Risk Management

RISK MANAGEMENT

Risk Management

- Involves anticipating of risks that might affect the project schedule or the quality of the software being developed and taking action to avoid these risks.
- The results of the risk analysis should be documented in the project plan with an analysis of the consequences of a risk occurring.
- Effective risk management makes it easier to cope up with problems and to ensure that these do not lead to an unacceptable schedule slippage
- Risk can threaten the project that is being developed and the organization

Categories Of Risk

- Project Risk – These risks affect the project schedule or resources. Example Loss of an experienced designer
- Product Risk – These risks affect the quality or performance of the software being developed. Example Failure of purchased component to perform as expected
- Business Risks – These risks affect the organisation developing or procuring the project . Example A competitor introducing a new product
- The risks that may affect a project depend on the project and the organizational environment where the software is being developed. Some of the common risks are shown in the table below

Possible Software Risks

Risk	Risk type	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 which 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Technology change	Business	The underlying technology on which the system is built is superseded by new technology.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.

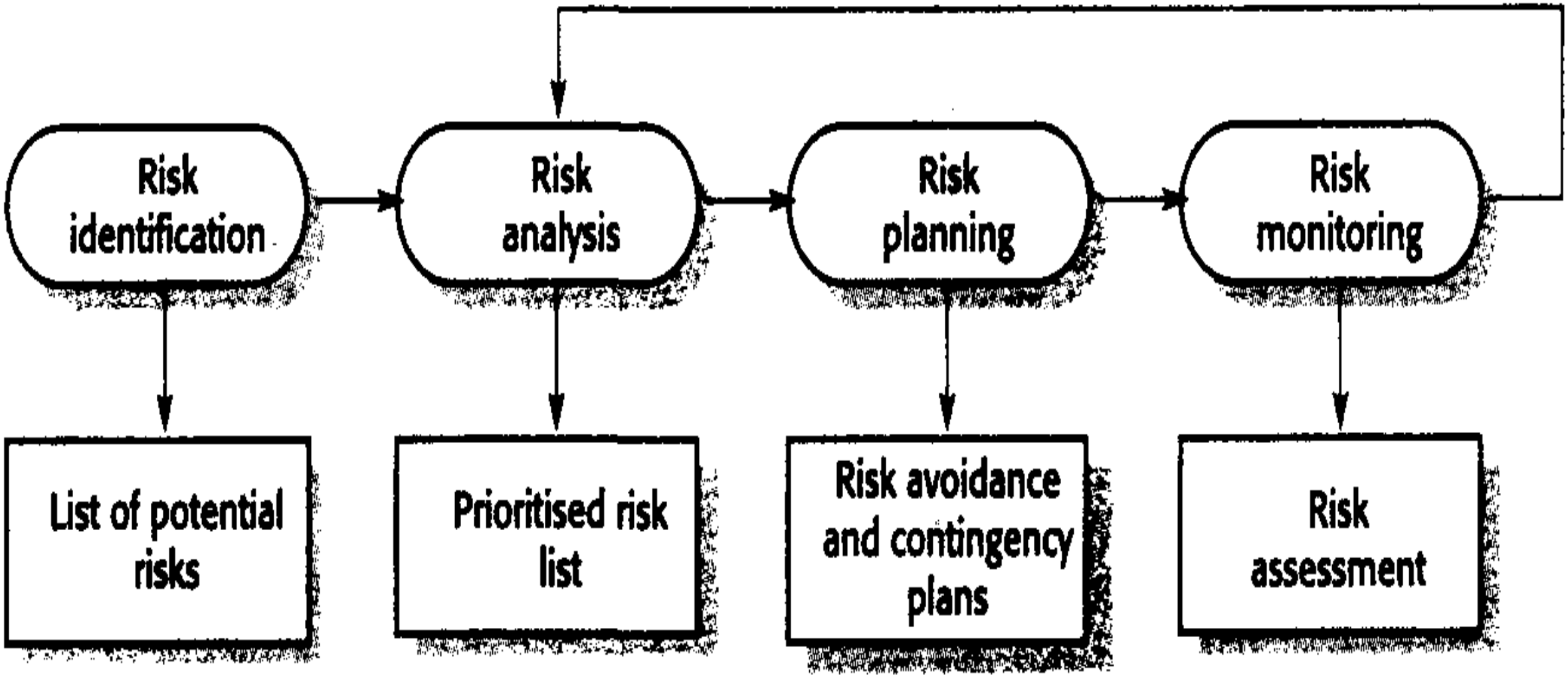
Risk Management Process

- It is important because of the inherent uncertainties that most projects face. These stem from loosely defined requirements, difficulties in estimating the time and resources required for the software development, dependence on individual skills and requirement changes.

- Risk management process is an iterative process which continues throughout the project.

- Anticipation of the risk, impact on the project and steps to avoid these risks. The following diagram shows the risk management process

Risk Management Process



Risk Identification

- It is the first stage of risk management which is concerned with discovering possible risks to the project.

- It is carried out as a team process using a brainstorming approach or may simply be based on experience. There are six types of risks that can arise

Types Of Risk

1. *Technology risks* Risks that derive from the software or hardware technologies that are used to develop the system.
2. *People risks* Risks that are associated with the people in the development team.
3. *Organisational risks* Risks that derive from the organisational environment where the software is being developed.
4. *Tools risks* Risks that derive from the CASE tools and other support software used to develop the system.
5. *Requirements risks* Risks that derive from changes to the customer requirements and the process of managing the requirements change.
6. *Estimation risks* Risks that derive from the management estimates of the system characteristics and the resources required to build the system.

