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# **Application of Risk Management in a Net-Centric Environment**

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# 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 of dealing with **RISK**





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# The Times ... They are Changing

Stovepipe systems seek risk avoidance ...

Controlled Environment



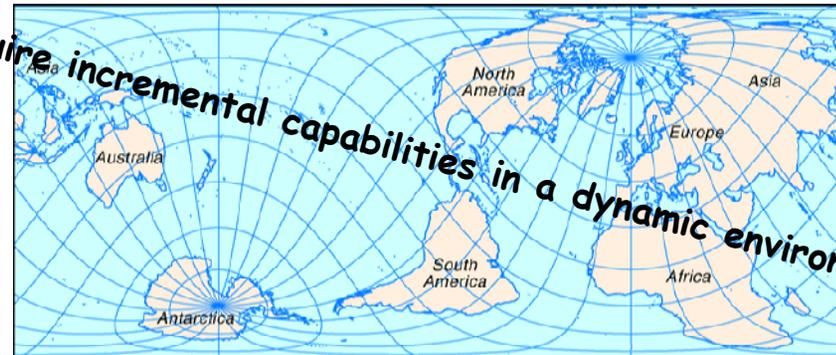
*Build turn-key systems in a static environment*

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



*Acquire incremental capabilities in a dynamic environment*

Risk Management

Old risks have not disappeared and new risks abound



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# Net-Centric Transformation

- **Old Information Systems World**
  - Systems oriented
  - Specific design requirements process (dream and develop)
  - R&D from scratch
  - Years spent developing entire system
  - Tightly integrated functionality
  - Test against perfection
  - System-Level Security
  - Obsolescence and disposal
  - Prescriptive Governance
- **New Net-centric World**
  - Services oriented
  - Functionality-based, “close enough” (see and use)
  - Greater use of COTS, especially for enterprise services
  - More focused on sustainability and scalable deployment
  - Dynamic functionality through composability
  - Security built in, with balanced risks
  - Living and adaptable
  - Collaborative governance

**Net-Centric Environment raises different risk management challenges**



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# 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**



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# Risk Management Process



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



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# 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?

**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)



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# Risk Assessment for Net-Centric Environment

- **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**

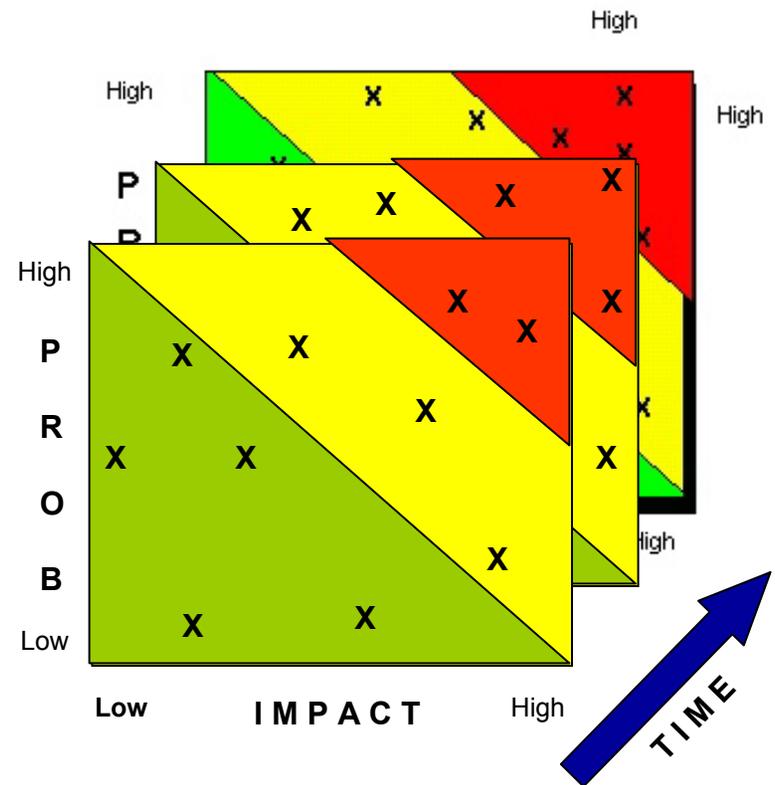


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# Risk Prioritization for Net-Centric Environment

- **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



**Challenges: Optimize ROI / Link Risks to Strategy / View risks in aggregate**



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# Risk Mitigation for Net-Centric Environment

- **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**

**Challenge: Finding new balance between risk mitigation and risk assumption**



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# Summary

- **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 ...**

**Net-Centric Risk Management process ...  
Challenges to address**



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# Challenges

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- **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**

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