SWEN90016
Software Processes & Project Management

Risk Management

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Learning Outcomes

1. Understand the fundamentals of risk management
2. Understand the Risk Management Process
3. Understand how to:
   - plan risk management activities
   - identify risks
   - analyze and assess risks
   - respond to risks (risk strategies)
   - monitor and control risks

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What is a risk?

- **A *risk* is a:**

  Possible future event that has negative results

  Hazard; peril; or exposure to loss or injury

  - Webster's dictionary

  An uncertain event or condition that, if it occurs, has a positive or negative effect on the project objectives

  - PMBOK

- The first two definitions above treat risk and always negative, whereas the third definition considers positive as well as negative impacts - *opportunities* (we will stick with the third definition)

Risk vs Uncertainty

- Risk is different to uncertainty although they are related.

- ***Uncertainty:***
  - Lack of complete certainty about an event/outcome
  - The event/outcome has a probability of less than 1
  - E.g. outcome of a sporting event
- ***Risk:***
  - Uncertainty that has an impact
  - E.g. If you have placed a bet on the sporting event, or have some other personal stake in it, then there is risk associated with the outcome of the sporting event

Risk is a result of uncertainty but not every uncertainty is a risk.

Why formal Risk Management

- We deal with risks in our lives every day
  - e.g. Planning to get to the lecture

- Projects have many possible risks, that could have significant impacts on the outcomes:
  - Business risks
  - Project risks
  - Product risks
- A planned Risk Management process is essential
- The goal of project risk management is:

  minimising the impact of potential negative risks while maximising the impact of potential positive risks

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Risk Management Process

Risk Management Process

- **Plan**
  - How to approach and plan risk management activities?
- **Identify**
  - Identify the possible risks
- **Analyse and Assess (Qualitative and Quantitative):**
  - Identify the relative priorities of the identified risks
- **Respond (Action):**
  - How can we reduce the likelihood or impact of risks?
- **Monitor and Control:**
  - How can we detect the ongoing status of our risks? How can we control them effectively and efficiently?

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Risk Management Planning

- The output of risk management planning is a ***Risk Management Plan (RMP)*** that documents the procedures for managing risks throughout a project

- The project team should review the RMP and understand and implement the organisation's and the sponsor's approaches to risk management

- The level of detail will vary with the needs of the project

Risk Management Plan Template

- The Risk Management Plan
  - Methodology
  - Roles and Responsibilities
  - Budget and Schedule
  - Risk Categories
  - Risk Probability and Impact
  - Tracking
  - Risk Documentation
  - Contingency Plans
  - Fall-back Plans

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Characteristics of Risk

- Determine which events should be considered as risks by analysing the following:
  - Is the *probability* of the event occurring greater than *zero?*
  - What is the *impact* of the event on the project?
  - Do we have some *degree of control* over the event or its outcome?
- Generic Risks:
  - Threats or opportunities common to every software project (e.g. staff turnover, budget and schedule pressures)
- Product-specific Risks:
  - Threats or opportunities specific to the product, and can only be identified by people who have a clear understanding of the product and technology

Kinds of Risk

- **Project risks**
  - Affect the planning of the project

    e.g. Budget, Schedule, Scope, Personnel, etc.

- **Product risks**
  - Affect the quality or performance of the outcome being developed

    e.g. Design problems, implementation problems, interface problems, maintenance problems, verification problems

- **Business risks**
  - Affect the economic success of the project

    e.g. No demand for product, loss of management support, loss of external funding for the project etc.

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