptions
B. Mission Area (e.g. Global Strike)
   - Emphasizes investment plans for large sets of capabilities
C. Budget Cycle-Driven (e.g. FY12 POM)
   - Emphasizes annual budget submissions on S&T funding, other requests
D. Decision-focused (e.g. initiate MDD or not)
   - Emphasizes providing just the info needed by decision makers – to influence specific development decisions

Decisions Related to Joint Concept

1. Write joint concept or not?
2. **Scope of joint concept (missions, use cases, capabilities, functions)?**
3. **Constraints on Solutions?**

Decisions Related to Capability-Based Analysis (CBA)

4. Conduct a Capability-Based Analysis (CBA)—or not?
5. 90-day or 180-day CBA*
6. **Time frame for capability needs/gaps**
7. Scope of CBA?
8. **Questions, feedback on functional concept, joint concept?**
9. **What are the gaps (time frame, which capabilities, magnitude)?**
10. **Identify appropriate organizations to collaborate with**
11. **Choose appropriate subject matter experts (SMEs)**
12. **Determine if their work is "truly joint"**
13. **Which potential system concepts to consider?**
14. **Solution type: transformational, evolutionary, or information technology (IT)?**
15. **Materiel solution required?**
16. **Write initial capabilities document (ICD) or DCR for non-materiel options**
    - accept risks or not

*if formal JCIDS effort

Decisions Relating to Initial Capabilities Document (ICD)

17. **Scope? Which capabilities?**
18. **What levels of capability?**
19. **Which time frame to target for the capabilities (near term, far term)?**
20. **Connections to other Operational Concepts, systems? (interdependencies)**

Decisions by DoD Service Component

21. **Decide which operational concepts (CONOPS) to write, and their scope**
22. **Decide experiments, exercises (selection and scope)**
23. **How to respond to proposals, lobbying from industry**
24. **Sustain existing capabilities / systems, or increase capability?**
25. **Is this an incremental improvement?**
26. **Major Defense Acquisition Program (MDAP) or not?**
27. Who is Milestone Decision Authority (MDA)?
28. **How to set up, organize, staff Materiel Solution Analysis (MSA) activity**
29. **Choose the entity that will execute MSA phase (including choice of development center—e.g. Space or Air)**

Decisions – Combatant Commands:

30. Decide what comments to make on Joint Capabilities Integrated Decision System (JCIDS) capabilities documents written by others
31. **Decide what their annual integrated priority list (IPL) submission will be**
32. Decide what capabilities and attributes to *advocate* to the Joint Requirements Oversight Council (JROC)
33. **Decide what joint urgent operational need (JUON) to submit or sponsor***

Decisions – JROC (JCS J8) with DNI/IRB

34. Decide functional area taxonomy
35. **Initial Capabilities Document (ICD) demonstrates need for materiel solution?**
36. **Ask Milestone Decision Authority (MDA) to consider materiel solutions?**
37. **What advice to give to ICD writers / MDA**
38. What recommendations to present at Materiel Development Decision (MDD)
39. Level of Joint Interest?
    - determines level of validation at Service or Joint Chiefs of Staff (JCS) level
40. What priority to assign the capabilities?
41. New or updated ICD or Capability Development Document (CDD) for existing system's incremental improvement?

Decisions – OSD CAPE

42. **Approve/disapprove Analysis of Alternatives (AoA) Guidance**
43. **Is more info needed for the AoA Guidance?**
44. **Is there a Major Defense Acquisition Program (MDAP) to oversee?**
    - **Is it in scope of CAPE or not**
45. **Is there a Highly Classified Program?**
46. **Do we believe the Initial Capabilities Document (ICD)?**

MDA Decisions Around MDD

- Before MDD
  - **47. Sufficient information to hold the Materiel Development Decision (MDD) review?**
  - **48. If not, designate an office to conduct additional analysis to support MDD**
  - 49. Approve study guidance for that "additional analysis"
  - **50. Concur on AoA Study guidance?**
  - 51. Identify Stakeholders
- At MDD
  - 52. Approve/disapprove start of Materiel Solutions Analysis (MSA) phase
  - 53. Which DoD Component will execute MSA phase?

