

# Course OOSE

## Object oriented, component based software engineering

Version 30/08/2004

(Course could also be offered to Erasmus Incomings and for Erasmus Teacher's Mobility in other countries)

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## 0 **Abstract**

### **Enterprise Portals, eBusiness Infrastructure, Webservices, Enterprise Application Integration, Business-to-Business Integration: – The Today's State of the Art**

A reliable, scalable transaction platform is the base for the eBusiness. Depending on the programming model there are different middleware platforms like Web Application Servers for J2EE, TP-monitors like CICS and Tuxedo for C and Cobol, Object Transaction Monitors for C++ and Corba as well as platforms for integrating all these worlds. Based on these transaction infrastructures prebuilt EJB components and a Commerce Server allow rapid development of eShops and eBusiness applications. A Personalisation Server enables creating dynamic Web applications based on user profiles, a rules engine and a content management system. According to the standardized specification of the J2EE Connector Architecture a componentware market of plug&play adapters for Enterprise Application Integration came up the last 2 years. Furthermore by a Workflow Management System business processes can be graphically modeled and implemented without hard coding. Also the processes of different business partners can be modeled and integrated to supply chains without any coding. Finally virtual market places can be easily built by defining collaboration hubs and downloadable enablers. Enterprise portals for Business to Consumers, Business to Employees and Business to Business support a single point of access on top of all these technics. All together is today called the eBusiness infrastructure.

### **Enterprise Portals, eBusiness Infrastructure, Webservices, Enterprise Application Integration, Business-to-Business Integration - Stand der Technik heute**

Eine ausfallsichere, skalierbare Transaktions-Plattform ist die Basis für die Anforderungen des eBusiness. Abhängig vom Programmiermodell gibt es verschiedene Middleware Plattformen wie Web Application Server für J2EE, TP-Monitore wie CICS und Tuxedo für C oder Cobol, Object Transaction Monitore für C++ und Corba sowie Plattformen für die Integration all dieser Welten. Darauf aufbauend können mit vorgefertigten Geschäftsprozessen und EJB Komponenten eines Commerce Servers eShops und eBusiness-Anwendungen schnell entwickelt werden. Ein Personalisation Server ermöglicht die Erzeugung dynamischer Web-Applikationen basierend auf Benutzerprofilen, einer Regelmaschine für Personalisierungsregeln und einem Content Management System. Entsprechend dem Standard der J2EE Connector Architecture entstand in den letzten beiden Jahren ein Komponentenmarkt für vorgefertigte Adapter für Enterprise Application Integration. Außerdem können mittels integrierter Workflow Management Systemen Geschäftsprozesse graphisch modelliert und ohne „harte“ Codierung flexibel implementiert werden. Die Geschäftsprozesse zwischen Geschäftspartnern können z.B. als Supply Chains über Unternehmensgrenzen hinweg integriert werden sowie Virtuelle Marktplätze schnell und einfach eingerichtet werden. Oberhalb all dieser Techniken liefern Enterprise Portals für Business to Consumers-, Business to Employees- und Business to Business-Anwendungen einen Single Point of Access auf die Anwendungen und Informationen eines Unternehmens. Alles zusammen nennt man heute eine eBusiness Infrastruktur.

