Authentication and Access Management as Central Topics of Every Infrastructure

Prof. Dr.-Ing. Firoz Kaderali
Department of Communication Systems
Authentication and Access Management as Central Topics of Every Infrastructure

Prof. Dr.-Ing. Firoz Kaderali
Department of Communication Systems
Content

- Introduction to Uni-Online
- Authentication and Accessmanagement
- Uni-Online as Open Source
ET-Online

Platform of the faculty of Electrical Engineering and Information Technology

First comprehensive concepts were developed nearly five years ago

An extensive prototype has been implemented and tested in practice with about 2000 Students

Nearly all our courses are currently offered online
Because of several institutions using and adapting ET-Online → Uni-Online

- **Partners**
  - TU Dresden
  - ViTA (Virtuelle Teleakademie) Bochum
  - FH Gelsenkirchen
  - MMK Hagen
  - KOMMTEL Münster
Virtual University - Technical Platform

- Decentralised server structure
- Connected via the FernUni Backbone
- Based on internet technology
- Accessable with a normal Web browser
- Integrated database
Technical Platform - Facts

- Sun and Intel-based hardware
- All parts of the platform are realized with open source software, e.g.
  - Linux operating-system
  - PostgreSQL database
  - Apache Web-Server
  - PHP modules and scripts
Virtual University - Structure

- Presentation layer
  - information about all events, lectures,…
  - library, general communication, …
- Course layer
  - electronic course material, multimedia appl., …
  - password protected object oriented access
Virtual University - Structure

- Communication layer
  - communication with fellow students, tutors, lecturers, ...
The course material is based on the existing teaching material of the FernUniversität that is already optimised for distance teaching.

Different kinds of course materials are offered to the students:

- multimedia courses, videos, computer based training
- highly interactive courses with integrated working and experimental environment
- animations, ...
Communication

- Communication is one of most important parts of online learning
- With
  - Course specific mailing-lists and newsgroups
  - Audio-, Chat- and Videoconferencing-Tools
  - Seminars via Multicast Backbone
  - the efficiency of distance learning increases
Introduction to Uni-Online
Authentication and Access Management
Uni-Online as Open Source
Course Management
Tutor's view

- The tutor can
- handle the enrollment of students for his course
- handle exercise results of the students
- create reports about courses and students
- create statistics about students' results
- register appointments
- look for tutoring of other courses
- contact other tutors
- access the database from any computer via WWW
Students' view

- Students
  - have access to exercise results via WWW
  - can query their enrollment in courses
  - can display personal appointments
  - can contact their tutors
  - can change personal data (email address, ...)
  - can correspond to fellow students via mailing lists
Tools for the Student

- Online-Assistant
  - Dates relevant to the student
  - Requesting of exercise results
  - Communication with fellow students

- Offline Navigator
  - Reduction of online time and costs for our students
  - More convenient handling of learning material
Online-Assistant

- Works in interaction with the database
  ... students have access to all relevant data
  ... individual workspace
  ... helps to personalise Uni-Online

- Secure transmission of all data
Online-Assistant
Screenshot

Kaderali "Authentication and Access Management as Central Topics of Every Infrastructure"
Offline Navigator
Technical Information

- Tool, which
  - automatically offers an individual and structured list of course materials
  - notifies about actual common information
  - updates older course material
  - shows further software which is needed
  - and further
    - compares which of the items above are already on the student's PC or
    - downloads the missing items.
Offline Navigator

- Java-based tool for automatic download of course material
  - reduces online-time
  - … minimizes internet access costs up to 75%
- interaction with database
- automatic download and structured storage of compressed course material
- web pages, software, …
- the online pages on the student`s computer
### Offline Navigator Screenshot

#### Liste der von "Tamara Testfall" belegten Kurse

<table>
<thead>
<tr>
<th>Grundlagen der Elektrotechnik I (02110)</th>
<th>15.09.1998</th>
<th>HTML</th>
<th>Stunden</th>
</tr>
</thead>
<tbody>
<tr>
<td>G Kurseinheit 1</td>
<td>15.09.1998</td>
<td>HTML</td>
<td>238000</td>
</tr>
<tr>
<td>G Kurseinheit 2</td>
<td>15.09.1998</td>
<td>HTML</td>
<td>267000</td>
</tr>
<tr>
<td>Kurseinheit 4</td>
<td>15.09.1998</td>
<td>HTML</td>
<td>200000</td>
</tr>
<tr>
<td>Kurseinheit 5</td>
<td>15.09.1998</td>
<td>HTML</td>
<td>301000</td>
</tr>
<tr>
<td>Kurseinheit 6</td>
<td>15.09.1998</td>
<td>HTML</td>
<td>293000</td>
</tr>
<tr>
<td>Kurseinheit 7</td>
<td>15.09.1998</td>
<td>HTML</td>
<td>377000</td>
</tr>
<tr>
<td>Kurseinheit 8</td>
<td>15.09.1998</td>
<td>HTML</td>
<td>310000</td>
</tr>
<tr>
<td>Kurseinheit 3</td>
<td>15.09.1998</td>
<td>HTML</td>
<td>686000</td>
</tr>
<tr>
<td>G Aufgabe 1</td>
<td>15.09.1998</td>
<td>HTML</td>
<td>144000</td>
</tr>
<tr>
<td>G Aufgabe 2</td>
<td>15.09.1998</td>
<td>HTML</td>
<td>460000</td>
</tr>
<tr>
<td>Aufgabe 3</td>
<td>15.09.1998</td>
<td>HTML</td>
<td>39000</td>
</tr>
<tr>
<td>Aufgabe 4</td>
<td>15.09.1998</td>
<td>HTML</td>
<td>62000</td>
</tr>
<tr>
<td>Aufgabe 5</td>
<td>15.09.1998</td>
<td>HTML</td>
<td>24000</td>
</tr>
<tr>
<td>Aufgabe 6</td>
<td>15.09.1998</td>
<td>HTML</td>
<td>46000</td>
</tr>
</tbody>
</table>
Offline Navigator
Summary of Advantages

- Individual view of the course offers
- Establishes two short online sessions in contrast to one long session
  - Improves the download process
  - No online costs for navigation time
  - Minimises transmission costs
- Further use of internet services while operation of the Offline Navigator is possible
Access Control

- Students (and guests) can access and use Uni-Online freely.
- Course unit 1 of every course is also available to everyone.
- For all other course material authentication is necessary.
- This authentication has to be done only once for each session.
Access Control

- Uni-Online uses the students' passwords available via the university computer center's LDAP server … Only one password for dial in at the university and for use of Uni-Online.
- External persons can access the course material via the Online Shop.
Online Shop

- Electronic payment of course material
- Course material can be bought anonymously
- Course is downloaded immediately after payment
- Current payment systems
  - Ecash: anonymous, digital coins
    - Deployed by Deutsche Bank in Germany
Kaderali "Authentication and Access Management as Central Topics of Every Infrastructure"
Content

- Introduction to Uni-Online
- Authentication and Access management
- Uni-Online as Open Source
CampusSource and Uni-Online

- Department for Communication Systems is member of CampusSource
- Uni-Online Platform is available for free
  - Sources
  - Documentation
  - Licensed via extended GNU License
Uni-Online

- Uses Open Source Software itself
  - Database
  - Web server
  - Scripting Language
  - Operating System
- Support via
  - providing companies
  - Newsgroups
  - mailing list
Contact information

Prof. Dr.-Ing. Firoz Kaderali
Department of Communications Systems
FernUniversität Hagen

http://uni-online.fernuni-hagen.de/