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Determining the best Loci of knowledge,
responsibilities and decision rights in major
acquisition organizations

Dillard, John; Nissen, Mark

Monterey, California. Naval Postgraduate School

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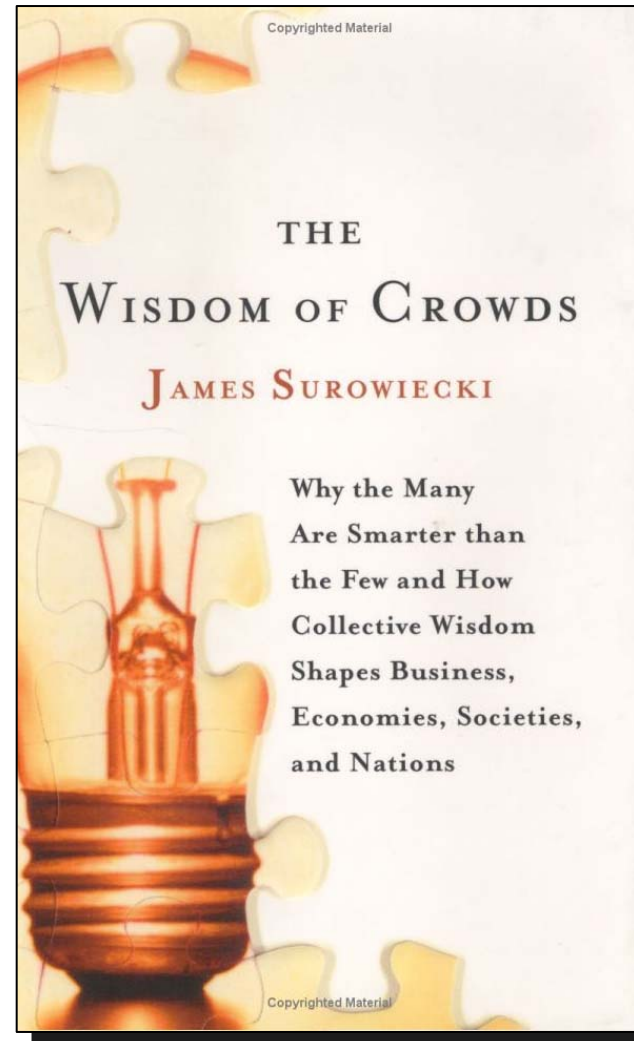
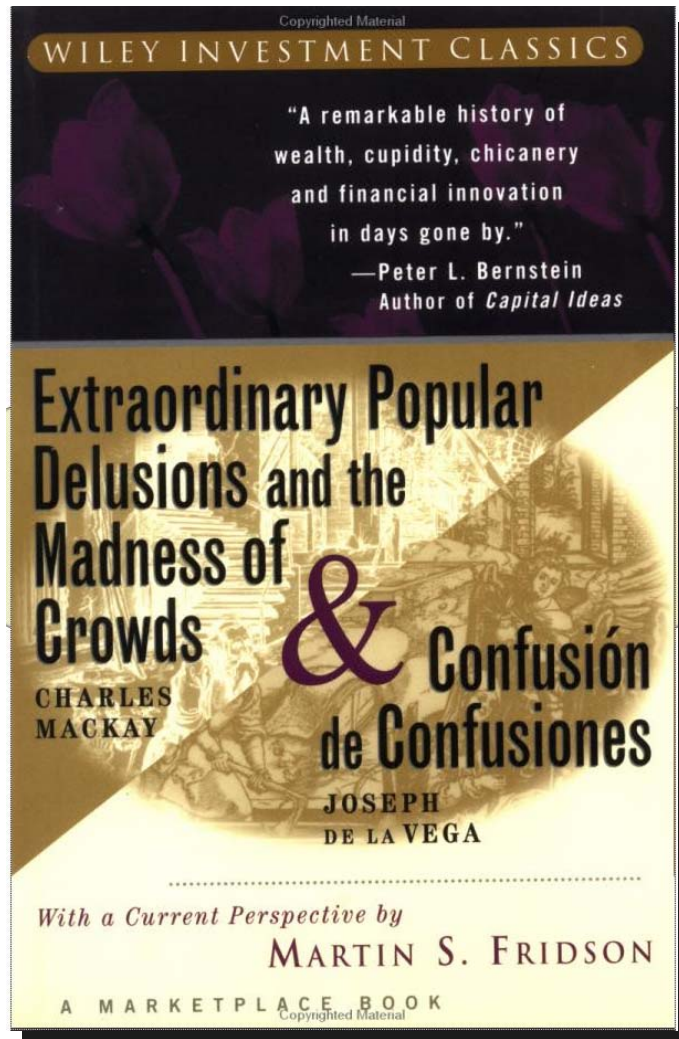
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Are We Smarter in Numbers??



**GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
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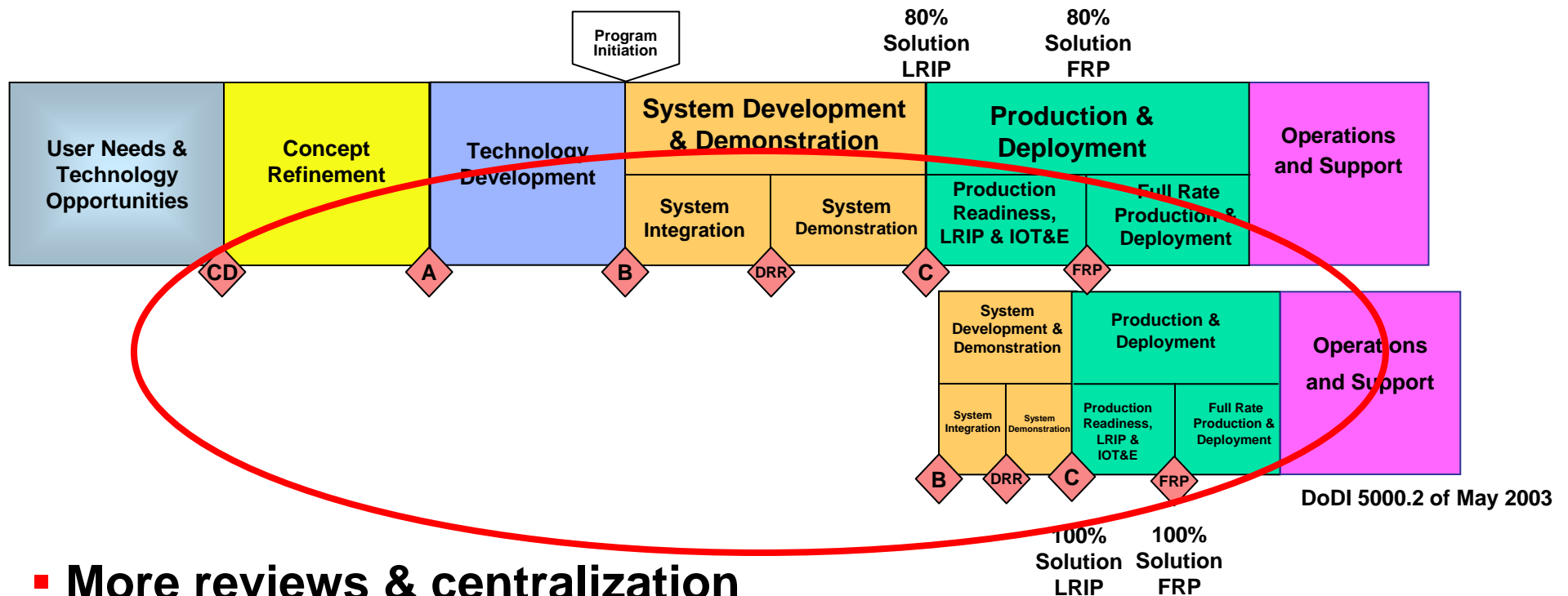
***Determining the Best Loci of
Knowledge, Responsibilities and
Decision Rights in Major Acquisition
Organizations***

