Systems Development and Project Management

ICT in Business
Leiden Institute of Advanced Computer Science (LIACS), Leiden University
The Netherlands

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Summary

ICT development projects face increasing complexity. In addition to technological challenges, managerial and organizational issues arise, causing failure to a vast number of development initiatives.

The **lecture-based** part of this course focuses on the management of the development process, including the systems development life cycle, alternative approaches to software development, techniques for project management, and critical success factors.

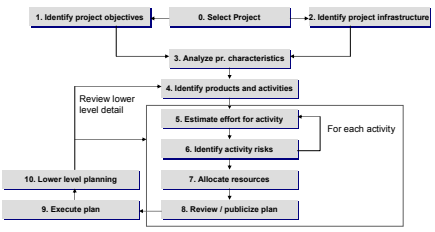
The **project-based** part of the course, which builds on the software engineering course, provides an opportunity to experience and apply the issues and techniques discussed in the course to a real project.

	1994	1996	1998	2000	2002	2004	2009
Succeeded	16%	27%	26%	28%	34%	29%	32%
Failed	31%	40%	28%	23%	15%	18%	24%
Challenged	53%	33%	46%	49%	51%	53%	44%

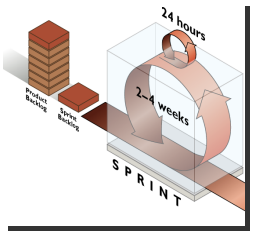
From the Standish CHAOS Report: They define success as projects on budget, cost, and with expected functionality.

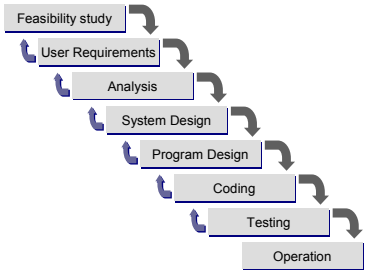
Course Contents Overview

1. Approaches to Project Planning
2. Software Development Approaches
3. Activity Planning and Resource Allocation
4. Software Effort Estimation
5. Risk Management and Project Escalation
6. Project Monitoring and Control
7. Software Quality Assurance
8. Managing People
9. Contract Management
10. Visionary Leadership
11. Trade Fair Organized by Students



Flow chart of the STEP WISE approach to project management (modified, simpler version of PRINCE II).





SCRUM (left) and Waterfall model (right): Two extremes of the software development approaches, SCRUM being an agile, adaptive, prototyping-based approach and the waterfall model being a structured, staged one-shot approach with delivery at the end of the project. Other approaches such as spiral, incremental, rapid prototyping, and DSDM are discussed in the course as well.

The Practical Project

Software project management is a real-world business. The closer we can get to reality in the course, the better. As a means to achieve this, students will work in groups throughout the course on a **practical project assignment**. For this project, a **project proposal and detailed project plan** have to be developed, and by the end of the course, the developed system mockup (however, with some functionality implemented) has to be presented within a **trade fair** event.

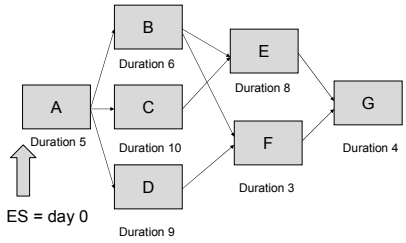
Example of previous projects:

- A system for downstream gas distribution optimization.
- A web based customer loyalty card system.
- The soccer world-championship IT service system.

The Trade Fair

Like in the real world, the student groups working on the project assignment correspond to "companies" competing for the same software development project awarded by a "customer" (the lecturer and his evaluation team). In addition to the project proposal and detailed project plan, the **trade fair** is the unique opportunity to present a group's system to the potential "buyer".

This is a unique experience of marketing, presenting your system, answering questions, and trying to convince the "buyer" of the benefits of the group's system. The competition, the group development experience under time pressure, and the presentation and selling situation are a unique experience.



Activity networks, the critical path method (CPM), and other evaluation techniques are important tools for activity, resources, and cost scheduling – all of which are of critical importance for project managers.

Grade Composition

Active participation of students is expected in this course, and the participation involves in-class contributions, a presentation, group-work deliveries, a written exam, and a so-called trade fair at the end of the course, where students present their project work. In detail, the grade is composed as follows:

15%	Project proposal	Group work
15%	Detailed project plan	Group work
5%	PPT presentation on a case study	Group work
5%	Reflection paper	Individual
5%	In class participation	Individual
30%	Written exam	Individual
25%	Trade-fair project Presentation	Group work

Textbook

Bob Hughes, Mike Cotterell:
Software Project Management, McGraw Hill, Maidenhead, 2006.

About the Lecturer

Prof. dr. Thomas Bäck is head of the Natural Computing Group at the Leiden Institute of Advanced Computer Science (LIACS). He received his PhD in Computer Science from Dortmund University, Germany, in 1994. He has been Associate Professor of Computer Science at Leiden University since 1996 and full Professor since 2002. Thomas has more than 150 publications on natural computing technologies, is the author of a book on Evolutionary Algorithms, and co-editor of the Handbook of Evolutionary Computation and Handbook of Natural Computing. He received the best dissertation award from the Gesellschaft für Informatik in 1995 and is an elected fellow of the International Society for Genetic and Evolutionary Computation for his contributions to the field. In addition to his research and teaching experience, Thomas is also an experienced company CEO who has managed large projects with Fortune 500 companies such as Air Liquide, Beiersdorf, BMW, Daimler, Henkel, Honda, Johnson & Johnson, P&G, Rio Tinto, RWE, Symrise, TUI, Unilever, Volkswagen.