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CONSORTIUM

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SOLUTIONS TOGETHER



Future of System and Software Engineering Project Management and the CMMI

Date: November 17, 2005

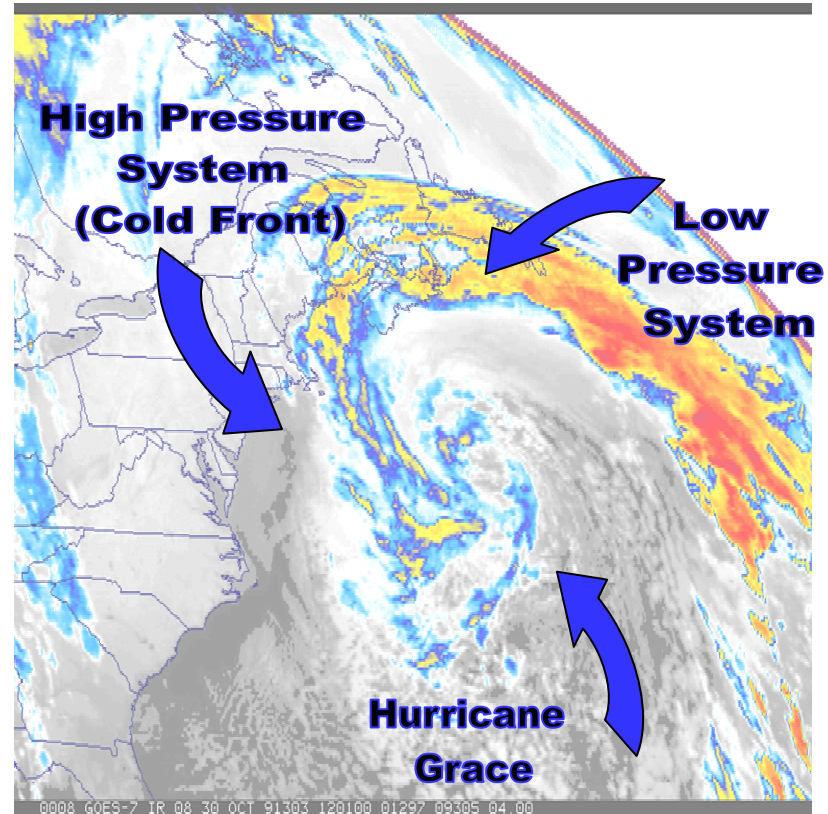
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Agenda