**John T. Dillard and Dr. Mark E. Nissen
May 2005**



John: Centralized Organizational Control

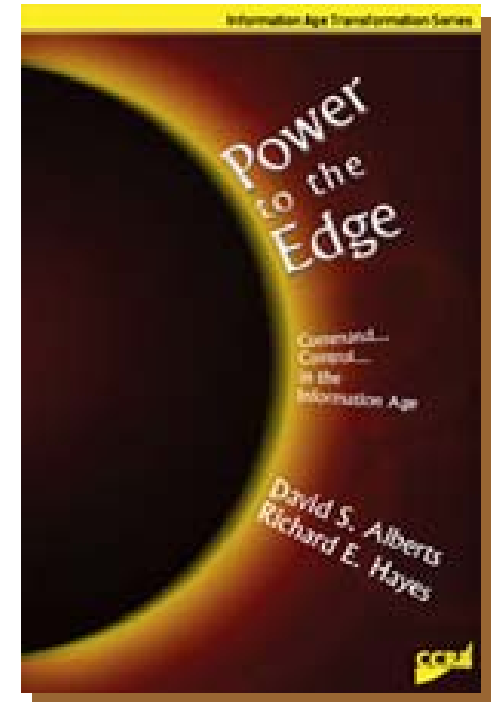
DoD Reviews Under 2003 Acquisition Framework Under an Evolutionary Acquisition Strategy



- More reviews & centralization
- Reviews as control measure against risk
- Versus Contingency Theory & uncertain environments
- Cost associated is difficult to estimate



Mark: “The Edge Project”



- Enable network-centric operations
- Fully connected, global, secure network
- Move decision power to “edges” of organizations
- Leverage shared awareness and dynamic knowledge

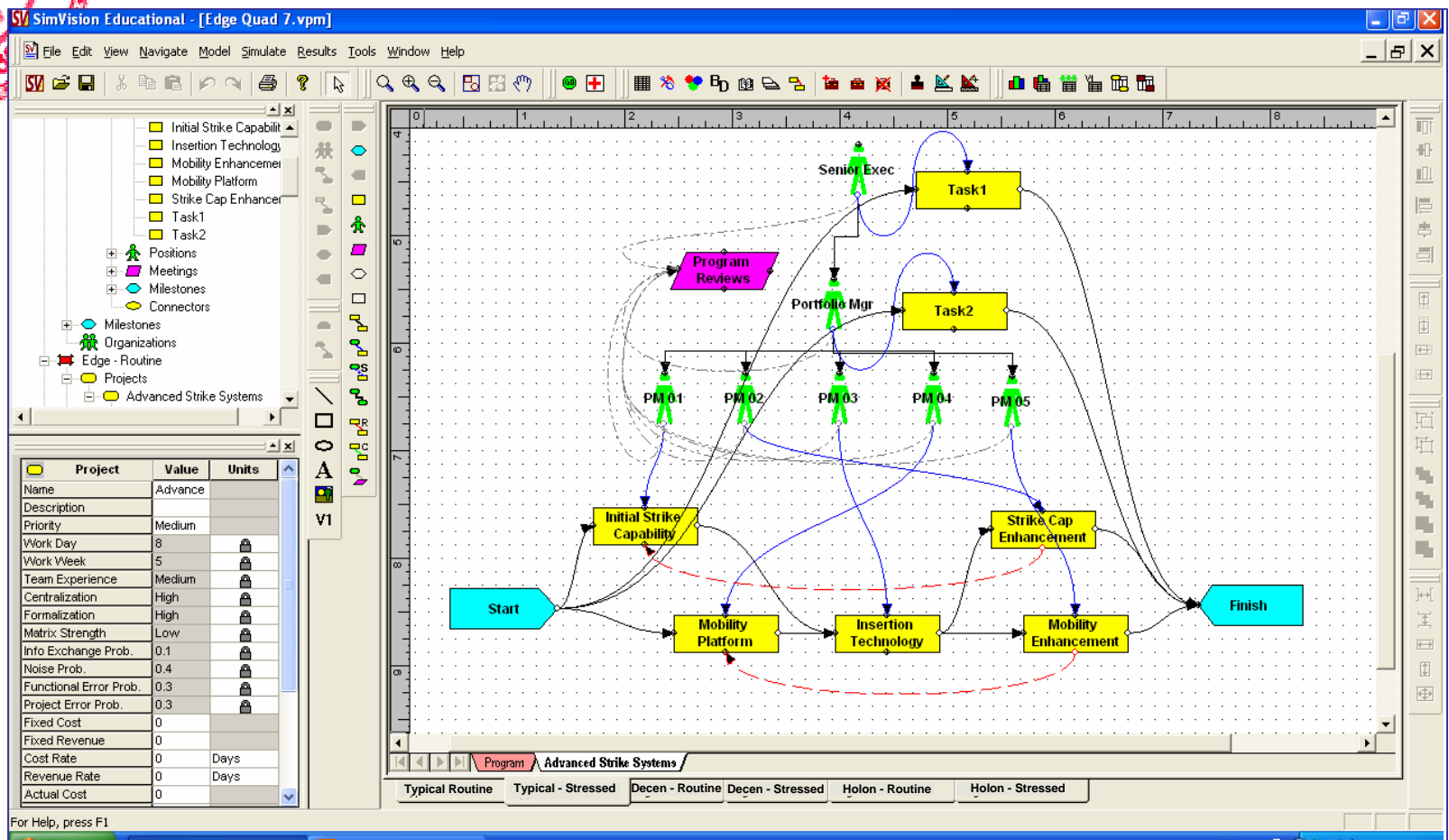
Mark's New Book: *Harnessing Knowledge Dynamics*



Stanford's Virtual Design Team



SimVision™ by Vite Corp

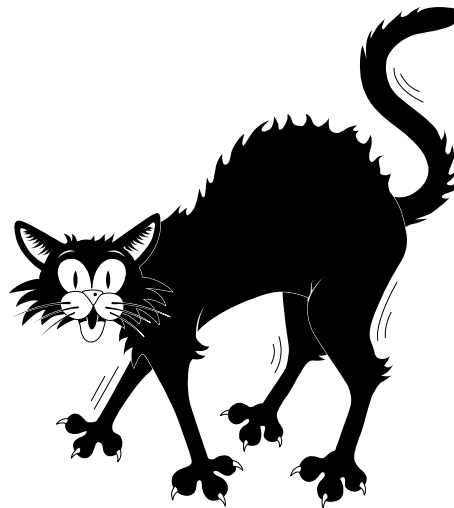




Modeling and Simulation Methodology

“The best material model of a cat is another, or preferably the same, cat.”

Norbert Wiener, 1948



“All models are wrong. Some are useful.”

