Software Project Management

Lecture 29

Risk Mitigation Plans

- Risk Mitigation Plans address risks that can be avoided in the near future; for example:
  - Obtain training to improve developer skills
  - Use a faster processor to reduce performance risk
  - Install an automated configuration management tool
  - Change the system testing procedures
- Plans are intended to avoid future problems by addressing the sources of potential problems as soon as possible

Risk Mitigation Plan Format

- 1. Name and Identity Number
- 2. Nature of the risk to be mitigated
- 3. Actions to be taken
- 4. Responsible party
- 5. Resources to be applied
- 6. Progress milestones
- 7. Completion criteria
- 8. Planned completion date

Plan must be periodically reviewed for progress, revised as necessary, and tracked to completion

Contingency Plans

- Contingency plans address risks that may become problems in the future, for example:
  - Risk of a schedule delay in the future
    - We are currently on schedule but we are concerned about losing a key staff member
  - Risk of insufficient memory to implement all essential features
    - On the first day of the project we have sufficient memory - but we might not later

Format of a Contingency Plan

- A contingency plan addresses risk factors for which no immediate action is warranted, other than:
  - Developing the contingency plan and
  - Implementing the risk tracking method
- A contingency plan contains:
  - A description of the risk factor
  - The risk tracking method
  - The problem trigger
  - The Contingent-Action plan

Crisis Management

- How do projects get into crisis?

- 1. Lack of attention to potential problems
- 2. A foreseen but unmitigated situation
- 3. An unanticipated situation
- 4. A failed contingency plan

Projects would never get into crisis situations if risk management were 100% effective because the goal of risk management is to respond to potential problems with sufficient lead time to avoid crises.

How To Respond To Crises?

- Acknowledge the crisis
- Inform all concerned parties
- Assign responsibilities and delegate authority
- Provide all needed resources
  - Including meals and sleeping quarters
- Review status on a daily basis
  - Perhaps twice daily?
- Operate in “burn-out” mode
  - Around-the-clock effort
- Establish a “drop-dead” date
  - Date at which we acknowledge we cannot overcome the crisis

Continuous Risk Management

- Risk identification, mitigation and development of risk management strategies are important aspects of initial project planning
- Risk management must also be an on-going activity throughout the lifetime of a software project
  - New potential problems arise
  - Some potential problems never materialize
  - Some potential problems appear to be solved but arise later in a different guise
- Risk management should be the focus of every discussion and every review meeting.

Tracking Of Top-n Risk Factors

- Each status review should produce a prioritized "top-n" list of risk factors, action items, and contingency plans:

This Week	Last Week	Number of Weeks	Risk Factors
1	1	3	Scoping work to schedule & resources
2	3	2	Staffing plan
3	_	1	Receipt & installation of workstations
4	3	6	Memory overrun

Status Reviews*

- Each status review should produce a status report that summarizes:
  - New risk factors
  - Retired risk factors
  - Re-surfaced risk factors
  - Status of on-going action items
  - Status of on-going contingency plans
  - New action items and contingency plans generated
- * weekly, monthly, milestone, department, senior management reviews, customer reviews

Levels of Risk Management

- Crisis Management - everything's broken
- Fix on failure - something broke?
  Fix it!
- Risk mitigation - what will we do when it breaks?
- Prevention - how keep it from breaking?
- Eliminate root causes - why could it break?
- PLEASE strive for the last two levels

