Portfolio Management Best Practices for the DoD, R&D and Acquisition Communities

Edson, Robert; Long, Nicole

Portfolio Management Best Practices: Observations from Industry

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ANALYTIC SERVICES INC

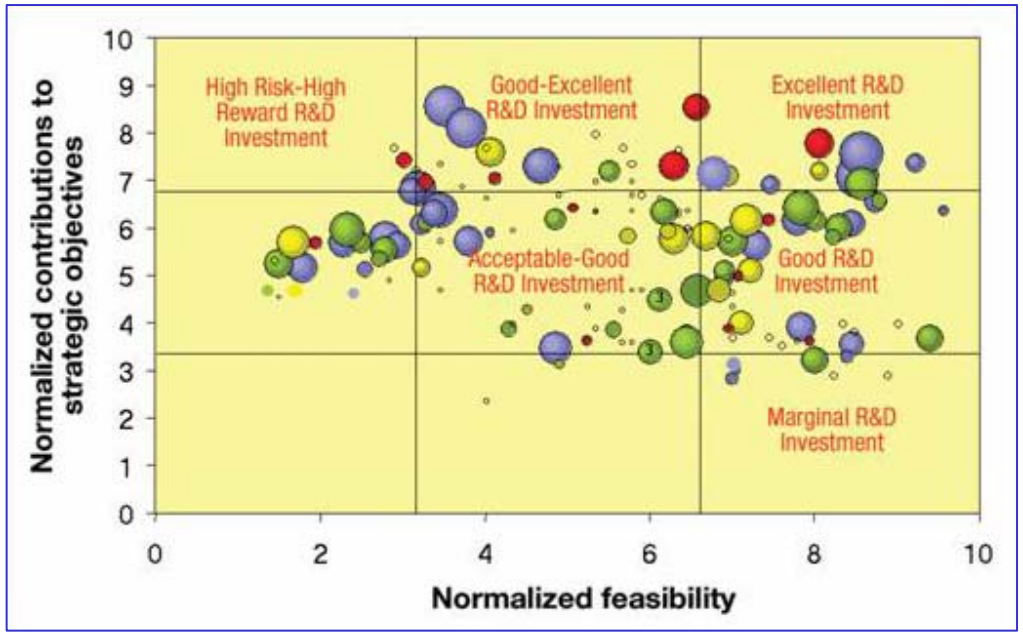
Outline

- Project Overview
- Portfolio Management Framework
- Evaluation Methods
- Critical Success Factors
- Comparison to DOD

Reviewed work is industry specific.
Challenge is translating to the Government Space.