George E. P. Box, 1979



Nobel laureate Herbert Simon

“I understood that a computer is not just a number cruncher, but a general system for dealing with patterns of any type -- I realized that you could formulate theories about human and social phenomena in language and pictures and whatever you wanted on the computer.”

at Carnegie Mellon University - Oct, 2000

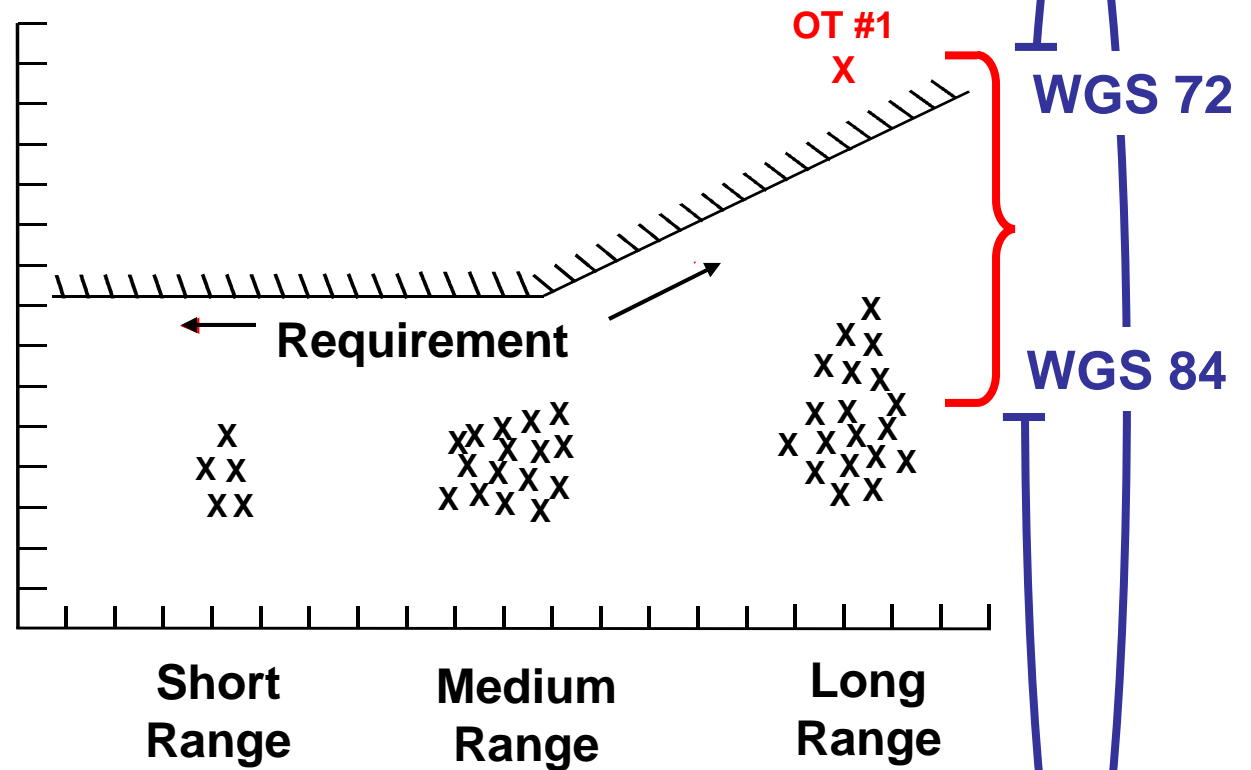




Army TACMS Model vs. Reality



Horizontal Accuracy



Missile flight varied from model:
Revealed differing map bases
(World Geodetic Survey Spheroids)

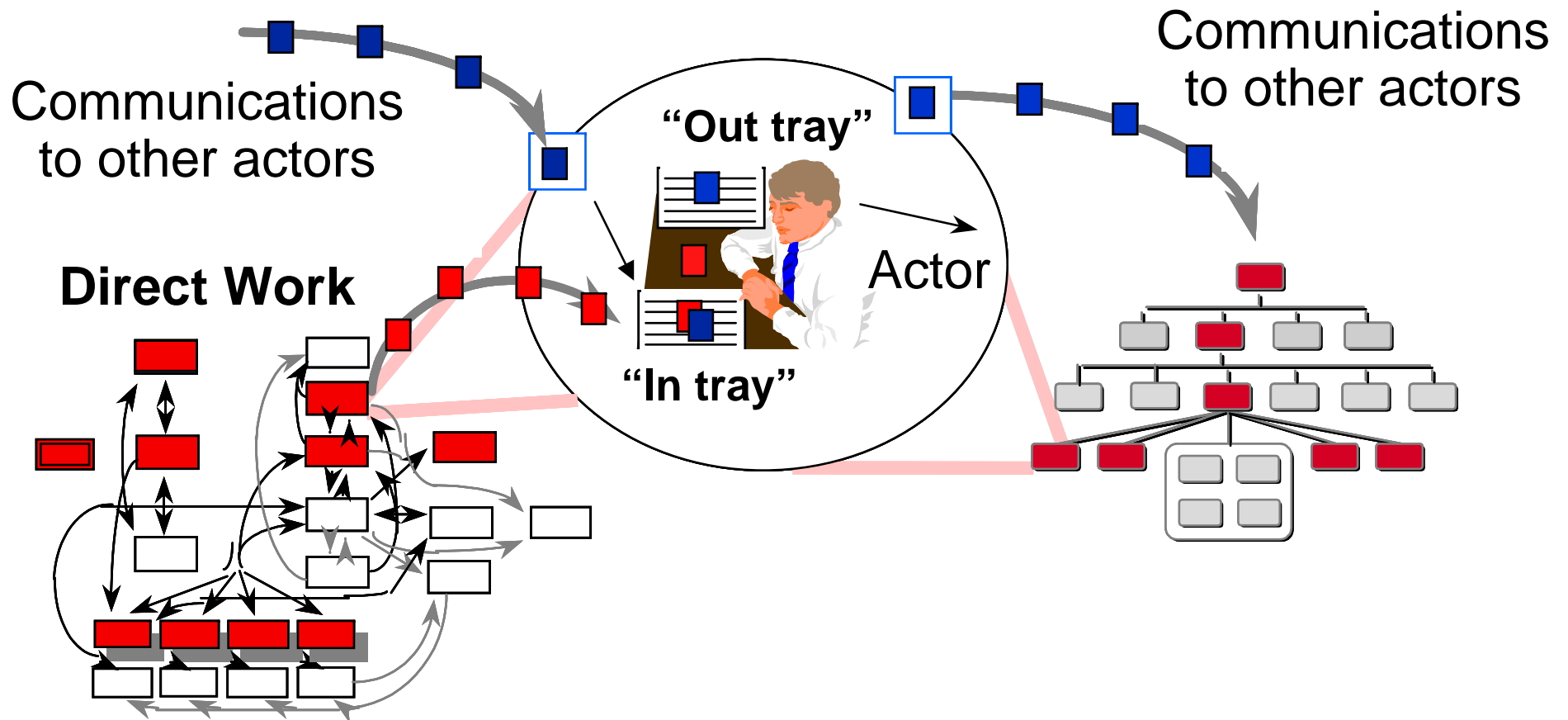


Compelling Questions

- **How can acquisition organizations be designed to improve performance?**
 - **Are there superior organizational designs to replace the current acquisition organization?**
 - **Which, if any, is most appropriate?**
 - **On what basis should acquisition leaders and policy makers choose between such competing organizational forms?**
 - **What evidence supports claims of superiority for one organizational approach versus another?**

