



Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

# **ETH World Report of Activities 2000–2003**

**Report by the ETH World Program Director  
for the International Peer Review, November 2003**

Zurich, 23 October 2003

**ETH** *World*

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Report of Activities 2000–2003**

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for the International Peer Review, November 2003

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Swiss Federal Institute of Technology Zurich, 2003

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## **Introduction**

This report has been prepared as a background document for the International Peer Review of ETH World in November 2003.

The document is a self-evaluation report by the ETH World Program Management. It is a critical review of the first three and a half years of the ETH World program, seen from the point of view of today's Program Management.

The report wishes to convey to the reader what should be achieved through ETH World, what the objectives of the program are, and how these have evolved over time. It also documents where ETH World stands today, what its achievements so far are, and how these have been reached.

As the evolution of the program over time have been significant, the report gives due consideration to the history and development. It is hoped that the report thus will be useful as a basis for reflection and for shaping the future directions of the program.

The report is structured into two main sections. Section I provides a general overview of the ETH World program, describing its goals, strategy and the general implementation of the program. Each chapter in this section contains an analysis and self-evaluation by the ETH World Program Director. Section II is devoted to the projects, which constitute major building blocks towards the implementation of the ETH World vision.

Zurich, 23 October 2003

Prof. Dr Bernhard Plattner  
ETH World Program Director



**SECTION I:  
GOALS, STRATEGY AND IMPLEMENTATION**



# 1. Mission and goals of ETH World

## 1.1 Mission statement

The Program Management has defined ETH World as follows:

*ETH World is a strategic program of the Swiss Federal Institute of Technology Zurich (ETH) to establish a virtual space for communication and cooperation independent of time and place. The program aims to make this space widely used and accessible to all stakeholders of the university.*

*ETH World supports all members of ETH in their core business – teaching, learning, research and the associated management tasks. The program enables new forms of networking and cooperation with business, industry and society.*

*ETH World contributes to realizing the vision of a university of the future and thereby strengthens the international competitiveness of ETH Zurich.*

*(ETH World Mission Statement, July 2002)*

## 1.2 Evolution of the goals

ETH World was initiated in 1999 as a strategic program “to develop an infostructure for ETH Zurich” by Professor Gerhard Schmitt, VP Planning and Logistics.

A group of ETH faculty and staff was formed to define the goals and prepare the initial steps. They described the envisaged infostructure of ETH World in the following way:

*“This infostructure combines the physical infrastructure and the rapidly developing communication infrastructure. It is an opportunity to support and coordinate ongoing and planned individual efforts for the benefit of the entire ETH community. ETH World augments the main locations, ETH Zentrum and ETH Hönggerberg, with an emerging virtual space, which could develop into a virtual campus. “*

*(ETH World Newsletter, May 2000)*

In defining the goals a set of initial questions were formulated:

*All ETH members utilize computers in some way. Yet, with the proliferation of networked computing new questions emerge that ETH World should be able to answer. Some of those questions are:*

*Why are important lectures, colloquia and seminars not available online? Why don't ETH members and alumni receive daily information about ETH? How can one form a virtual research cluster with intense interactions although the participants are located far apart? Why can't we acquire information about literature directly in the laboratory? Why don't we use intelligent databases for text, audio, images, and movies? Why can't one perform a molecular orbital calculation at One's desk during the lecture? Where can industry easily find representative expertise at ETH? Do we make sustainable and responsible use of our infrastructure resources? Why can't students have more opportunity to manage their time to suit their needs - for example, to participate in courses that overlap?*

*(ETH World Newsletter, May 2000)*

In parallel, three initial steps towards implementing the vision of ETH World were prepared: a Conceptual Competition, a number of “pioneer projects” and a Wireless LAN pilot. The Executive Board approved the related projects to start on January 1, 2000.

In the Invitation to Tender Call for Conceptual Competition (see Chapter 5) in April 2000, ten goals were defined for ETH World:

1. *ETH World will support and augment research facilities with new types of information and communication technologies; ETH World will offer to education a vital platform for time- and space-independent, collaborative and learner-oriented activities. Special emphasis will be given to continuing education and lifelong learning.*
2. *ETH World will improve access to existing and new scientific and administrative services.*
3. *ETH World will connect the virtual and physical spaces.*
4. *ETH World will provide optimal communication as well as globally accessible information, not least by breaking down linguistic barriers.*
5. *ETH World will strengthen the different ETH departments and their interdisciplinary collaboration.*
6. *ETH World will create synergies through the integration of advanced research, education and infrastructure.*
7. *ETH World will extend areas of research to accommodate the requirements of an information society.*
8. *ETH World will support students, employees, professors and alumni of the ETH Zurich in their efforts to promote the development and globalization of the ETH community.*
9. *ETH World will provide a forum for cooperation and knowledge transfer for the benefit of business, politics, non-governmental organizations (NGOs) and society as a whole.*
10. *ETH World will enhance the ETH's attraction for potential students, cooperation partners and faculty members as well as for sponsors and professional bodies.*

*(Conceptual Competition ETH World, April 2000)*

Over time it became increasingly clear that the rather abstract formulation of the objectives and the long list of goals made it difficult for many faculty and staff members to grasp what ETH World is really about. During 2001 and 2002 different attempts were made to condense the goals into a few sentences. In July 2002 the present Mission Statement (Chapter 1.1) was adopted.

### **1.3 Evaluation and conclusions**

ETH World as a “virtual space” was a powerful part of the original vision. It was decisive for many of the initial activities and especially for the Conceptual Competition. It was, however, also misleading. The virtual space envisaged by ETH World is not restricted to activities initiated by or financed through the program. Parts of it already existed; other parts were developed parallel to ETH World and funded through other means.

It is therefore more appropriate to define ETH World as the strategic program designed to implement the vision of this virtual space. This program accelerates the development that would have taken place anyway. It coordinates activities and projects to avoid overlapping efforts and generates economies of scale. And it identifies gaps and initiates activities to close them.

A virtual space cannot be built just like that. It is a moving target. It is not being built on a green-field site. It is also a huge target: the resources available would not be sufficient to reach all goals in the six years available for the program.

ETH World helps to build sections of this space. The program seeks to ensure that these are connected and compatible with future developments. It is already obvious that at the end of the program there will be a number of tasks that were originally foreseen but have not been completed or have not even been started – or are no longer necessary as needs, habits and technologies have changed.

## 2. Organization

### 2.1 Present organization

As of May 1, 2002, the ETH World program has been headed by a Program Director, Prof. Bernhard Plattner, who is supported by a staff team and by an Advisory Committee. The Program Director reports directly to the Vice-President for Planning and Logistics, Prof. G. Schmitt. Figure 1 illustrates this organization.

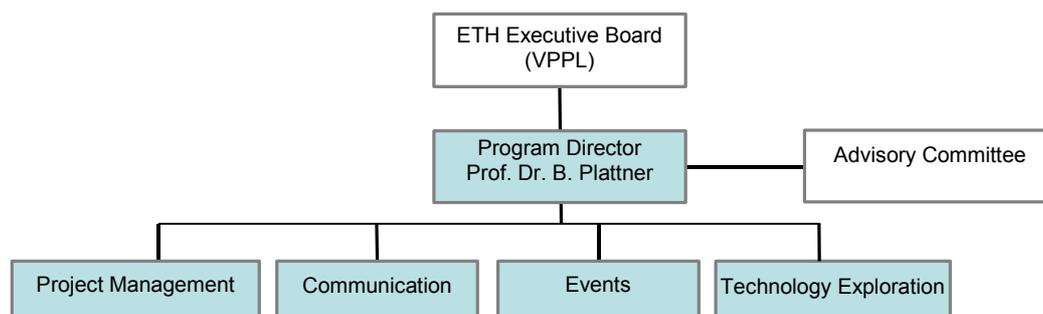


Figure 1: The organization of ETH World as of May 2002

In addition to the Program Director, the Management Team comprises seven part-time persons (approx. 4 full-time equivalents). Their main tasks are planning, project management, communication, technology exploration, budgeting and controlling.

#### **The ETH World Management Team**

- Prof. Dr Bernhard Plattner: Program Director (0.2–0.4 FTE)
- Anders Hagström: Project management, controlling (0.6 FTE)
- Beatrice Huber: PR and communication (0.2 FTE)
- Beatrice Lüthi-Renner: Events, administration, Interface to NET – Network for Educational Technology (0.4 FTE)
- Dr Barbara Meili: Communication management (external consultant) (0.2–0.4 FTE)
- Ida Schmieder: Video production (0.8 FTE)
- Daniel Sigg, System administration, technology exploration, web development, programming (1.0 FTE)
- Benjamin Stäger: System management, web development, programming, graphic design (0.8 FTE)

The setup of the Management Team is chosen to match the competences required for the tasks. The role of the communication and project management tasks has grown substantially as the program progresses. All members of the Management Team are involved in these tasks. The exploration of new technologies and the central development and implementation of the ETH World infostructure, which in the earlier phases of the program were key tasks, now receive less emphasis.

Bernhard Plattner as Program Director and Anders Hagström as Project Manager represent ETH World within ETH Zurich and externally.

#### **ETH World Advisory Committee**

The Advisory Committee mainly comprises professors and heads of key central administrative units. These individuals do not represent their organizations; they were rather chosen for their expertise and their potential for contributing to the mission of ETH World. The Committee advises the Program Director on strategic issues, in particular the annual goals, financial matters, calls for proposals, and project evaluation.