Objective

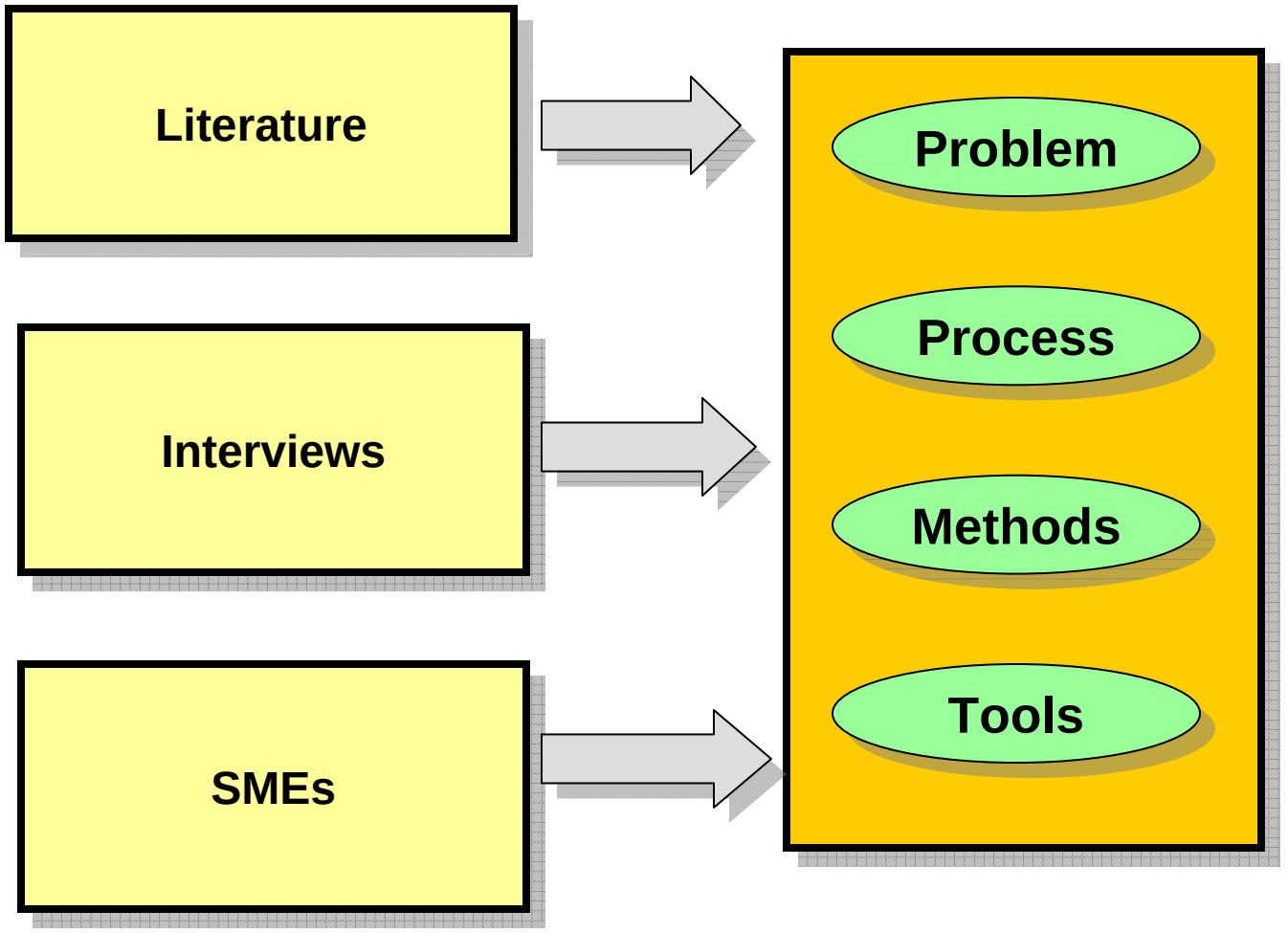
- Develop portfolio management tools, processes, and models
  - Evaluate industry portfolio management processes and best practices
  - Develop/integrate portfolio management tools and models for improved portfolio management performance within US federal agencies



Parmentola and Walker (2004)

An organization's portfolio management practices should be aligned with enterprise strategy and should include stakeholder participation.

Current Study Methodology



Literature (Sample)

35 Companies

Portfolio management in new product development: Lessons from the leaders--I
Robert G Cooper; Scott J Edgett; Elko J Kleinschmidt
Research Technology Management; Sep/Oct 1997; 40, 5; pg. 16

Portfolio management in new product development: Lessons from the leaders-II
Robert G Cooper; Scott J Edgett; Elko J Kleinschmidt
Research Technology Management; Nov/Dec 1997; 40, 6; pg. 43

205 Companies

Best practices for managing R&D portfolios
Robert G Cooper; Scott J Edgett; Elko J Kleinschmidt
Research Technology Management; Jul/Aug 1998; 41, 4; pg. 20

55 Evaluation Methods

A practical R&D project-selection scoring tool
Henriksen, A.D. and Traynor, A.J.
IEEE Transactions on Engineering Management, 1999; 46, 2, pp. 158-170

Portfolio Management Challenge (Example Problems)

- Department of Transportation
  - Research and Innovative Technology Administration (RITA)
    - Approximately two years old
    - Congressional mandate to demonstrate value-added of coordinated and efficient R&D activities
  - Current research managed by modal offices
    - Own agendas
    - Projects aimed at low level goals
  - No department wide strategy or authority
- ASD (Networks and Information Integration)
  - Charged with implementing capabilities based portfolio process
  - Capabilities enabled by 300 projects across all services
  - Lack coordination mechanism and authority