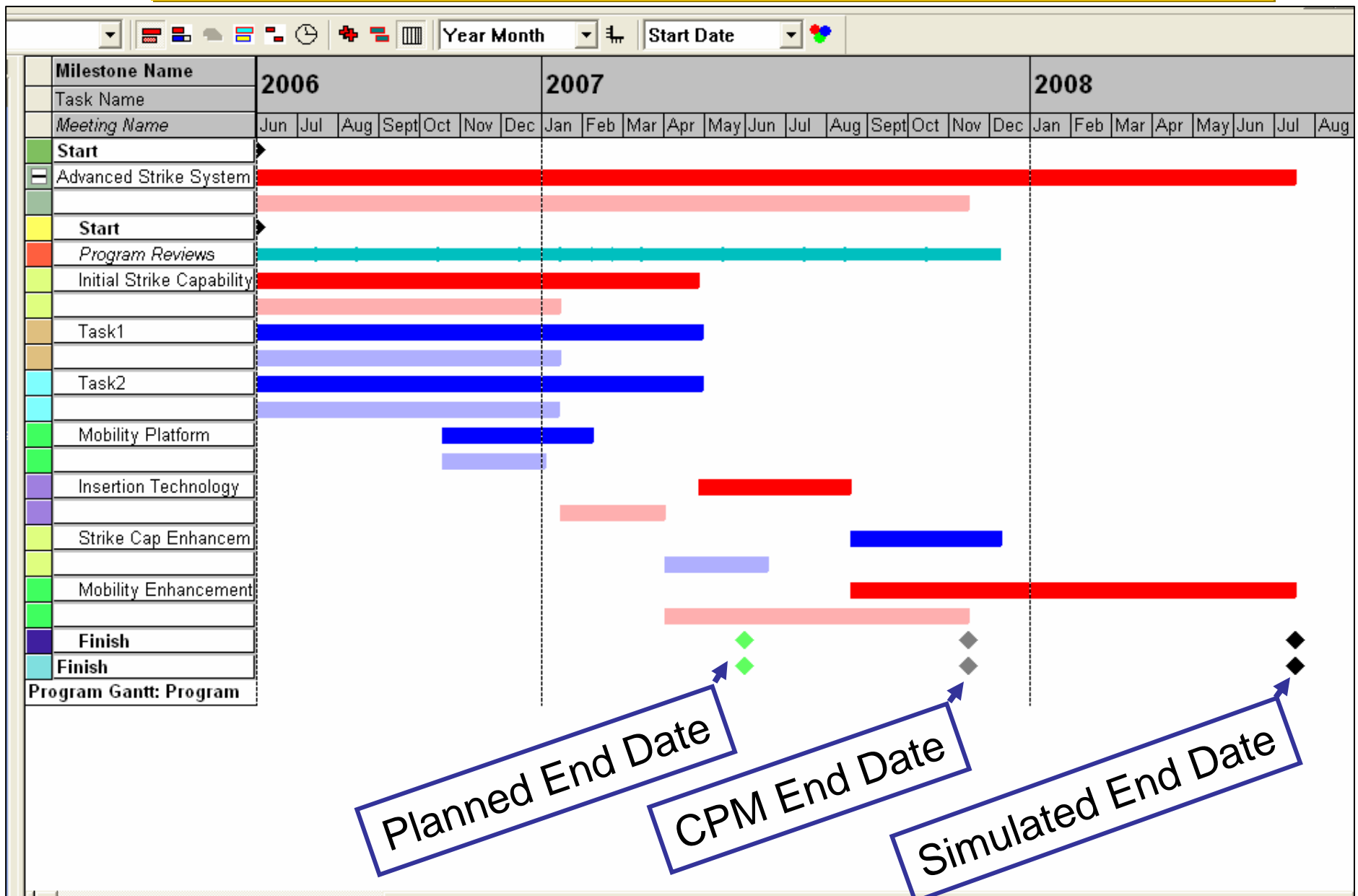


SimVision Modeling Environment

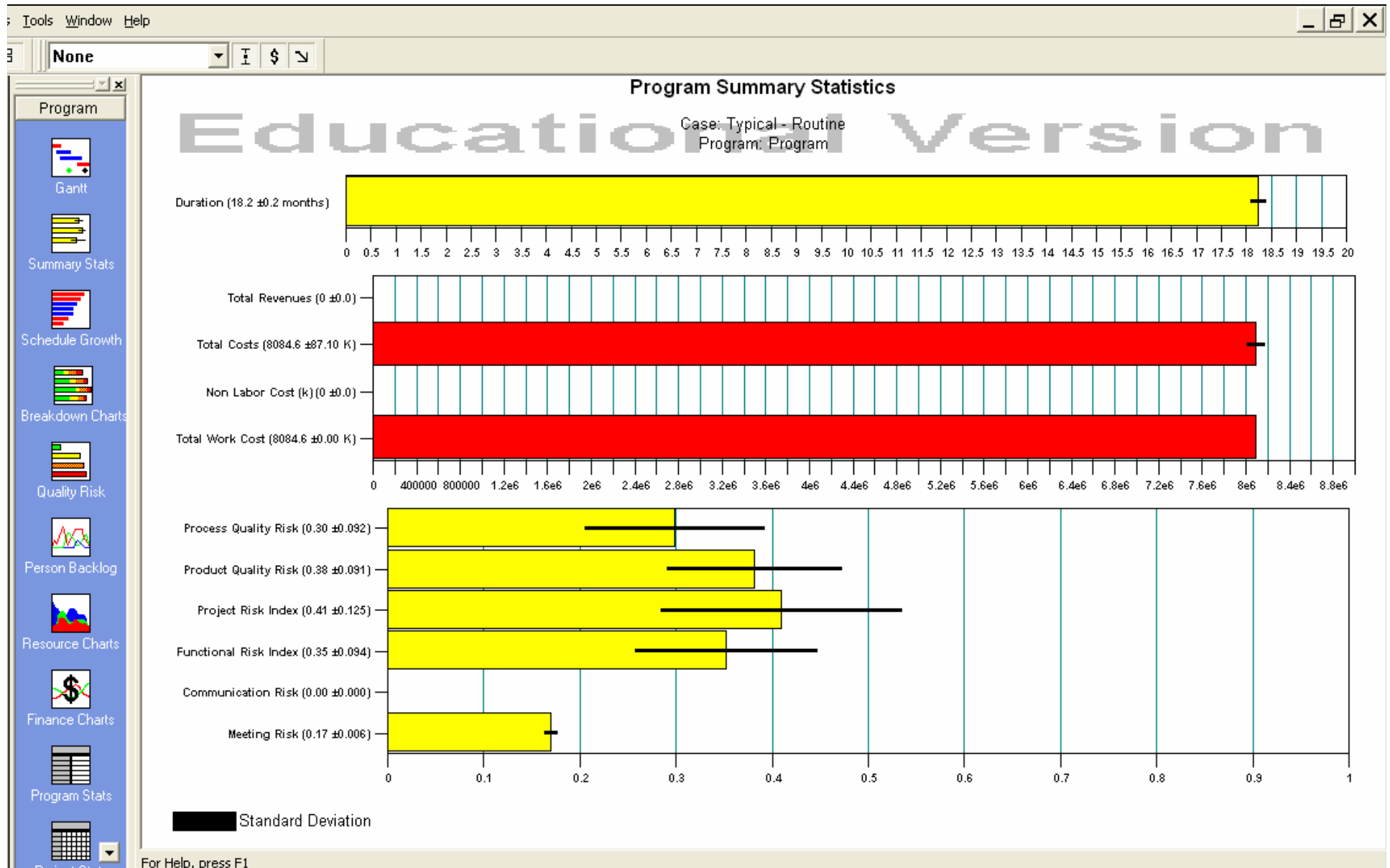


See: Galbraith, J. R. 1974. Organization design: An information processing view. *Interfaces* 4 (3): 28-36