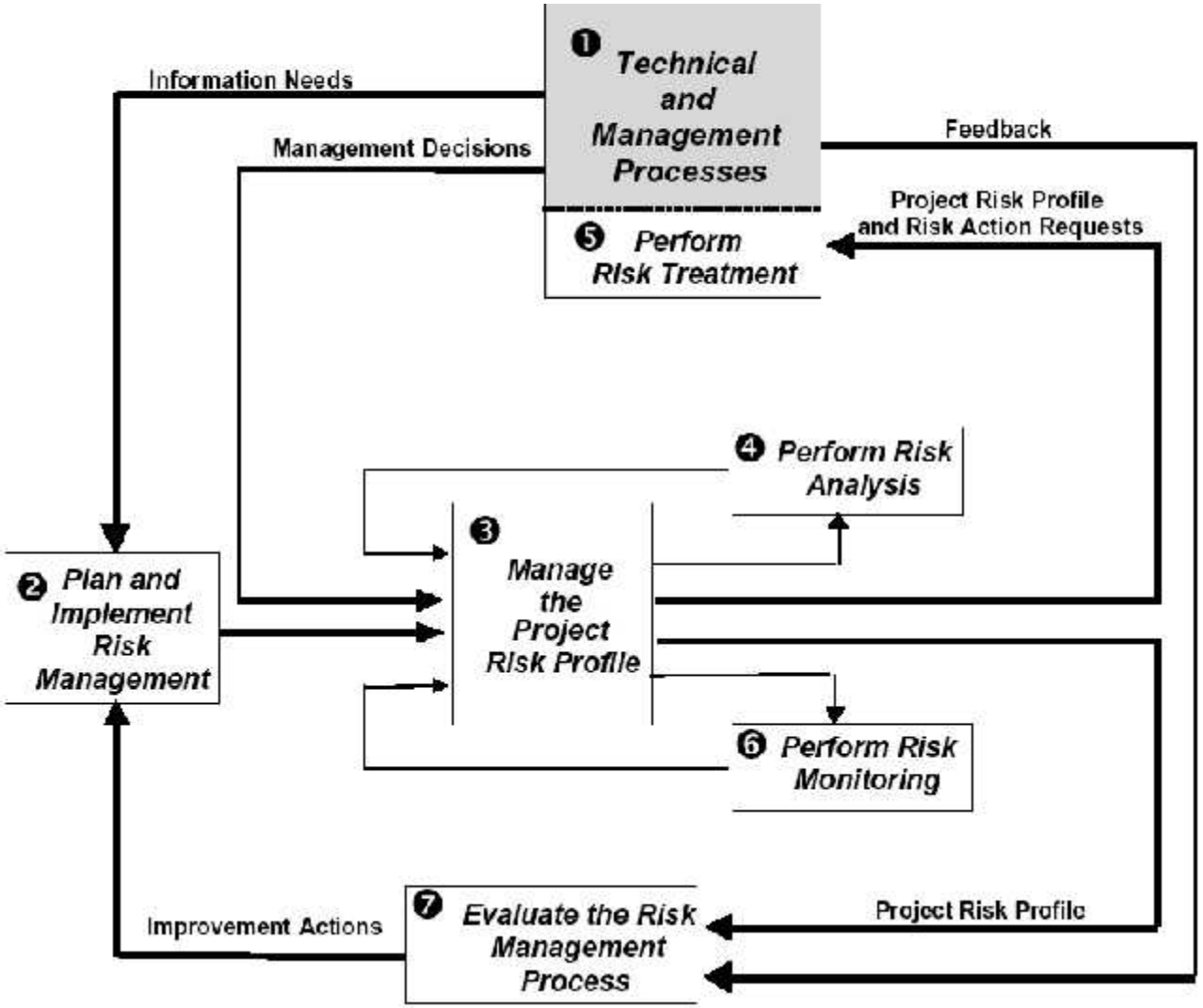
Reactive Approach

- Project team reacts to risks when they occur
- mitigation—plan for additional resources in anticipation of fire fighting
- fix on failure—resource are found and applied when the risk strikes
- crisis management—failure does not respond to applied resources and project is in jeopardy

Proactive Approach

- Formal risk analysis is performed
- Organization corrects the root causes of risk
  - QM concepts and SQA
  - Examining risk sources that lie beyond the bounds of the software
  - Developing the skill to manage change

IEEE 1540:2001
Risk Management Process Model



Technical and Management Processes

- Define the information requirements for RM
  - *information needed and priority*
  - risk areas of concern
  - RM policies required
  - *risk acceptability thresholds*
- Make decisions regarding risks
- Make recommendations for improving the RM process

Plan and Implement Risk management

- Establish RM policies to support information required by decision makers
  - how RM is to be performed?
  - what tools or techniques to be used?
  - how RM activities will be coordinated?
  - how risk is to be communicated?
- *Establish the RM process*
- Establish responsibility for RM
- Assign RM resources
- *Establish RM process evaluation*

Manage the project risk profile

- Create a consistent current and historical view of the risks present and their treatment
- Define the technical and managerial risk management context
  - risks areas of concern
  - stakeholder(s) perspective(s)
  - objectives, assumptions and constraints
- *Establish risk thresholds*
- *Establish and maintain the project risk profile*
- Communicate risk status to stakeholders

Perform Risk Analysis

- *Identify risks defined by RM context*
- *Estimate risk likelihood and consequences*
- Evaluate and prioritize the risks and their interactions against thresholds
- Recommend risk treatment where applicable
- Document in risk action request
  - *measures of treatment effectiveness*
  - contingency plans

Perform Risk Treatment

- Management evaluates risk action requests and determines acceptability of risks
- If risk reduction actions are to be taken, management selects, plans, monitors, and controls treatment to decrease risk exposure
- Once a risk treatment has been selected
  - if a 12207 Life Cycle Process is employed,
    - risk treatment is managed using the problem management approach of the Management Process
  - if a non-12207 Life Cycle Process is employed,
    - a detailed Risk Treatment Plan must be developed and implemented

Perform Risk Monitoring

- Review and update individual risk states and the management context
- *Assess effectiveness of risk treatments*
- Seek out new risks

Evaluate the Risk Management Process

- *Capture RM information*
- Assess and improve the RM process
  - *collect RM information*
  - *assess the quality of the process*
  - identify opportunities for improvement
  - provide feedback to management
  - make improvements to the process
- Generate lessons learned

Q&A