

Risk Management

Lecture 18

Risk Managment

A risk is a potential problem – it might happen and it might not

Conceptual definition of risk

Risk concerns future happenings

Risk **involves change in mind, opinion, actions, places**, etc.

Risk involves choice and the uncertainty that choice entail

Risk Categorization – Approach #1

Project risks

They threaten the **project plan**

If they become real, it is likely that the **project schedule** will slip and that costs will increase

Technical risks

They threaten the **quality** and **timeliness** of the software to be produced

If they become real, **implementation** may become difficult or impossible

Business risks

They threaten the **viability** of the software to be built

If they become real, they **jeopardize** the project or the product

Risk Categorization

Sub-categories of Business risks

- **Market risk** – building an excellent product or system that no one really wants
- **Strategic risk** – building a product that no longer fits into the overall business strategy for the company
- **Sales risk** – building a product that the sales force doesn't understand how to sell
- **Management risk** – losing the support of senior management due to a change in focus or a change in people
- **Budget risk** – losing budgetary or personnel commitment

Risk Categorization – Approach #2

- **Known risks**
 - Those risks that can be **uncovered** after careful evaluation of the project plan, the business and technical environment in which the project is being developed, and other reliable information sources (e.g., unrealistic delivery date)
- **Predictable risks**
 - Those risks that are **extrapolated** from past project experience (e.g., past turnover)
- **Unpredictable risks**
 - Those risks that can and do occur, but are extremely **difficult to identify** in advance

Reactive vs. Proactive Risk Strategies

Reactive risk strategies

"Don't worry, I'll think of something"

The majority of software teams and managers rely on this approach

Nothing is done about risks until something goes wrong

The team then flies into action in an attempt to correct the problem rapidly (**fire fighting**)

Crisis management is the choice of management techniques

Proactive risk strategies

Steps for risk management are followed

Primary objective is to **avoid risk** and to have a **contingency plan** in place to handle unavoidable risks in a controlled and effective manner



Steps for Risk Management

- 1) **Identify** possible risks; recognize what can go wrong
- 2) **Analyze** each risk to estimate the **probability** that it will occur and the **impact** (i.e., **damage**) that it will do if it does occur
- 3) **Rank** the risks by probability and impact
 - Impact may be **negligible, marginal, critical, and catastrophic**
- 4) **Develop a contingency plan** to manage those risks having **high probability** and **high impact**

Seven Principles of Risk Management

1. **Maintain a global perspective**

1. View software risks within the context of a system and the business problem that is intended to solve

2. **Take a forward-looking view**

1. Think about risks that may arise in the future; establish contingency plans

3. **Encourage open communication**

1. Encourage all stakeholders and users to point out risks at any time

4. **Integrate risk management**

1. Integrate the consideration of risk into the software process

5. **Emphasize a continuous process of risk management**

1. Modify identified risks as more becomes known and add new risks as better insight is achieved

6. **Develop a shared product vision**

1. A shared vision by all stakeholders facilitates better risk identification and assessment

7. **Encourage teamwork when managing risk**

- Pool the skills and experience of all stakeholders when conducting risk management activities

Risk Projection/Estimation Steps

- 1) Establish a scale that reflects the **perceived likelihood** of a risk (e.g., 1-low, 10-high)
- 2) Delineate the **consequences** of the risk
- 3) Estimate the **impact** of the risk on the project and product
- 4) Note the **overall accuracy** of the risk projection so that there will be no misunderstandings

Contents of a Risk Table

A risk table provides a project manager with a simple technique for risk projection

It consists of five columns

Risk Summary – short description of the risk

Risk Category – one of seven risk categories (slide 8)

Probability – estimation of risk occurrence based on group input

Impact – (1) catastrophic (2) critical (3) marginal (4) negligible

RMMM – Pointer to a paragraph in the Risk Mitigation, Monitoring, and Management Plan

Risk Summary	Risk Category	Probability	Impact (1-4)	RMMM

Developing a Risk Table

- **List** all risks in the first column (by way of the help of the risk item checklists)
- **Mark** the category of each risk
- **Estimate** the **probability** of each risk occurring
- **Assess** the **impact** of each risk based on an averaging of the **four risk components** to determine an overall impact value (See next slide)
- **Sort** the rows by probability and impact in **descending** order
- **Draw** a horizontal cutoff line in the table that indicates the risks that will be given further attention

Assessing Risk Impact

Three factors affect the **consequences** that are likely if a risk does occur

Its nature – This indicates the **problems** that are likely if the risk occurs

Its scope – This combines the **severity** of the risk (how serious was it) with its overall **distribution** (how much was affected)

Its timing – This considers **when** and for **how long** the impact will be felt

Assessing Risk Impact

The overall **risk exposure** formula is **$RE = P \times C$**

P = the probability of occurrence for a risk

C = the cost to the project should the risk **actually occur**

Example

P = 80% probability that 18 of 60 software components will have to be developed

C = Total cost of developing 18 components is \$25,000

$$RE = .80 \times \$25,000 = \$20,000$$

The RMMM Plan

The RMMM plan may be a part of the software development plan or may be a separate document

Once RMMM has been documented and the project has begun, the risk **mitigation**, and monitoring steps begin

Risk **mitigation** is a problem **avoidance** activity

Risk **monitoring** is a project **tracking** activity

Risk monitoring has **three** objectives

To **assess** whether predicted risks do, in fact, **occur**

To **ensure** that risk aversion steps defined for the risk are being properly **applied**

To **collect** information that can be used for **future** risk analysis

The findings from risk monitoring may allow the project manager to ascertain what **risks caused which problems throughout the project**

Summary

Whenever much is riding on a software project, common sense dictates risk analysis

Yet, most project managers do it informally and superficially, if at all

However, the time spent in risk management results in

- **Less upheaval** during the project
- A **greater ability** to track and control a project
- The **confidence** that comes with planning for problems before they occur

Risk management can absorb a significant amount of the project planning effort...but the effort is worth it

Thank You