Simulation Outputs - Gantt

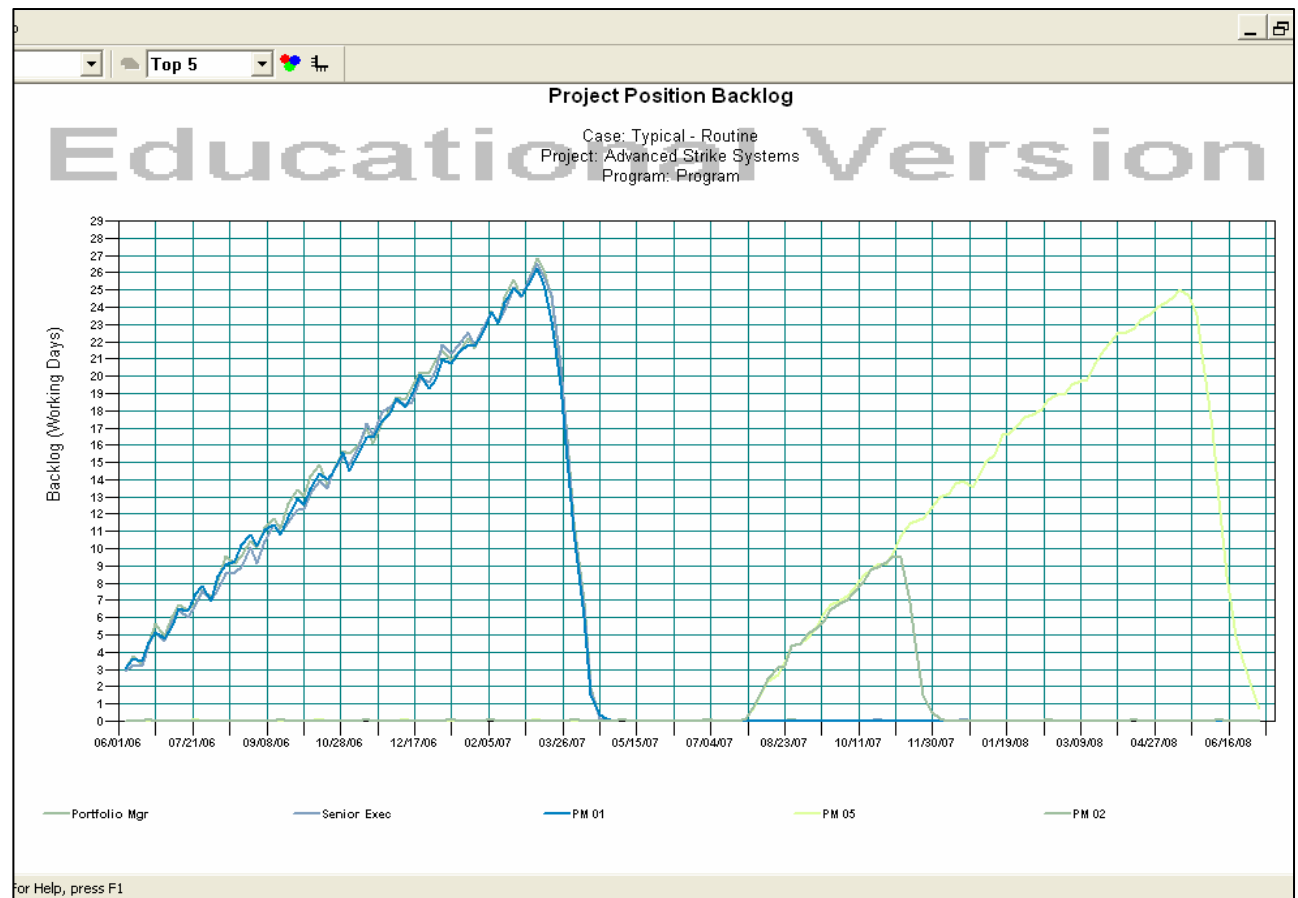


Simulation Outputs – Program Statistics



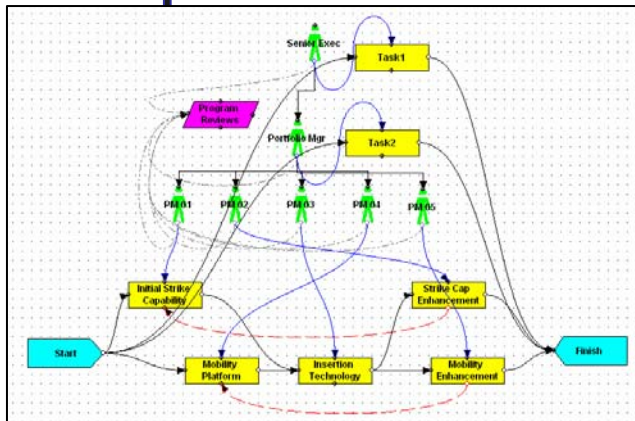
Simulation Outputs – Volume/Backlog

Name	Value
Project Name	Advanced Strike Systems
Description	
User WBS	
Simulated Duration (days)	555.8
CPM Duration (days)	381.9
Simulated Start Date	6/1/2006
Simulated Finish Date	7/17/2008
Total Volume	7995.5 days
Work Volume	4800.0 days
Rework Volume	123.8 days
Coordination Volume	3051.3 days
Decision Wait Volume	20.4 days
Fixed Cost (k)	0
Non Labor Cost (k)	0
Actual Cost	0
Fixed Revenue (k)	0
Total Revenue (k)	0
Actual Revenue	0
FRI	0.352
PRI	0.409
Coordination Risk	0.057
Communications Risk	0.00
Meeting Risk	0.17
Criticality	1
Percent Staffing	0.0
Case	Typical - Routine
Program	Program

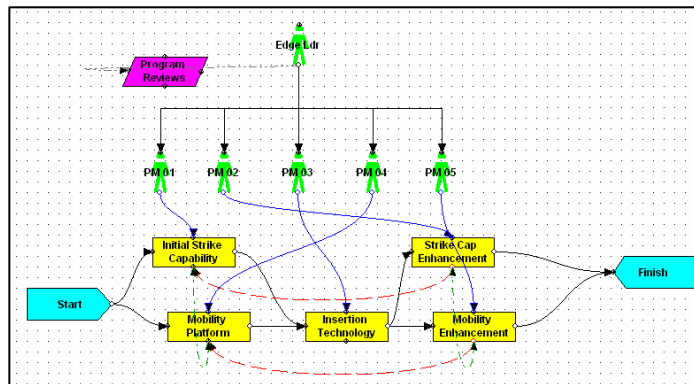




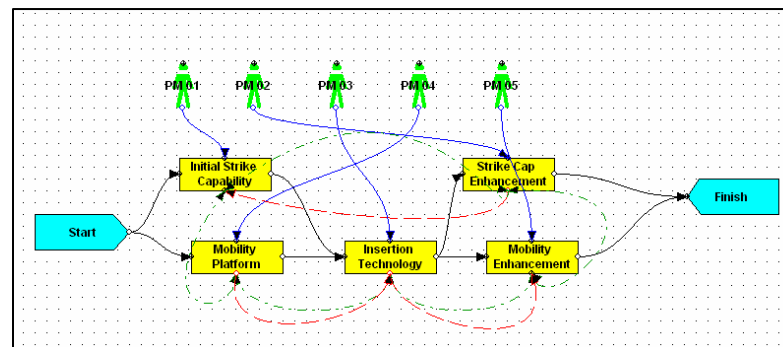
Computational Acquisition Organizational Models



Typical
(Centralized within PEO
Bureaucratic)



Decentralized
(Direct Reporting)



Holonistic
(Adhocratic)

