Traditional Risk Management

- **RISK** is a measure of potential inability to achieve overall program objectives within defined **cost**, **schedule** and **technical** constraints

- **RISK MANAGEMENT** is the act of dealing with **RISK**

SOURCE: Risk Management Guide for DOD Acquisition, V2.0, June 2003
The Times … They are Changing

Stovepipe systems seek risk avoidance …

Controlled Environment

Risk Avoidance

Net-Centric Transformation

… An impossibility in era of Net Centricity – risk must be an accepted fact of life

Net Centric World Wide Web

Old risks have not disappeared and new risks abound
## Net-Centric Transformation

<table>
<thead>
<tr>
<th>Old Information Systems World</th>
<th>New Net-centric World</th>
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<tbody>
<tr>
<td>Systems oriented</td>
<td>Services oriented</td>
</tr>
<tr>
<td>Specific design requirements process (dream and develop)</td>
<td>Functionality-based, “close enough” (see and use)</td>
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<tr>
<td>R&amp;D from scratch</td>
<td>Greater use of COTS, especially for enterprise services</td>
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<tr>
<td>Years spent developing entire system</td>
<td>More focused on sustainability and scalable deployment</td>
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<td>Tightly integrated functionality</td>
<td>Dynamic functionality through composability</td>
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<tr>
<td>Test against perfection</td>
<td>Security built in, with balanced risks</td>
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<td>System-Level Security</td>
<td>Living and adaptable</td>
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<tr>
<td>Obsolescence and disposal</td>
<td>Collaborative governance</td>
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<tr>
<td>Prescriptive Governance</td>
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Net-Centric Environment raises different risk management challenges
How Is Risk Management Conditioned by Net-Centric Transformation?

- Emphasis on the use of COTS
- Use of spiral, incremental capabilities development strategies
- Dynamic test environments
- Warfighter need for “early-to-market” product delivery
- Abbreviated Milestone development process
- Immediacy to vulnerability exploitation via web

All the above and more increase pressure on risk management mitigation strategies and tactics
Risk Management Process

Risk Identification → Risk Assessment → Risk Prioritization → Risk Mitigation

How will Risk Management differ in the Net-Centric Environment?
Notional Risk Framework for Net-Centric Environment

- Technological Risk
  - Standards maturity
  - Vendor products stability and interoperability
  - Scalability
  - Security challenges

- Deployment/Provisioning Risk
  - Predicting results of service composition
  - Testing and certification of services
  - Service Release management
  - Blend of managed services from others and own-provided services

- Business Risk
  - New contracting models and incentives (not LSI)
  - Cost projection not focused on development/fielding cost
  - Cost-recovery models for services
  - Market effect and agility to mature services based on usage
  - Do we understand the marketplace? Who is offering competing services? How much usage is “our” capability module getting?

- Organizational Risk
  - System engineering process – adapted to services model
  - Risk management process – aligned with outcomes
  - Governance process
  - Life cycle management
  - Staffing / skills / experience matches
  - Right partnerships? With industry? With other government organizations?

Challenge: Not Just Cost, Schedule, Performance ...

Capability-Based Acquisition
- Focus on outcomes linked to operational use
- Less constraining requirements place more decision options with program

Systems Engineering for Net-Centricity
- Concurrent engineering of multiple material solutions/delivery models
- Rapid fielding, agility, and service refresh must be enabled (not constrained)
Traditional approaches still apply
- Probability of occurrence
- Severity of impact of occurrence

But, …
- Complexity or displacement may mask effective valuation
- “Contract, buy, build” decreases emphasis on development control factors (schedule and cost) and increases emphasis on performance and utility
- We must learn to quantify risk in the face of more degrees of uncertainty
  - Looking for sources of lessons learned
  - Early adopters, pilots, commercial lessons learned, academic study?

Challenge: Credible valuation must be the foundation – We don’t know what we don’t know
Prioritization: Use of a decision framework that identifies and prioritizes risks, such that

- Risks with greatest impact and the greatest probability of occurring are handled first

But …

- Expand risk model elements
- View multi-dimensionally
- Devise new metrics for prioritizing risk
- Results may revise material solutions and Acquisition Strategy
Prioritization identifies highest-impact targets for risk mitigation

Decision-makers must then lay out options for risk mitigation and consider resource investment, before choosing a course of action

- **Traditional Risk Mitigation options**
  - Risk avoidance (traditionally, our first option)
  - Risk transfer/distribution to another party, e.g. contractor
  - Reducing negative effect of risk
  - Accepting consequence of risk

- **New business models may offer new options, or change our perception about acceptable mix of options**
Dynamics of net-centric environment put different pressures on risk management

Old risks have not disappeared and new risks abound

Emphasis shift from risk avoidance to risk management

New dimensions to consider beyond cost, schedule & performance

Need to continually revisit key decisions to assure they still apply

Unknowns still to be investigated, studied and discussed

Challenges remain in understanding complexities and implications of net-centric and service oriented architectures …
Challenges

- Risk Identification: Expanding the framework beyond Cost, Schedule, Performance …
- Risk Assessment: Credible valuation is the foundation - We don’t know what we don’t know (but we need to learn quickly!)
- Risk Prioritization: Still need to optimize ROI – CBA demands that we also link risks to materiel solutions strategy
- Risk Mitigation: Risk-averse culture must balance risk mitigation and risk assumption