- Prof. Dr Bernhard Plattner, ETH World Program Director (ex officio, chair)
- Dr Andreas Dudler, Computing Services
- Prof. Dr Gerd Folkers, Department of Chemistry and Applied Biosciences
- Daniel Künzle, ETH Center for Teaching and Learning (ELZ)
- Prof. Dr Markus Meier, Department of Mechanical and Process Engineering
- Prof. Dr Felicitas Pauss, Department of Physics
- Rolf Probala, Corporate Communications
- Prof. Dr Walter Schaufelberger, Department of Information Technology and Electrical Engineering
- Dr Hanspeter Scherbel, IT Experts Committee/Department of Mathematics
- Prof. Dr Peter Stucki, University of Zurich, Department of Computer Science
- Prof. Dr Andreas Wenger, Department of Humanities, Social and Political Sciences

## 2.2 Evolution of the organization

Just as the goals, also the organization of ETH World has evolved and become more streamlined over time.

In the initial phase, the ETH Executive Board formed the ETH World Steering Committee. In this phase, a Project Developer, Dr. Christof Hanser, in the Office of the Vice-President Planning and Logistics supported the program.

As of January 1, 2001 a more structured organization was put in place. The responsibility for the program was divided between the Steering Committee (“Projektsteuerung”) and a Program Management Committee (“Projektleitung”). The Steering Committee was separated from the ETH Executive Board. The three Vice-Presidents remained as members of the Steering Committee, and the committee was enlarged with additional faculty members. In the Program Management Committee, which was lead by Professor Walter Schaufelberger as Project Director, were representatives of the key central services of ETH Zurich. The Program Director had a staff team supporting him in the areas of strategy development, project management, financial management, and PR and communication activities. The project “Neptun – Mobile Computing for Students” was also directly managed by the Project Management Committee<sup>1</sup>. Figure 2 illustrates the organization of ETH World during this phase.

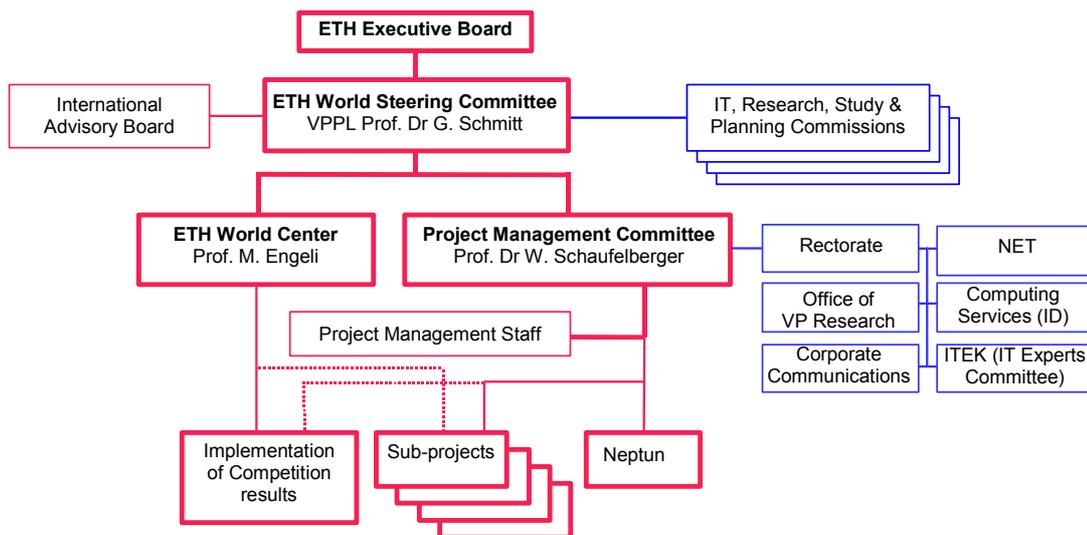


Figure 2: Organization of ETH World (January 2001 to April 2002)

<sup>1</sup> This organization is typical of large development projects in the Swiss federal administration. The two committees are responsible for strategic and operational decisions, respectively.

In addition, an “ETH World Center” was established, led by Professor Maia Engeli. The division of tasks between the Center and the Project Management was not clearly defined, nor the organizational relationship between these two bodies. The ETH World Center focused its activities on information activities, coordination of the projects, implementation of the results from the conceptual competition, as well as support, development and implementation of the ETH World infostructure.

As Professor Engeli’s term as assistant professor came to an end, Professor Spiro Pollalis, Visiting Professor from Harvard University, was appointed head of the ETH World Center in December 2001.

The unclear division of tasks between the ETH World Center and the Project Management Committee along with strategic differences between the professorial Steering Committee and the Project Management Committee, which consisted mainly of administrative staff, led to a situation that the Program Management Committee found untenable. The Committee resigned at the end of 2001.

Professor Bernhard Plattner was appointed Program Director and the present organization established in May 2002.

### **2.3 Evaluation and conclusions**

The problems that were caused by the complex organization prior to 2002 have been eliminated. The new, streamlined organization has proven to be efficient and effective.

The Advisory Board plays an important role and is a very valuable complement to the operative Program Management. Thanks to the mix of faculty members and heads of key units from the central services, the recommendations of the Board are balanced and practicable while being geared to the needs of teaching and research.

The role of the non-technical tasks has grown substantially as the program has progressed. Project management, communication, social and legal aspects are at the fore. This will need to continue to be reflected in the development of the team.

### 3. Funding

#### 3.1 Budget

ETH World is defined as a six-year program running from 2000 to the end of 2005.

The original financial plan foresaw a total budget for the period 2000–2004 of CHF 32.9 million. However, the yearly budgets are approved by the ETH Executive Board in the annual budgeting process, based on the needs of the program and on the general financial outlook.

#### **ETH World financial plan 2000–2005 (1000 CHF)**

	2000 (A)	2001 (A)	2002 (A)	2003 (B)	2004 (B)	2005 (F)	Total
Program management	198	467	683	300	300	300	2 248
Conceptual competition	874	312	544				1 730
Infrastructure elements	230	948	293	815	785	700	3 771
Neptun	0	514	427	1 065	1 000	1 000	4 006
Pioneer projects	489	1 513	1 360	535	45	15	3 957
Projects 2001–2005		448	979	1 700	2 285	2 400	7 813
Reserve	250	146	158	150	150	150	1 004
<b>Total</b>	<b>2 041</b>	<b>4 350</b>	<b>4 444</b>	<b>4 565</b>	<b>4 565</b>	<b>4 565</b>	<b>24 529</b>

(A) = Actual

(B) = Budget

(F) = Finance plan

#### 3.2 Interface to other funding mechanisms

ETH World is one among several funding mechanisms available for projects at ETH Zurich. Others internal “funding agencies” are the *Research Commission* for research projects (so called “TH projects”); *FILEP*, a funding program of the Rector for the promotion of innovation in teaching and learning ([www.filep.ethz.ch/](http://www.filep.ethz.ch/)); and the *IT Fund* for basic IT infrastructure. In addition, a program to promote “Strategic Excellence Projects” (SEP) for large-scale projects in applied research aiming at innovation through interdisciplinary cooperation was initiated in 2000 ([www.sep.ethz.ch](http://www.sep.ethz.ch)). In 2003 a successor program, the Innovation Initiatives Program (INIT), was introduced with the objective of promoting new scientific endeavors ([www.verw.ethz.ch/sfw/Pub/init.html](http://www.verw.ethz.ch/sfw/Pub/init.html)).

External funding sources of relevance to the vision of ETH World include the *Swiss Virtual Campus* ([www.virtualcampus.ch](http://www.virtualcampus.ch)) and the *New Information and Communication Technologies in Teaching (NTIC)* initiative of the ETH-Board ([www.eth-rat.ch](http://www.eth-rat.ch)).

Although each of these programs and initiatives have their own remits and well-defined target groups, the interface to the ETH World program, which cuts across the institution, is less easy to define. The Program Management strives for efficient coordination with these other agencies and advises projects and potential projects on the most appropriate source of funding.

Simultaneous submission of project proposal to ETH World and other funding agencies is not permitted. However, it is possible to define separately a part of a research, teaching or IT project, which contribute to ETH World

#### 3.3 Evaluation and conclusions

The substantial budget cut by 25 percent compared with the original financial plan has not been without impact on the implementation of the program. As the cut was decided in the early phase of the program, it was possible to adapt the activities. For the execution and the further development of the program, it has been important to be able to rely on the agreed financial conditions.

The two projects with the broadest impact, “Neptun – Mobile Computing for Students” and “Wireless LAN” amount for approximately one-third of the program budget. The results are visible and benefit a large number of users.

The coordination with other funding mechanisms functions fairly well in some cases, such as the Filep program. In other cases it needs to be further improved.

Under the new project organization, the expenditure for program management amounts to 6.6% of the total budget (2003).

## **4. Communication, public relations, networking and community building**

### **4.1 Institutional context**

The ETH World program is an instrument for the development of high-level research, teaching, learning and services. As all successful instruments it is bound to change the processes and structures that it was designed to support.

Therefore, in many respects ETH World is a change program. As such it poses not only a technical, but also – and above all – social and organizational challenges. Change processes succeed only when supported by intensive communication. There is a great need for information and motivation. The anxieties and resistance must not be underestimated.

The Program Management has recognized internal and external communication as one of its key tasks. ETH World comprises numerous decentralized projects. The program is thus implemented by a widely distributed community – and in an institutional culture where the Departments and Institutes enjoy considerable autonomy and where there exist comparatively few centrally prescribed rules. Coordination of and cooperation between the individual projects is important for the success of ETH World as a program, but this must mainly be achieved voluntarily. Through effective communication the Program Management wants to ensure that the members of the developer community are aware of each other and receive incentives for cooperation. Communication measures serve equally to convey information and to promote community building and networking.

### **4.2 The challenge of the lack of perception**

In conjunction with the realignment of the strategy 2002 the Program Management developed a communication concept. It contains an analysis of the situation at that point with the strengths and weaknesses, defines the communication goals, target groups, and key messages and describes the most important actions necessary to reach the goals.