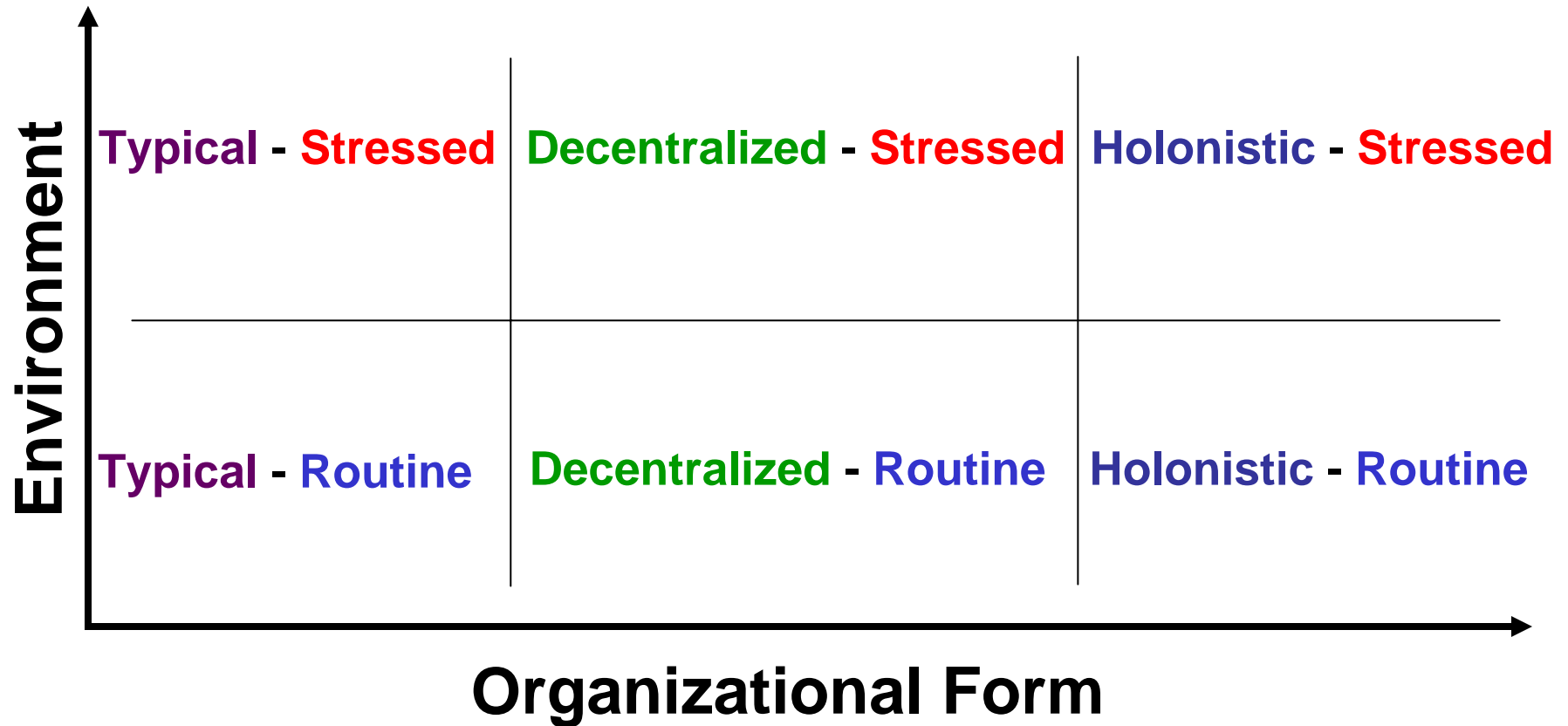


Organizational Design Parameters

Organizational Parameter	Typical	Decentralized	Holonistic
Centralization	High	Low	Low
Formalization	High	Low	Low
Matrix Strength	Low	High	High
Hierarchy	3 layers	2 layers	1 layers
Sr-Cmd (Sr Exec PM):	1 FTE	0	0
Mid-Cmd (Port Mgr SL):	1 FTE	1	0
Operations (PMOs):	50 FTE	50	50
Communication Links	0	2	5
Info Exchange Prob	0.1	0.9	0.9
Application Exp.	Low	Medium	Medium
Meetings	More	Less	None
Functional Error Prob	0.1	0.2	0.2
Project Error Prob	0.1	0.2	0.2
Rework Links Str	30	10	10
Team Experience	Medium	Medium	Medium
Skill Level/Matched	Medium	Medium	Medium



Experimental Design





Environmental Parameters

Environmental Parameter	Routine	Stressed
Requirement Complexity	Medium	High
Solution Complexity	Medium	High
Uncertainty	Medium	High
Noise	0.3	0.4
Functional Error Probability	0.1 & 0.2	0.3 & 0.4
Project Error Probability	0.1 & 0.2	0.3 & 0.4



Experimental Results

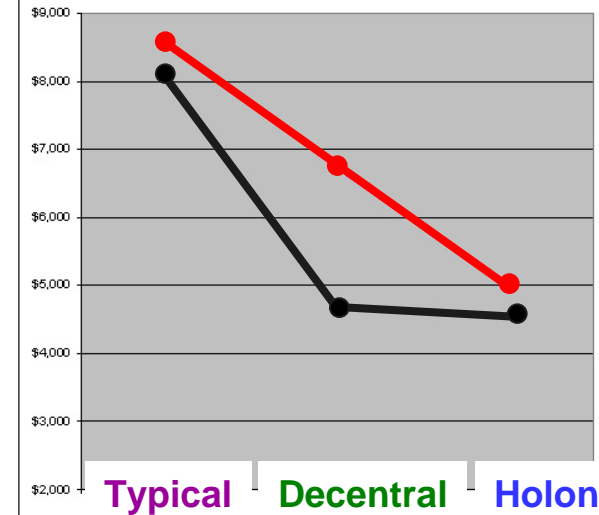
— Routine Environment:

Measure	Typical	Decentralized	Holonistic
Duration	556 days	428 days	407 days
Cost \$K	\$8,085	\$4,674	\$4,565
Project Risk	0.41	0.54	0.76

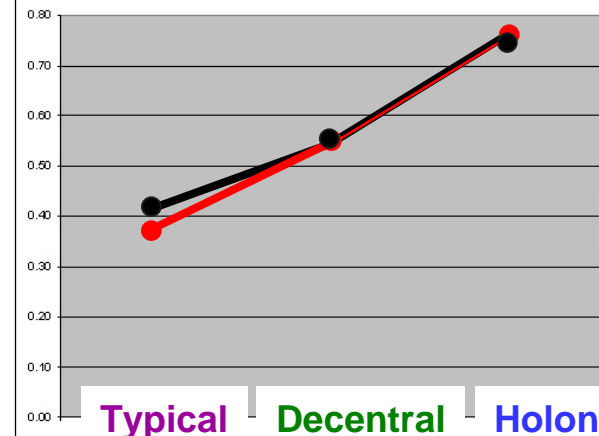
— Stressed Environment:

Measure	Typical	Decentralized	Holonistic
Duration	580 days	604 days	458 days
Cost \$K	\$8,561	\$6,708	\$4,973
Project Risk	0.37	0.55	0.76

Cost & Org Design



Risk & Org Design





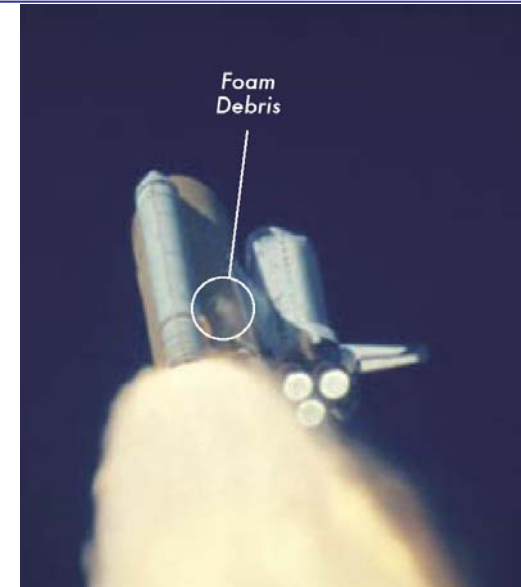
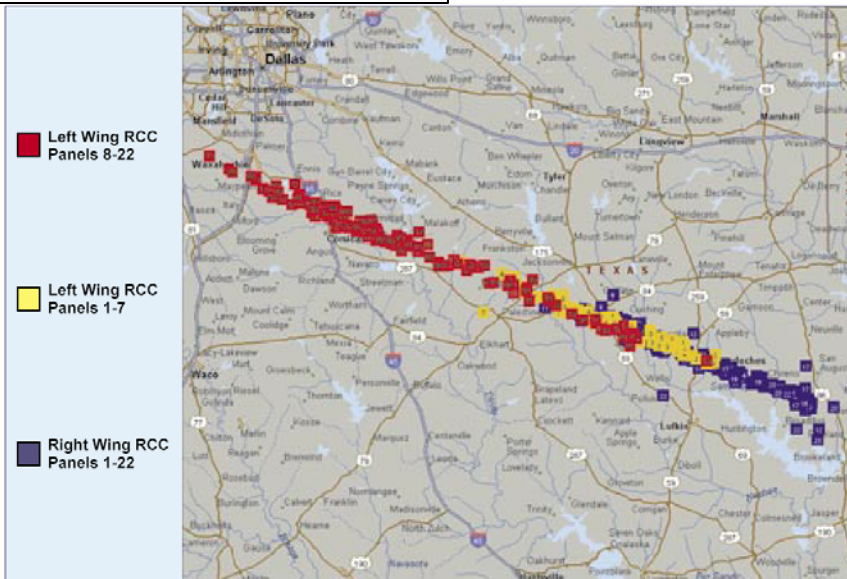
Balancing Costs of Control vs. Risk