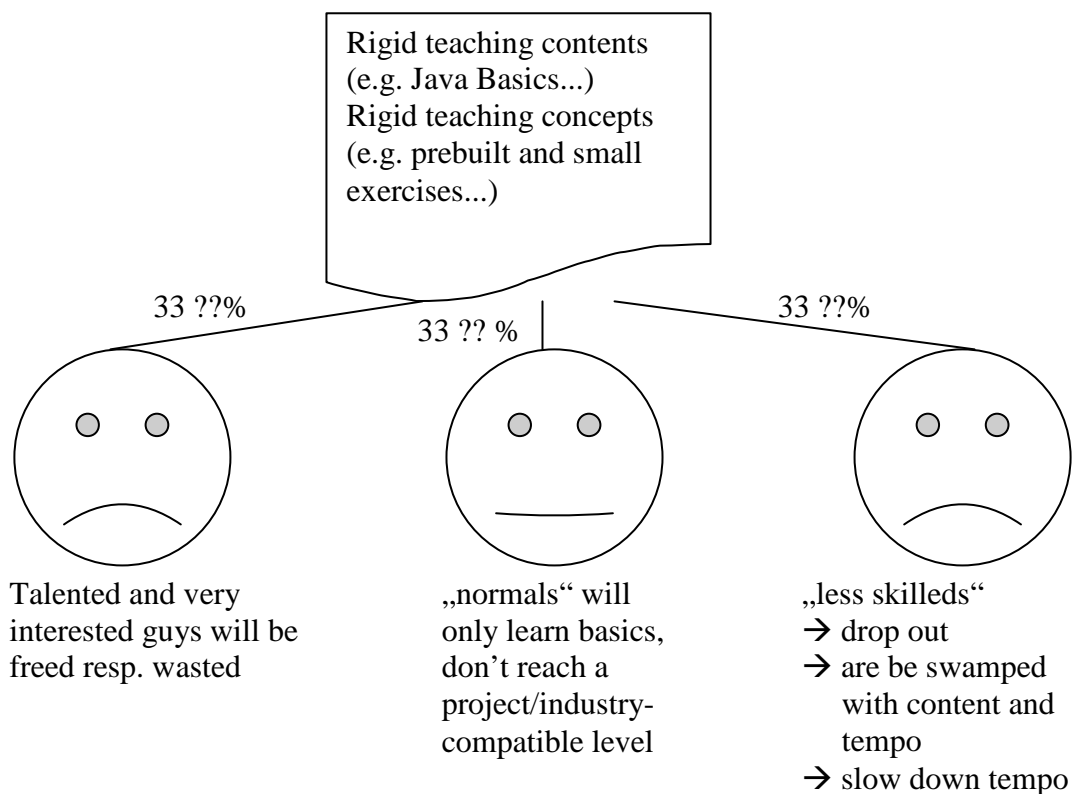
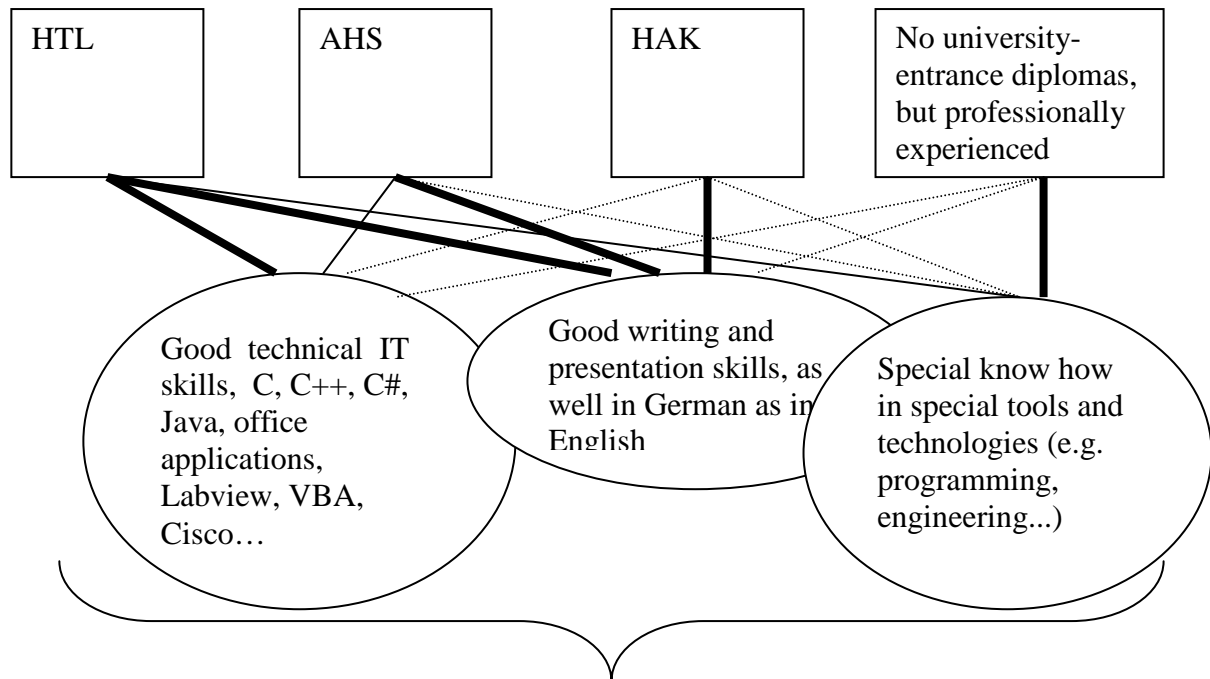
# 1 **Learning Targets**