It was clear that a considerable gap existed between the perception of ETH World within ETH Zurich and the strategic goals defined for ETH World. The reasons for this gap could be identified in the early phases of ETH World: communication in the first two years, and especially during and about the conceptual competition, conveyed the image of a major, well-endowed program with lofty but rather abstract goals. ETH World was not well understood. There were many frequently asked questions, but few consistent answers.

Relatively little attention was given to the fact that most of the projects funded by ETH World were geared toward broad use and benefit to all ETH members.

The Program Management Team is making concerted efforts to close this gap. The core messages have been defined. A Communication Action Plan has been developed. Answers have been given to the Frequently Asked Questions ([Annex 1](#)). The communication activities have been focused and increased. They consist of a mix of actions to address both the core community of “co-developers” of ETH World and the ETH community at large.

### **4.3 Communication measures**

To position ETH World in the minds of ETH members, the Program Management seeks to communicate frequently and to offer regular opportunities for dialogue. The communication measures must therefore be effective and cost-efficient. The focus of these measures has therefore evolved from print products towards events and web-based communication.

The key measures are:

a) *Events*

- “Info Lunches”: Presentations of the current status of ETH World, project highlights and other themes of broad interest for all ETH members, twice yearly at each of the main campuses, followed by a snack buffet.
- Showcase events: Presentations of new technologies and topics for the developer community, once a month during terms, in the early evening followed by drinks.
- Presentations at conferences, seminars, meetings and other internal and external events, e.g. NET conference, Alumni Day, Forum New Learning Technologies, IT Experts Committee, etc.

b) *Publications*

- The website [www.ethworld.ethz.ch](http://www.ethworld.ethz.ch) with basic information about ETH World, news from the projects and related activities, announcements about and video documentation from ETH World events, “Interview of the Week” with project representatives and other key persons, etc.
- Regular exposure in “ETH Life”, the daily online publication of ETH Zurich with a monthly print edition. The ETH World material includes news and contributions about ETH World projects and events. From April to October 2003, the Program Director was a regular columnist for the web publication.
- Conference papers, articles and a book chapter are also regularly produced, both by the Program Management Team and by the individual projects.

c) *Promotional material*

- Basic presentation set, openly available on the web site
- Posters and flyers for ETH World events and related activities
- USB flash drives with basic information as give-away or handy tool

In the earlier phases of the program, print products and CDs were used for information. In 2002 two 2000 Newsletters were published (in April and December). In 2001 the results from the Conceptual Competition were published as a book. In July 2001 and in January 2002 mini-CDs were produced presenting the on-going projects and the results from the competition.

#### **4.4 Brand management**

The Program Management recognizes the strength and value of the brand “ETH”. “ETH World” is therefore not managed as a separate brand. Its role is to support and enhance the national and international competitiveness of ETH Zurich. Within ETH, “ETH World” is discreetly positioned as a brand mainly for community building purposes.

#### **4.5 Communication for efficient processes**

The program management considers the documentation for advisory and decision-making bodies to be an important communication task. Well-structured and easily understandable documents support efficient management and administrative processes and provide synergies for the communication with the project community.

The Program Management pays careful attention to status reports, applications, minutes and other documents to make sure that the message gets across to the widespread and busy community. Such documents also serve as the basis for internal and external communication.

#### **4.6 Evaluation and conclusions**

The Program Management recognizes that the perception gap still exists, although it has narrowed considerably. Resistance has been overcome, at least partly. The positive

development may partly be due to the strategic focusing, but the main reason is probably that it becomes easier to grasp and “see” the ETH World vision as concrete results from the projects and activities emerge. For both reasons, strategic communication is a key factor.

## 5. ETH World Conceptual Competition

One of the three main activities conceived at the start of the ETH World program was an international conceptual competition. The competition “ETH World – virtual and physical presence in the Internet and in Zurich/Switzerland” was organized from April to November 2000 to seek a master plan for how to turn the vision of ETH World into reality.

The competition was coordinated by [phase eins], a Berlin-based consultancy company specialized in the management of architecture competitions.

### 5.1 Competition tasks

*“Imagine a campus, a virtual one. Design this campus! You are asked to submit a conceptual design – a strategic masterplan. ETH World is primarily an infostructure project to be conceived in a virtual space and virtual dimension. We are looking for an ingenious and realizable concept for the integration of people, new media, research, learning, and the existing architecture of the ETH Zurich within a global context. The development of a design vision must take the following items into account:”*

*(Invitation to Tender, April 2000)*

Ten tasks were defined for the competition. The participants were asked for “an ingenious and realizable concept for the integration of people, new media, research, learning and the existing architecture of ETH Zurich within a global context.” The design vision should include components that:

- 1. Improve and promote new methods of research and education; without aspiring to be a distance teaching university, ETH World should support learning teams, improve the relationship between students and teaching staff, encourage intellectual discourse between all members of the ETH community and foster lifelong learning and collaboration;*
- 2. Strengthen identification with the university and promote the forming of an interactive community of students, teachers, researchers, staff members, alumni, and other associates;*
- 3. Establish a network for communication and interaction, enhance the human-machine and human-machine-human interface, provide the interconnection for the complete exchange of information through the ingenious organization of digital and information technology;*
- 4. Define the structural and formal framework for navigating and communicating with other users in the information space;*
- 5. Address issues of user roles and identities, public and private domains and their interconnection;*
- 6. Preserve multiplicity in an environment assembled from heterogeneous components, by addressing the balance between decentralized and centralized organizations;*
- 7. Support multilingualism;*
- 8. Enable ETH World to evolve as a dynamic system capable of accommodating unforeseeable changes, building on active users contributions that grow and transform the system;*
- 9. Address socio-cultural implications, respecting the ethical standards of ETH Zurich;*
- 10. Bridge virtual and physical space through close interaction with existing and future physical facilities, enhancing the value of the physical campuses by supporting better and more efficient use of the physical infrastructures.*

The extensive summary of the Competition Main Tasks is given in [Annex 2](#).

## **5.2 Results of the Conceptual Competition**

The competition attracted worldwide attention. Some 300 requests for documentation were received. In the first round 51 contributions were submitted, seven of these were invited to the second round.

The international jury awarded the first prize to the entry “beyond Luxury”, submitted by a team of architects, designers and software programmers from Zurich. Three further prizes were awarded and one additional purchase was made.

Many proposals were submitted by architect teams, which might reflect the fact that architects are familiar with design competitions. But the background of the contributors was very broad: web designers, computer and software engineers, business consultants, media and communication specialists.

The competition with all contributions is documented in a book, “Conceptual Competition ETH World: Virtual and Physical Presence”, edited by Ph. Carrard and M. Engeli (gta Verlag, Zurich 2001).

## **5.3 Implementation of the Competition results**

The program management seeks to implement the core of the visionary ideas of the winning team, but the implementation proved far from easy. As could be expected, the practical implementation requires compromises and adaptation to the technical and financial reality. A considerable amount of time was needed to consolidate the vision of the winning team with the existing infrastructure and with the needs of the ETH members. During this time, the “beyond Luxury” consortium, which had formed specifically for the ETH Word competition, disintegrated. A first phase of implementation was carried out in 2002/03 with mitLinks AG, the company at the core of the consortium. The implementation focused on target-group specific web sites and personalized access to information. After this initial phase, the work has been continued with internal resources by the ETH Web Office, the Computing Services and the ETH World Program Management Team.

## **5.4 Evaluation and conclusions**

The competition made a major contribution towards making ETH World known within ETH Zurich, in Switzerland and worldwide. However, the competition did not produce the master plan for the virtual campus. It provided new ideas and external input into the planning and development processes. These ideas were difficult to implement as stand-alone applications in the existing environment. The core idea of the winning team is being implemented in the project “Personalized access to information” (web portals).

## 6. Projects

### 6.1 Projects as important building blocks

Major building blocks towards realizing the vision of ETH World are contributed by projects, carried out by the departments, laboratories and other units of ETH Zurich. Some of these are developing new forms of communication and collaboration in teaching, learning, research and services. Other projects implement the basis for a pervasive information and communication infrastructure – the “infostructure” – of ETH World, which will enable new services and bring practical benefit to all stakeholders of the university.

A key objective is to ensure that the tools and services developed within ETH World are transferred into the daily operation of the university as soon as possible. This will ensure the sustainable impact of the program.

However, ETH World does not only promote projects that have a broad and demonstrable impact on the daily work of ETH students, faculty and staff. Paying tribute to its visionary character, the program also funds “blue sky” projects with the purpose of making a vision accessible to its future beneficiaries, e.g. by implementing a “showcase” prototype for demonstration and testing. The nature of these projects typically does not permit to deploy a prototype in full scale as needed for a pervasive service across ETH.

To date 26 projects have been funded by ETH World.

### 6.2 Proposal procedure

The first batch of projects was initiated with the launch of the ETH World program in 2000. These included both hardware and software projects, as well as conceptual projects. Special emphasis was given to infostructure aspects. The pioneer projects played a major role in demonstrating the kind of activities that could be integrated under the ETH World umbrella. These projects were solicited in a call with limited circulation, and were mainly proposed by individuals that were already acquainted with the idea of ETH World.

The first formal and widely circulated call for proposals was launched in spring 2001. The call sought proposals fulfilling the following overall goals:

- Promoting sustainable improvements in the research and learning culture through the implementation of virtual information spaces and tools with the help of which research groups and teaching and learning communities can cooperate independent of time and space.
- Simplifying administrative processes and establishing new kinds of academic services through electronic means.
- Improving access for alumni and external stakeholders to ETH Zurich know-how and expertise through electronic channels.

These goals were further focused through the following requirements:

- Projects with broad impact, i.e. basic or transversal projects that bring a benefit to as large a group of users as possible
- Exemplary solutions, i.e. initiatives that can serve as examples for similar projects in other ETH units, that develop technical or organizational solutions or collect experiences that can be further used elsewhere.
- Concepts for the effective use of personal laptops by students, i.e. preliminary studies and preparatory work for Project Neptun 2002/03.

