



The Impact of Network Technology on Information Systems

Systems - People - Organizations

Prof. Dr. Florian Matthes
Software Systems Institute

f.matthes@tu-harburg.de

A Global Information Society: Chances and Challenges



Learning Objectives

- What is an information system?
- What are major trends in IS development?
- What are contributing research disciplines?

Information Systems

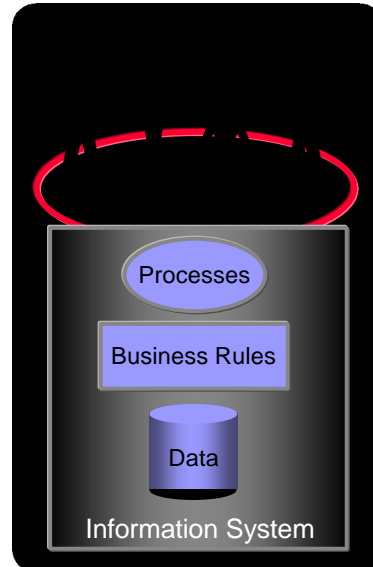
Traditional Perspective

An information system supports **cooperative activities**

- ◆ of employees
- ◆ in an organization
- ◆ based on codified business rules

Examples

- ◆ Manage students at the university
- ◆ Run a large manufacturing plant



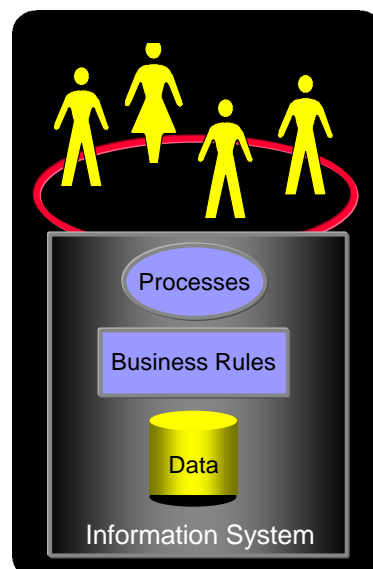
Cooperation over Time

Lifetime of the data determined by the lifetime of the processes to be supported.

Examples

- ◆ Register for a course
- ◆ Monitor the progress of a customer order

- Persistence, Recovery
- **Database Technology**



Cooperation in Space

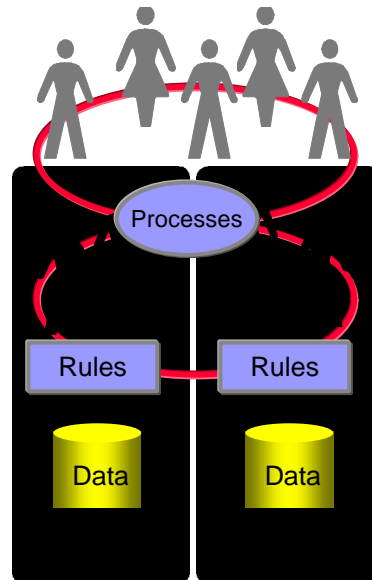
People and systems are distributed physically.

- ◆ **Employees** within the organization
- ◆ **Customers and Business Partners** outside of the organization