- 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



MISTAKES

**Successful programs are achieved because
problems were overcome.**

Market Dynamics

Platform → *Customer Emphasis* → **Enterprise**

Requirements → *Acquisition Model* → **Objectives**

Dominant Prime → *Program Execution* → **Strategic Teaming**

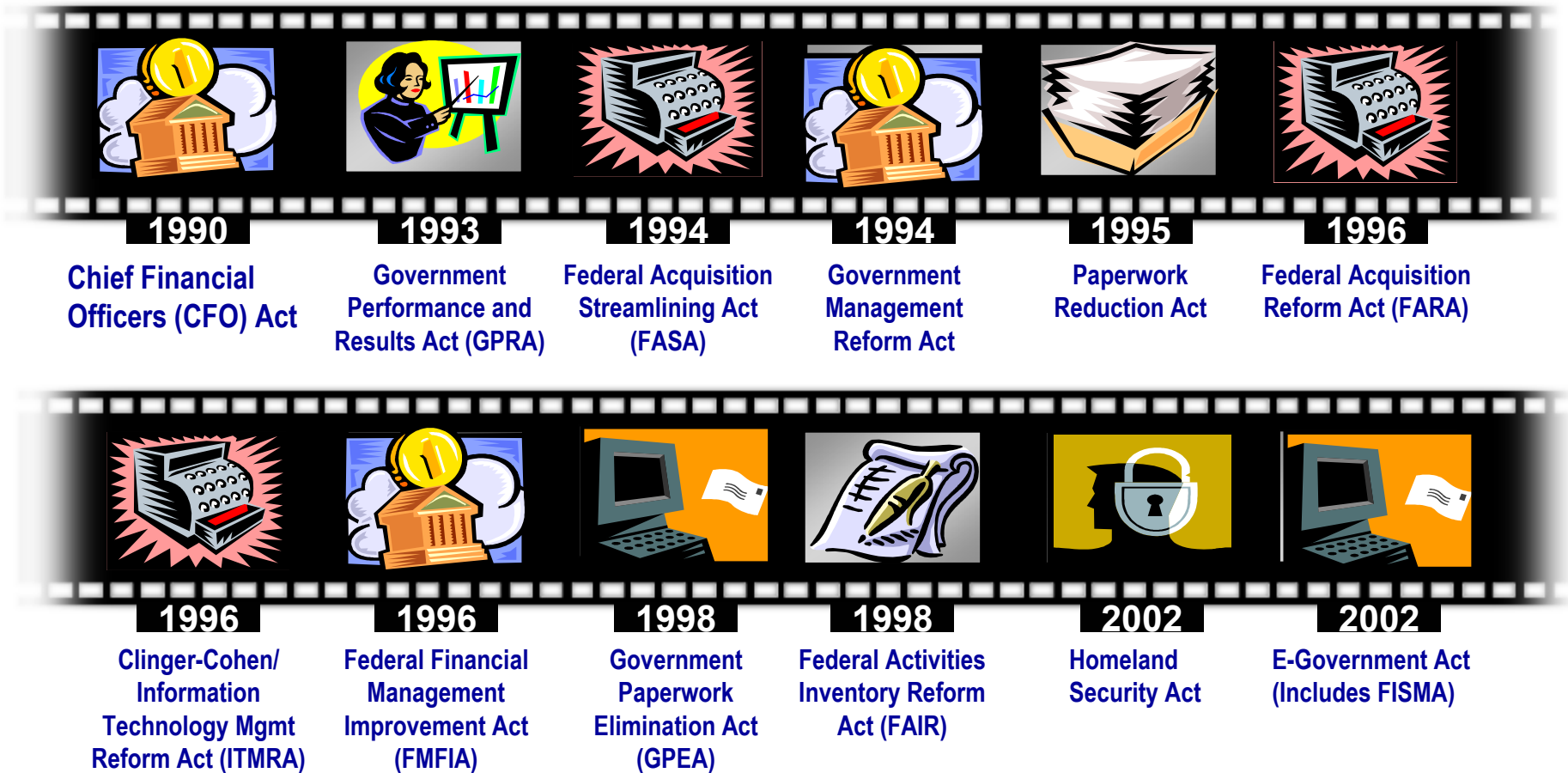
“Boxes” → *Integration Challenge* → **“Layers & Stacks”**

Proprietary → *Architectures and Standards* → **Plug & Play**

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



Federal Procurement Legislation



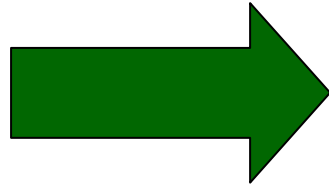
Legislation changed not merely the law, but also has changed the customer's mindset

Army FCS: Network Centric Warfare

From This...



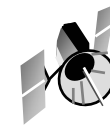
Hundreds of Systems Interoperating in the Battlefield



To This...