CHAPTER 7

The Accident's Organizational Causes

COLUMBIA
ACCIDENT INVESTIGATION BOARD



SPACEDAILY
YOUR PORTAL TO SPACE

ROCKET SCIENCE

Columbia, The Legacy Of "Better, Faster, Cheaper"?

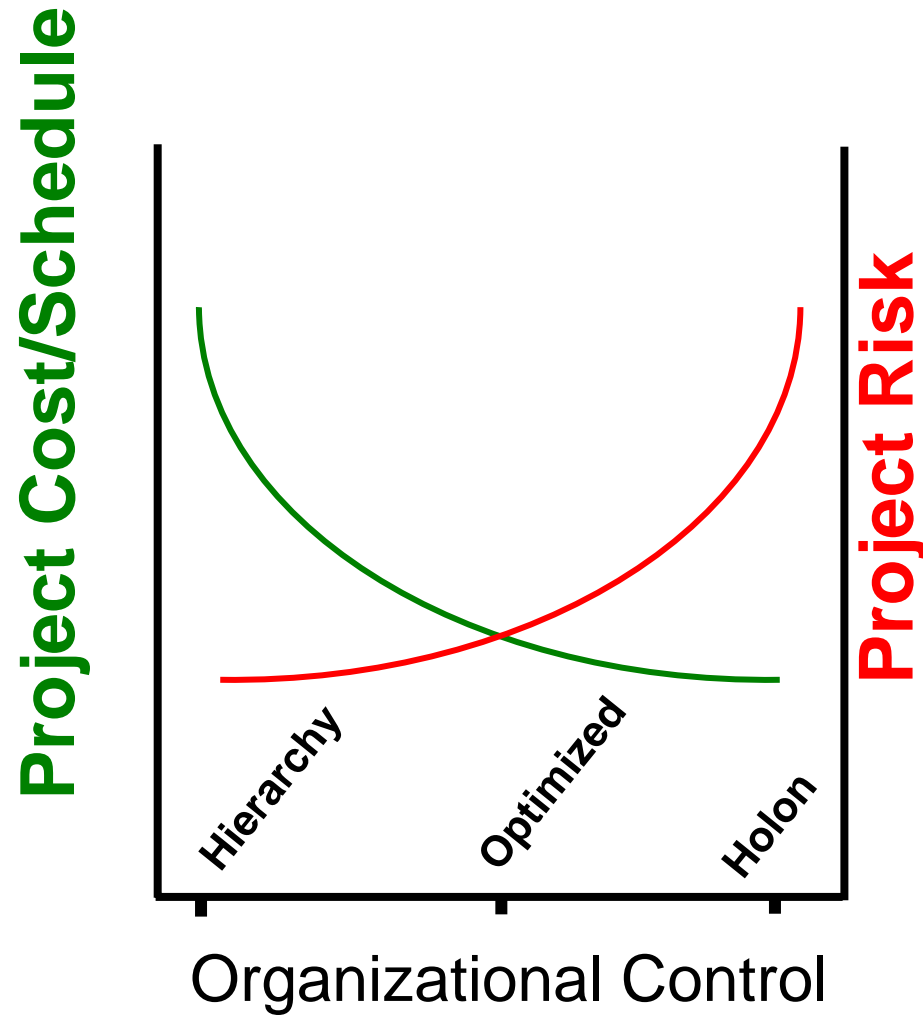
by Raymond Anderson
Sugarloaf Key - Jul 15, 2003

The day Columbia rolled out of the Vehicle Assembly Building at the Kennedy Space Center (KSC) for