In the following Call for Projects at the end of 2002, special emphasis was given to projects that develop and implement tools offering useful services to ETH members and external stakeholders. Again, such projects were required to have broad impact, i.e. provide a useful contribution to the ETH work environment.

### 6.3 Selection criteria

#### *General requirement*

Project proposal can be submitted by all ETH units, both in the Departments and in the central scientific and administrative services. The approval of the superordinate unit is required.

Similar submission of the same proposal to other funding sources is not allowed. However, a project may be divided into an ETH World component and one or several other components funded through the relevant funding mechanisms for teaching, research or IT projects.

Projects are funded according to the subsidiarity principle: only activities that are not part of the basic mission of the submitting unit are eligible. Projects must also be compatible with the development plan of the applicant's unit.

Preference is given to short initial projects with a duration or an initial phase of up to one year.

#### *Specific criteria:*

- Clearly defined contribution to the goals and further development of ETH World
- Well-defined target group(s), uses and benefits
- User-orientation in both in the content and the development process of the project (participative software development, usability tests, support)
- Evaluation concept (e.g. user satisfaction)
- Measures to promote ETH World as "Learning Organization" (project management, evaluation, exchange of experiences)
- Clear project organization, professional project management
- Funding, including own and matching funds

In 2002 the sustainable operation of the developed tool was an additional important selection criterion.

- Business model und concept to secure longer-term provision of the developed services or tool (e.g.. how the project is transferred into the daily business of an ETH unit, provided as an internal service, as a commercial service or through sponsoring.

### 6.4 Project categories

The ETH World projects can be divided into three categories:

*Infrastructure projects*, with the goal of putting in place the infrastructure needed to support teaching, learning and research independent of time and place.

*Impact projects*, developing and implementing tools and services that provide benefits to large groups of users.

*"Blue-sky" projects*, exploring new technologies and applications. Their potential benefit is great, but on a longer term.

The projects can also be classified according to the application areas:  
Community building, E-Learning, Information management or Research tools.

### 6.5 Summary of the projects

The following tables summarize the projects funded by ETH World to date. The individual projects are presented in Section II.

**Pioneer projects 2000**

				Infrastructure		
				Impact		Blue-sky
<b>A1</b>	ETH Life	Corporate Communications	2000–		x	
<b>A2</b>	ZPE Industry Portal	Dept of Mechanical and Process Engineering, Center for Product Development	02/2000–01/2001		x	
<b>A3</b>	arc-line – architecture on-line	Dept of Architecture, Chair of Architecture and Design	04/2000–03/2003		x	
<b>A4</b>	Advanced Querying and Coordination of Multimedia Information	Dept of Computer Science, Database Research Group	04/2000–03/2002			x
<b>A5</b>	CALICE –Computer-aided Learning and Civil Engineering	Dept of Civil, Environmental and Geomatics Engineering, Institute of Geotechnical Engineering & Institute of Structural Engineering	04/2000–03/2002		x	
<b>A6</b>	ETH Alumni World (Portal)	ETH Alumni	04/2000–12/2002		x	
<b>A7</b>	Vireal Lab	Dept of Chemistry and Applied Biosciences, Institute of Pharmaceutical Sciences	04/2000–03/2003		x	x
<b>A8</b>	Wireless LAN	Computing Services (ID)	07/2000–04/2002	x	x	
<b>A9</b>	United Visions Student TV	United Visions (Student Association)	06/2000–12/2005		x	
<b>A10</b>	CCN – Chemistry Contact Network	Dept of Chemistry and Applied Biosciences, Laboratory for Inorganic Chemistry	01/2001–12/2003		x	

**Projects 2001**

				Infrastructure		
				Impact		Blue-sky
<b>B1</b>	metalogue – formative evaluation of ETH World	Dept of Industrial Management and Manufacturing, Institute for Work Psychology	01/2001–06/2004		(x) <sup>2</sup>	
<b>B2</b>	Video Streaming	NET – Network for Educational Technology	01/2001–06/2002	x	x	
<b>B3</b>	NEPTUN – Mobile Computing for Students	Computing Services	05/2001–06/2005	x	x	
<b>B4</b>	IT-Building Blocks	Computing Services	05/2001–12/2005	x		
<b>B5</b>	Dynamic Content Management for Virtual Learning Environments	Dept of Industrial Management and Manufacturing, Institute of Hygiene and Applied Physiology	09/2001–08/2003		x	x
<b>B6</b>	ETH E-Collection	ETH-Bibliothek	09/2001–12/2003	x	x	
<b>B7</b>	E-PICS – Interactive picture information system for teaching and research at ETH Zurich	ETH-Bibliothek	09/2001–04/2003	x	x	

<sup>2</sup> This project performs a program-internal formative evaluation of ETH World. It therefore has a direct impact on the program, but only an indirect one for the community at large.

<b>B8</b>	All4u – Dynamic Collaborative Information Spaces	Dept of Computer Science, Database Research Group & Dept of Industrial Management and Manufacturing, Institute for Hygiene und Applied Physiology	10/2001–09/2003			<b>x</b>
<b>B9</b>	DEEDS – Distance Education at ETHZ: Delivery System	Center for Continuing Education	10/2001–06/2002	<b>x</b>	<b>x</b>	
<b>B10</b>	Entry Points into the ETH World Infostructure	Dept of Computer Science, Institute for Pervasive Computing	10/2001–12/2002			<b>x</b>

### Projects 2002/2003

				Infrastructure		
					Impact	
						Blue-sky
<b>C1</b>	Videoconferencing Service	Computing Services & NET – Network for Educational Technology	11/2002–12/2005	<b>x</b>	<b>x</b>	
<b>C2</b>	personETH	Personnel Office	01/2003–01/2004	<b>x</b>	<b>x</b>	
<b>C3</b>	My Library@ETH: Personalized entry to the online library resources	ETH-Bibliothek	01/2003–12/2003	<b>x</b>	<b>x</b>	
<b>C4</b>	Video Streaming II	NET – Network for Educational Technology	01/2003–12/2003		<b>x</b>	
<b>C5</b>	Internet Portal for ETH Career Services	ETH Alumni & ETH Juniors	02/2003–04/2003		<b>x</b>	
<b>C6</b>	togETHer – Collaborative Work across Networks in Research and Teaching	Dept of Mechanical and Process Engineering, Center for Product Development	04/2003–03/2006			<b>x</b>
<b>C7</b>	Speak'n'Play	NET – Network for Educational Technology & Dept of Mechanical and Process Engineering, Center for Product Development	07/2003–12/2003		<b>x</b>	
<b>C8</b>	Building IP: Integration of pervasive media technology into the HIL building at ETH Zurich	Dept of Architecture, Chair of Computer-aided Architectural Design	07/2003–04/2005			<b>x</b>

## 6.6 Evaluation and conclusions

The project portfolio has grown organically over time, based on the interests and preferences of individuals who are willing and able to contribute. Without a master plan, the coherence of the projects is dependent on how well the general goals have been understood and accepted.

Especially in the early phase of the program the project landscape was shaped by the interests of the pioneers, who saw how they could benefit from and contribute to ETH World. Many of these early adopters also participated in the definition of the goals of ETH World.

Through the projects a large and growing ETH World core community has been established. These persons make a valuable contribution to the development and implementation of ETH World.

## 7. Lessons learned and outlook

The ETH World program is an instrument for the development of high-level research, teaching, learning and services. As all successful instruments it is bound to change the processes and structures that it was designed to support.

Since its launch in 2000 the program has clearly started and accelerated developments that are irreversible. It is, for example, already evident that the laptop is about to replace the pocket calculator, just as this replaced the slide rule twenty years earlier.

But much still remains to be done to make sure that the tools and services developed within ETH World are put to effective use, for example, by integrating the laptops to improve the teaching and learning process. It is not the primary task of ETH World to make sure this happens, but if it does not, ETH World will have been a bad investment.

The ETH World program has evolved over time. This process has not been entirely straightforward, but the evolution, focusing and adaptation to specific needs of the various stakeholders have been important parts of the development process.

Compared with virtual campus and virtual university initiatives of other institutions, the “infrastructure approach” chosen by ETH World seems unique. The objective to put in place the information and communication infrastructure for education, research and services, and to leave it up to the individual teaching, research and service units to make use of this infrastructure, is well suited to the decentralized culture of ETH Zurich. It is important to make sure that the infrastructure is suited to the needs of those who will use it. But an even bigger challenge is to make those ETH members who *could* benefit from the infrastructure *want* to use it. It is also imperative to make sure that the maximum synergy with other initiatives is achieved, especially those that support the production and delivery of content (e.g. Filep).

The ETH World pioneer projects were still very much stand-alone activities. Many of them had to tackle the same problems. They would have benefited from common standards and services, but as these were being developed in parallel, the projects could not yet use a common infrastructure. An obvious example of this early problem are the many “portal” projects that were launched in the first two years. Today, these projects can all draw on the Web Content Management System, developed as an ETH World “IT Building Block”, and instead concentrate on content and services.

In an ideal world, the first half of the ETH World program could have been devoted to developing the infrastructure, with the second half devoted to applications based on this backbone. It was, however, equally important in the early phase to motivate people and to implement real-life examples of what ETH World will “look like”. The chosen approach with parallel development of infrastructure and applications can be justified from this perspective.

ETH World has managed to establish links between or bring together activities that were initiated independently of each other. This integration of distributed activities can be regarded as one of the most valuable contributions of ETH World to the overall development of ETH Zurich. This benefit is mostly invisible but it translates into synergy, economies of scale and improved efficiency.