Network Centric Distributed Platforms

Small Unit UAV



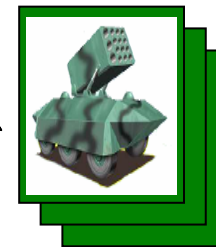
Other Layered Sensors

Network Centric Force



Robotic Sensor

Distributed Fire Mechanisms



Robotic NLOS Fire

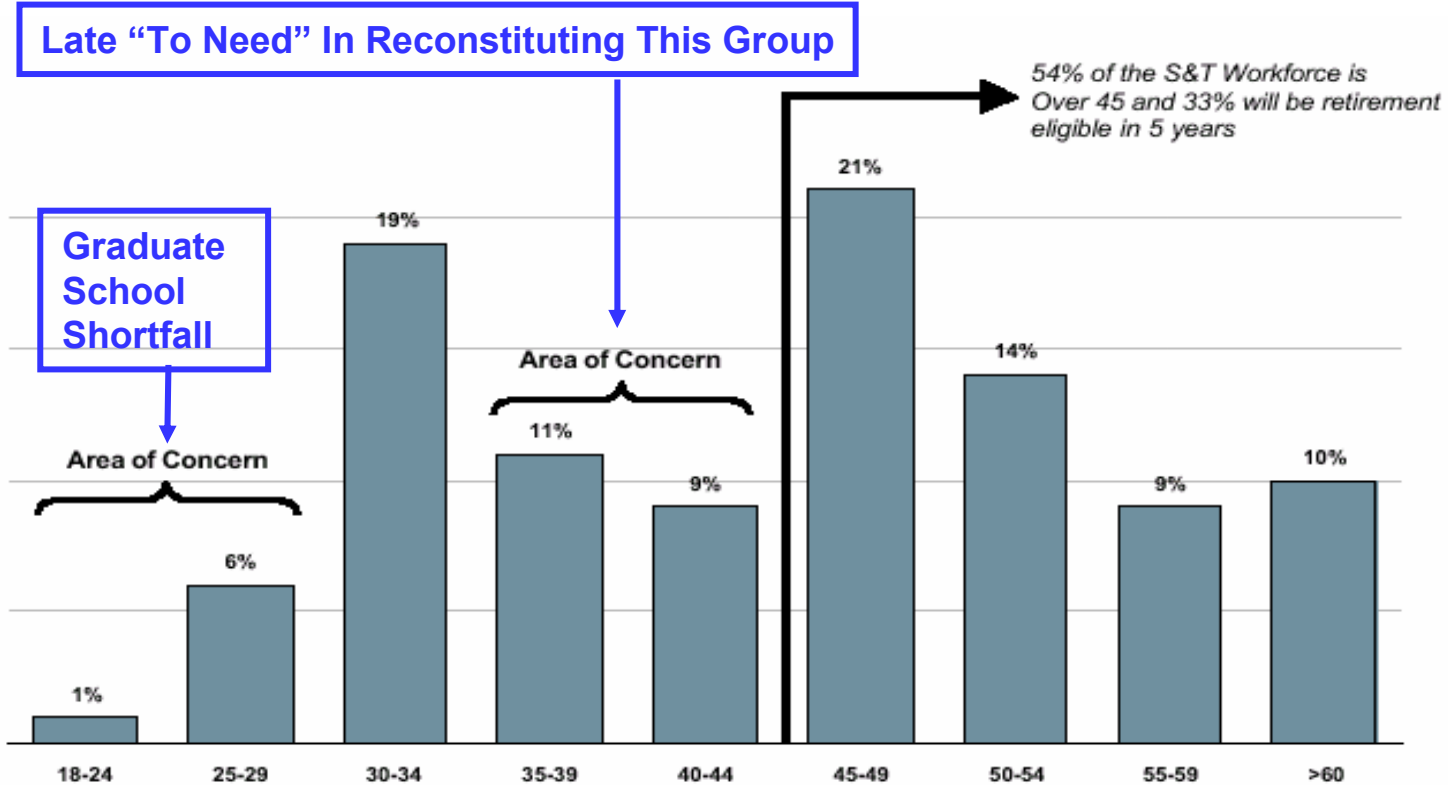
Robotic Direct Fire



Manned C2/Infantry Squad

Exploit Battlefield Non-Linearities using Technology to Reduce the Size of Platforms and the Force

Society Drivers: Bimodal Demographics (Space Industry)



