AUBURN MONTGOMERY

A Prescriptive Framework for Risk Management

PMI Montgomery – Membership Luncheon
February 11, 2009

Gene Akers
Sr. Director
Center for Advanced Technologies
University Outreach
Auburn Montgomery

Why do projects fail?

AUBURN MONTGOMERY

- Lack of user involvement
- Lack of competent staff
- Lack of a standardized methodology
- Lack of executive ownership
- Lack of clear business objectives
- Lack of scope management

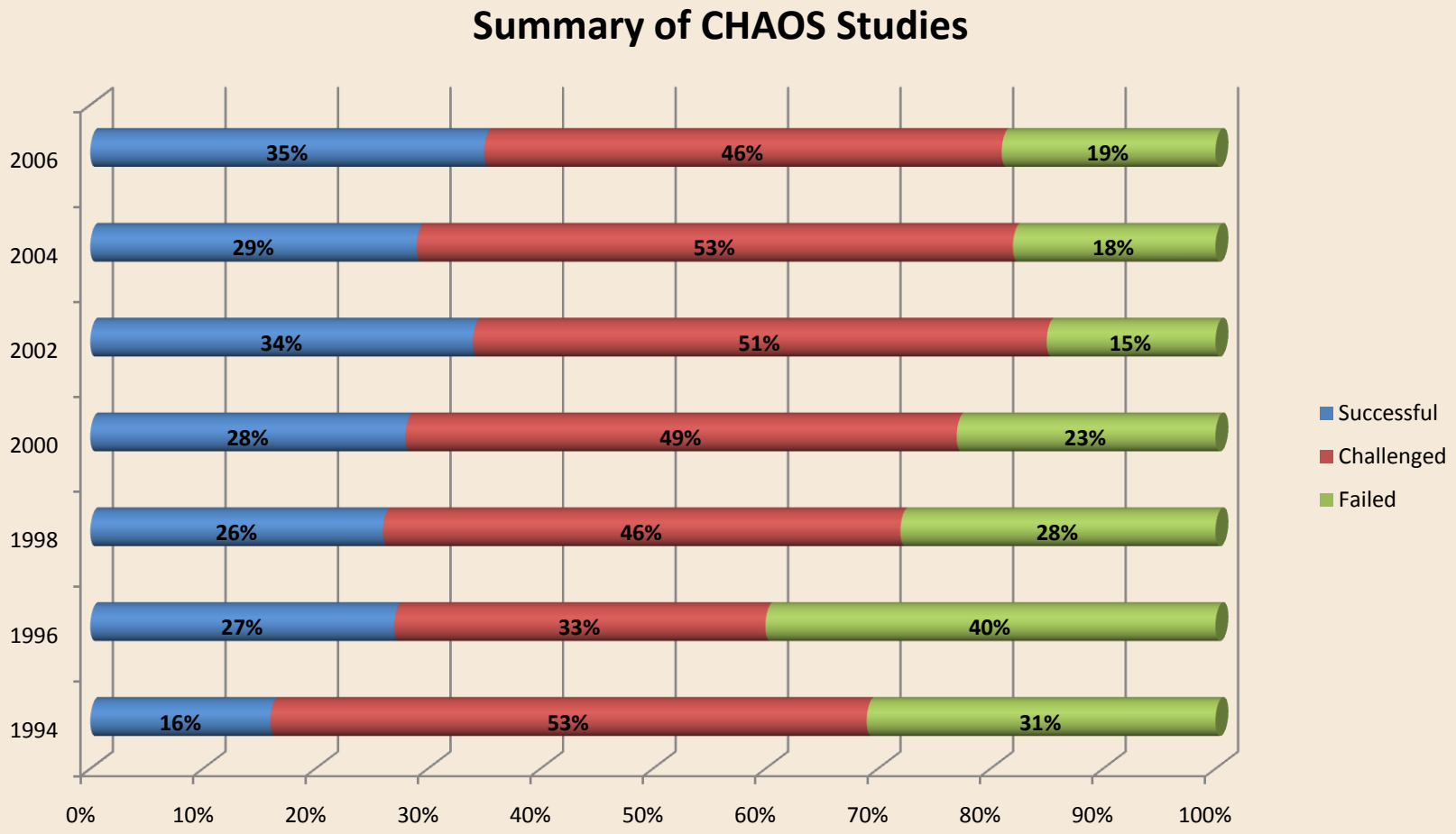
What do you think?