Despite this and the fact that a number of projects with broad impact have been implemented within ETH World, no “complete transformation” of a Department or other unit has been achieved. There are interesting developments in this direction, for example, in the Department of Architecture thanks to the combined effect of the projects Neptun and arc-line. Still, the change process is only at the beginning, in some areas more so than in others. The engineering departments, architecture, and applied sciences are clearly more involved than the natural sciences. The challenge here is to involve the whole institution.

The name “ETH World” suggests a strong orientation towards the outside environment. However, as can be seen from the project landscape, the focus is strongly on supporting and developing internal processes. As the ETH World infrastructure makes it easier to

interact and communicate with the outside world, it can help the individual units to develop their contacts with and services for business and industry and society at large.

ETH World is aimed at supporting the core processes of education and research, but the development of the management processes is equally important. ETH World is unique within ETH Zurich in that not only teaching and research units can apply for funds. Also the central services can carry out strategic development projects within the program. This is clearly a strength.

ETH World is defined as a six-year program to implement a vision. The goal is to develop and implement tools and services that become part of the regular activities of ETH Zurich. Ensuring this transfer to the daily operations will be one of the most important goals for the remaining two years of the program.

**SECTION II:  
PROJECT DESCRIPTIONS**



## A1 ETH Life – Daily web publication of ETH Zurich

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

Project type: Community building  
Keywords: Web publication, PR, Web content management, Media relations

Project partners Corporate Communications  
– Rolf Probala  
– Dr Norbert Staub  
– Martina Märki

ETH Life is the daily web publication of ETH Zurich. Since November 2000, it reports daily on events and matters concerning ETH. ETH Life serves the information of all university members and contributes to the development of a sense of community. It reports on issues that are important to the people at ETH and reflects the academic, social and cultural diversity of the university. It contributes to a lively discourse within the academic community and promotes identification with ETH.

ETH Life is aimed at all members of ETH Zurich: university management, professors, assistants, students and staff. ETH Life also gives alumni a daily insight into their alma mater. The web magazine also offers the public and the media first-hand information about life at the university.

As a web publication ETH Life is flexible and can react quickly to events. It can be updated anytime or publish special issues. It increasingly uses multimedia features, such as audio and video streaming and Video-Over-IP multicasting.

ETH Life is published in German with a weekly English edition, “ETH Life International”.

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### *Milestones:*

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2000/07/01	Project start
2000/11/18	First issue of ETH Life online at the Dies academicus
2001/05/10	Live Internet transmission of the annual media conference of the Executive Board
2001/07/15	Introduction of custom-made, open-source-based editorial system, enabling a wide variety of Content Syndication with other ETH web portals
2003/04/03	Launch of weekly English edition

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## A2 ZPE Industry Portal

<http://zpeportal.ethz.ch/>

Project type: Information Management/Community Building  
Keywords: Product development, Industry, Communication, Virtual reality, Web portal

Project partners: Center for Product Development, Department of Mechanical and Process Engineering

- Prof. Dr Markus Meier
- Dr Andreas Kunz
- Thomas Kennel

The Center of Product Development ZPE cooperates closely with industry in research and development. The ZPE Industry Portal aims to be a new platform for this interactive cooperation.

Its interactive facilities allow users to obtain relevant news and information and to create interactive project areas, which can be complemented with all necessary services and tools.

The portal content and the graphical layout are treated separately, so the content can be modified without changing the unique appearance of the whole portal. The management of the portal can be done without specific knowledge. The dynamic and convenient portal is based on the open source software ZOPE and was launched as a prototype at the end of 2000.

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### *Milestones:*

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2000/02/01	Project start
2000/12/20	1st prototype goes live
2001/02/13	2nd prototype
2001/05/31	Launch of final ZPE-Industry Portal
2001/07/20	Project end

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### A3 arc-line – Architecture on-line

<http://arc-line.arch.ethz.ch/>

Project type: E-learning  
Keywords: Architecture, Computer-aided architectural design (CAAD), Interactive pedagogy

Project partners: Chair of Architecture and Design, Department of Architecture  
– Prof. Dr Marc M. Angéilil  
– Michael Martin

The project arc-line has developed an architectural design course as a web-based communication and production network. arc-line does not replace traditional modes of teaching, but enhances them with the possibilities offered by new technology. By superimposing the physical and digital space, students and faculty can interact more effectively.

While learning the basics of architecture, first-year students are actively involved in designing the digital space in which they act. arc-line thus becomes a dynamic system in continuous transformation, leading from the design of a small architectural artifact to a larger urban conglomerate. Students and faculty can navigate through this space and assess the products of their design process.

Based on web technology, this designed space allows connections to various databases relevant to the teaching of architecture such as course outlines, lecture notes, bibliographies, and textbooks. Arc-line also fosters identification with ETH: its users – students, teachers and researchers – form a collective that the project helps to coalesce.

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<i>Milestones:</i>	
2000/01/01	Project start
2000/01/12	Preparatory Phase: Development of script for integrating architectural design course with web-based communication and production tools
2000/07/30	Phase 1: Hardware implementation, didactic content development, on-line representation (2D), database concept development for the intelligent information platform
2001/04/01	Start of pilot use
2001/07/30	Phase 2: Didactic content refinement, on-line representation (3D), on-line desk critiques, programming and test implementation of the intelligent information platform
2002/09/30	Phase 3: Didactic content refinement, on-line representation (3D), on-line desk critiques, intelligent information platform, unified teaching portal
2003/03/31	Project end

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## A4 Information Search & Coordination

### Advanced Querying and Coordination of Multimedia Information in ETH World

[http://www-dbs.inf.ethz.ch/externalprojects/index\\_04.html](http://www-dbs.inf.ethz.ch/externalprojects/index_04.html)

<http://dbshorus.ethz.ch/>

Project type: Information Management  
Keywords: Information systems, Image search

Project partners: Database Research Group, Department of Computer Science  
– Prof. Dr Hans-Jörg Schek  
– Michael Mlivoncic  
– Dr Heiko Schuldt  
– Christoph Schuler  
– Dr Roger Weber

This project addressed two essential challenges of information spaces with many interdependent multimedia information sources:

- Achieving consistency in the information-flow from different sources
- User-friendly and efficient search mechanisms for finding the right information in a large, virtually integrated information space

This project has carried out a feasibility study and developed a demonstration prototype for a base technology, which will allow users to find structured information in ETH World:

- An image search engine with similarity search
- Integration of a query planner with dynamic selection of best execution plan based on user-specified conditions
- Combining text and image retrieval combining text and image retrieval, considering structured predicates and the extraction of image annotations.
- Coupling application systems, e.g., ImageFinder (the image database of the ETH Library) and monitoring and triggering relevant system events.

User-friendly multimedia search has been implemented in “Chariot“, a prototype system for fast and feedback-aware image similarity search.

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#### *Milestones:*

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2000/04/01	Project start
2001/10/30	Extended image retrieval engine with support for combined image and text searching
2002/01/30	Support of information coordination based on publish & subscribe technology
2002/04/20	Extended image retrieval engine with support for context-aware searching
2002/04/30	Project end

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## A5 CALICE – Computer Aided Learning in Civil Engineering

<http://www.calice.igt.ethz.ch/>

Project type: E-learning

Keywords: Interactive pedagogy, Virtual laboratory, Structures, Geotechnics

Project partners: Institute of Geotechnical Engineering, Department of Civil, Environmental and Geomatics Engineering

– Prof. Dr Sarah Springman

– Robert Banjac

– Ravikiran Chikatamarla

– Pierre-Andre Mayor

Institute of Structural Engineering, Department of Civil, Environmental and Geomatics Engineering

– Prof. Dr Thomas Vogel

– Reto Bargaehr

– Alexander Kott

– Barbara Schechinger

The goal of the CALICE project is to stimulate the use of new information and communication technologies in teaching and research at the Department of Civil, Environmental and Geomatics Engineering. The project benefits from international cooperation and ETH-wide links in the form of technology sharing and didactic expertise.

Third and fourth semester courses in geotechnics and the theory of structures make substantial use of IT within the CALICE environment. Lectures, exercises, simulations, quizzes and tests are made available online. The project also builds a knowledge infrastructure for several courses in the upper semesters. As students can equip themselves with laptop computers through the Neptun project WLAN cards, live simulations can be demonstrated on demand.

Research presentations and colloquia have also been webcast to international partners through an infostructure enabling video streaming and live web interaction.

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### *Milestones:*

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2000/04/01 Project start

2001/02/08 The first implementation of the courses has been delivered successfully with positive evaluation from the students

2002/03/31 Delivery of additional modules

2002/03/31 Project end

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## A6 ETH Alumni World

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

Project type: Community Building  
Keywords: Web portal, Alumni, Information management

Project partners: ETH Alumni  
– Dr Peter O. Brunner  
– Brigitte Cuperus  
– Dr Andrea Ventura

The objective of the project ETH Alumni World is to provide a virtual gateway for alumni of ETH Zurich to their alma mater in order to integrate them better into the ETH Community. ETH Alumni World aims to promote both inter-personal and professional networking among alumni and with members of ETH Zurich. The range of services will also include a comprehensive calendar of coming events and facilities for contacts and virtual meetings.

The project will transfer the alumni website to the Web Content Management platform of ETH. This will improve the information flow to alumni and rationalize the publication process.

Through the integration of the alumni database personalized services will be made available, such as online updates to personal information, restricted web access to the member register and online registration for alumni events. Alumni will also be able to manage their lifelong e-mail forwarding facility directly.

Based on the software MatchingNeeds a number of brokering services will be developed. As a pilot implementation a mentoring service will be set up to match alumni as mentors for students and prospective students.