- Primary professional competences
  - o Developing a Computer Science project as a Distributed System
  - o Using OOAD-standards like UML and OEP
  - o Learning software architectures like single tier, two tier, three tier, multi tier and choosing the appropriate architecture for an application
  - o Learning protocols like IIOP, RMI, DCOM, .NET Remoting, http(s), WAP, SOAP...
  - o TP-monitors, application servers, models of SW components
  - o Learning IDEs for implementing Distributed Systems, Enterprise Portals resp. Enterprise Applications
- Secondary competences
  - o Capacity for teamwork (soft skills and communicative competence)
  - o Apply typical “project”-tools for organizing teamwork like project planning tools, Instant Messaging...
  - o Scientific working (scientific lecturing and writing)
  - o Provoke creativity and acting on student’s own initiative

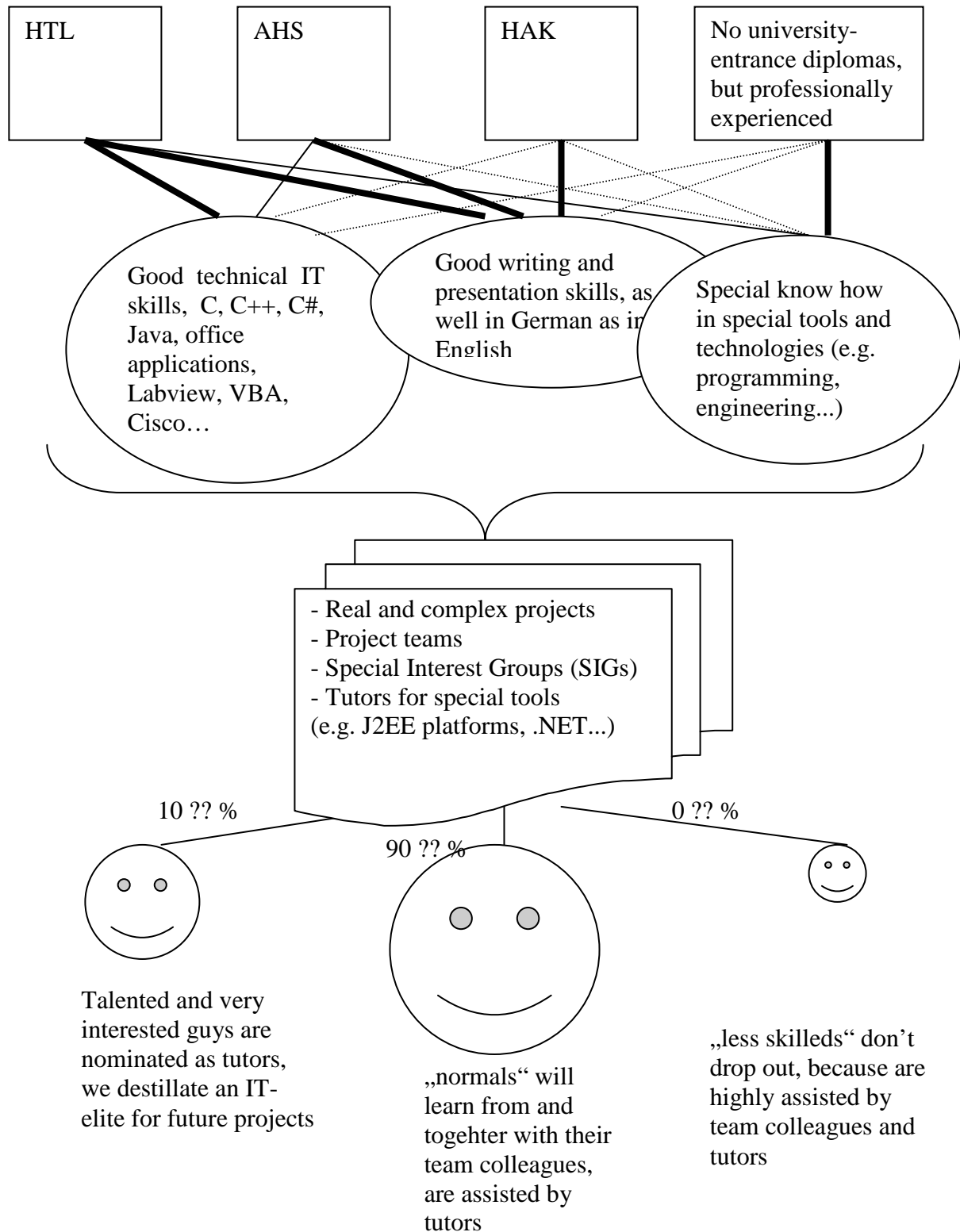
## 2 Situation and pre-conditions

Attendees with

- very different educational requirements
- very different professional qualifications
- different ages
- perhaps Erasmus incoming students



Therefore real projects, team working, special interest groups, tutors...



