Software and its Engineering

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Contents

- Introduction
- Software Project Management
  - Estimation
- Development Approaches
  - Traditional
  - OO
  - CO

Reference Books

  http://www.ceng.metu.edu.tr/~dogru/b.pdf

Software Characteristics

- Software is developed, not manufactured
- Software does not wear out
- Software problems are wicked
- Mostly custom built, should benefit from being assembled from existing components

Software Types

- System software
- Real-time software
  - Hard real-time
- Business software
- Engineering and scientific software
- Embedded software
- Fault tolerant
- Safety critical

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Myths

- **Management myths**
  - Standards and procedures are there, that is everything our people needs
  - development tools = newest computers
  - behind schedule? Hire more people
- **Customer Myths**
  - Begin with a general statement, details will be filled in later
  - Change can be accommodated easily because software is flexible
- **Practitioners Myths**
  - program works -> job is done
  - before the program runs, quality cannot be assessed
  - the only deliverable is a working program

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What is Software?

- program
- Set of programs
- System of programs + documents
- Logical glue
  - Set of programs + documents
  - Integration
  - Abstract design

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Software Crisis

- demand
- offer
- time

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Success?

- Failure
- Big repair
- Some repair
- Success

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Success: 2010 +

Source: Standish

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Engineering Problem

- Wicked problems
- Elevating abstraction
- Automation
- Software !!!!
SysML

- ~UML Profile
- Some added diagrams (Requirements D.1)
- Some modified diagrams
- Some UML diagrams are excluded
- Influenced UML 2.0 on.