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### *Milestones:*

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2003/08/01	Project start
2003/10/31	Pilot mentoring service for prospective female students (EQUAL)
2003/12/31	Pilot web site ready
2003/12/31	Pilot mentoring brokerage service (Alumni)
2004/03/31	Integration of alumni database and Alumni mentoring service into website
2003/04/01	New website online
2004/04/30	Project end

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## A7 Vireal Lab

### A virtual-real laboratory for research and teaching in Pharmaceutical Sciences

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

Project type	Research tools
Keywords:	Virtual-real collaboration, Roomware, Interactive furniture, Group-based learning, Pharmaceutical sciences; collaborative teamwork
Project partners:	Institute of Pharmaceutical Sciences, Department of Chemistry and Applied Biosciences – Prof. Dr Gerd Folkers – Dr Christof Hanser

The project Vireal Lab has established an environment combining virtual science worlds with the real world in the library of the Institute of Pharmaceutical Sciences. This room was equipped with intelligent “roomware” technology: tables, chairs and whiteboards with integrated electronics, providing easy access to the Internet, databases and the local computer network.

This infrastructure is used to support interactive seminars and research meetings with remote labs. Participants can be present as virtual individuals, allowing real-time discussion of complex data. Vireal Lab enables collaborative teamwork of local and remote teams. Course material for asynchronous teaching, chat rooms and live videos for synchronous teaching are accessible on the server, making the students more independent of time and place without losing contact and information.

Vireal Lab is used for student work, collaboration with research project partners, graduate and postgraduate education, as server for educational material and for continuing education for the medical professions.

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#### *Milestones:*

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2000/04/01	Project start
2000/10/30	Hardware installation planning in detail. Usage concept; security and access concept established.
2001/10/15	Construction of the Vireal lab in the Pharma Library Irchel 36-L-08.
2001/10/30	Testing & adaptation of molecular simulation software for the new hardware.
2002/02/05	A first seminar has taken place in the Vireal lab based on existing data transfer technology in the winter term 2001/02. First evaluation results by Institute of Work Psychology finished.
2002/05/30	Introduction of the Vireal lab in daily research & teaching use in the Department of Chemistry and Applied Biosciences (D-CHAB) and other interested ETH groups. Planning of the Bio Profil project (natural product drug discovery with Costa Rica)
2003/05/10	using the Vireal Lab as tool Implementation of Stanford Software (Mouse functions over all screens etc) in
2003/08/15	collaboration with Prof. Jan Borchers
2003/12/31	Project end

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## A8 Wireless LAN

<http://wireless.ethz.ch/>

Project type: Infostructure Elements  
Keywords: Wireless LAN, IEEE802.11b, Network, Internet access, Virtual Private Network VPN

Project partners: Computing Services (ID)  
– Armin Brunner

Working wireless means having Internet access without being connected with a cable. Wireless and thus mobile computing improves communication in many areas: lectures, seminars, meetings, or independent work in the student restaurant, library, or dormitory.

The goal of the wireless LAN project is to improve the effective use of semi-public space. The project is accompanied by research to explore the possibilities and limits for teaching, research and administration.

The project installs base stations for wireless access in lecture halls, working areas and semi-public spaces, which can be used for working, e.g. the study zones in the main building and the student restaurants. To promote use in the early phase, the purchase of wireless access cards for laptop computers was subsidized. Today wireless cards are standard equipment in all Neptun laptops.

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### *Milestones:*

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2000/07/01	Project start
2000/11/07	1st phase in use
2001/04/20	Two complete buildings (IFW and RZ), selected lecture halls and semi-public areas equipped
2001/12/31	Further access point installed at both ETH locations Zentrum and on Höggerberg
2002/04/04	ETH-wide Wireless LAN concept approved
2002/04/04	SSH/Telnet validation complemented by Virtual Private Network (VPN) infrastructure
2003	Continued extension of the WLAN coverage
2003/06/30	Project end

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## A9 United Visions

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

Project type: Community building  
Keywords: Streaming video, Community TV, WebTV

Project partners: United Visions (student association)  
– Pia Guggenbühl  
– Beatriz Rosenberger  
– Muriel Thévenaz  
– Samuel Wegmann

United Visions is the joint online campus television of ETH and the University of Zurich. It is a WebTV channel focusing on life at the two universities. United Visions broadcasts lectures and information on research projects, but it also covers parties and events. The program is an insight into student life in Zurich.

United Visions has two main goals:

- To attract the attention of people from all around the world on the two universities in Zurich
- To give students interested in journalism, marketing, organization, and online communication the chance to do media-related work.

United Visions is a student initiative and it is run by students, with financial and infrastructure support by the universities.

## A10 CCN –Chemistry Contact Network

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

Project type: Research tools  
Keywords: Topology, Periodic surface, Nanotechnology, Crystal structure, Animation, Solid state chemistry

Project partners: Laboratory of Inorganic Chemistry, Department of Chemistry and Applied Biosciences  
– Prof. Dr Reinhard Nesper  
– Christian Mensing  
– Stefano Piotto  
– Dr Anke Zürn

The CCN project has four main goals:

- To formulate and visualize the role of chemistry within ETH World. Concentrating on key research topics, such as nanotechnology, catalysis, and modern analytical methods, CCN aims to establish time-limited virtual research clusters and virtual institutes.
- To enhance the visibility and acceptance of chemistry as a major research and teaching field at ETH.
- To expand teaching to a new, virtual level by generating new teaching and learning tools not only for basic chemical education at different departments of ETH and higher-level education at the Department of Chemistry, but also for secondary schools and the high-school (Gymnasium) level, and for continuing education.
- To establish dynamic links between teaching, research, and applications, moving towards a comprehensive interaction with present and future chemistry.

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### *Milestones:*

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2001/01/01	Project start
2001/01/20	Industry Contact Forum evaluation of fields of expertise in chemistry
2001/06/10	CCI "Creative Chemistry on the Internet": Start to build up animations library
2001/08/30	Real-time cooperation and research platform (synchronous): Prototype ready
2001/09/15	Interactive contact platform for research networks (asynchronous): Prototype ready
2001/09/20	Interactive contact platform for research networks (asynchronous): Prototype ready
2001/10/15	Real-time cooperation and research platform (synchronous): Start of standard operation
2001/10/20	CCI "Creative Chemistry on the Internet": Complete experimental set for General Chemistry
2001/11/10	Highlight-Presentation Gallery: Infrastructure specifications
2001/12/20	Interactive contact platform for research networks (asynchronous): Test runs for Swiss National Science Foundation project "Supramolecular Functional Materials" ready
2001/12/20	Industry Contact Forum: Start of operation
2002/01/20	Highlight-presentation gallery: Start of action
2003/12/31	Project end

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## B1 Metalogue – formative evaluation of ETH World

Project type:	Evaluation
Keywords:	Evaluation, Work psychology
Project partners:	Institute of Work Psychology, Department of Industrial Management and Manufacturing Engineering – Prof. Dr Theo Wehner – Dr Christoph Clases – Verena Friedrich
Project type	Evaluation
Keywords:	Evaluation, Work psychology
Project partners:	Institute of Work Psychology, Department of Industrial Management and Manufacturing Engineering  – Prof. Dr Theo Wehner – Dr Christoph Clases – Verena Friedrich

ETH World will bring about organizational, technological and social changes to ETH Zurich as a work place. The linkage between physical and virtual space, innovations in teaching and learning, intensified interdisciplinary cooperation, cooperation with external stakeholders, and cross-border forums for knowledge transfer will all have an impact on this change process.

The project *metalogue* was initiated to carry out a formative evaluation of ETH World from within the program itself. In psychology in general and work psychology in particular there is a long tradition with regard to the analysis and evaluation of work tasks, work places, technologies on the one hand and the understanding of organizational change on the other. With regard to ETH World, *metalogue* will provide a forum for coordinating feedback-processes with respect to local experiences in various work settings. By integrating a broad variety of actors – including actors that have not been directly involved in ETH World so far – various perspectives will be taken into account. As a formative evaluation project, *metalogue* supplies ETH World with process-related feedback about its overall performance and allows the program's overall management to be adjusted based on the results of the evaluation.

As an integral part of the community building process of ETH World, *metalogue* aims to:

- involve a broad variety of actors in the evaluation
- systematically support communication
- provide in-depth feedback on motives and expectations towards ETH World
- track actual changes brought about by ETH World
- formulate options for the further development of ETH World.

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### *Milestones:*

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2001/01/01	Project start
2002/01/31	Evaluation criteria and utility parameters defined. Face-to-face forum for exchange of experiences initiated. Online platform for formative evaluation is set up
2003/02/28	Feedback of interim results of the results produced by forum for co-construction. Presentation of results of Delphi study
2003/09/30	Mid-term report on overall project (incl. recommendations for re-design)
2004/04/30	Presentation of summative evaluation of ETH World
2004/07/30	Presentation of the final report (incl. recommendations for re-design)
2004/08/30	Project end

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## B2/C4/C7 Video Streaming – PLAY

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

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

Project type: Infostructure Elements  
Keywords: Video streaming, Video-on-demand, Live Streaming

Project partners: Network for Educational Technology  
– Jens Keller  
– Roger Rebetez  
– Nathalie Schmidig  
– Dr Elizabeth Zingg  
– Thomas Gabathuler, Solutionpark Streaming GmbH

The project Video Streaming aims to put in place the infrastructure, through which lectures and important events of the ETH can be made available as video over the Internet. This infrastructure covers the recoding, editing, compression, storage and distribution of video recordings.

In the first phase the basic infrastructure for streaming video was established. The software, “PLAY”, was developed to streamline the production of streaming media. With the help of PLAY, videos with synchronized slide presentations that otherwise require extensive post-editing can be produced on the fly. PLAY is web-based and can be configured and operated with a web browser. It is easy to use and allows for the flexible deployment in a wide variety of recording environments.

