

ETH World Project Posters

for the International Peer Review, November 2003

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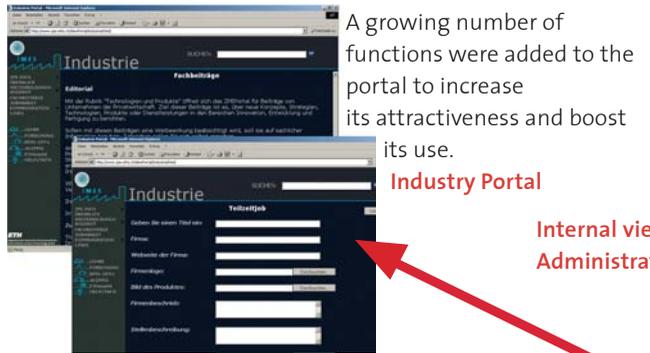
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ZPE Industry Portal

The goal of the project was to develop a new generation of Internet platform for the Center for Product Development, where the users with different access rights can manage the content themselves without having to rely on a web administrator. The idea was to provide a platform with up-to-date information to serve as a communication gateway for industry, students and researchers.



A growing number of functions were added to the portal to increase its attractiveness and boost its use.

Industry Portal
Internal view, Administration

The Portal consequently implements the idea of automating administrative and formatting tasks. This was achieved through routines developed under ZOPE that cover all relevant tasks and are easy to integrate in other pages. Reservation systems, input masks, efficient search machines, subject area structures, chat or blackboard functions were developed and integrated. After the end of the project the portal continues to be updated and adapted to changing user needs.

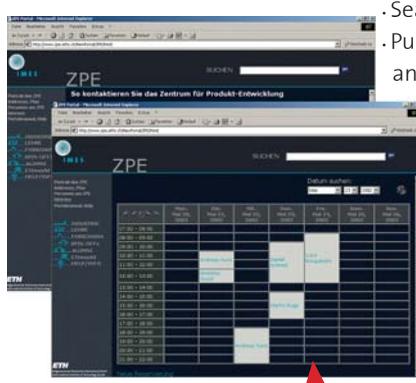
Die letzten 10 Besucher			
1.	23 Oktober	08:44	Cable & Wireless, Vereinigte Staaten
2.	23 Oktober	08:45	Cable & Wireless, Vereinigte Staaten
3.	23 Oktober	08:54	Hochschule für Technik und Architektur Biel, Biel Bienne, Schweiz
4.	23 Oktober	09:06	Otto Bihler Maschinenfabrik, Halblech, Deutschland
5.	23 Oktober	09:12	ETHZ, Zurich, Schweiz
6.	23 Oktober	09:44	Tele Danmark, Danemark
7.	23 Oktober	09:46	Tele Danmark, Danemark
8.	23 Oktober	09:47	Tele Danmark, Danemark
9.	23 Oktober	09:53	ETHZ, Zurich, Schweiz
10.	23 Oktober	10:36	ETHZ, Zurich, Schweiz

An important aspect of the portal project was to capture the use and acceptance by the different user groups. It turned out that the use of different functions varied considerably between

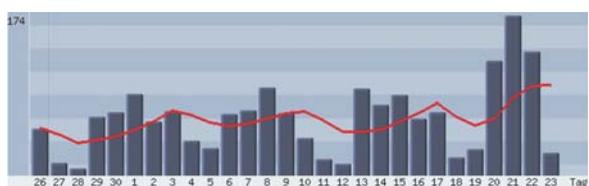
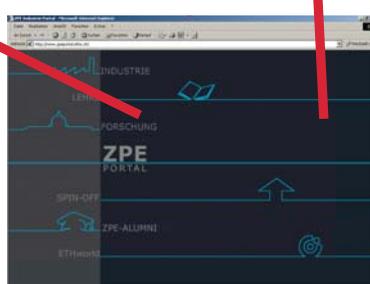
Thanks to simple web-based input forms users without programming knowledge can make use the ZPE Industry Portal interactively.

Based on an initial needs survey users from industry were given the possibility to add their own content. Excluding advertisements, this includes

- Search for employees
 - Publication of articles and papers
 - Job offers
 - Requests
 - Room reservations
- In addition, the portal offers the normal information content of a website.



Portal for students and staff

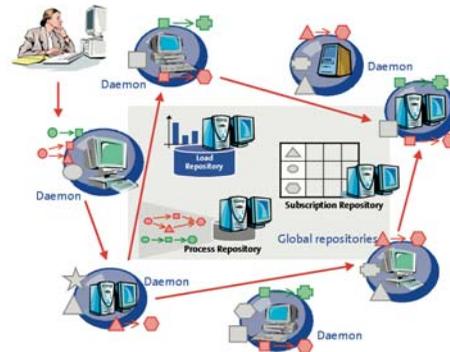


user groups. One can generally say that students and ETH staff display an active behavior, while industrial users access the information passively to make contact later by email or telephone. In recognition of this behavior some of the original features were deactivated.

Open Service Infrastructure for Reliable and Integrated Process Support

System Architecture:

- OSIRIS is a Hyper Database that applies well known database concepts and guarantees to services. It manages higher order objects (e.g. Services and Processes)
- OSIRIS consists of local daemons (hyper database layers) at the providers sites for process execution and navigation (comparable to an additional network stack layer), and global metadata repositories that organize and maintain system-wide information.
- OSIRIS makes it possible to execute processes peer-to-peer, distribute process navigation, bind services at run-time (late binding), update metadata in a lazy way using publish/subscribe and freshness constraints, decouple updates of replicated metadata from process execution, and to scale to arbitrary sizes (in terms of service providers and concurrent processes)



OSIRIS System Architecture: A combination of a local hyper database layer and global components make it possible to manage very large environments.

Process Modeling and Monitoring

- O'GRAPE – Modeling: Process definitions can be specified with a graphical user interface. Transaction properties are specified in addition to common control and data flow definitions. Transactional process properties are automatically derived from activity properties. Automatic integration of web services from a UDDI service description repository.
- O'GRAPE – Monitoring: Monitoring of running process instances using the same O'GRAPE layout.

Process Modeling:

With the well integrated modeling and specification tool O'Grave: trans-actonal processes guarantees can be specified.

ETH World Applications:

- Management of the information space of ETH World. Keeping community and personal info space consistent.
- Interactive Similarity Search. Efficient and effective similarity search on multimedia object. Benefits from workload balancing features during insertion of new images (e.g., crawled on the web).
- Consistency between object repository and search indexes is guaranteed by a set of administrative processes that trigger when changes are observed in the data store. Currently, ISIS contains more than 400000 images (costs for feature extraction: ~14000 CPU days)

OSIRIS supports many different tasks in the ETH World information space: interactive search as well as organization in the background.

Long-running administration processes. Often involving manual interaction. OSIRIS supports both short and long running processes. This also includes interoperation to legacy systems (e.g. SAP).

Computer Aided Learning In Civil Engineering

Goal of the Project

The CALICE (Computer-aided Learning in Civil Engineering) pilot project was partially funded by ETH World. It first went online in the winter 2000. The project provides a computer-based learning platform focusing on an introduction to the fundamentals of geotechnical engineering.

The main pedagogical aims are:

- to improve the student's understanding of the subject through discovery and reflection, and
- to support a wide range of individual learning styles.