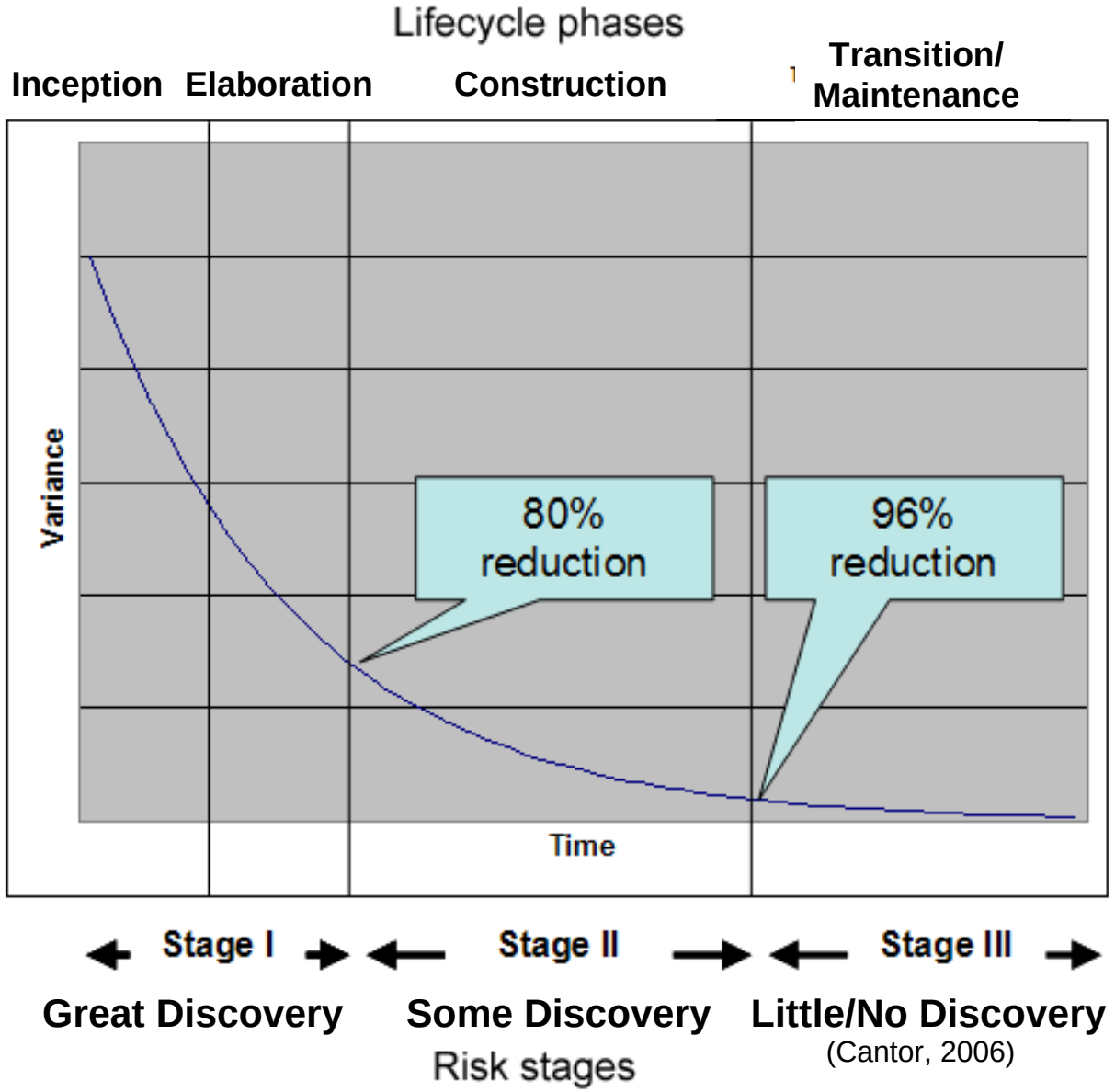
Consequences of No/Poor Portfolio Management

- Lack of focus
- Reluctance to kill projects
- Too many active projects
- Logjams in the process
- Resources and people spread too thin
- Increase of failure rates
- Products too late to market
- Lack of synergy

(Cooper *et al*., 2001)

Product/Portfolio Lifecycle

- Management process varies with phase in the lifecycle.
- Processes and tools should work towards maximum risk reduction.



(Cantor, 2006)

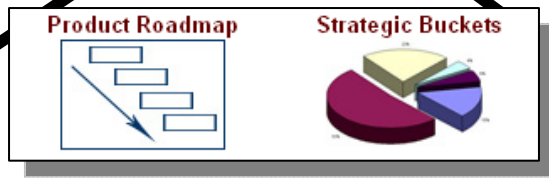
Portfolio Management Framework

1. Strategic Portfolio Decisions

Business Strategy & New Product Strategy

2. Governance Model

3. Tactical Project Decisions



4. Strategic Portfolio Decisions

- Project Reviews - Stage-Gate Process
  - Must pass "Must Meet" Criteria
  - Are scored on "Should Meet" criteria
  - Go/ No Go / Kill decisions made