The aim of the second project phase is to maintain and extend the services of the Network for Educational Technology – NET to match the rising demand for streaming productions. The technical infrastructure for streaming video will be upgraded to increase its reliability. The user interface will be improved to make streaming media easy to use (“Easy Streaming Access”). Tools and know-how will be provided to enable teachers and students to make their own video productions (“Free Cutting”). In order to avoid bottlenecks additional hardware will be installed and a new video cutting station will be established on the Hönggerberg campus.

In a third sub-project, the PLAY software will be integrated with the “SpeakersCorner” multimedia lectern, developed at the Center of Product Development into a combined product, “Speak’n’Play”. The focus is on common interfaces and complementary functionality.

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### *Milestones:*

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2001/01/01	Project start
2001/06/30	Specifications for the modular Livebox
2001/07/30	End of test phase for recorded lectures, specifications for software solution
2001/08/30	Prototype of modular Livebox, tests
2001/09/30	Prototype of software solution, tests
2002	Test use of Modular Livebox and software; development of productive software
2003/01/20	Launch of PLAY software
2003/11/14	Launch of “FreeCutting” service
2003/12/31	Project end

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## B3 Neptun – Mobile Computing for Students

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

Project type: Infostructure Elements  
Keywords: Laptop, student computing, E-learning

Project partners: Computing Services  
– Dr Andreas Dudler  
– Immo Noack  
– Christina Brand  
– Roman Hotz  
– Ralph Curschmann

With project Neptun ETH Zurich seeks to ensure that all students have access to a laptop computer as a personal work tool. The project is complemented by the campus-wide wireless access put in place by the Wireless LAN project.

Through the project new student work places are established and some of the load is taken off the central computer rooms. The improved access for students to computing resources helps to promote learning independent of time and space. This contributes to improving the quality of teaching and research.

Neptun selects the laptop suppliers and the equipment models and negotiates the purchase conditions. The students buy the laptops with their private means. Students in need can apply for financial aid.

Neptun distributes software free of charge or at very good conditions, offers support through a helpdesk and provides the supporting infrastructure (printers, docking stations, power outlets, anti-theft devices, lockers, etc.). The service offering is publicized to all students and staff through a broad palette of communication measures (website, flyers, posters, emails, letters, etc.).

Through a set of accompanying measures faculty are motivated and trained for using the laptops in their teaching.

In a pilot project in the winter semester 2001/02 first experiences were collected with four Departments. In the following year ten Departments participated in the action and in the third year the project has been extended to all of ETH Zurich. In the meantime several other universities and other educational establishments in Switzerland have joined the project.

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### *Milestones:*

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2001/03/01	Project start
2001/10/21	Start of pilot project in four Departments (D-ANBI, D-ARCH, D-INFK und D-MAVT)
2002/03/31	Evaluation of pilot project
2002/06/01	Start of Neptun II: Extension to 10 Departments
2003/02/25	Evaluation of Phase II
2003/06/01	Start Neptun III: Extension to all of ETH Zurich
2004/02/29	Evaluation of Phase III
2004/06/01	Start Neptun IV: Transfer to day-to-day operation
2005/02/28	Final evaluations
2005/06/30	Project end

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## B4 IT Building Blocks: Application Middleware for Web-Transactions

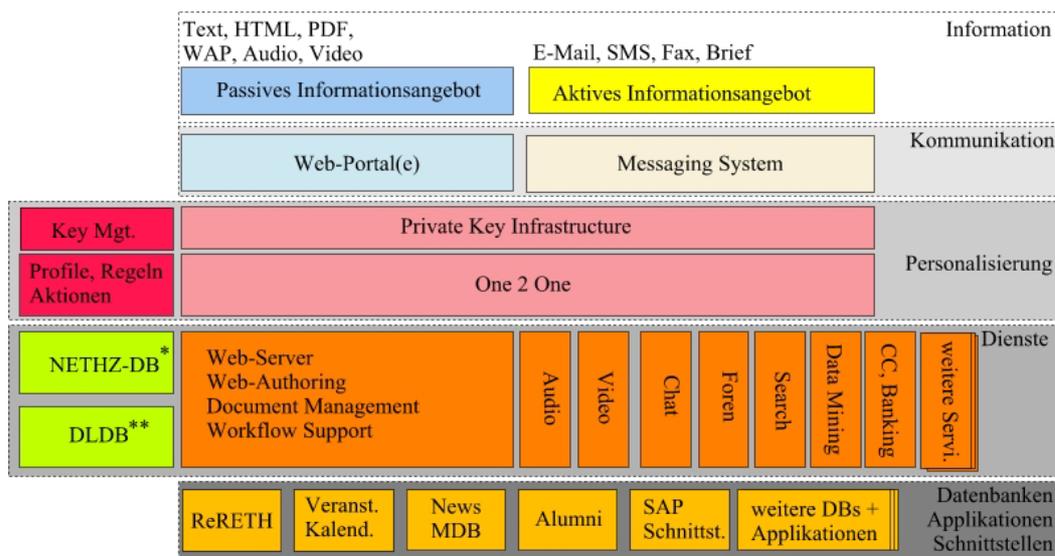
[http://www.id.ethz.ch/Aktuell/Aktuelle\\_Projekte/Building\\_Blocks.html](http://www.id.ethz.ch/Aktuell/Aktuelle_Projekte/Building_Blocks.html)

Project type: Infostructure elements  
 Keywords: Web transactions, Application middleware, Bea application server, J2EE, Java Beans, Enterprise Java Beans, Databases, Oracle,

Project partners: Computing Services (ID)  
 – Dr Andreas Dudler  
 – Dr Giorgio Broggi  
 – Dr Dorothea Christ

The support of education and research within ETH World requires the reengineering of many administrative processes. The goal is, whenever possible, to support these processes through web transactions. This will enable the direct integration, without media interruptions, into the central administration and the use of the respective databases.

The project "IT-Building Blocks" aims to establish the software architecture needed for this development within the Computing Services. This architecture will provide secure, reliable and stable support for large volumes of web transactions with the central databases.



The software architecture is three-tier: (1) Clients: pure HTML browser, (2) Middleware: Bea application server with Java 2 Enterprise Edition (J2EE), Java Beans and Enterprise Java Beans; (3) Database Server: Oracle V8.

This architecture was implemented in the pilot project "Electronic Inscription" in the Rectorate to enable the verification in a real application environment.

**Milestones:**

2001/05/01	Project start
2001/06/30	Evaluation of technology for implementing web applications for the support of administrative core processes
2001/09/01	Evaluation of commercial middleware to implement the applications
2001/09/10	Launch of productive pilot application Electronic Inscription for two departments
2001/12/01	Project end

## B5 dLCMS – Dynamic Learning Content Management System for Virtual Learning Environments

<http://www.iha.bepi.ethz.ch/>

Project type: E-learning  
Keywords: Web-based learning, Learning content management systems LCMS, Web content management systems WebCMS, Learning objects, SCORM, Zope, Silva, Python

Project partners: Institute of Hygiene and Applied Physiology, Department of Industrial Management and Manufacturing Engineering  
– Prof. Dr Helmut Krueger  
– Dr Brigitta Danuser (until June 2003)  
– Dr Sissel Guttormsen  
– Christine Hitzke  
– Samuel Schlupe

The aim of the project is to develop, implement and operate a "dynamic Learning Content Management System" (dLCMS) that makes it possible to manage, use and reuse learning objects.

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.

The dLCMS enables the effective handling of small modular Learning Objects. 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.

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 Virtual Learning project (VIL) of the postgraduate program "Work and Health" will be implemented as a pilot application.

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<i>Milestones:</i>	
2002/01/01	Project start
2002/07/31	Evaluation of existing systems and technologies
2002/08/31	Definition of the dLCMS concept
2003/04/30	Development of the dLCMS application
2003/11/15	Design of an e-learning module for the post-graduate study, "occupational health" with dLCMS
2003/12/31	Project end

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## B6 ETH E-Collection – The Digital Publication Platform of ETH Zurich

<http://e-collection.ethbib.ethz.ch/>

Project type: Information Management  
Keywords: Electronic publication, Document server, Online library, Open Archive Initiative

Project partners: ETH-Bibliothek  
– Dr Wolfram Neubauer  
– Dr Alice Keller (until September 2003)  
– Corinne Gysling  
– Stephanie Boschung  
– Alex Weber

The ETH E-Collection is an electronic document server established by the ETH-Bibliothek. Members of the ETH community can publish digital documents that have not been made public through other channels. The E-Collection offers scientists the possibility to quickly publish research results worldwide. It also helps to add to the library's already extensive stock publications that previously have only been available to a limited audience. With the E-Collection, a wider audience now can get free access to publications and material that are relevant for research and teaching.

The E-Collection contains doctoral dissertations, lecture notes and handouts, research reports, conference proceedings, journals, annual reports, etc. The complete collection may be accessed over the E-Collection website. The material is also catalogued in the regular library system NEBIS with direct links to the electronic document. Access to material containing copyrighted material, such as lecture notes, can be restricted with an Intranet solution.

The project is accompanied by extensive marketing and PR activities to make it known and to motivate faculty to submit documents. These have included a letter to all professors at the launch of the project, telephone marketing, posters and flyers, mails to new faculty and visiting lecturers, etc.

By October 2003 the collection had grown to comprise about 4,400 full-text documents.