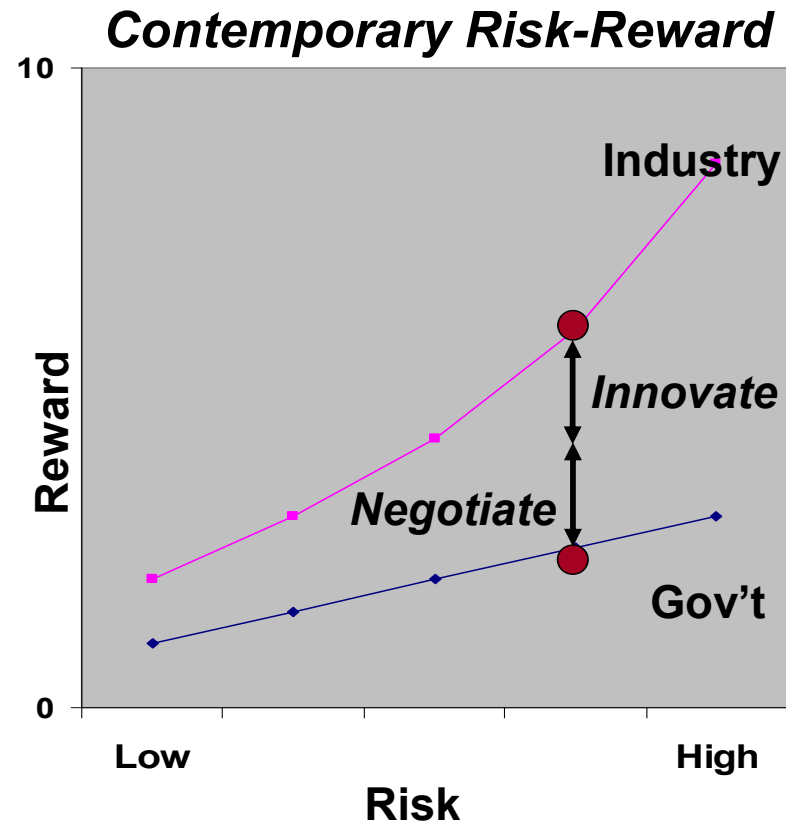
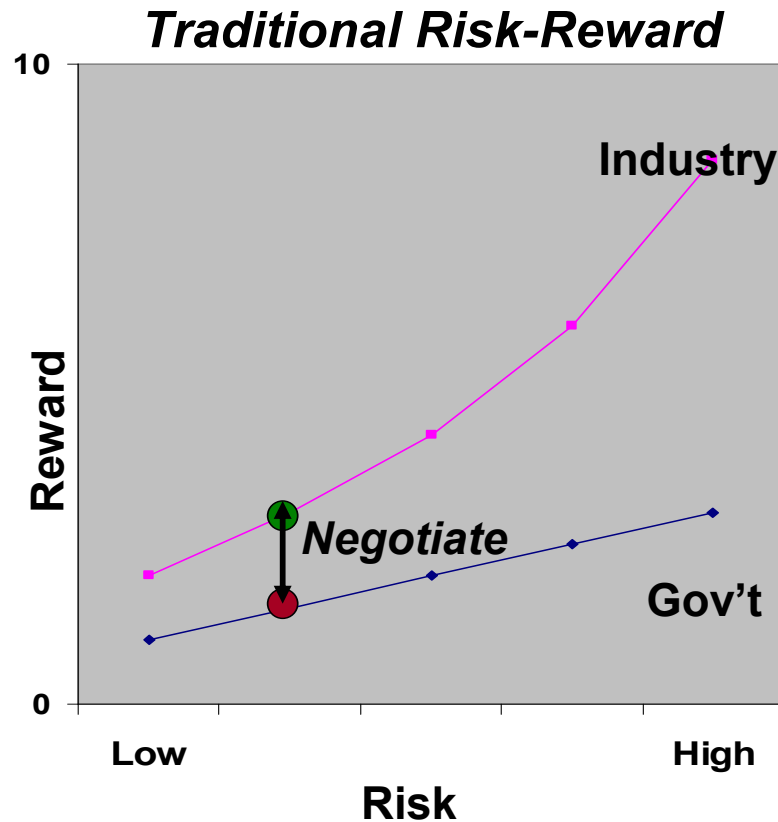
Average Space Industry S&E Workforce Age Distribution

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)