CHAOS Study Factor Rankings for Successful Projects

AUBURN MONTGOMERY

Rank	1994	2001	2006
1	User involvement	Executive summary	User involvement
2	Executive support	User involvement	Executive support
3	Clear requirements	Experienced PM	Clear business objectives
4	Proper planning	Clear business objectives	Optimizing scope
5	Realistic expectations	Minimized scope	Agile process
6	Smaller project milestones	Standard software infrastructure	Project management expertise
7	Competent staff	Firm basic requirements	Financial management
8	Ownership	Formal methodology	Skilled resources
9	Clear vision & objectives	Reliable estimates	Formal methodology
10	Hard-working, focused team	Other	Standard tools and infrastructure

Houston – We have a problem!



Source: http://www.infoq.com/articles/Interview-Johnson-Standish-CHAOS

Importance of Risk Management

- Risk management helps focus attention on the project
  - Where you can have an effect
  - Where your efforts will be beneficial
- Crisis avoidance management
- Proactive rather than reactive

Some Common Mistakes

AUBURN MONTGOMERY

- Benefits of risk management are not well-understood – just do it!
- Not providing adequate time for risk management
- Not identifying and assessing risk using a standardized approach
- Crisis management (i.e. firefighting) is “reactive” while risk management is “proactive”
- Risk management is cheaper & less embarrassing than crisis management

Definitions

- Risk - An uncertain event or condition that, if it occurs, has a positive or negative effect on the project objectives.
- Risk Management - The systematic process of identifying, analyzing, and responding to project risk. It includes maximizing the probability and consequences of positive events and minimizing the probability and consequences of adverse events.

Risk Management Processes

Risk Planning

AUBURN MONTGOMERY

- Requires a firm commitment from all project stakeholders
- Ensures adequate resources to plan for and manage risk
- Focuses on preparation

Risk Identification

AUBURN MONTGOMERY

- Identifies project assumptions
- Identifies project constraints
- Identifies project risks
  - Identifies risk categories
  - Develops probability factors (P)
  - Develops consequence factors (C)
- Summarizes project risks in business plan

Center for Advanced Technologies
400 S. Union Street, Suite 335 Montgomery, Alabama 36104
www.cat.aum.edu

Risk Identification Tools

AUBURN MONTGOMERY

- Learning Cycles
- Brainstorming
- Pre-analysis survey
- Nominal Group Technique
- Delphi Technique
- Checklists
- SWOT Analysis
- Cause & Effect (a.k.a. Fishbone/Ishikawa)
- Past Projects

Center for Advanced Technologies
400 S. Union Street, Suite 335 Montgomery, Alabama 36104
www.cat.aum.edu

Delphi Method

AUBURN MONTGOMERY

- Delphi may be characterized as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem.
- Involves:
  - Some feedback of individual contributions of information and knowledge
  - Some assessment of the group judgment or view
  - Some opportunity for individuals to revise views
  - Some degree of anonymity for the individual responses.

Risk Analysis

AUBURN MONTGOMERY

- Risk Analysis
  - Risk Exposure = f(Probability * Impact)
    - What is the probability of a particular risk occurring?
    - What is the impact on the project if it does occur?
  - Focuses on prioritizing risks so that an effective strategy can be formulated for those risks that require a response.
    - Depends on stakeholder risk tolerances
    - You can't respond to all risks!

The how to …

- Establish risk measurement scales
  - Probability of Occurrence
  - Consequences of Occurrence
- Estimate risk factors
- Determine significant risks
- Document results of risk analysis

Center for Advanced Technologies
400 S. Union Street, Suite 335 Montgomery, Alabama 36104
www.cat.aum.edu

Probability of Occurrence

AUBURN MONTGOMERY

- Probability that a specific risk will happen (P)
- Possible factors
  - Maturity of technology/process/personnel
  - Complexity of the project
  - Dependency on outside entities
  - Stability of the organization

Consequences of Occurrence

AUBURN MONTGOMERY

- Loss to affected parties if the outcome is unsatisfactory (C)
- Possible factors
  - Capability
  - Public Relations
  - Cost
  - Schedule
- Circumstances that impact factor selection
  - Business issues
  - Political issues
  - Personal issues

How do we quantify risk and consequence?

Sample P Measurement Scale

	Maturity Factor	Complexity Factor	Dependency Factor	Stability Factor
0.1 Low	Maturity Table	Simple relative to current environment	Entirely within project control	External factors will not make any changes
0.3 Moderate	Maturity Table	Minor complexity relative to current environment	Depends on existing product supplied from outside organization	External factors will make minor changes (<25%)
0.5 High	Maturity Table	Moderately complex relative to current environment	Depends on supply and modification of existing product from outside organization	External factors will make major changes (<50%)
0.7 Very High	Maturity Table	Significantly complex relative to current environment	Depends on new development from outside organization	External factors will make significant changes (<75%)
0.9 Extremely High	Maturity Table	Extremely complex relative to current environment	Depends on finding development from outside organization	External factors will make constant changes

Source: Adapted from Charette, R. *Software Engineering Risk Analysis and Management.* New York, New York: Intertext Publications, 1989.