Examples

- ◆ Register online for a course
- ◆ Coordinate multiple manufacturing sites

→ **Network Technology**
 Software Technology



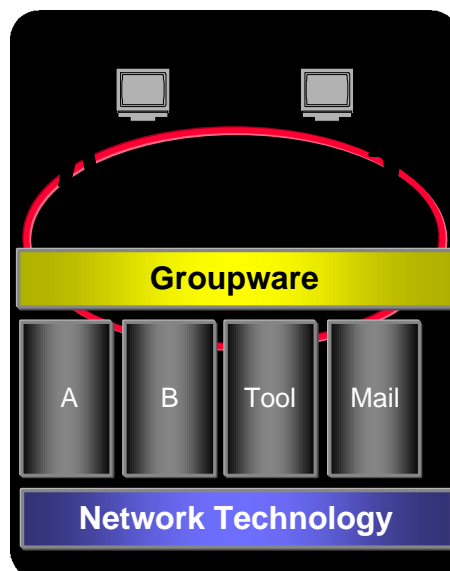
Cooperation in Multiple Modalities

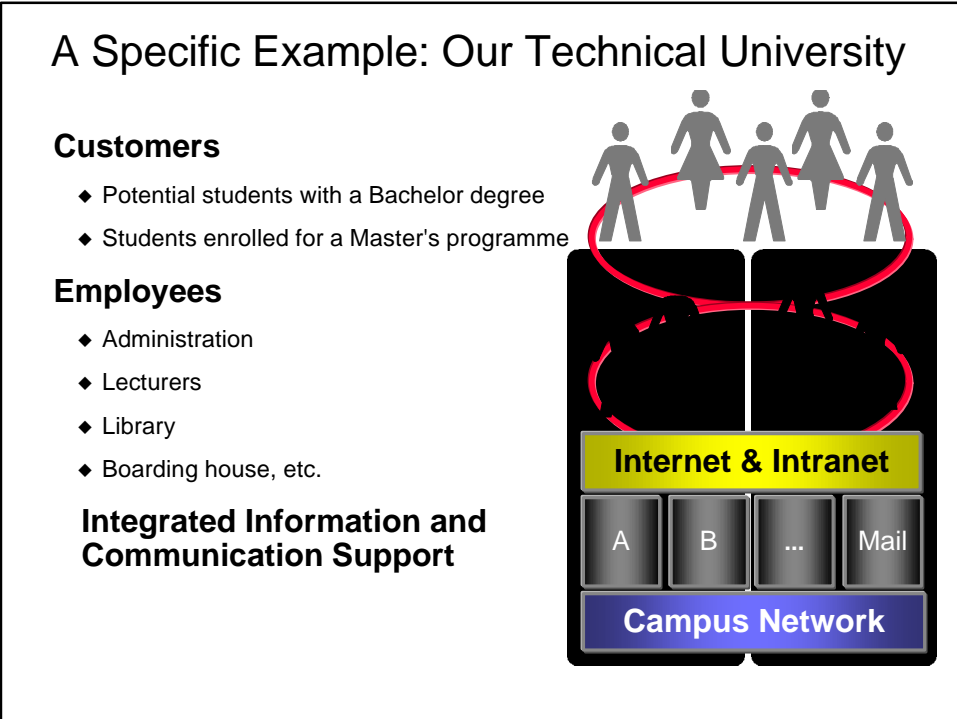
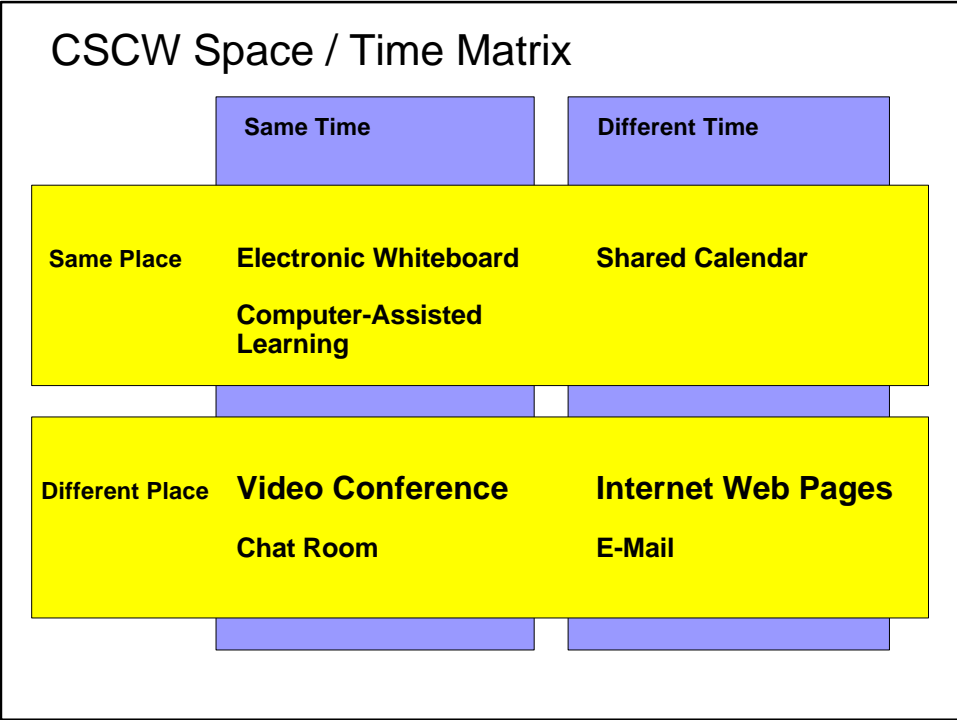
Information systems have to adapt to changing human work practice.