Decisions & Adjustments

Product Status & Scores

- Portfolio Review
  - Holistic
  - Reviews all the projects together
  - Identifies strategic imperatives
  - Checks project priorities
  - Checks for portfolio balance

(adapted from Cooper *et al*., 2001)

(1) Business Goals

- **Enterprise goals essential**
  - **Strategic plan**
  - **Annual plan**
  - **Performance measures**
- **Drives portfolio goals**
  - **Maximize value**
  - **Achieve balance**
  - **Strategic alignment**

(Cooper *et al*., 2001)

(2) Governance Models

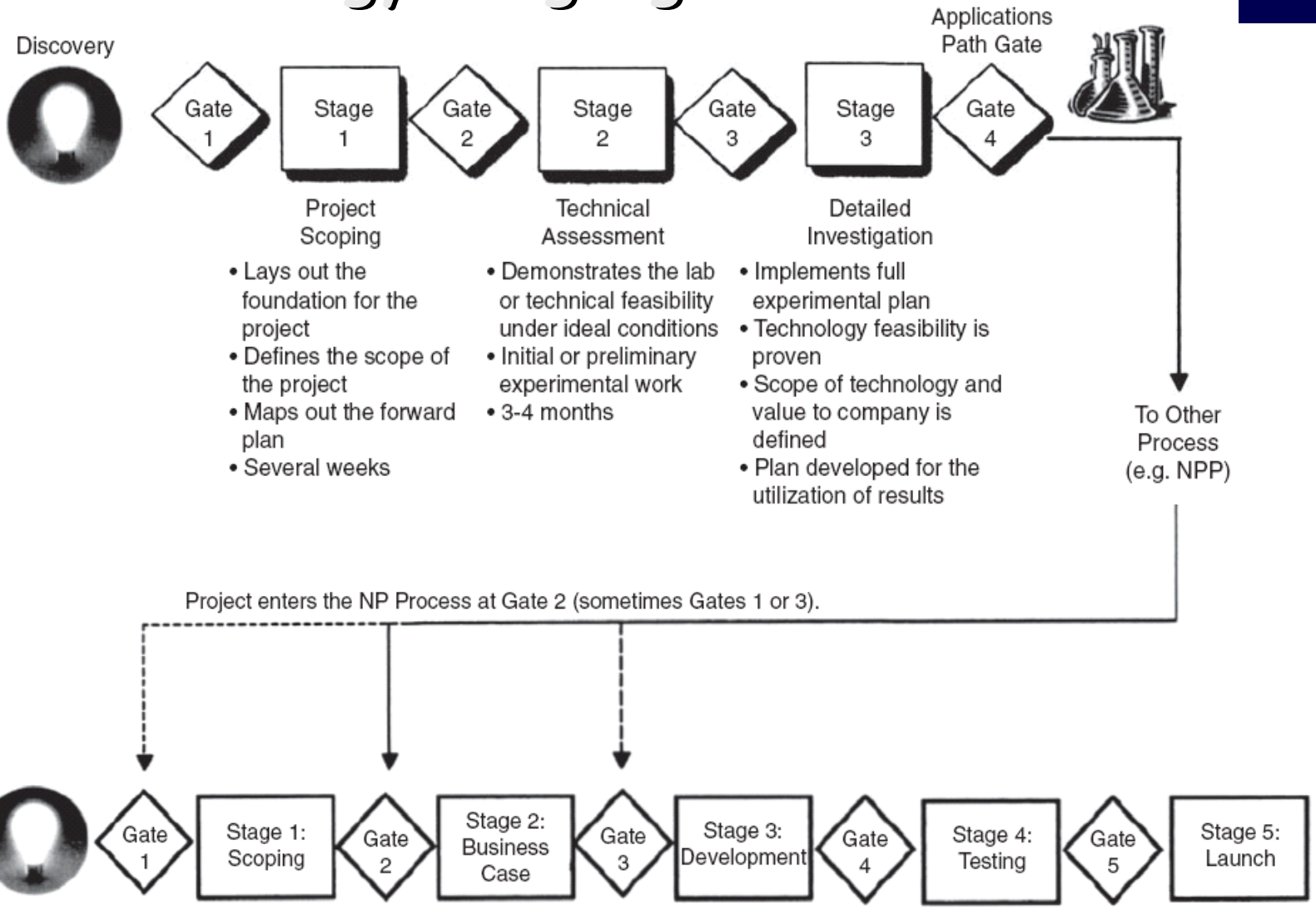
- Integrate practices to ensure that the enterprise's product development supports business objectives
- Governance characteristics (Cantor 2006)
  - Establishes organizational chains of responsibility, authority, and communication
  - Executes measurement and control mechanisms to effectively drive the organization
- Control loops/feedback an integral part of governance systems and the portfolio management process.