Decisions – Industry and Labs

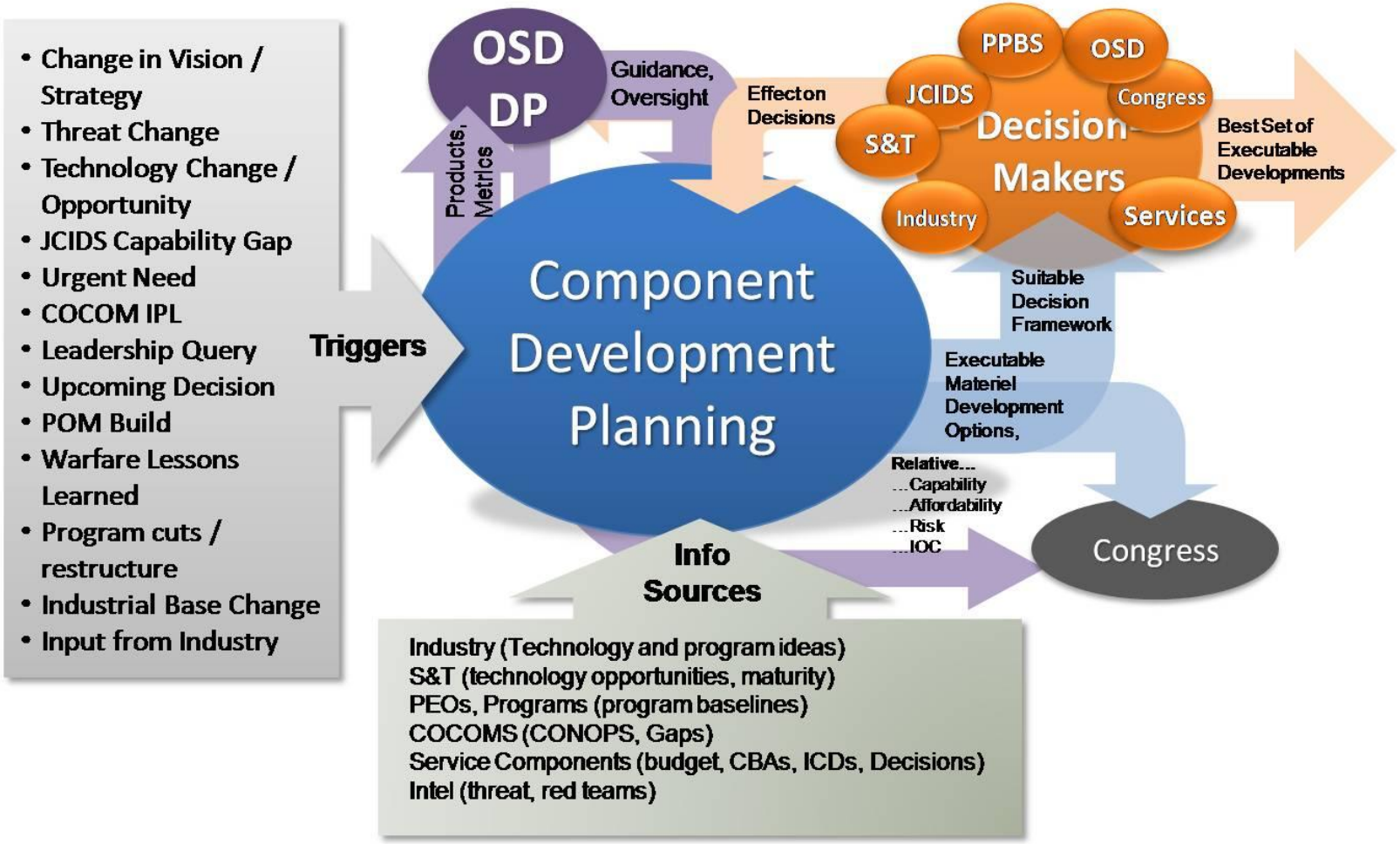
Industry

54. **IR&D Investments**
55. **RFP, BAA response or not**
56. **Corporate focus**

Labs

57. **Organization**
58. **6.1, 6.2, 6.3 Investments**

One View – A Decision-focused, trigger-based model



Comparison of Four Approaches

	A. Concept-Focused	B. Mission Area	C. Budget Cycle (POM)	D. Decision-Focused
Focus, Emphasis:	Near-term descriptions of alternative system concepts	Concepts and Technologies to cover a large set of capabilities	Annual budget submissions, cost profiles	Major decisions that affect what gets developed (pre-MDD, MDD, AoA, MS A)
Output:	Concept Descriptions	(6) Mission Area Development Plans (links technologies to concepts to capability needs)	RAPIDS (FYDP profile with paragraph), Some analyses	Alternative COAs compared in a tailored decision framework
Benefits:	Increased focus on concept maturity (cost, risk)	Can be more comprehensive Forces broader look Can ID synergies	Planners' inputs can be more relevant Forces decisions	Tailors the best of the other three models
Drawbacks, Challenges:	Difficult to keep program factors in view May de-emphasize architecture trade space Favorites Relevancy	Not as responsive (2 years to produce) Requires more resources Typically does not document trade space, rationale	May not address longer-term needs	Requires better connections with decision-makers Need to prioritize