Sample Maturity Factors

AUBURN MONTGOMERY

	Technical Risk Maturity Factor	Process Risk Maturity Factor	Vendor Risk Maturity Factor	Personnel Risk Maturity Factor
0.1 Low	Technology exists and can be used "as is"	Process exists and can be used "as is"	We have worked with these people we know them well	Staff has extensive knowledge of IT
0.3 Moderate	Technology requires minor change before use (<25%)	Process requires minor change before use (<25%)	We have worked with these people but do not always understand them	Staff has considerable knowledge of IT
0.5 High	Technology requires major change before use (<50%)	Process requires major change before use (<50%)	We have rarely worked with these people	Staff has moderate knowledge of IT
0.7 Very High	Technology requires significant design and engineering before use (<75%)	Process requires significant design and engineering before use (<75%)	We have worked with people we believe to be similar	Staff has limited knowledge of IT
0.9 Extremely High	State of the art, some research done	State of the art, some research done	We have never dealt with these people or anyone like them	Staff has little or no knowledge of IT

Source: Adapted from Charette, R. *Software Engineering Risk Analysis and Management.* New York, New York: Intertext Publications, 1989.

Technology Maturity

- Scenario: Agency is looking at using a third party provider for a call center.
- Risk: Security and confidentiality of customer information in third party data management system
- Determine the probability of unauthorized access to customer information

Sample C Measurement Scale

Magnitude	Capability Factor	P.R. Factor	Cost Factor	Schedule Factor
0.1 Low	Minimal or no consequences, unimportant	Occasional harsh write-ups in newspapers	Budget estimates not exceeded, some transfer of money	Negligible impact on other development schedules; changes compensated by available slack
0.3 Minor	Small reduction in capability (10% requirements not met)	Called before legislature or investigative body	Cost estimates exceed budget by 1 to 5%	Minor slip in schedules (less than 1 month), small adjustments in milestones required
0.5 Moderate	Some reduction in capability (25% requirements not met)	Unfavorable public opinion	Cost estimates increased by 5 to 20%	Other schedules slip in excess of 3 months; a few projects are shelved
0.7 Significant	Significant capabilities missing (50% requirements not met)	Budget cuts as political retribution	Cost estimates increased by 20 to 50%	Other schedules slip up to 12 months; many projects are shelved
0.9 Catastrophic	Technical goals cannot be achieved	Severe pressure to replace key officials	Cost estimates increased in excess of 50%	Other schedules slip more than 12 months; most projects are shelved

Source: Adapted from Charette, R. *Software Engineering Risk Analysis and Management.* New York, New York: Intertext Publications, 1989, and Estes, Don, Year 2000 *Strategic Project Design: Risk Assessment, Cost Control, and Automated Testing, v 7.0*.

Review Risks Analysis

- Stakeholders review risk analysis to
  - Look for unidentified risks
  - Verify that risks are truly risks
  - Provide different perspectives
  - Stakeholder buy-in

Risk Strategies

AUBURN MONTGOMERY

- Depends On:
  - The nature of the risk itself: really a threat or an opportunity?
  - The impact of the risk on the project's Measurable Organizational Value (MOV) and objectives: what is the probability and impact of a risk
  - The project's constraints in terms of scope, schedule, budget, and quality
  - Risk Tolerances or preferences of the project stakeholders: how much risk is tolerable?

Risk Aversion Strategies

AUBURN MONTGOMERY

- Accept or ignore the risk
- Avoid the risk completely
- Mitigate the likelihood or impact of the risk (or both) if the risk occurs
- Transfer the risk to someone else (i.e., insurance)

Evaluate Aversion Strategies

- For each risk aversion strategy consider
  - Feasibility
  - Costs and benefits
  - Resource requirements
  - Overall impact
  - Trigger and duration
  - Criteria for success
- Document evaluation considerations and decisions

Risk Management Plan

AUBURN MONTGOMERY

- Purpose and scope
- Objectives and stakeholders
- Assumptions and constraints
- Selected risk management methodology
- Analysis of project risk
  - Overview
  - Risk Identification
  - Risk Analysis
  - Risk Evaluation
  - Risk Aversion Strategies
  - Results of Risk Aversion Strategies
- Recommendations

Risk Management

AUBURN MONTGOMERY

Questions?