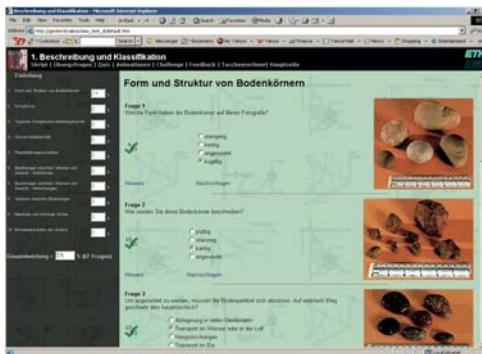


Fig. 1. Personalised homepage

Conclusions

An extensive on-line teaching and learning module for the introductory geotechnical engineering course has been implemented successfully at the Institute for Geotechnical Engineering. This is the first time that Internet-based teaching tools have been used at ETH Zurich for delivering a geotechnical engineering course. The evaluations and comments from the students were extremely positive. This course material has been improved and refined annually, and an enhanced version will be used for the same course in the academic year 2003/04.

This program was distinguished by invitation to the finals of the Medida Prix 2002.



Fig. 2. Multiple-choice and numerical questions

CALICE Model

The aims have been achieved most effectively by adopting a multi-threaded approach that mixes traditional methods (e.g. lectures, laboratory work and textbook style notes) with interactive Internet-based learning resources, which include:

- Hypertext-based on-line reference material with significant multimedia content
- Java-based simulations (see Fig. 3) that promote discovery and reflection
- Challenges that include essay-type open-ended questions that relate theory to practice
- Multiple-choice and numerical questions (see Fig. 2) that consolidate learning and help the tutors to monitor the student's progress through use of a personalised homepage (see Fig. 1).

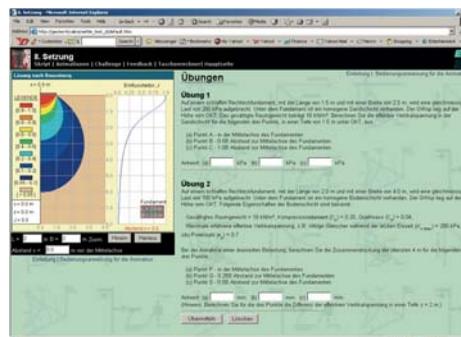


Fig. 3. Java-based simulations

ETH Alumni World – The Online Reference for the Alumni of ETH Zurich

The alumni of ETH Zurich is the largest group within the ETH community. ETH Alumni World is the information center of the virtual campus, providing access to information for all alumni of ETH Zurich and to other groups

The ETH Alumni Association provides services for the ETH Alumni:

- Lifelong E-Mail forwarding
- Free ETH Bulletin
- Organization of alumni events
- Administration of the alumni database
- Maintenance of the Alumni World website.

Members can take advantage of additional services like:

- Free access to the membership directory
- Free alumni magazine «Focus»
- Access to the attractive laptop offer of ETH (Neptun)
- Reduced health insurance fees
- Free registration of the on-line abstract delivery service
- Free online abstract delivery service «GetAbstract» for new business literature.

ETH Alumni sub-organisations can also use the Alumni World website as a platform for their own announcements.

The ETH Alumni Association continuously improves the services to support the ETH as well as the personal network of the Alumni — keep in touch!

Alumni Association

Mission Statement

The Alumni Association offers an active network between Alumni and the ETH, alumni and the society, and alumni and the business world.

In close partnership with ETH Zurich, the Association supports the Alumni in their personal careers and promotes the interests and goals of the ETH.

The Alumni Association is a non-profit organization.

Support for ETH Zurich

The Alumni Association assists with the fulfillment of the public mission of ETH Zurich. It promotes the identification of Alumni with ETH and the reputation of ETH and its alumni with the public. The Association actively supports ETH by making the professional experiences of its alumni available to the university.

Activities

The Alumni Association operates a business office, publishes the magazine «Focus» and administers the database and the website Alumni World.

It provides services for all alumni of ETH Zurich, for the members of the Association and for the ETH students (**Career Services**).

Facts & Figures

- The ETH was founded in 1855.
- Today, ETH Zurich has over 60 000 alumni.
- The alumni database contains more than 30 000 addresses of alumni in 100 countries.
- Of these 12 000 are members of the ETH Alumni Association.
- Most of the members are organized into local or professional subgroups.

VirealLab® – High-tech roomware for virtual and real teamwork

Definition:

VirealLab® (www.vireal.ethz.ch) stimulates intensive collaborative work, discussion and learning.

- A completely new environment for teamworks in education and research in life sciences
- Furnished with big interactive digital wall surfaces and tables providing easy access to the virtual world
- Equipped with conventional books supplementing the virtual world
- And provided with wireless LAN, mobile tables and chairs enabling flexible and dynamic working modes

These make Vireal Lab to be an innovative approach to meet the high demands of today's teaching and research in life sciences.



CommBoards®, interactive digital wall surfaces, designed by Wilkhahn (www.wilkhahn.de)

InteracTable®, an interactive table designed by Wilkhahn (www.wilkhahn.de)

The impact of VirealLab®

In a collaborative teamwork effort between the institute of Pharmaceutical Sciences and the Institute of Work Psychology of the ETH Zurich the impact of Vireal Lab is going to be analyzed and evaluated.

The following experiences have been made so far:

Cons

- More time is needed to prepare a lesson
- Intense interaction requires more time (this can may turn out as a pro if considering the learning outcome!)
- The technology may distract

The high demands of today's teaching in life sciences

Sophisticated scientific technologies enable accurate investigation of complex data at molecular level. To teach these complex data appropriately and to get a deeper understanding of them, new teaching technology with the following features is required:

- Real-time 3D visualization of bio-molecules in a high quality
- Manipulation as well as simulation of 3D bio molecules



In addition, nearly all modern research in life sciences has switched to teamwork to be able to create real breakthroughs in basic and medicinal sciences, e.g. The Human Genome Project. This fact demands:

- Appropriate team teaching and learning concept
- An Environment with high-tech team roomware

These are necessary for high-level team teaching and research.

Definitely, books, verbal explications, blackboard and overheads are no longer sufficient to reach today's educational goals in life sciences.

Pros

- Allows interesting settings of interactive and constructive pedagogical concepts
- Stimulates intensive collaborative work, discussion and learning
- 3-D-visualization on large screen supports immense understanding of complex data
- Leads to a higher cognition level like procedural (K3 - K6) and not only declarative (K1-K2) knowledge
- Provides richer learning experience fun
- Homogeneous and standardized technology

CCN – the Chemistry Contact Network

Project Goals:

CCN – the Chemistry Contact Network represent today's chemistry and chemical issues and stimulates communication in the field [1]. CCN investigates the possibilities of new communication technologies for research and education in chemistry, focusing on a blended learning environment with dynamic linking of research and teaching. CCN aims

- 1) to formulate and visualize the role of chemistry within ETH World, and to enhance the visibility and acceptance of chemistry as a major research and teaching field at ETH Zurich;
- 2) to expand comprehension of chemistry by a new, virtual level and by new teaching and learning tools;
- 3) to establish dynamic links between teaching, research, and applications, moving towards a comprehensive interaction with present and future chemistry.

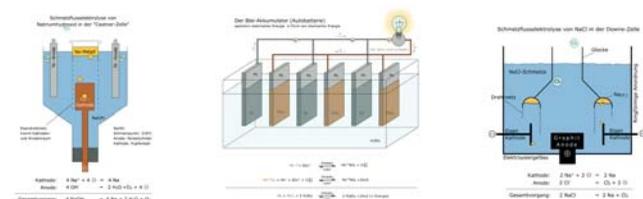


Figure 1 – Examples of vector based schematic animations for communicating electrochemical processes [2].



Figure 2 – Interactive 3D-elements (vrm) allow users to explore spatially complicated arrangements, by structure models, or HES approaches [3].