Comparison of Four Approaches

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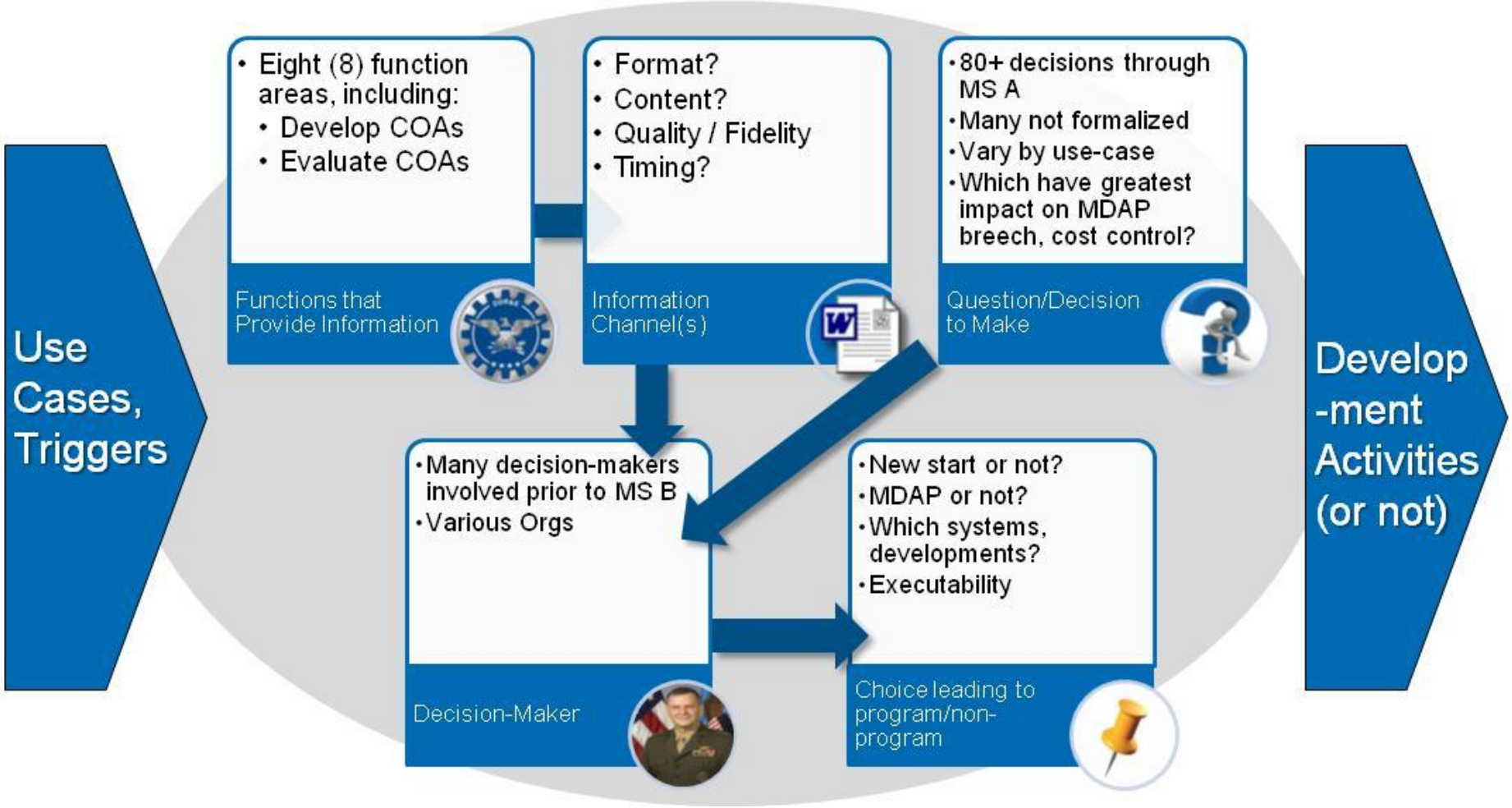
Implications for Development Planners

- Decisions are requirements, “use cases”
  - Can apply SE to organize around these
  - ID particular communication needs of each decision maker
  - Varying, tailored decision-aiding analysis products
  - Many opportunities—need to prioritize
- Increase relevancy
  - Avoid being too late to affect decisions
  - Proactively seek out decisions to inform
  - Expand customer base to market to

Future Work

Functional Concept / CONOPS for Development Planning



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BACKUPS

“Real” Program Shapers?

- Materiel or non-materiel
- Who is building it
- Large or small
- The Joint Concept
- The CBA
- Existing CONOPS
- Existing baseline infrastructure, architecture
- Mindset of people owning the program start information?

