Perspectives on Software Engineering

Peter Dolog
dolog [at] cs [dot] aau [dot] dk
5.2.47
Information Systems
February 14, 2008
Goals of this Lecture

To finish tutorial planning
To discuss perspectives on software engineering
  • Stages
  • Management Issues
To perform tutorial on interactive and agile development basic reflections
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<th>Group</th>
<th>Date</th>
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What is SE?

WHAT IS SOFTWARE ENGINEERING?
The IEEE Computer Society defines software engineering as “(1) The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software. (2) The study of approaches as in (1).”
SOE - Related Disciplines

Zelkowitz (1978):

<table>
<thead>
<tr>
<th>Mathematics</th>
<th>Engineering</th>
<th>Management Science</th>
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<tbody>
<tr>
<td>Algorithms</td>
<td>Costs and Tradeoffs</td>
<td>Requirements, Risks, Personnel, Monitoring</td>
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SWEBOK (2004):

**Table 2 Related disciplines**

- Computer engineering  
- Computer science  
- Management  
- Mathematics  
- Project management  
- Quality management  
- Software ergonomics  
- Systems engineering
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SD Life Cycle (Zelkowitz)

Requirements analysis
Specification
Design
Coding
Testing
Operation and maintenance
Design, Structure Diagram

**Figure 2.** Sample baseline diagram for a compiler.
Testing

- Unit test
- Integration test
- System test
- Acceptance test

V-Model
Effort distribution in percentages

Figure 1. Effort required on various development activities (excluding maintenance)
Life-cycle Effort Distribution

**Figure 3.** True effort on many large-scale software systems.
Goals of Software Engineering

Use techniques that manage complexity
Increase reliability and correctness
Develop techniques to predict costs accurately