Communicating Chemistry :

Dynamics and bonding phenomena are complex issues in chemistry that elude direct observation. At present many disconnected approaches exist (MO-, band structure calculations, ELF*, structure displays and transitions, HES** approaches, e.g.) all of which enhance understanding by comprehensive 3-D-visualization. CCN develops such tools for comprehensive visualization, investigation and communication, especially for topologically complicated systems (Figure 1-5). Our platform independent system allows researchers to share common tasks through synchronous and asynchronous remote interaction.



Prof. Dr. Reinhard Nesper
solid state chemist
project leader



Dr. Anke Zürn
scientific visualization,
teaching objects



Dr. Stefano P. Piatto
scientific visualization
programming (CURVIS)



Christian Mensing
video techniques (CCI)
server maintenance

<http://www.ccn.ethz.ch/>

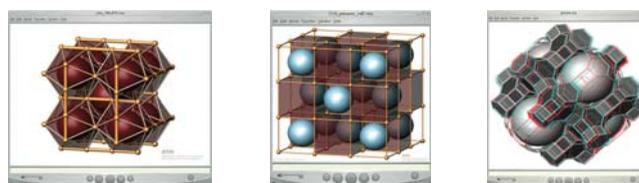


Figure 3 – Interactive QuickTime VR elements: Different aspects of crystal structures models, revealing their relationships to basic sphere packings or other crystal structures. The Cr3Si structure type, the bcc packing and the threefold cubic rod packing (left); the CaF2 structure type and the fcc packing (middle); the crystal structure of Faujasite and its relation to the diamond structure (right, red-green stereo-images; please use red-green glasses) [4].

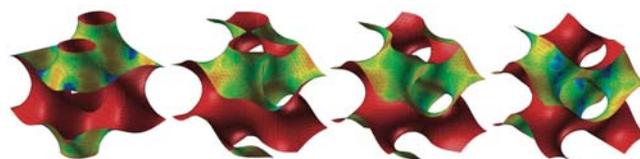


Figure 4 – Animations and simulations (video or vector formats): Screenshots of a CCN-video, showing the transition of HES, produced by CURVIS/CCN program. As an example, the local values of the curvatures are colour mapped, allowing to perceive the curvature changes during a transition.

3-D programs for communication and research:

New needs for visual research, and the necessity of high-end scientific visualization programs for education purposes, led us to work out general guidelines on how to develop chemical software in respect of its scalability and usability for research and teaching. CURVIS is a CCN computer program for scientific visualization, based on the platform of AVS/Express [5]. The structure of CURVIS is modular, and designed for over-the-web use. CURVIS provides an easy production of communication materials in form of animations, videos, and interactive 3-D-elements.

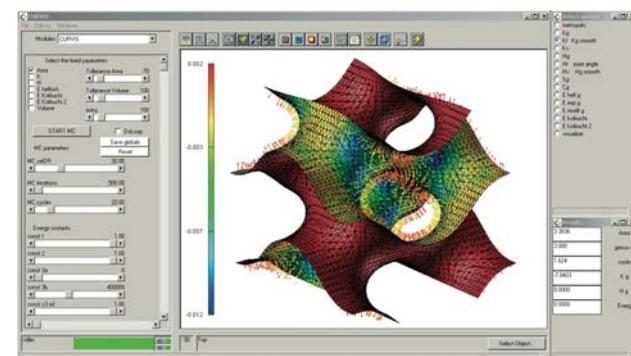


Figure 5 – CURVIS display of an HES, with bending energy colour mapped onto the surface and glyphs (arrows), which represent the mean curvatures (colour) and normal directions.

References: [1] S. P. Piatto, A. Zürn, W. Uhlig, M. Mensing, B. Rüttimann, R. Nesper, «New media for teaching and communicating inorganic chemistry: The projects CCN and CCI at the Department of Chemistry and Applied Biosciences, ETH Zurich», *Chimia* 57, (2003) pp. 94-98;

[2] Flash, from Macromedia Inc.;

[3] The Web3D Repository, URL: www.web3d.org/vrm/vrml.htm;

[4] QuickTime VR, from Apple Computer Inc.; [5] AVS/Express, Advanced Visual Systems, www.avs.com.

*Electron Localization Function, ELF; **Hyperbolic Equi-Surface, HES.

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PLAY – Video Streaming Made Easy

Project Goals:

«Video Streaming» is an infostructure project, initiated in 2001 to establish the technical infrastructure for streaming video as well as to provide a streaming service at ETH Zurich. In addition to implementing the technology necessary for video streaming, the development of a rich media production software, «PLAY», was a central goal of the project.

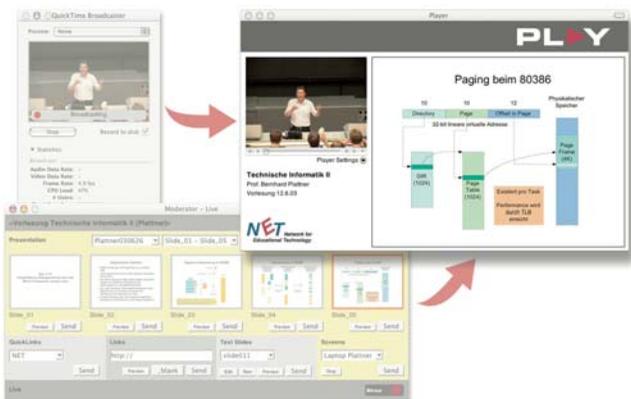
In the follow-up project, which started in 2003, the functionality of the PLAY software will be extended. In the sub-project «Speak'n'Play» the software will be integrated into the «Speakers desk» interactive lectern. A further sub-project, «Free Cutting», addresses the rising needs for easy-to-use editing facilities for self-made video productions.



Advertisement for the Video Streaming Project

About PLAY:

Produced manually, synchronized video&slide presentations require about 20 hours' work per hour of lecture in a process that involves many steps. Together with the company Solutionpark Streaming the project has developed a software that makes it possible to produce rich-media presentations on the fly for live and on-demand use. PLAY is a server-based web-application a video encoding software and a web browser. Slides are added to the video stream either by taking screenshots from the presenter's computer or by clicking on previously prepared slides. At the end of the lecture or talk it takes only a mouse click to prepare a video-on-demand for later viewing.



PLAY automates the synchronisation of presentation slides in streamed video productions

Other Services:

With the mobile video streaming equipment we can send video streams from almost every location at ETH Zurich. In contrast to other services that use video streaming technology at high bandwidths (e.g. Telepoly) we provide video streams also at lower data rates (modem/ISDN/cable/ADSL), thus reaching students, ETH staff, alumni and other audiences at home. Other services include the self-service post-production facility «Free Cutting», video productions, video encoding and transcoding into various formats, and consulting, often in cooperation or with the help of various other institutions at ETH Zurich, the University of Zurich and private companies.



The PLAY team: Elizabeth Zingg, Nathalie Schmidig, Roger A. Rebetz and Jens Keller (from left to right)

Dynamic Learning Content Management System

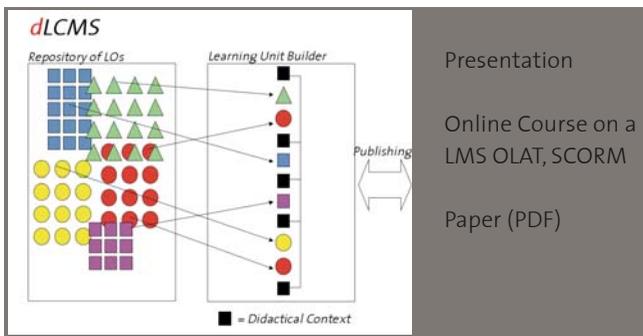
Reuse of E-Learning Material

The production of content for computer-based learning is demanding and expensive. It is therefore desirable to reuse e-learning material to the extent possible. Because of varying learning objectives, target groups and teacher preferences, existing electronic courses are seldom reused, as there is almost always a need to change some parts. To encourage reuse, a widely proposed approach is to use small modular units, «Learning Objects». These can be easily assembled into new courses. For the effective handling of small modular Learning Objects users need the technical support provided by a Learning Content Management System (LCMS).