Questions

- What is the entire set of decisions prior to the Materiel Development Decision (MDD) that affect what gets into the Defense Acquisition System?
- What are the information needs of these decisions?

Context - “Terms Defined”

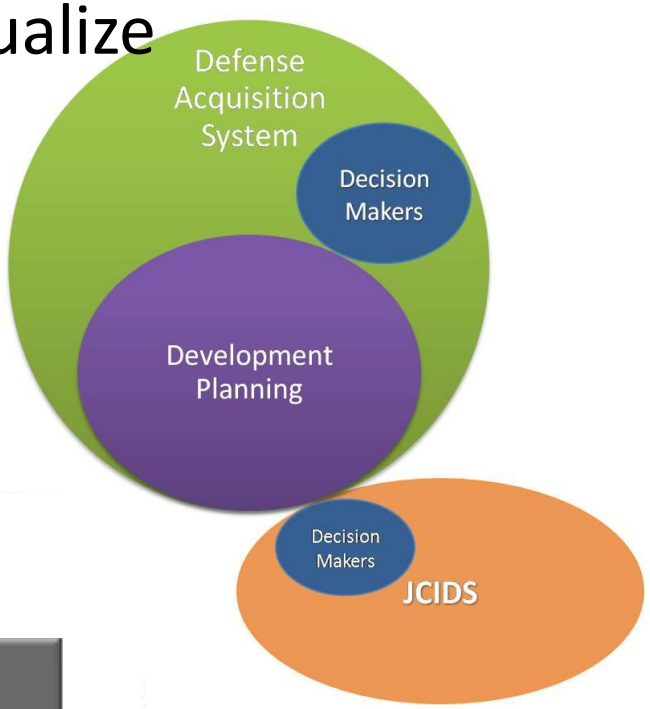
- “DoD”
  - DoD vs. non-DoD; not just OSD but within Service Components
- “Development Planning “
  - Development planning provides information allowing decision makers to select the best executable program candidates
- “Model”
  - Once you know your strategic objectives, it helps to have a functional concept or ConOps
- “Development Stakeholders”
  - Congress, OSD CAPE, JROC, Service Components, MDA, Sponsor unit, Developers, End Users, Suppliers (Industry, Labs)

Context – This comes from a SE approach

- 4.1 Stakeholder Requirements Definition Process
  - 4.1.2.1 ID Users and Stakeholders
  - 4.1.2.2 Define Needs
  - 4.1.2.5 Establish the Concept of Operations (ConOps)
- Then Functional Analysis
- Synthesis of a developer stakeholder workforce, tools, training, organization, interfaces, etc.

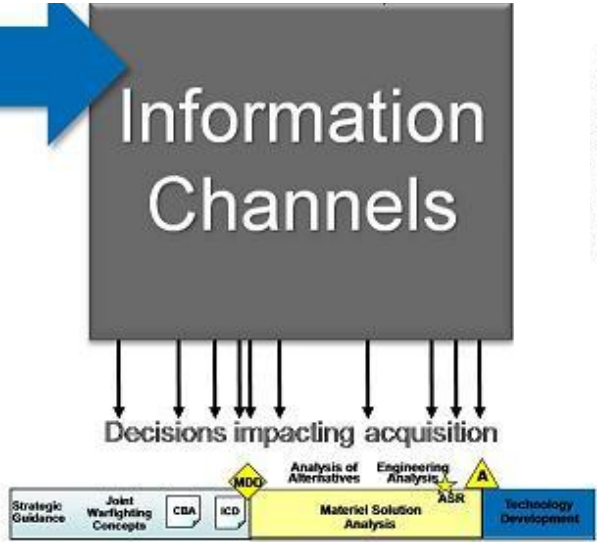
Decision-Focused DP Model

Other Attempts to Visualize



- Select Planning Focus (capabilities, opportunities, gaps)
- Understand target (future) environment for systems
- Understand present baseline capability / architecture / systems picture
- Develop Concepts, COAs
- Evaluate COAs
- Support Decisions
- Communicate
- Manage Planning Efforts

Functions that Provide Decision Information pre-MS A



Functional Concept Contents

- High level mission-oriented objectives
- Operational Boundaries
- Context Diagram
- Input / Output Events
- Environment, Concurrent Functions
- Interfaces
- Thread or sequence for each use case (ie scenario or trigger)
- Timelines
- Analysis on operational correctness of threads

Functional Analysis Outputs

What a full model of DP may contain

- Use Cases
- Dictionary
- Functional Flow Diagrams
- Interfaces
- Boundaries
- Inputs
- Outputs
- Controls