Risk Analysis

- Identify each risk and make a judgment about the probability and the seriousness of it
- Risk estimates are based on a number of bands like <10% (Low), 10-25 % (Moderate), 25-50% (High), 50-75% (Very High), >75% (Very Very High)
- Effects of these risks must be assessed as catastrophic, serious, tolerable or insignificant
- Tabulate the result of the analysis process according to the seriousness of the risk as given below

Risk and its types

Risk type	Possible risks
Technology	The database used in the system cannot process as many transactions per second as expected. Software components which should be reused contain defects which 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 which 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 Planning

- Considers each of the key risks that have been identified and identifies strategies to manage the risk

- The strategies for identifying the risk falls into three categories

  - Avoidance strategies – Probability that the risk will arise will be reduced. Example strategy for dealing with defective components
  - Minimization strategies – Impact of the risk will be reduced. Example Reorganization of team
  - Contingency Plan – Prepared for the worst and have a strategy in place to deal with it. Example Strategy for organizational financial problem

Risk Management Strategies

Risk	Strategy
Organisational financial problems	Prepare a briefing document for senior management showing how the project is making a very important contribution to the goals of the business.
Recruitment problems	Alert customer of potential difficulties and the possibility of delays, investigate buying-in components.
Staff illness	Reorganise team so that there is more overlap of work and people therefore understand each other's jobs.
Defective components	Replace potentially defective components with bought-in components of known reliability.
Requirements changes	Derive traceability information to assess requirements change impact, maximise information hiding in the design.
Organisational restructuring	Prepare a briefing document for senior management showing how the project is making a very important contribution to the goals of the business.
Database performance	I vestigate the possibility of buying a higher-performance database.
Underestimated development time	Investigate buying-in components, investigate the use of a program generator.

Risk Monitoring

- Involves regularly assessing each identified risk to decide whether that risk is becoming probable and whether the effects of the risks have changed.
- Risk Monitoring is a continuous process and at every management progress review it is considered.
- The table below gives the description of the risk factors

Risk Monitoring

Risk type	Potential indicators
Technology	Late delivery of hardware or support software, many reported technology problems
People	Poor staff morale, poor relationships amongst team members, 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