Learning Content Management

The goal of this project is to provide an LCMS with the following properties:

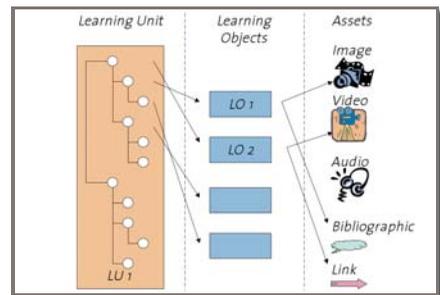
- Promotion of reuse of e-learning content, through:
- Learning Objects as basic building blocks
- Separation of content and presentation
- Standardized structured content
- Centralized content management
- Task-specific tools, each assisting a group of specialists with respect to their specific expertise (authors, designers, etc.)
- Easily adaptable sequencing of Learning Objects independently of the specific content
- Flexible graphical design based on design templates
- Management tools for creation and retrieval of content
- «Future-proof»-proof data formats



dLCMS Functional Architecture: Repository, Learning Unit Builder, Publishing

dLCMS Architecture

A centralized repository gives a large number of potential users access to the stored Learning Objects. The repository provides flexible retrieval of learning resources and supports sophisticated search functionalities. Learning Objects are assembled to Learning Units through the Learning Unit Builder. The navigation menu and table of content are generated automatically. In the publishing stage the Learning Units are prepared for various delivery media, e.g., web delivery or paper media. Here styling and layout are applied coherently to the Learning Unit.



Three-tiered dLCMS Information Model: Learning Unit, Learning Object, Asset

dLCMS Technology

The dLCMS is based on the Zope/Silva technical framework. Silva uses XML technology, which guarantees future-proof content storage. It is equipped with an online editor, which enables authors to create or edit content without needing any XML knowledge. The dLCMS fits well to ETH World:

- It uses the same technology as the ETH Web Content Management System (WCMS) and it integrates easily into the ETH infrastructure
- Users can apply their WCMS knowledge also to the dLCMS
- The dLCMS profits from a rapidly growing technical know-how pool at the ETH, which will ensure support and maintenance of the system in the future.
- The dLCMS is open source and thus independent from commercial companies. It enables the ETH World community to adapt the system to their evolving needs.
- The dLCMS will provide a platform to share learning material among the ETH World community

ETH E-Collection: The Digital Publication Platform of ETH Zurich

Goals:

By setting up an alternative publication platform the ETH-Bibliothek offers members of ETH Zurich the possibility to publish their documents independently of the traditional publishing industry. The documents are recorded centrally according to international library standards and stored on a long-term basis. Thus publications relevant to research and teaching are made available free of charge to the scientific community worldwide.

The ETH E-Collection project phase started in Summer 2001. By the end of 2003 the workflow will be integrated into the library's routine operation.



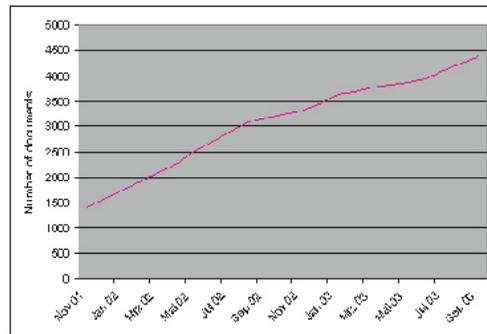
The collection:

The ETH E-Collection contains dissertations, research and conference reports, series, lecture notes and course materials, master's theses and other material. The dissertations account for about 60% of the collection, which by October 2003 had grown to more than 4400 documents.

In accordance with the profile of ETH Zurich the main subject focus of the collection is science and technology.

The E-Collection team is always pleased to receive new documents, which can either be submitted as an e-mail attachment or uploaded directly on the library's upload server.

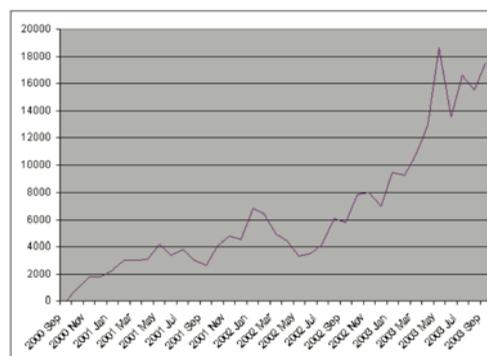
Further information can be found on the ETH E-Collection homepage.



Growth of the ETH E-Collection 2001-2003:
As seen from the absolute numbers, the documents are not submitted on a regular basis, but according to the academic rhythm of the institution.

Milestones:

- August 2001:** Start of the ETH E-Collection: First full text documents stored on the document server and catalogued in the NEBIS library catalog.
- September 2001:** Launch of the E-Collection on the web with 50 documents. Integration of some 1400 doctoral dissertations.
- February 2002:** Final version of website with improved user navigation and retrieval options.
- Summer 2002:** Implementation of intranet solution for copyrighted documents for ETH internal use.
- October 2003:** Registration as data provider at the Open Archive Initiative (OAI).
- December 2003:** Incorporation of work processes into the library's daily business.

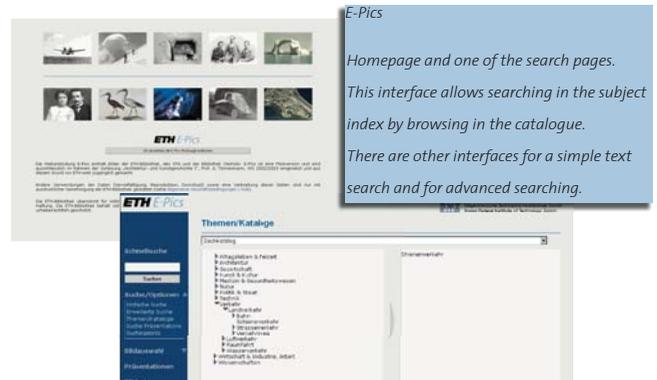


Usage rate:
Over the last two years the PDF files accessed per month increased considerably. In March 2003 the limit of 10000 accesses per month was exceeded for the first time.

E-Pics: Interactive picture information system for teaching and research at ETH Zurich

Goals

As a part of the ETH World infostructure, a picture information system will be created, centrally managed and accessible to all ETH World users via a Web browser. The documents will be indexed by means of scientifically controlled metadata. The first step was to find an interface between the Web and the search engine for the existing picture database of the ETH-Bibliothek. Besides indexed searching, the interface should be able to handle the most important functions of the system with a standard Web browser – from searching to producing picture collections for teaching.



E-Pics
Homepage and one of the search pages.
This interface allows searching in the subject index by browsing in the catalogue.
There are other interfaces for a simple text search and for advanced searching.



