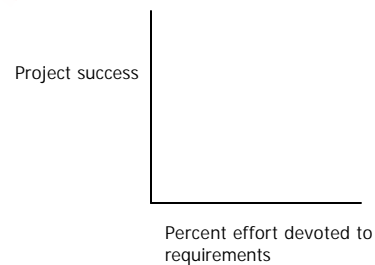# CSE 403, Software Engineering Lecture 3

Requirements

Project

- Background study of student note taking
  - What do students do with lecture notes?
- Develop use cases
- Get up to speed on dev environment
  - Write a few throw away apps

High level goal

- Make sure the right system is built
- Totally bogus statistic (but still "true")
  - It costs 57.3 times as much to fix an error at development time than at specification time

Trade off curve

Project success

Percent effort devoted to requirements

Role of requirements

- Requirement development phase
- Use of requirements in project

- Before requirements sign off

- After requirements sign off

Documentation

- "A key concept is that requirements must be documented"
- "It's not a requirement until its written down"

- Obvious – but not always followed

Requirement types

- Business case requirements

- User requirements

- Functional requirements

Business case requirements

- "We need a payroll system"
- "Build an on-line admissions system integrated with the student database "
- "Add a speech UI to MS Word"
- "Develop a student note management application to work with ConferenceXP Presenter"

User requirements

- Requirements from the user's point of view
- Expressed in the user's language
- Based on understanding of user's application
- Does not define implementation
- Issue: defining user in mass market software

Methods for expressing requirements

- Specification lists
- Data-flow diagrams
- Entity-relationship diagrams
- Prototypes
- Mock ups
- Use cases
- Scenarios
- Personas

Challenges of requirements gathering (Kulak, Guiney)

- Finding out what users need
- Documenting users' needs
- Avoiding premature design assumptions
- Resolving conflicting requirements
- Eliminating redundant requirements
- Reducing overwhelming volume
- Traceability

Use case methodology

- A use case describes a sequence of interactions between a system and an external actor that results in the actor accomplishing a task that provides benefit to someone.
- Buzzwords
  - User-centric
  - Task-centric

Scenarios

- A single path through a use case
- Presenter
  - Lecture delivery use case
    - Slide lecture scenario
    - Whiteboard lecture scenario

Use case

- Overview of interactions
- Text details
- Example
  - Authenticate User
    - Actors: User, Unauthorized user
    - Summary: Users request entry to the system, valid credentials allow access

Use case traps to avoid

- Too many use cases
  - Each use case should tell a story about a way a user would interact with the system to a achieve a particular goal
- Duplication across cases
- Including UI Design or data definitions
- Attempting to associate every requirement with a use case

Restaurant Reservation System

- Support assignment of patrons to tables
- Customer
  - Restaurant in a large chain
  - Willing to invest resources for a system that could be deployed widely

Develop use cases for reservation system

- What are the use cases?

Candidate use cases

- Customer makes remote reservation
- Customer arrives at restaurant
- Staff seats customer
- Staff updates seating chart