Examples

- ◆ Batch processing of written student applications
- ◆ *Drag&Drop* course allocation with E-Mail notification

→ **Computer Supported Cooperative Work (CSCW)**





Adresse <http://www.tu-harburg.de/allgemein/studium/masters/masters.html>

international academic programmes



- [Challenge in Engineering Sciences](#)
- [Master's Programmes](#)
 - [Materials Science](#)
 - [Mechatronics](#)
 - [Information and Communication Systems](#)
 - [Process Engineering](#)
 - [Application](#)
- [Bachelor's Programme](#)
 - [Application](#)
- [Further Information](#)

Challenge in Engineering Sciences

The increasing globalization of markets requires an increasing internationalization of education. The Technical University of Hamburg-Harburg is prepared to accept this challenge by offering an [international academic programme](#) in the engineering science which consists of an interdisciplinary bachelor's programme and six master's programmes. These academic courses are characterised by the following features:

master's
 Technical University of Hamburg-Harburg

TECHNISCHE UNIVERSITÄT
TUHH
 HAMBURG · HARBURG

Adresse <http://www.tu-harburg.de/allgemein/studium/masters/ICSmain.html>



information and communication systems

- [Challenge in Engineering Sciences](#)
- [Master's Programmes](#)
 - [Materials Science](#)
 - [Mechatronics](#)
 - [Information and Communication Systems](#)
 - [Process Engineering](#)
 - [Application](#)
- [Bachelor's Programme](#)
 - [Application](#)
- [Further Information](#)

The programme comprises a set of compulsory and elective courses which address three more specific areas of the subject:

Software for Information and Communication Systems

Parallel algorithms	(1st sem.)
Parallel processing	(1st sem.)
Object-oriented analysis &	(1st sem.)

master's
 Technical University of Hamburg-Harburg

TECHNISCHE UNIVERSITÄT
TUHH
 HAMBURG · HARBURG

Adresse http://www.tu-harburg.de/allgemein/studium/masters/M_Applicform.html

Application Form

International Master's Programmes
Technical University of Hamburg Harburg

I apply for the Programme in

For the winter term of

Personal Data

Title

First name

Surname

Sex Male Female

Current resident address

Postal address (if not identical to current

Adresse <http://www.sts.tu-harburg.de/teaching/ss-98/SoftArch/entry.html>

[CONTACT](#) [PEOPLE](#) [PROJECTS](#) [TEACHING](#) [PAPERS](#) [SEARCH](#) [INTRANET](#)

Software Architectures

Lecture
Number: 2612.1002
Professor: [Florian Matthes](#)
Time: Friday 14:00 - 15:30
Room: ES42 R 1582

Background and Motivation

Software developers have often adopted specific architectural patterns for system organization - but, for the most part, informally. This lecture presents the state of the art in software architectures as an engineering discipline. The focus is on practical and proven models, styles and methods presented from an object-oriented perspective.

Goals

The primary objective of this course is to teach students how to approach software systems from an architectural point of view. By the end of the course, students should be able to

Adresse <http://www.sts.tu-harburg.de/teaching/ss-98/SoftArch/demo.html>

11 Fr. 10.7. [Object-Oriented Class Frameworks](#) (Java Applets, Java Servlets, Java Beans)

12 Fr. 17.7. [Object-Oriented Class Frameworks](#) (cont'd)

Exercises and Exam

No.	Topic	Issued	Return until	Solution
1	Pipe and filter architectures	Fri 6/12/98	Fri 6/19/98	P&F architectures
2	Event-based architectures	Fri 6/19/98	Fri 6/27/98	Event-based architectures
3	JDBC relational database access	Fri 7/3/98	Fri 7/17/98	JDBC relational database access
4	Understanding framework programming	Fri 7/10/98	Fri 7/17/98	--

[Candidates and Exam Dates](#)

Please have a look at the large number of [online material, books and tutorials on Java.](#)

Recommended Reading

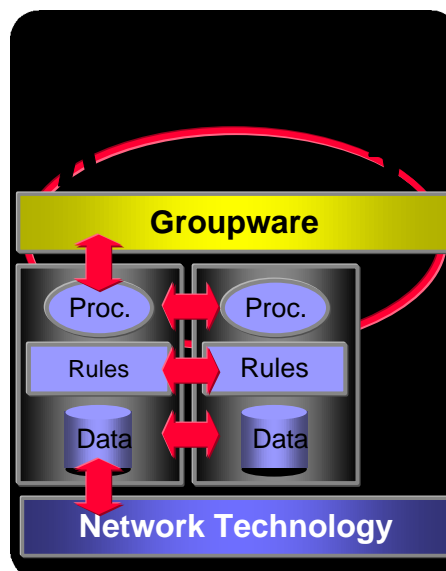
- Mary Shaw, David Garlan: *Software architecture, perspectives on an emerging*

→ A Cooperative Information System

... supports cooperative activities

- ◆ of people
- ◆ from multiple organizations
- ◆ based on negotiated business rules
- ◆ in multiple modalities
- ◆ over arbitrary distances

→ **Multi-disciplinary research & development**



Success Factors in a Global Information Society

- ◆ **Technology:** Networks and Information Systems
 - ◆ **Organizations:** Change Management and New Alliances
 - ◆ **People:** Knowledge and Communication Skills