E-Pics
Interface for saving found images in a «basket» for further processing

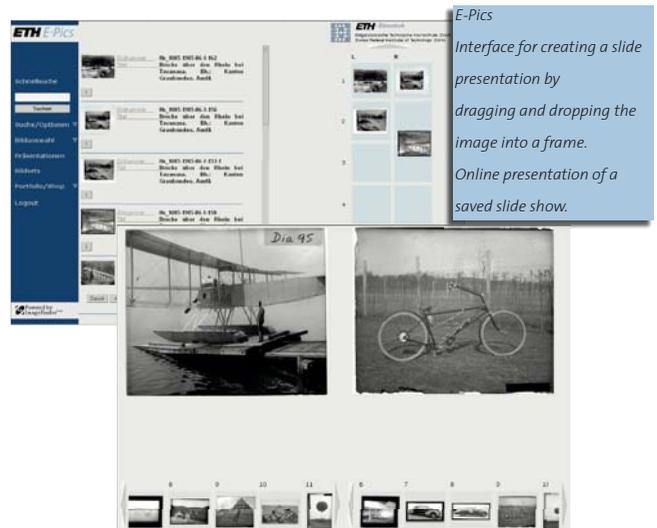
The Pilot Project

As a pilot project, an interactive online picture database, as part of teaching and research, was developed and then tested in a course in 2002/03 by the Institute for History and Theory of Architecture (GTA, Prof.W. Oechlin and Prof.A. Tönnemann) and Stiftung Bibliothek Werner Oechlin in Einsiedeln. The pictures and the picture collections are accessible over the web for the GTA course participants for their scientific work.

Next steps

The Web interface was tested in a course. Based on the result the system will be developed further with the following principles:

- Evaluation of users' requirements
- Easier input of pictures into the database
- Scalable reliable technical platform
- Exclusion or integration of different formats/media types
- Interface to other ETH World projects (Advanced Querying, IT Building Blocks, CCN and others)



E-Pics
Interface for creating a slide presentation by dragging and dropping the image into a frame.
Online presentation of a saved slide show.

Allqu – Dynamic Collaborative Information Spaces

Goals:

The project aims to develop graphical user interfaces that visualize the objects and relationships in a personal information space. The interface should allow users to interactively explore and shape their space. Based on a series of prototypes, the different possibilities are investigated. We also study navigation, classification and retrieval practices of users in their personal information space, in order to build the theoretical foundations for defining technical and usability requirements.

Allqu: Prototypes

The personal information space contains multimedia information (text, images, music) with objects linked in a networked structure. Several methods have to be used to enable useful interaction. The following prototypes (see Figures) investigate different aspects of this problem.



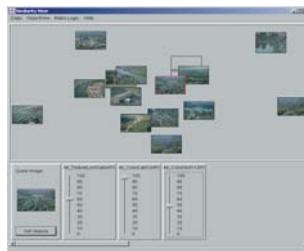
2-D display of the result of an image similarity search query



2-D display of the result of an image similarity search query



3-D visualization of a highly linked network structure. The user can move interactively in this 3-D world



Interactive exploration and query refinements of the image space

1. Visualization

Prototype display of multimedial information. The display is organized using similarity information between the different objects. Thereby, the context and correlations between objects can be perceived.

2. Search and Navigation

Interactive exploration makes it possible to refine queries and perceive correlations between objects.

Allqu: The study – A qualitative experiment

Users were asked to search or classify, 20 documents in an unfamiliar PC file system or physical office (10 users each). The goal was to define document characteristics from the users' point of view, under exclusion of a person's individual context. The experiment was videotaped and the tapes transcribed. The analysis was done manually.

Result: 21 context-independent document descriptors could be identified and defined (see Table).

Attribute Name	Attribute Definition / Example Usage	Type
Physical Location	PC: Storage location on the hard-drives. «On drive C». Office: Concrete place or position. «On that table».	Technical
Physical Format	Defines a file format such as e.g. PDF, TXT, DOC, etc.	
Physical Size	PC: Number of bytes needed for storage. «16Kbytes ...» Office: Shelf space required. «It was thicker ...»	
File-Properties	Entries in the 'File – Properties' options menu.	
Time / Date	PC: Precise indication. «October 31st». Office: Approximate indication. «I used that recently.»	
Document Type	Letter, picture, presentation, newspaper article, etc.	User-friendly
Program-of-Origin	Program a document was created with. «This is a Word document.»	
Document / Folder Name	PC: «Under MyDocuments and then Private.» Office: «The label on that folder says 'Report'».	
Title	Prominent first line, that visually stands out from the rest.	
Topic	Perceived content through words grabbed while skimming a specific document.	
Author	Perceived creator or owner of a document.	
Language	The language a document is perceived to be written in.	
Visual Appearance	Overall picture of a document, i.e. its look and structure.	
Perceived Importance	Rating applied to a document based on type, layout, etc.	
Work / Private	Defines, whether a document belongs to a private or a working context.	
Project	Indicates an identifiable project the document is part of.	
Future Processing	Intended actions to be taken upon a document. «This will go to the bin first thing tomorrow morning.»	
Use / Purpose	Perceived intended use of a document. «The protocol contains a to-do list for work».	

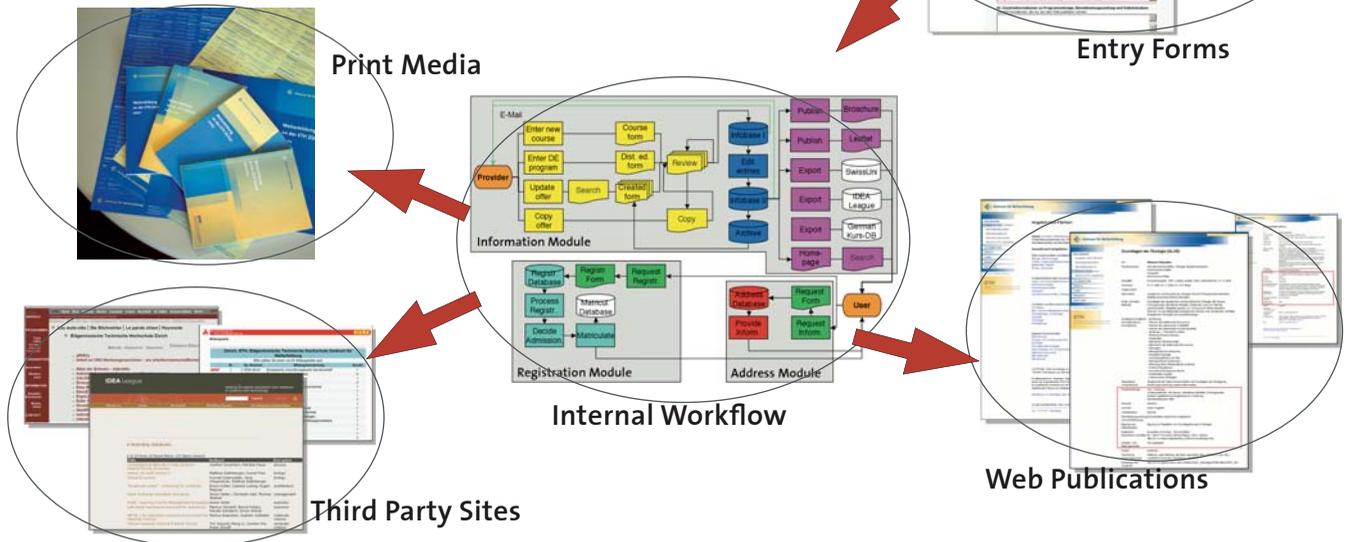
A subset of 18 user-point-of-view document characteristics. The first group still bears a great resemblance to traditional metadata. The second group, however, is distinguishably different and more user-friendly.

Distance Education at ETHZ: Delivery System – Your Distance Education Platform

1. General Goals

DEEDS provides a web-based platform for ETH faculty who want to publish their e-learning products under the label of ETH Zurich and make them available in a convenient form to individuals, companies and other organizations for educational purposes. The project also offers a platform to individuals, institutions and companies eager to gain a structured overview over the e-learning developed at ETH Zurich, and gives them the opportunity to use these programs under defined conditions.