(3a) Project Reviews

- Critical Questions (Steele)
  - Who should be involved in program selection?
  - What kinds of information should be obtained?
  - What weight should be given to:
    - sources of various inputs?
    - individual variables?
  - How should conflicts be resolved?
  - How/to whom should results be given?
  - How much can changes in business or progress be accommodated?

When you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge of it is of a meager and unsatisfactory kind **(Lord Kelvin)**

(3b) Project Reviews
Technology Stage-gate Process



The Standard 5-Stage, 5-Gate Stage-Gate® New Product Process

 www.stage-gate.com

(4a) Portfolio Review – Maximizing Value of the Portfolio

- Maximize Value
  - Maximize the value of the portfolio of projects against one or more business objectives (e.g. profitability, strategy, acceptable risk)
- Appropriate Methods for Reaching Maximum Value:
  - Net Present Value
  - Expected Commercial Value
  - The Productivity Index
  - Options Pricing Theory
  - Dynamic Rank Ordered List
  - Scoring Models
  - Checklists
  - Paired Comparisons

(4b) Portfolio Review – Seeking the Right Balance of Projects

- Achieve Balance
  - Balance portfolio in terms of risk and return; short- and long-term projects; “small” versus “major” efforts; ongoing versus new projects; business units; etc.
- Appropriate Methods for Balancing the Portfolio
  - Bubble Diagrams
    - Risk-Reward
    - Market and Technical Newness
    - Market and Technology Risk
    - Market Segment vs Strategic Intent
    - Strategic Impact Matrix
  - Histograms, bar charts and Pie Charts
    - Capacity Utilization
    - Project Timing
    - Project Types
    - Markets, Products, Technologies
    - Customer Needs

(4c) Portfolio Review – A Strong Link to Strategy

- Strategic Alignment
  - Operationalize development mission, vision, and strategy to drive portfolio management processes and project selection
- Appropriate Methods for Aligning Portfolio with Strategy
  - Top-down approach
    - Technology Roadmaps
    - Strategic Buckets
    - Platform Projects
    - Target Spending Levels
  - Bottom-up approach
    - Strategic criteria built into project selection
  - Hybrid Top-down/Bottom-up Approach

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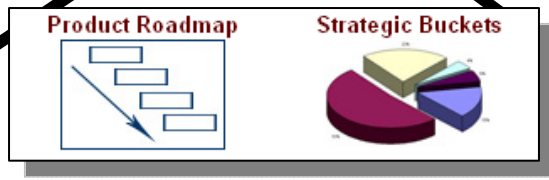

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Evaluation Methods

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Evaluation Methods

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Evaluation Methods

(adapted from Cooper *et al*., 2001)

Evaluation Techniques Overview

- **Economic Models—**Evaluation and selection as a traditional investment decision
- **Probabilistic Financial Models—**Modified economic considerations which account for risk and uncertainty
- **Scoring Models and Checklists—**Subjective project evaluation based on strategic variables
- **Behavioral Approaches—**Designed to bring Portfolio Management Personnel to a consensus
- **Mathematical Optimization Models—**Mathematical routines that attempt to find the optimal set of projects in order to maximize some objective
- **Decision Support System—**Model that allows Portfolio Management intervention and interaction
- **Mapping Approaches—**Methods to visualize the overall portfolio structure against multiple variables
- **Peer Review-** Evaluation through independent SME evaluation

Critical Success Factors

- Portfolio management practices must be aligned with the enterprise strategy.
- Stage-gate reviews are essential at both the project and portfolio level.
- Project evaluation conducted first with strong “Go/No Go” decisions; “Go” and “new” projects then feed into the portfolio management activity.
- Decision making processes must be robust and consistent.
- Strong senior management ownership and involvement essential; particularly in decision making.
- Strong metrics and measurements necessary to support evaluations.

Discussion: Application to DOD

- DOD has many to one, or many to many project to capabilities portfolios.
- DOD has multiple, independent, resource owners (the Services) targeting separate products, but in some case working to satisfy the same capabilities.
- DOD decision making distributed across services and agencies, potentially with conflicting goals.
- Valuation and monetizing projects and portfolio content within the DOD difficult. Makes use of some evaluation methods a challenge.
- Involvement of senior decision makers time limited; therefore management tools and processes must be quickly and easily understood.

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