### **3 Realisation**

#### **3.1 Learn the basics about Distributed Systems, Enterprise Applications, Portals**

- see abstract

#### **3.2 Project idea**

- Everybody comes up with a project idea up to the 2. plenum date and prepares a PPT presentation of exactly 3 minutes.
- Evaluation criterias for the presentation are discussed.
- Aims:
  - o „Sell“ your project
  - o Win at least 4 or 5 applicants as team members
  - o Send email + PPT-attachment to professor until 1 day before 2. plenum date
- Provoke creativity / presentation skills / communicative competence

#### **3.3 Application as a team player**

- Write an application by text processing + scan/insert picture + CV with your skills needed in the project
- You can apply for more projects.
- Send application via email + attachments to project leader with Cc to professor until 1 day before 3. plenum date
- Project leaders send email to applicants with positive/negative answer ASAP
- Project leaders send email to professor with names of team members
- Teams/project leaders organise Instant Messaging groups per team (professor included?)
- Design a project website
- Aims:
  - o Building teams (for further learning together), selection of needed skills in the project
  - o Learning accuracy (orthography, grammar, ...)

#### **3.4 Find the Use Cases of your project**

- Loan out the UML book from the library (Peter Forbrig:....) → UML version 1.0
- Search for UML 2.0 in the internet
- Identify the relevant business processes and define the Use Cases by Visio / Rose
- ...
- What shall how supported by IT?
- Presentation of the Use Cases as PPT with Visio / ... diagrams included
- Aims:
  - o Requirements analysis, discuss business (resp. technical) processes with the customers and reengineer them
  - o Tools learned: ... Use Cases with Visio / Rational Rose / Poseidon..., library and remote access

### **3.5 Particularize a business (or technical) process as an activity diagram (or state chart, depending on the kind of project)**

- Look at UML 2.0 and the changes regarding activity diagrams
- Presentation of the activity diagrams as PPT with Visio / ... diagrams included
- Aims:
  - o Requirements analysis, discuss business processes with the customers and reengineer them
  - o Tools learned: ... Activity diagrams (or state charts) with Visio / Rational Rose / Poseidon..., page flows, JPD

### **3.6 Design class diagrams**

- Classes / Attributes / Methods / Objects / Instantiation / Inheritance / Generalisation/Specialisation, Whole/Part, Associations, Cardinalities...
- Model Driven Architecture (MDA)
- Generating code from MDA
- Presentation of the class diagrams as PPT with Visio / ... diagrams included
- Aims:
  - o From requirements analysis to implementation, discuss class diagrams with the customers and redesign them
  - o Tools learned: ... class diagrams with Visio / Rational Rose / Poseidon..., implementation of EJBs

### **3.7 Decide for an appropriate programming language and an Integrated Development Environment (IDE) resp. Integrated Service Environment (ISE)**

- Design the user interfaces
- Implement the business processes as page flows resp. workflows
- Implement roles and entitlements
- Implement business logic as EJBs
- Integrate legacy systems and connect data bases
- Design campaigns and implement marketing strategies

### **3.8 Write an scientific paper about your project and present the project at a (simulated) scientific conference**

- Exercise the principles of scientific working / writing / presenting

## 4 Schedule

Date	Subject	Type	hours	Room/ Equipment	Tutors/SIGs (also optionally and additionally offered by 1 tutor)
1a	Present concept of the course (targets, contents, dates, eval.- criteria), draw/explain diagrams of architectures and principles, terms, protocols... deliver IDE, deliver master-CD/course materials/SOA-/ISE-articles, read first paper "behind the scenes"	plenum	3	beamer; Internet, notebooks	
1b	Hannes Huber?	exercise	2		
2a	What means Distributed Systems today? Introduction in SOA, enterprise portals and their subjects, discuss paper "behind the scenes", show EJB-tutorial, J2EE tutorial	plenum	3	beamer internet notebooks	
2b	Hannes Huber	exercise, home office, virtual room	2		
3a	Excursion eWerk Wels: Portal project + presentation of the state of the project "electricity meter recording " - ... via internet browser application - ... via mobile device (WAP) - ... via self delivering devices Building project teams: "Concepts/state of the art of self delivering electricity meters and solutions/proposals for system- and software architectures"	plenum	3	beamer internet notebooks	
3b	Hannes Huber	Exercise home office, virtual room	2		
4a	Basics I: System- and SW- architectures, component models	plenum	3	beamer internet notebooks	
4b	Hannes Huber	Exercise, home office,	2		