3. Implementation

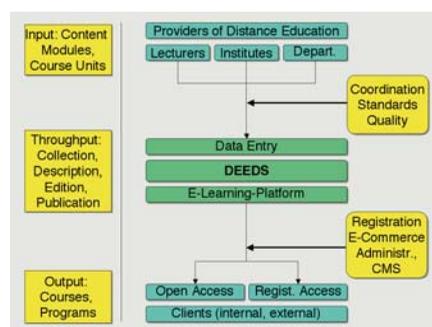


2. Conceptual Framework

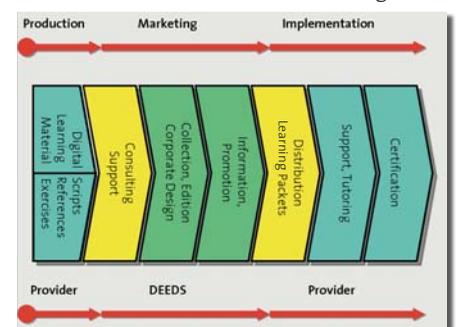
Four Strategic Principles based on a SWOT-Analysis of the general Framework

External Conditions	Opportunities:	Risks:
Internal Conditions	<ul style="list-style-type: none"> Global Markets Lifelong Learning Technol. Change 	<ul style="list-style-type: none"> Competition Support and Cost Copyright
Strengths:	<ul style="list-style-type: none"> Increase the visibility through centralized promotion 	<ul style="list-style-type: none"> Optimize workflows based on existing solutions
Weaknesses:	<ul style="list-style-type: none"> Increase customer value through better information and the building of learning packets 	<ul style="list-style-type: none"> Capitalize on decentralized expertise, administration and distribution

Business Model: Platform between Producers and Clients



Process Model and Role Definition: Focus on Information and Marketing



Entry Points into the ETH World Infostructure

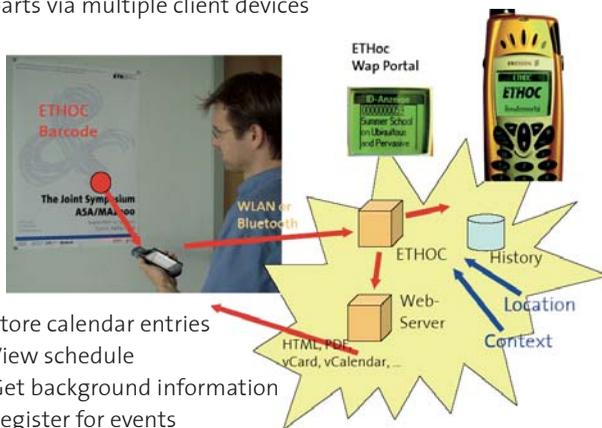
Goals

1. Interweaving the infostructure of ETH World with the physical infrastructure of ETH
2. Provision and utilization of location information
3. Investigation and evaluation of privacy and acceptance aspects

Prototype: ETHOC

«Everything has online content»

- Simple creation of augmented documents via web interface
- Easy access to virtual counterparts via multiple client devices



- Store calendar entries
- View schedule
- Get background information
- Register for events

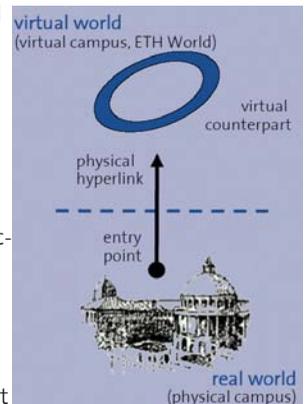
Positioning Services

- In-building guide and navigation aid
 - Find-your-way prototype
- Facility management
 - room utilization profiles
 - detect zones of activity
- Locate friends and study groups
- «Transparent» ETH



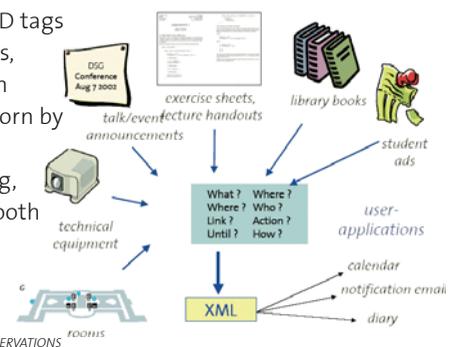
Entry Points into ETH World

- Make virtual campus visible and accessible from places throughout the physical campus
- Information associated and collocated with physical entities
 - Act as information anchors
 - Partition information space
 - Provide opportunities for interaction with the information space
 - Physical objects and related information become a unity
- Information is situated and grounded in the physical context

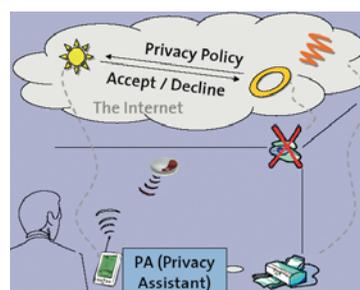


Augment physical ETH entities with virtual counterparts

- Barcodes and RFID tags
 - At doors, in rooms, on documents, on physical items, worn by ETH members
- WLAN positioning, infrared or Bluetooth beacons
 - Physical spaces and areas



Privacy and Acceptance



- Privacy of location information and personalized data
- Investigation of social implications of introducing ubicomp technologies into students' lives

Video conferencing Service

About the project

Computing Services (ID) and NET – Network for Educational Technology:

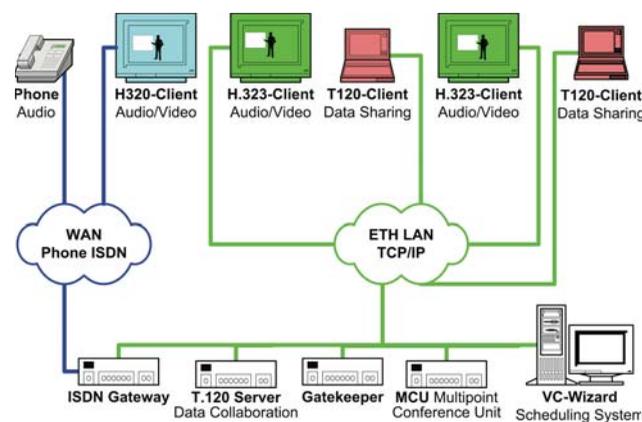
Video conferencing, easy-to-use, network-based, campus wide. The service provides video conferencing for various uses, ranging from simple software clients running on personal computers to multiple high-resolution video streams for tele-teaching.

Person-to-person, group-to-group, person-to-group, multipoint-conferences; document and application sharing.

For internal on-campus conferencing as well as for conferences with participants from all over the world, extensively automated and controlled through a centralized infrastructure.

Installation and maintenance of the technical infrastructure.

Helpdesk, support and training for users.



