Future of System and Software Engineering Project Management and the CMMI

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Agenda

- Storms of the 80s
  The software crisis and birth of the Consortium (1985)

- Storms of change today in
  – Customer
  – Industry
  – Technology
  – Society

- Future of Systems and Software Engineering Project Management and the CMMI
  – Top Six Predictions

“Perfect Storm” Event, October 1991
National Oceanic & Atmospheric Administration
Successful programs are achieved because problems were overcome.
Market Dynamics

The emerging dynamic is to address both sides, and do so with compressed delivery schedules.
Federal Procurement Legislation

1990
Chief Financial Officers (CFO) Act

1993
Government Performance and Results Act (GPRA)

1994
Federal Acquisition Streamlining Act (FASA)

1994
Government Management Reform Act

1995
Paperwork Reduction Act

1996
Federal Acquisition Reform Act (FARA)

1996
Clinger-Cohen/Information Technology Mgmt Reform Act (ITMRA)

1996
Federal Financial Management Improvement Act (FMFIA)

1998
Government Paperwork Elimination Act (GPEA)

1998
Federal Activities Inventory Reform Act (FAIR)

2002
Homeland Security Act

2002
E-Government Act (Includes FISMA)

Legislation changed not merely the law, but also has changed the customer’s mindset
Army FCS: Network Centric Warfare

From This...

- Small Unit UAV
- Robotic Direct Fire
- Robotic NLOS Fire
- Manned C2/Infantry Squad

Hundreds of Systems Interoperating in the Battlefield

To This...

- Network Centric Distributed Platforms
- Other Layered Sensors
- Distributed Fire Mechanisms

Exploit Battlefield Non-Linearities using Technology to Reduce the Size of Platforms and the Force
Society Drivers: Bimodal Demographics (Space Industry)

Average Space Industry S&E Workforce Age Distribution

Fewer New Starts and Program Uncertainty Make It Difficult to Both Attract and Retain Essential Talent

Source: Lockheed Martin (0004305-001: AIAA SE Workforce Data. Frank Cappuccio VP & GM Skunk Works)
Innovation Complements Negotiation

**Traditional Risk-Reward**

**Contemporary Risk-Reward**

*Innovation is the key to manage risk-reward in the government market*
The Future Project Management Challenge

Navigating the “Green Space”

Risk-Reward Preferences

Increasing gap between Industry’s acceptable risk/reward ratios (dashed line) and the reality of the marketplace (solid line).

The “Green Space” defines the area where industry initiatives must provide a payoff by reducing risk and/or increasing reward.

Acquisition changes based on previous legislation have introduced new levels of risk.

Source: Nidiffer and Doland, IEEE Software, Sept/Oct 2005
What Got us Where We Are
Won’t Necessarily Get us Where We Need to Be
1. We’re different!
2. Our customer doesn’t care
3. We didn’t bid the extra activities
4. Our project is too small
5. We have to follow our Prime’s (or customer’s) policies
6. Doesn’t apply to our kind of work
7. We already have a set of processes and it’s too hard to change
8. It doesn’t help me do my job better
9. What is the ROI?

10. Change is good – you go first!

Source: Linda A. Mills, Sector Vice President, Northrop Grumman, 2004, SSCI Member Forum
Maximizing Enterprise Potential

How can I continue to improve?

How can I become world class?

A race, a journey, a way of thinking, never a destination!
The Bottom Line

Process improvement should be done to help the business—not for its own sake.

“In God we trust, all others bring data.”
- W. Edwards Deming
Future of Systems and Software Engineering Project Management and the CMMI – Top Six Predictions

• Evidence exists that some organizations with high maturity ratings have not perform to that maturity on major programs*
  – Staged representation is the predominante CCMI representation (4 to 1) and is often the initial choice due to its binary visibility
  – Continuous representation offers an organization an opportunity to improve several process areas that are closely aligned to the organizational business objectives

• Over time, the Continuous representation will gain both customer and supplier predominance due to its more direct relevance to project performance
  – An emphasis will be placed on providing training/guidance material to program managers on how to achieve CMMI benefits
  – RFP Language in Sections L and M will be crafted to better support the use of CMMI

*Source: NDIA Web Site, Summit on CCMI Use in DoD Programs, Aug, 2005
Future of Systems and Software Engineering Project Management and the CMMI – Top Six Predictions

• While software is the critical infrastructure within infrastructures, we live in a systems of systems world
  – We need to manage our project from a systems perspective.
    • CMMI created from a variety of prior discipline-specific “maturity models” (software, systems engineering, etc)

• A key focus of CMMI will continue to be refine to focus on program management from a systems perspective

• Needs, which are being addressed, exist to extend CMMI for acquisition and for diverse environments.
  – CMMI, in general, is focused on development

• CMMI extensions (acquisition, service environments, etc) will provide updates to the Project Management process areas among others
Future of Systems and Software Engineering Project Management and the CMMI – Top Six Predictions

• We will continue to see good growth in demand for CMMI—in the US and abroad.
  – Release CMMI v1.2 scheduled for 2006
  – Increased references in journals and trade magazines on the merit of the CMMI approach

• The approval to develop a full acquisition model to upgrade the current, very limited acquisition model will receive good support from the community
  – Upgrade to be directed at improving government acquisition offices as well as corporate management offices where tasks have been outsourced.
  – Subcontractor management will become a more important component of this upgrade and other parts of the CMMI constellation
Future of Systems and Software Engineering Project Management and the CMMI – Top Six Predictions

• Organizations typically do not initiate improvement efforts for the sake of process improvement – there is usually a underlying business driver
  – Other process improvement frameworks exist besides CMMI
  – Each process frameworks have their own strengths and weaknesses

• Program managers will demand a value-driven process improvement framework relative to their business
  – CMMI will be updated to accommodate this demand

• Program managers will demand a reduction in assessment costs
  – CMMI appraisals will be refined to accelerate the achievement of business goals, focusing on those areas that provide the greatest return, without compromising the quality or intent of the compliance frameworks
Recommended Reading


Any Questions?