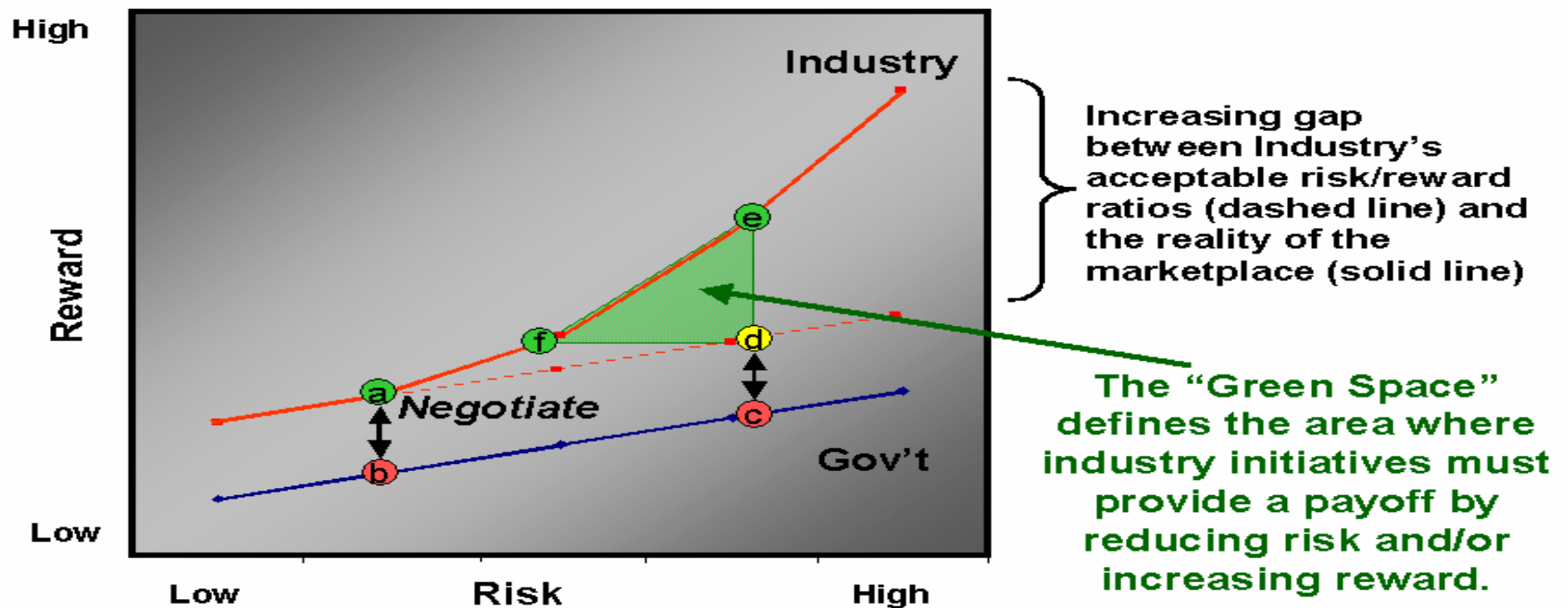
Innovation Complements Negotiation



Innovation is the key to manage risk-reward in the government market

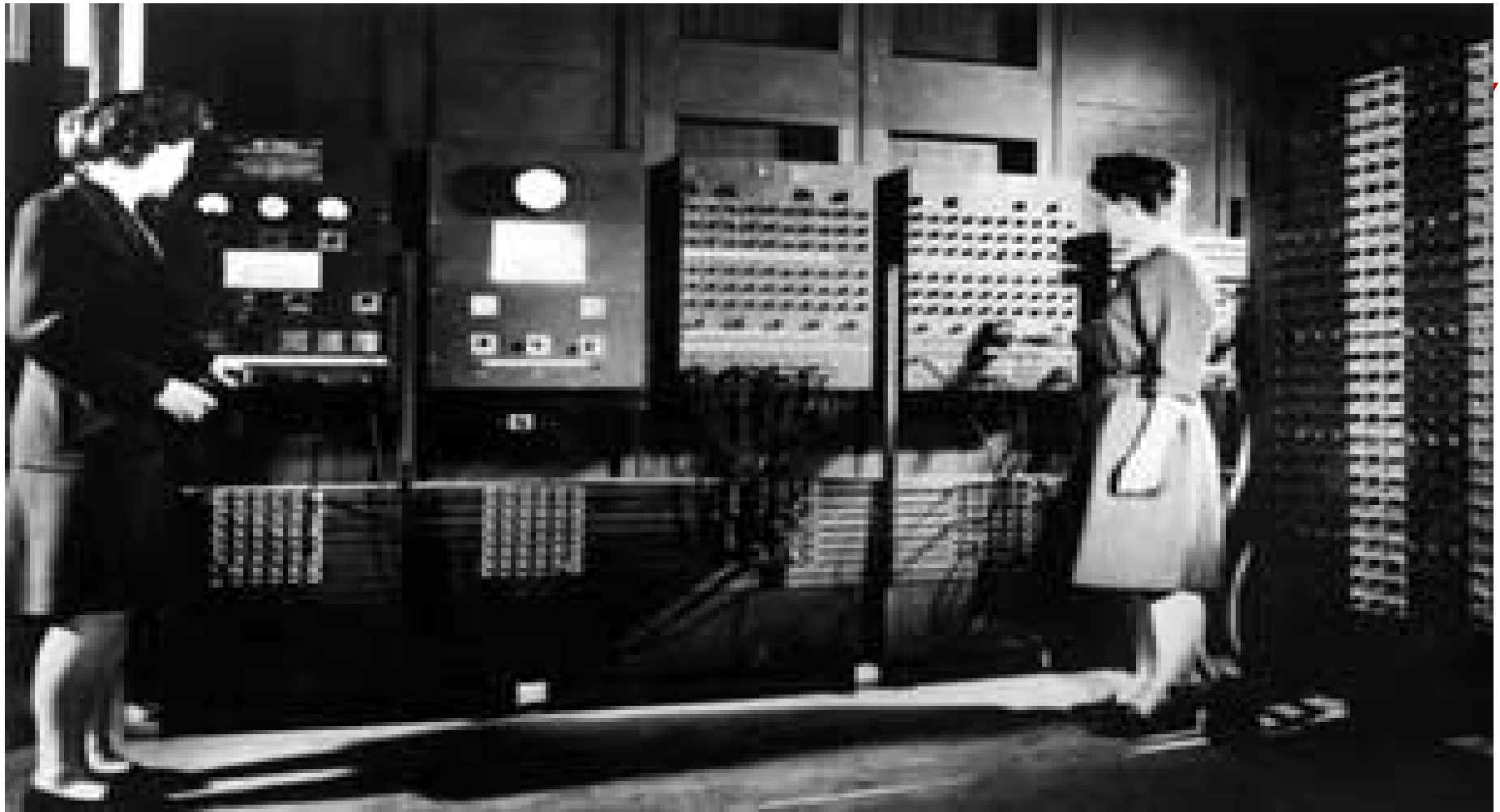
The Future Project Management Challenge

Navigating the “Green Space” Risk-Reward Preferences



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



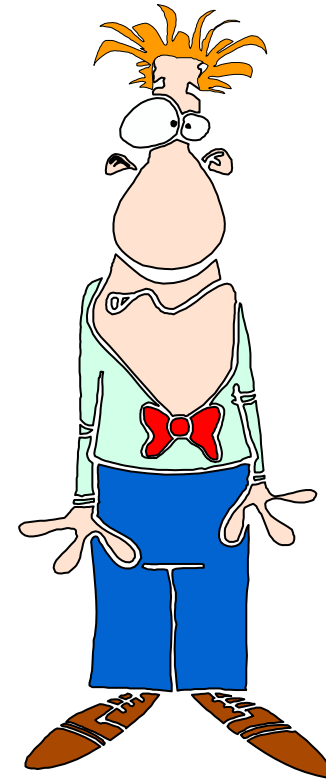


*What Got us Where We Are
Won't Necessarily Get us Where We Need to Be*



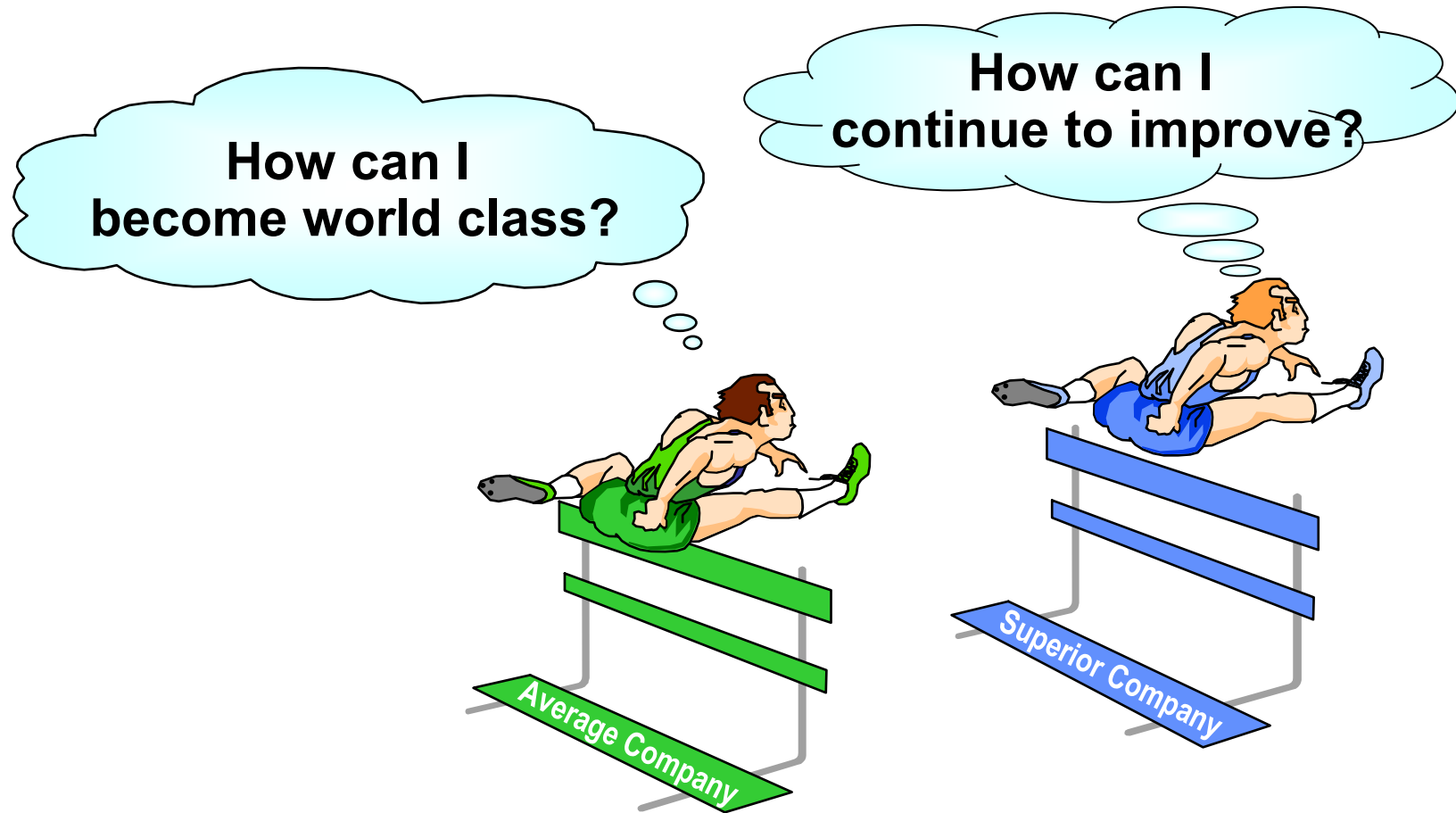
Things Are Going to Change – Get Use To It

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!

Maximizing Enterprise Potential



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 performed to that maturity on major programs*
 - Staged representation is the predominate CMMI 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

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

Buckman, Robert H. *Building a Knowledge-Driven Organization*. McGraw-Hill, New York, NY, 2004.

Chao, Pierre A. "Alternative Futures for the Defense Industry." Center for Strategic & International Studies, Chantilly, VA, April 2005.

Chesbrough, Henry William. *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Harvard Business School Publishing Corporation, Boston, MA 2003.

Drucker, Peter. *Managing in the Next Society*. Truman Talley Books, New York, NY, 2003.

Malone, Thomas. *The Future of Work: How the New Order of Business Will Shape Your Organization, Your Management Style and Your Life*. Harvard Business School Publishing, Boston, MA, 2004.
See <http://ccs.mit.edu/futureofwork/>

Wladawsky-Berger, Irving. "The Future of IT in an On-Demand World." IBM Server Group, Keynote address at OSBC 2005.
Archived at <http://www.itconversations.com/shows/detail495.html>

Any Questions?