Infrastructure

Requirements, applications, systems

- Personal laptops: software-based with additional Webcam and headset (eConf, NetMeeting)
- Personal desktops: hardware and software (ViaVideo)
- Self-service for small-group systems from lending pool (Tandberg)
- Large-group systems with support in video conferencing rooms (VTEL Vista)
- Lecture-hall systems with support in teleteaching auditoria (Telepoly, Minerva VCP, AccessGrid)
- Phone and cell-phone integration
- Document and application sharing (T120)
- Multipoint-conferences

Objectives, innovation

- Improve and extend communication
- Support collaboration and cooperation
- Facilitate distributed work
- Less time spent for travelling
- Easy-to-use, VC for everyone – applicable on every workplace
- Simple operating System, control by the user (entire ETH)
- Centralised validation (N.ETHZ Account)
- Low-cost personal systems: ≤CHF 700
- Central purchasing and lending unit
- Worldwide accessibility
- All VC systems based on IP (H323) and ISDN (H320)
- Participation in international VC projects like AccessGrid
- Globaldialling scheme – worldwide numeration like telephone



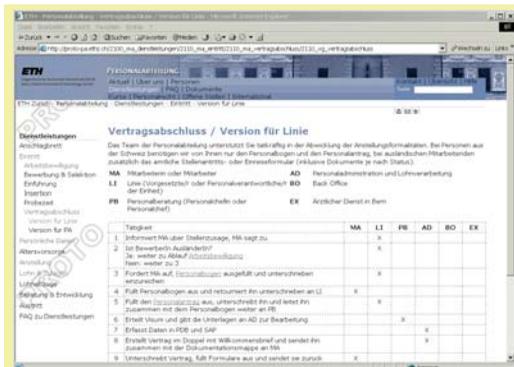
PersonETH – Towards virtual Human Resources Management for the virtual campus

Research and teaching can best concentrate on their tasks if they are given an efficient administrative support by the central services. A virtual campus needs to be supported by a virtual administration: personETH is a first step in this direction.

With the project personETH the human resources management (HRM) of ETH aims to develop a new web application with the final goal of a paperless handling of the standard HR-management workflows between employees, executive personnel, departments and central services.



The contents of personETH are based on the HRM-Cycle of an employment



Visualization of a workflow on the website of the personnel department

Main steps on the way to this goal are:

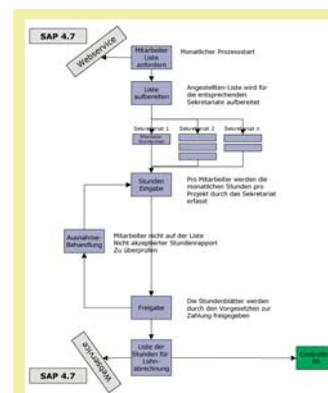
- Visualization of the HR-management workflows on the new website of the personnel department
- Selection of the suitable software for an electronic workflow-system
- Development of a test-workflow with the electronic workflow-system
- Selection of further workflows to be (partly) automated, basing on their potential for rationalization, in order to streamline procedures (and thus to accelerate the workflow) and to increase the quality of service

Current state of work:

- Website with visualization of workflows planned to go live on November 13, 2003
- Software for the electronic workflow system has been defined (ivyGrid)
- Pilot workflow (monthly settlement of accounts for hourly wages) is being developed

Challenges:

- Create an information platform which reaches all users, where the contents are communicated at different levels depending on the role of the user
- Find the appropriate degree of automation of the workflows, to help accelerate routine activities while allowing for enough flexibility in the organization of daily work



First draft of the test-workflow

MyLibrary@ETH: Managing the resources you need

Goals

The project MyLibrary@ETH aims to offer students, researchers and scientists a personalized library portal, giving them easy access to the library's extensive electronic resources. Although there is a strong focus on electronic library information sources, users are also able to include non-library content, allowing them to manage all electronic resources required to support their work. To minimize the effort necessary for the initial configuration of the personal MyLibrary page, the library has defined a selection of default pages according to the needs of different target groups. A professor or department could also create a default page for their students (virtual hand-held device).

MyLibrary start page:

To avoid a separate login the customers can use their standard ETH authentication. This is realized via an LDAP interface. The affiliation of a person results in the presentation of a specific default page.

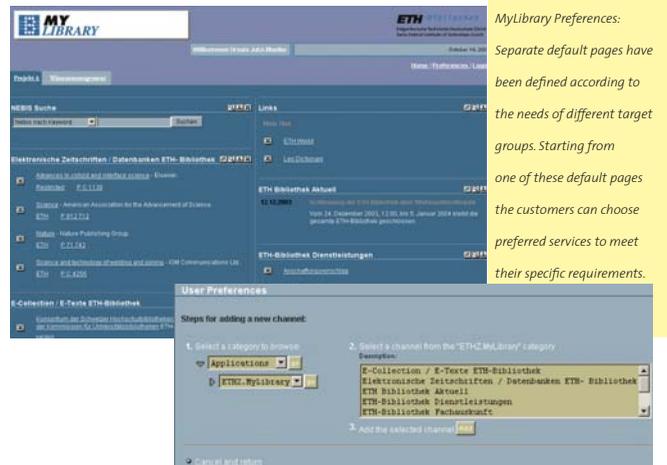


Realization

The project has paid much attention to defining the content and to planning the technical implementation in such a way that the relevant content could be presented in the best possible way. The project requires much advanced experience in new technologies (Tomcat, XML, JSP, J2EE and j2sdc) as uPortal has been chosen for the technical framework. The programming was primarily done in Java.

Sequence of realization:

- Evaluation of user requirements by a customer survey
- Preliminary study including an overview of different MyLibrary approaches worldwide
- Selection of uPortal as the technical framework
- Realization of the content based on users' requirements
- Implementation of the «service channels»
- Creation of the database structures
- Implementation of a temporary design

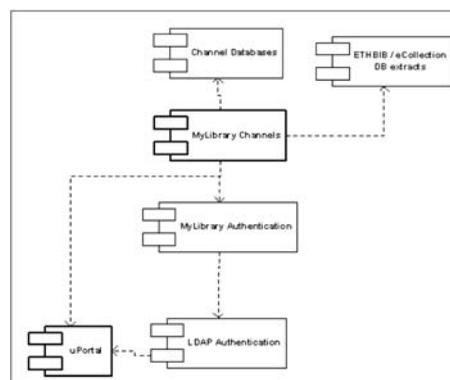


MyLibrary Preferences: Separate default pages have been defined according to the needs of different target groups. Starting from one of these default pages the customers can choose preferred services to meet their specific requirements.

Technical Information & Next Steps

The system is currently running on a test server. The software being used is uPortal version 2.1.3; Java: j2sdk 1.4.1_02; ServletContainer: Tomcat 4.1.18. For the databases Oracle 8.1.7 and MySQL 3.23.56 are used. In November 2003 a number of further improvements will be made:

- Multilingual support
- Improved design
- Migration to a central server (production) and load testing
- Interactive service channel for subject specialists
- Implementation of the single sign-on also for the NEBIS library catalogue.



Components of MyLibrary: This illustration shows the dependencies of the different parts, not the flow of information. The MyLibrary service «channels» are the core of the application; these services can be customized in accordance with users preferences.

The Online Service for Career Development Support

ETH Career Services

The ETH Alumni Association operates the ETH Career Services, which provide career assistance and support for alumni and students and help them to make the most of their education.

The ETH Career Services consists of three service areas:

The Student Area

Students are assisted with the planning and preparation of their professional career.

The Alumni Area

An interactive area in which alumni, students and ETH scientific staff can interact.

The Outside World

This area provides quality-controlled, career-related offers and activities are provided for external target groups.

ETH Career Services Website www.career.ethz.ch

The Career Services offered at www.career.ethz.ch:

The Student Advantage

ETH students will find a full range of services to support them in developing their career. These include ETH education programs, student exchange programs, company contacts, knowledge transfer to industry and the job market.

ETH students are offered the possibility of a personal advice session by the ETH Alumni Association during which they can discuss their specific concerns about career planning issues.

The Alumni and Student Advantage

Career-related feedback from Alumni is an important asset for ETH Zurich. The ETH Career Services has invited a service to match alumni as mentors for interested students. Alumni and students are asked to complete on-line personal profiles, based on which a profile matching software ensures that each student is provided with the mentor best suited to his or her needs.

The External Advantage?