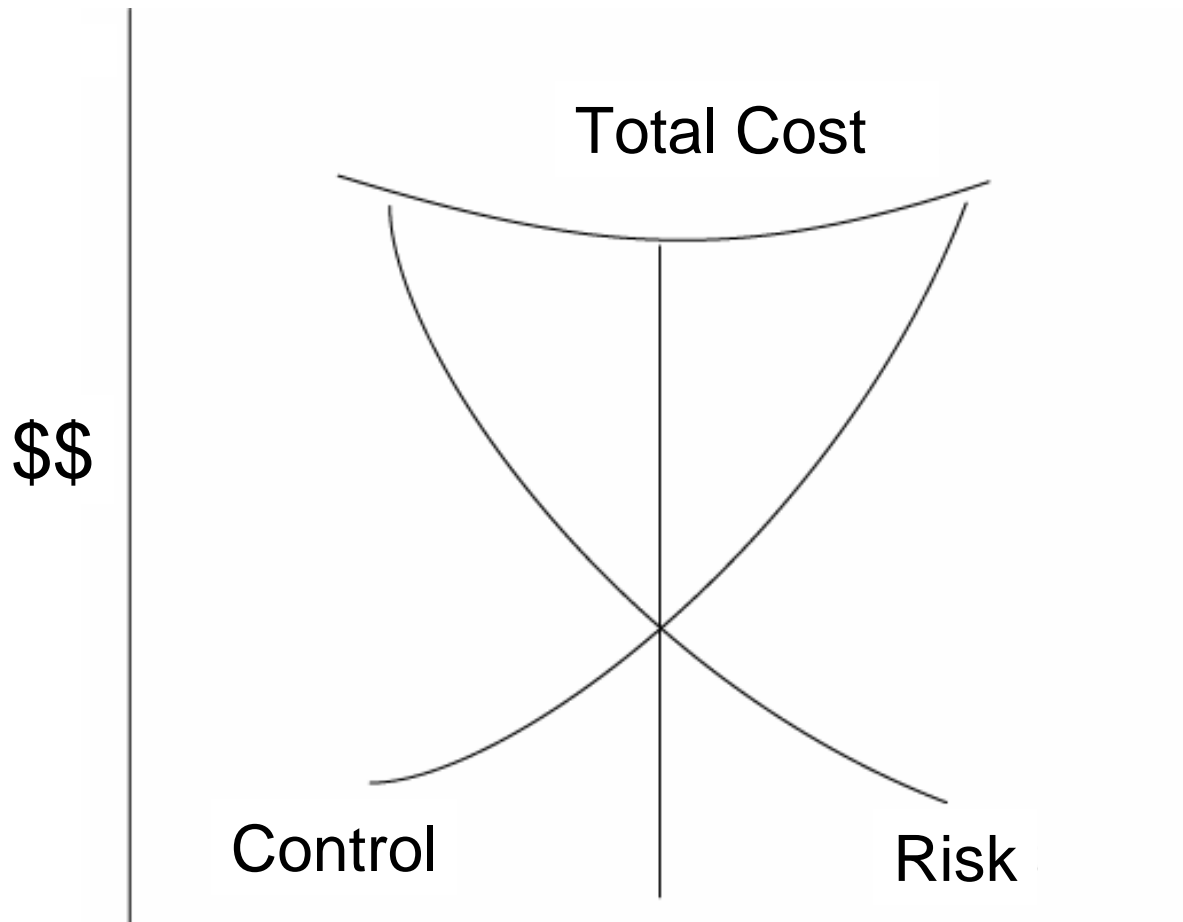


Implications





Balancing Costs of Control vs. Risk



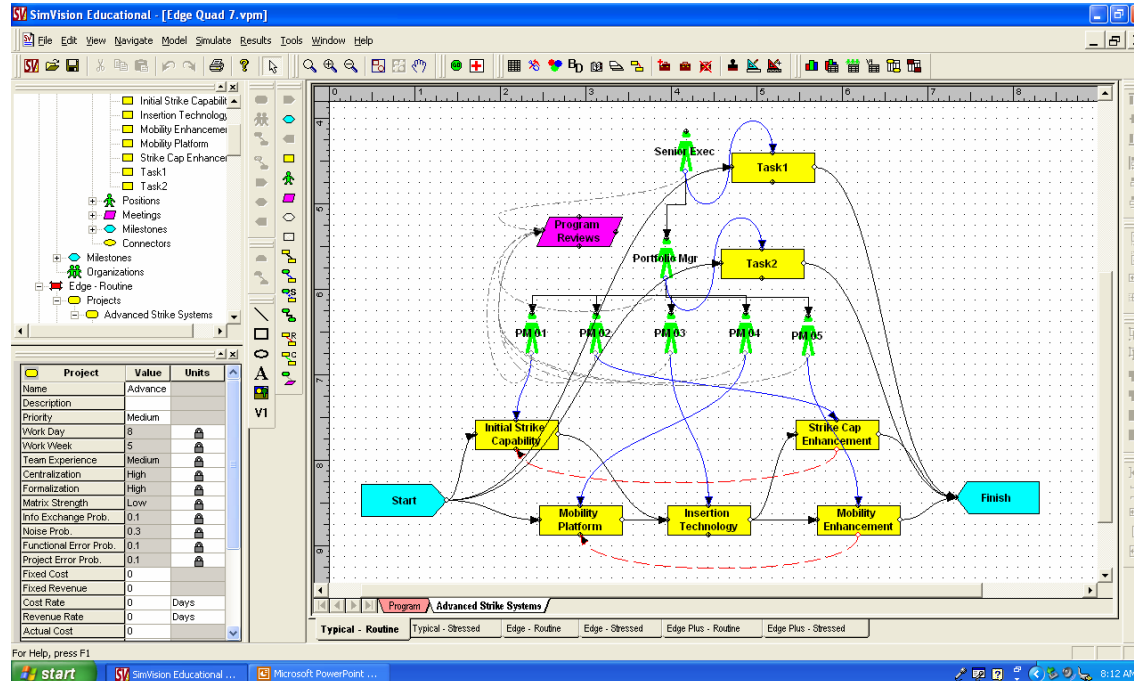
“The cost of control must be weighed against the value of empowering team members to be proactive risk takers.”

Robert K. Wysocki, [Effective Project Management: Traditional, Adaptive, Extreme](#), 2003.



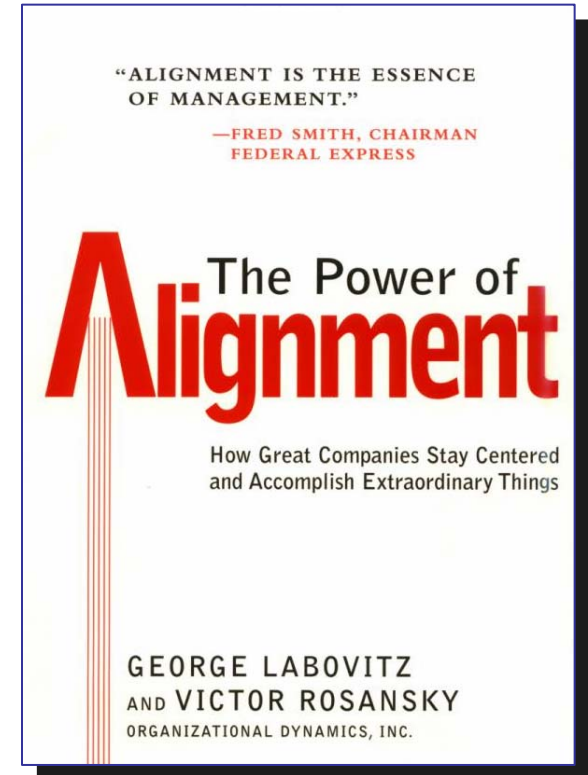
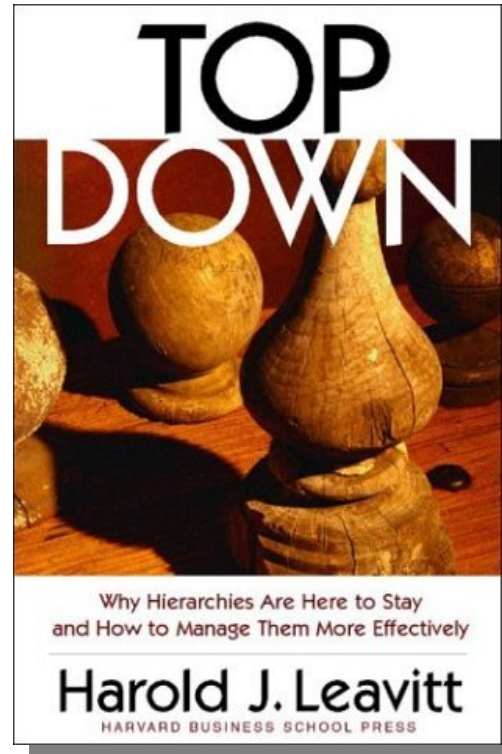
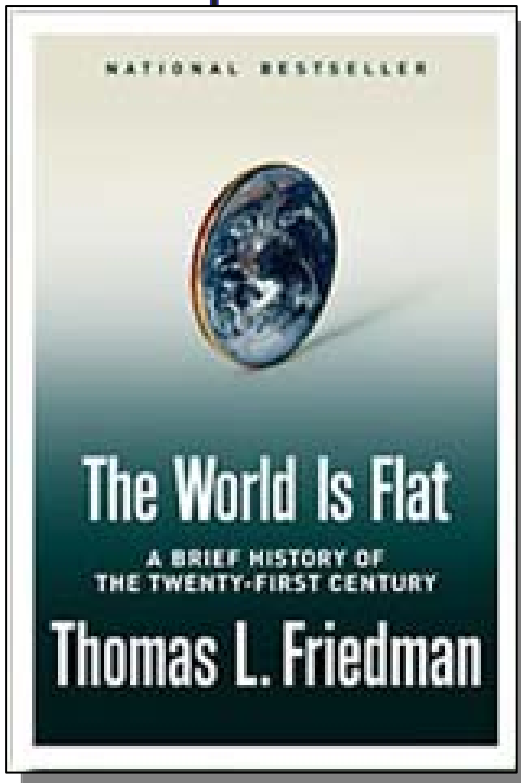
Conclusions and the Way Ahead

- Contingency Theory Reinforced/Extended
- Practical application – Insights, Design guides:
 - Organizational performance improvement
 - Fundamental tensions/trade-offs
 - Costs and benefits of control
- Computational experimentation techniques





Flat or Round or...?



Alexander Suvarov 1729 – 1800