		virtual room			
5a	Basics II: TP monitor, Object transaction monitor, application server	plenum	3	beamer internet notebook	
5b	Hannes Huber	Exercise, home office, virtual room	2		
6a	Enterprise Application Integration	plenum	3	beamer internet notebook	
6b	Hannes Huber	Exercise, home office, virtual room	2		
7a	WebServices	plenum	3	beamer internet notebooks	
7b	Hannes Huber	Exercise, home office, virtual room	2		
8a	XML + Standards for B2B	plenum	3	beamer internet notebooks	
8b	Hannes Huber	Exercise, home office, virtual room	2		
9a- 13a	Buffers + Writing papers	plenum	3	beamer internet notebooks	
9b- 13b	Hannes Huber	Exercise, home office, virtual room	2		
14/ 15	Presentations of the papers/projects	plenum	6	beamer internet notebooks	

## **5    *Appendix:***




- 5.1 Example of a final project paper eWerk Wels FUP
- 5.2 Example of a final project paper eWerk Wels Diploma Thesis
- 5.3 Scientific Working
- 5.4 How Instant Messaging Works

Wissenschaftliches Arbeiten - Wissenschaft und Wissenschaftlichkeit von Psychologie und Pädagog - Microsoft Internet Explorer

Adresse <http://paedpsych.jk.uni-linz.ac.at/INTERNET/ARBEITSBLAETTERORD/ArbeitsblaetterWissen.html>


## Wissenschaftliches Arbeiten

**NEU:**  
[Online-Tests](#) mit sofortiger Auswertung

<p><a href="#">Situativer Interessen Test</a></p>  <p>Der SIT ist ein differentieller Test zur Bestimmung von Berufs- und Freizeitinteressen nach dem <b>Modell von Holland</b>.</p> <p>ca. 5 Minuten</p>	<p><a href="#">Locus of Causality</a></p>  <p>Der LoC dient zur einfachen psychometrischen Erfassung des Rotterschen Konzepts des <b>Locus of Control</b>.</p> <p>ca. 5 Minuten</p>	<p><a href="#">Lerntypen-Test</a></p>  <p>Das Screening-Verfahren HALB-Test soll die in manchen Kreisen erstaunlich weit verbreitete <b>Lerntypentheorie</b> Vesters relativieren.</p> <p>ca. 4 Minuten</p>
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**Jetzt neu organisiert und wesentlich erweitert:**

- [Das schriftliche Referat](#)
- [Das Referat: Die Konzeption](#)
  - [Schreibtechnik](#)
  - [Themeneingrenzung & Schreibprobleme](#)



Start | WINDOWS | Wissenschaftliches Ar... | Outlook Heute - Microsof... | DE | 17:56

<http://paedpsych.jk.uni-linz.ac.at/INTERNET/ARBEITSBLAETTERORD/ArbeitsblaetterWissen.html>

Howstuffworks "How Instant Messaging Works" - Microsoft Internet Explorer

Adresse <http://computer.howstuffworks.com/instant-messaging.htm>

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- > RAM
- > Computer Viruses
- > Web Servers

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**Q. What's your IQ?**

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- 101 - 120
- 121 - 130
- 131 - 160+

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## How Instant Messaging Works

by [Jeff Tyson](#)

printable version free newsletter shop or compare prices

**Table of Contents**

- Introduction to How Instant Messaging Works
- Background
- ICQ

There is no doubt that the Internet has changed the way we communicate. For many of us, [e-mail](#) has virtually replaced traditional letters and even [telephone](#) calls as the choice for correspondence. Every day, billions of e-mail messages are sent out. E-mail has been the most rapidly adopted form of communication ever known. In less than two decades, it has gone from obscurity to mainstream dominance.

test - Instant Message  
File Edit Insert People

Internet

Start WINDOWS Posteingang - ... Howstuffwork... HowStuffWorks... UndertoneNetw... Dokument2 - Mi... DE 17:30