University of Mosul

College of Computer Sciences and Mathematics

Department of Computer Science

Software Project Management
Risk management

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Risk management

Risk management is concerned with identifying risks and drawing up plans to minimise their effect on a project.

A risk is a probability that some adverse circumstance will occur

- **Project risks affect schedule or resources;**
- **Product risks affect the quality or performance of the software being developed;**
- **Business risks affect the organisation developing or procuring the software.**

Software risks

Risk	Affects	Description
Staff turnover	Project	Experienced staff will leave the project before it is finished.
Management change	Project	There will be a change of organisational management with different priorities.
Hardware unavailability	Project	Hardware that is essential for the project will not be delivered on schedule.
Requirements change	Project and product	There will be a larger number of changes to the requirements than anticipated.
Specification delays	Project and product	Specifications of essential interfaces are not available on schedule
Size underestimate	Project and product	The size of the system has been underestimated.
CASE tool under-performance	Product	CASE tools which support the project do not perform as anticipated
Technology change	Business	The underlying technology on which the system is built is superseded by new technology.
Product competition	Business	A competitive product is marketed before the system is completed.

The risk management process

Risk identification

- **Identify project, product and business risks;**

Risk analysis

- **Assess the likelihood and consequences of these risks;**

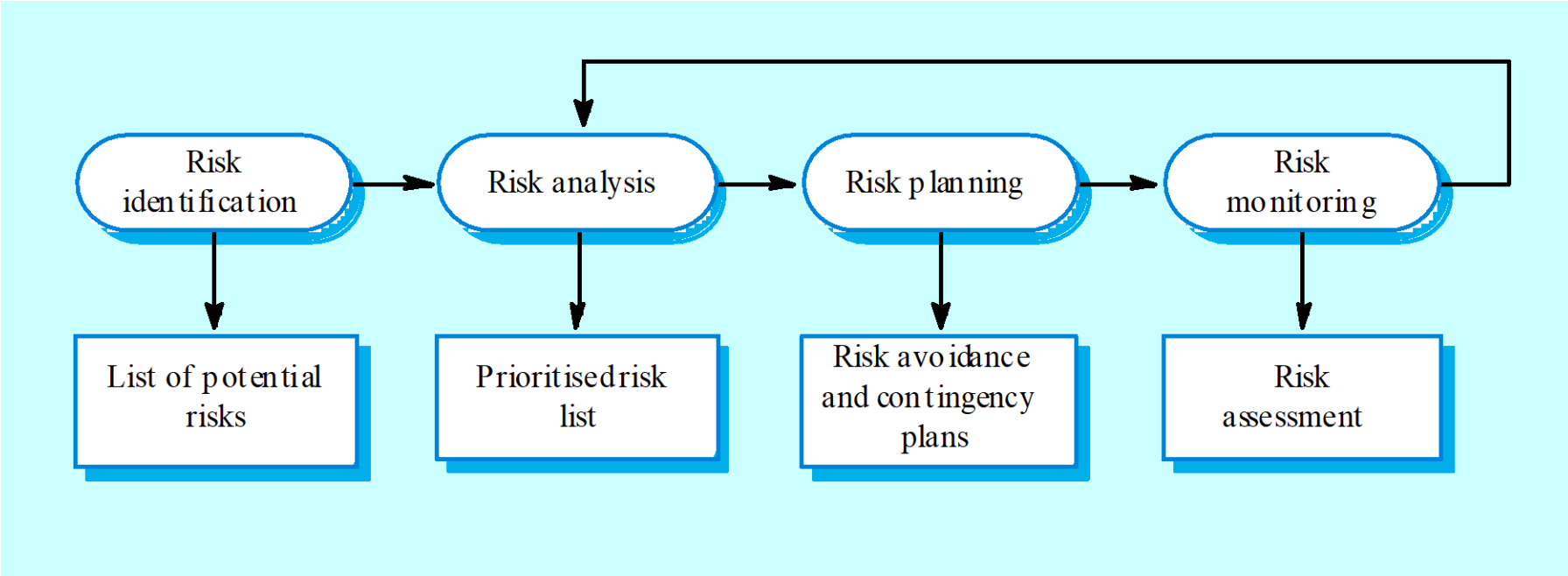
Risk planning

- **Draw up plans to avoid or minimise the effects of the risk;**

Risk monitoring

- **Monitor the risks throughout the project;**

The risk management process



Risk identification

Technology risks.

People risks.

Organisational risks.

Requirements risks.

Estimation risks.

Risks and risk types

Risk type	Possible risks
Technology	The database used in the system cannot process as many transactions per second as expected. Software components that should be reused contain defects that limit their functionality.
People	It is impossible to recruit staff with the skills required. Key staff are ill and unavailable at critical times. Required training for staff is not available.
Organisational	The organisation is restructured so that different management are responsible for the project. Organisational financial problems force reductions in the project budget.
Tools	The code generated by CASE tools is inefficient. CASE tools cannot be integrated.
Requirements	Changes to requirements that require major design rework are proposed. Customers fail to understand the impact of requirements changes.
Estimation	The time required to develop the software is underestimated. The rate of defect repair is underestimated. The size of the software is underestimated.

Risk analysis

Assess probability and seriousness of each risk.

Probability may be very low, low, moderate, high or very high.

Risk effects might be catastrophic, serious, tolerable or insignificant.

Risk analysis (i)

Risk	Probability	Effects
Organisational financial problems force reductions in the project budget.	Low	Catastrophic
It is impossible to recruit staff with the skills required for the project.	High	Catastrophic
Key staff are ill at critical times in the project.	Moderate	Serious
Software components that should be reused contain defects which limit their functionality.	Moderate	Serious
Changes to requirements that require major design rework are proposed.	Moderate	Serious
The organisation is restructured so that different management are responsible for the project.	High	Serious

Risk analysis (ii)

Risk	Probability	Effects
The database used in the system cannot process as many transactions per second as expected.	Moderate	Serious
The time required to develop the software is underestimated.	High	Serious
CASE tools cannot be integrated.	High	accepted
Customers fail to understand the impact of requirements changes.	Moderate	accepted
Required training for staff is not available.	Moderate	accepted
The rate of defect repair is underestimated.	Moderate	accepted
The size of the software is underestimated.	High	accepted
The code generated by CASE tools is inefficient.	Moderate	Insignificant

Risk planning

Consider each risk and develop a strategy to manage that risk.

Avoidance strategies

- **The probability that the risk will arise is reduced;**

Minimisation strategies

- **The impact of the risk on the project or product will be reduced;**

Contingency plans

- **If the risk arises, contingency plans are plans to deal with that risk;**

Risk monitoring

Assess each identified risks regularly to decide whether or not it is becoming less or more probable.

Also assess whether the effects of the risk have changed.

Each key risk should be discussed at management progress meetings.

Risk indicators

Risk type	Potential indicators
Technology	Late delivery of hardware or support software, many reported technology problems
People	Poor staff morale, poor relationships amongst team member, job availability
Organisational	Organisational gossip, lack of action by senior management
Tools	Reluctance by team members to use tools, complaints about CASE tools, demands for higher-powered workstations
Requirements	Many requirements change requests, customer complaints
Estimation	Failure to meet agreed schedule, failure to clear reported defects

Thank you