Contacts to business and industry provide the ETH Career Services with a wealth of information concerning career development: job opportunities, continuing education and courses, entrepreneurship, etc. This information is made available to ETH alumni and students.

ETH Career Services – a service of the ETH Alumni Association on behalf of ETH Zurich

ETH Career Services Website – a Project of ETH World realized by ETH Juniors

Collaborative Work over Networks for Research and Education

Goals

The together project works on the application and development of synchronous remote collaboration tools for education, research and services at ETH Zurich. Through user surveys and market analyses the gap between user needs and available products will be identified. Based on this knowledge two applications will be developed for synchronous editing of two- and three-dimensional content.

Selected applications will be tested within courses at the Departments of Mechanical and Process Engineering and Architecture. The result of these tests will serve as guidelines for further development.

User Interviews

The user interviews consisted of 22 general questions, that encouraged the interviewed persons to talk about their ideas of synchronous remote collaborations tools, such as Videoconferencing (VC), Instant Messaging (IM), Chat, Application Sharing (AS), Whiteboards (WB) and Joint Editing (JE). The participants, mostly assistants, but also some professors and students, were from the Departments of Agriculture and Food Science, Architecture, Biology, Information Technology and Electrical Engineering, Mechanical and Process Engineering and Physics.



PSI open source Instant Messenger

50 percent of the participants use at least one of the mentioned collaboration tools. IM seems to be the most widely used tool, followed by VC and AS.

As a positive effect of these software tools the users mentioned the reduction in cost and time for communication with remote partners. The possibility to work anywhere is perceived as an advantage (e.g., assistants supporting their students from home).

The complexity of the applications and lacking know-how prevent the users from using these tools more frequently. Also the organizational (scheduling, organizing the equipment, making tests) and technical effort of a VC session represent drawbacks to many users. Many also highlighted the importance of face-to-face meetings (for assistants coaching students) and the fact that most colleagues are in the same building.

Despite these reservations, most people could imagine using videoconferencing and other collaboration tools with partners at other universities, students, friends and external companies.

As possible application scenarios for application sharing, remote presentations and IT support have been identified. Joint-editing applications could be used in an open discussion or brainstorming sessions.

Social factors seem to constitute perceived limits of remote collaboration. Loss of informal communication, isolation, more stress and loss of privacy were mentioned. Also human-machine interface and financial issues were pointed out.

Online Survey

For obtaining more precise numbers on the use of synchronous remote collaboration tools an online survey was set up. Focus was on videoconferencing and application sharing. In 12 months a second survey will be carried out to capture the development trends in the use of these tools.



PHP Survey the system we used for our survey

Market Analysis

Over 100 group and desktop videoconferencing systems have been identified. A summary and the technical specification will be made available over a searchable web interface.

Several group videoconferencing systems with data-conferencing functionalities available in Switzerland have been evaluated. Three systems have been presented to our project team.

The market analysis of data-conferencing tools is still in progress. It will focus on available products for AS but will also include JE software. The results will be made available on the web.

Affordable Group Videoconferencing System

Group videoconferencing systems today cost around CHF 10000. Systems with data-conferencing features often cost more than CHF 20000. Until now no system is available with dual VGA output. To make group videoconferencing systems more affordable within ETH Zurich, the configuration of a standard PC has been customized with the VC software eConf to replace most of the features of «professional» group VC systems at a very reasonable price.



A big variety of videoconferencing systems are available

Integration of pervasive media technology into the HIL building at ETH Zurich

Aim:

The aim of the project is the development and installation of an Internet Protocol (IP) based system for controlling a lecture hall at ETH Zurich. Various hardware components and services will be systematically connected through IP. Among others, these are light, video projector, microphone, loudspeaker, room reservation, etc. Building services are represented completely through software. This software is implemented modularly and controls and handles access to services, such as light, sound, presentations, reservations, video conferences, automated documentation, etc. For accessing all the different hardware devices, an abstracting middleware is realized by using Open Services Gateways (OSGi) in Java. The link between the different equipment and with the users is independent of specific interfaces and file formats. The goal is a plug & play system for a great variety of devices, offering services like video, projection, sound, information. Open standards will be used as far as possible.

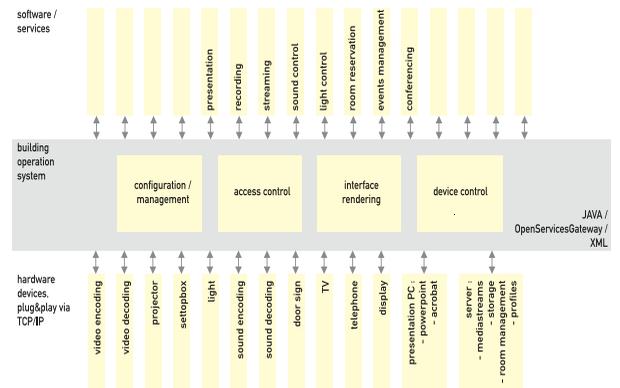


Fig. 2: Interaction between hardware and services through the central «Building Operation System», handling the specific requests and controls from both interfaces and hardware.

Timeline:

The project is structured into two phases: in the first phase, the office of the Chair of CAAD will be retrofitted with integrated building services, in order to install and evaluate different systems in lab-like conditions. The interfaces to the user will be developed and implemented. In the second project phase the results will be transferred into a lecture hall for publicity and technical perfection.

- July 2003: start
- November 2003: session about media integration
- March 2004: integration into physical space
- April 2004: session about user interfaces
- June 2004: user interfaces
- September 2004: presentation und documentation
- October 2004: end phase one

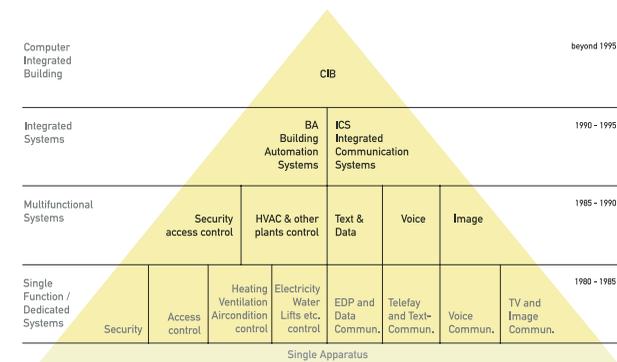


Fig. 1: The context of the project is the discussion on «computer integrated buildings».

Context:

Up to now, multimedia applications have been integrated into buildings as solitary systems, with rare interaction with the building itself. In consequence, highly specialized subsystems with proprietary and often not open standards are present. Universities, institutions and corporations worldwide are working on the digital integration of different building services. Devices using the Internet Protocol are most promising, because of their inherent modularity, the worldwide market and low costs.

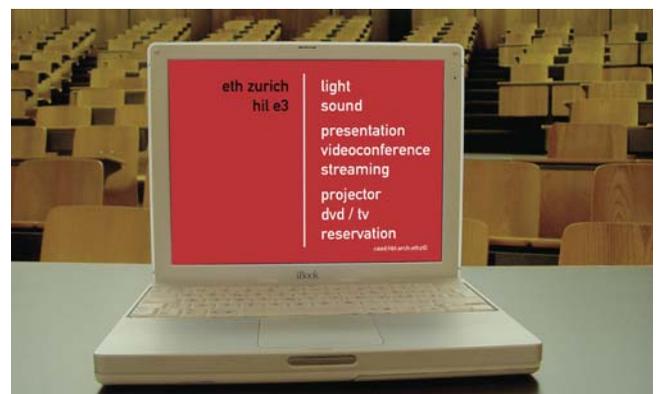


Fig. 3: Convenient web-based control of complex building services.