Roadmap

CSC 354, Software Engineering I

Overview

- Software engineering is the systematic application of engineering approaches to the development of software.

- The Road Map

    - Scope ->
    - Planning ->
    - Requirements ->
    - Architecture ->
    - Prototype ->
    - Test Plan ->
    - Design ->
    - Sprints ->
    - Delivery

Scope

- Scope of the product
  - determine what is *inside* the system, and what is *outside* the system
- Artifacts
  - Context diagram
  - User stories
  - Use cases

Planning

- Project Organization
  - What skills does the team *have*?
  - What skills does the team *need*?
  - Who is *responsible* for what?
- Artifacts
  - Software Development Plan
  - PERT / Gantt Chart

Planning (continued)

- Risk Management Plan
    - What is the *highest risk* portion of your application?
    - What do you understand *least* about?
- Artifact
    - Software Development Plan

Requirements

- Refine scope to requirements
  - What are the *functional* requirements?
  - What are the *non-functional* requirements?
  - What is the *user workflow*?
- Artifacts
  - Software Requirements Specification
  - Requirements Traceability Matrix

Architecture

- Scope the Architecture
  - Based on the requirements, what *servers, hardware, etc.* are needed?
  - What are the *development environments*?
- Artifact
  - Architecture Diagram

Prototype

- Design and build a working prototype
    - Research unknown areas
    - Try different solutions (fail fast)
    - Create the prototype
- Artifact
    - Working prototype

Test Plan

- Create system level test plan
    - Based on *user stories*
    - Based on *functional* requirements
    - Based on *non-functional* requirements
- Artifact
    - Test Plans

Design

- High level design
  - Create a system level *class diagram*
- Artifact
  - Detailed design specification

Sprints

- Multiple sprints, each deliver *user functionality*

- For *each* sprint (2 weeks each; goal is 4 sprints)

    - Sequence diagrams
    - Code
    - Test (unit, integration, system)
    - Deploy

- Artifact

    - Detailed design specification

Delivery

- Final user acceptance testing and report

- How do you install the system?

- How do the users use the system?

- Demo Day?

- Artifacts
    - Testing report
    - Installation guide
    - User manual