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<i>Milestones:</i>	
2001/06/01	Project start
2001/09/15	Pilot launch with first full text documents stored on the document server and catalogued in the library catalogue NEBIS; integration of 1 400 doctoral theses in the collection
2002/02/28	Launch of E-Collection website, improved user navigation and retrieval functions
2002/08/31	Installation of upload server, implementation of an intranet solution, integration of multimedia objects
2002/09/30	Metadata exchange with document server MathDiss; cataloguing tasks transferred to ETH-Bibliothek cataloguing department
2002/10/01	Registration in the OAI (Open Archive Initiative) as a data provider
2003/10/01	Implementation of the Open Archive Initiative (OAI) protocol to ease metadata exchanges
2003/12/31	Project end, Integration into day-to-day operation of the Library

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## B7 E-PICS – Interactive Picture Information System for Teaching and Research

<http://www.e-pics.ethz.ch/>

Project type: Information Management  
Keywords: Picture database, Digital images, Electronic publication, Image search, Metadata

Project partners: ETH-Bibliothek  
– Dr Wolfram Neubauer  
– Dr Rudolf Mumenthaler

gta – Institute for the History and Theory of Architecture, Department of Architecture  
– Prof. Werner Oechslin  
– Prof. Andreas Tönnemann

The aim of the project is to develop a picture information system as a part of the ETH World infostructure. The system encompasses image documents, which are indexed using scientific metadata. Thereby a high-quality picture database is created which can be used in research and education.

In a first step, the interface between the user application and the search engine for the existing image databases of the ETH-Bibliothek have been developed. In addition to indexed searching, the interface allows users access to the most important functions of the system with a standard Web browser: from searching and ordering to entering new pictures and definition of picture collections for teaching.

As a pilot implementation, the interactive online picture database has been used as part of teaching and research in the Department of Architecture within the course “History and Theory of Architecture I” in cooperation with the Foundation Bibliothek Werner Oechslin in Einsiedeln. The pictures and the picture collections were accessible on the web for the course participants.

Plans for further development of the project include an improved user interface, implementation of a reliable scalable technical platform and the definition of the interface to other ETH World projects, such as Advanced Querying and Coordination of Multimedia Information, IT Building Blocks, and Chemistry Contact Network.

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### *Milestones:*

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2001/09/01	Project start
2002/03/30	Digitalization of pilot collection
2002/05/31	Prototype of web interface
2002/10/25	Pilot collection catalogued
2003/04/30	Test use in one course, evaluation
2003/07/31	End Phase I
2003/11/24	Specifications for full-scale development
2004/03/31	Implementation and evaluation

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## B8 All4u: Dynamic Collaborative Information Spaces

<http://www-dbs.inf.ethz.ch/externalprojects/index.html>  
<http://www.rereth.ethz.ch/bepr/hygiene/krueger/pj.37.html>

Project type: Information Management  
Keywords: Navigation, Collaboration, Information retrieval, Visualization, User-point-of-view metadata, User study, Qualitative experiment, User Interface, Usability testing, Database, UML, C++, Java

Project partners: Database Research Group, Department of Computer Science  
– Prof. Dr Hans-Jörg Schek  
– Dr Roger Weber  
– Kai Jauslin

Institute of Hygiene and Applied Physiology, Department of Industrial Management and Manufacturing Engineering  
– Prof. Dr Helmut Krueger  
– Dr Sissel Guttormsen  
– Pamela Ravasio

Students and researchers use a large palette of applications on a daily basis to get organized, and to access and administer information. In present systems, the users must find their way on their own within the information space spanning a variety of channels. The means at their disposition (e.g. bookmarks, email, search engines) are very limited, require an immense effort and are not tailored at all towards their needs.

The goals of this project were on the one hand to develop graphical user interfaces which visualize the objects and relationships in a personal information space. They should allow a user to interactively explore and shape his space. Based on a series of prototypes, the different possibilities were investigated. On the other hand, we also studied navigation, classification and retrieval practices of users in their personal information space, in order to build theoretical foundations that define technical and usability requirements for personal and collaborative information spaces.

The global information space was mapped to an information space tailored for the user by using context sensitive methods. Different visualization methods can be used to view the personal information space. With easy and understandable communication primitives, the space can be shaped and changed.

Based on user studies and prototype implementations, the All4u project aims to provide advice how the different components of the “personal information space” should look like and what kind of services are required in what form. The project is divided into two equally important areas: Information Retrieval and Human-Machine Interaction. Together these will ensure that the concepts developed in this project are optimal with regard to technical and cognitive issues.

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### *Milestones:*

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2001/10/01	Project start
2002/04/01	Visualization prototype and windows desktop usage study
2002/12/01	Qualitative experiment and Prototypes: Information Retrieval aspects Data access and collaboration, usage patterns
2003/05/01	Implementation of extended visualization prototypes
2003/09/30	Project end

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## B9 DEEDS – Distance Education at ETHZ: Delivery System

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

Project type: E-learning  
Keywords: Knowledge transfer, Web portal, Standardization, Modularization, E-learning, E-commerce, Data security, Brokerage platform

Project partners: Center for Continuing Education  
– Daniel Künzle  
– Hans-Rudolf Frey

The aim of the DEEDS project is to develop a “distance-education delivery” platform. On this platform the Center for Continuing Education, collects all e-learning products that have been released for publication at ETH Zurich and makes them accessible on the Internet in a client-oriented way. Faculty members thus get the opportunity to distribute their e-teaching materials rapidly worldwide. DEEDS thus contributes to the transfer of recent research results into practice.

The aim of Phase I of the project was to collect and publish in a systematic way the e-teaching materials that previously were offered directly by the providing units. In Phase II, new products (lectures in streaming video quality), new customer services and a general course administration system for classical, hybrid and online courses will be added.

Issues related to standardization, modularization, quality assurance, intellectual property, data security and e-commerce have been clarified in cooperation with other Central Services and with the content providers.

### *Milestones:*

2001/09/01	Project start
2002/03/01	Definition of content concept, target groups, service offering, interface and functionality of the Distance Education Delivery Portal
2002/06/01	IT concept: IT-based implementation of the content concept; definitions of the specifications for the evaluation of the database and the web portal
2002/12/20	Implementation of software, interfaces and portal (licenses, modifications, testing)
2003/06/30	System online: Available e-learning programs uploaded on the Distance Education Delivery Portal; services available according to specifications and known among the target groups
2003/12/31	End of Phase I: New services including a new customer database and online pre-inscription procedures are available
2004/01/01	Start project phase II: Broadening of the range of products and services, implementation of an integrated course administration system for classical, hybrid and online courses

## B10 Entry Points into the ETH World Infostructure

Project type: Infostructure Elements  
Keywords: XML, Virtual counterparts of physical objects, Ubiquitous computing, RFID, Radio tags, Privacy, Positioning, Physical hyperlinks, PDA, Mobile devices, Location awareness, Infrared beacons, Context awareness, Barcodes, Wireless LAN, Bluetooth

Project partners: Institute of Pervasive Computing, Department of Computer Science  
– Prof. Dr Friedemann Mattern  
– Jürgen Bohn  
– Svetlana Domnitcheva  
– Marc Langheinrich  
– Michael Rohs

The project addresses the coupling of the physical campus infrastructure with the ETH World information space. By embedding hyperlinks into the ETH campus and attaching information to physical objects, visible entry points into the information space of ETH World are created, enabling a natural interaction between the physical and virtual environment and thus providing ubiquitous access to ETH World.

By providing location information for physical rooms and artefacts, the retrieval of information that is associated with them is simplified. It also helps people to navigate more easily. Through on-going evaluation, important questions regarding privacy and social acceptance of such a paradigm are analyzed.

A prototype system named ETHOC (“everything has online content”) has been developed, which makes the simple creation of augmented documents via a Web interface possible. ETHOC enables users to attach virtual counterparts to printed material. The system performs the creation, administration, and intermediation of online resources related to paper documents. To information providers it offers a Web-based author portal for generating unique IDs that can be printed as barcodes, and for associating online content and actions to printed material. To users it offers simple means to interact with virtual counterparts of printed documents using a variety of devices. Examples range from a WAP enabled phone equipped with a mobile bar code reader, a PDA with wireless connectivity, to the full fledged ETHOC browser for Java enabled PCs and laptops. The user has device independent access to his personal usage history.

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### *Milestones:*

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2001/10/01	Project start
2001/11/01	Interweaving the physical campus infrastructure with the ETH infostructure
2002/03/01	Provision and utilization of location information
2003/07/01	Investigation and evaluation of privacy and acceptance aspects
2003/12/31	Project end

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### References:

Michael Rohs, Jürgen Bohn: *Entry Points into a Smart Campus Environment - Overview of the ETHOC System*. International Workshop on Smart Appliances and Wearable Computing (IWSAWC), Providence, Rhode Island, USA, May 2003. Proc. 23rd International Conference on Distributed Computing Systems - Workshops (ICDCS 2003 Workshops). Available at: <http://www.inf.ethz.ch/vs/publ/papers/ethoc.pdf>

### Talks:

Michael Rohs: *ETHOC: Entry Points into a Smart Campus Environment*. International Workshop on Smart Appliances and Wearable Computing (IWSAWC), Providence, Rhode Island, USA, May 2003. Available at: <http://www.inf.ethz.ch/vs/publ/slides/EntryPoints-IWSAWC.pdf>

## C1 Videoconferencing Service

<http://www.vc.ethz.ch/>  
<http://www.vc-wizard.ethz.ch/>

Project type: Infostructure Elements  
Keywords: Videostreaming, Webcam, Videoconferencing, Teleteaching, Multipoint Conferencing Unit (MCU), TCP/IP, T.120, ISDN, H323, H320, Gatekeeper service, Document sharing, Application sharing, Access grid

Project partners: Computing Services (ID)  
– Armin Brunner  
  
NET – Network for Educational Technology  
– Thomas Rechsteiner  
– Stefan Schmuki

The project aims to establish an easy-to-use, network-based videoconferencing service at ETH Zurich. This service will provide videoconferencing for different uses, ranging from simple software clients running on personal computers to multiple high-resolution video streams for conferencing between lecture halls. The project will install and maintain the technical infrastructure, including a Multipoint Conferencing Unit and a Scheduler, and offer support and training for users to help them to become familiar with the new technology.

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### *Milestones:*

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2002/11/01	Project start
2002/12/10	Evaluation and testing of necessary infrastructure and systems
2003/04/10	Central infrastructure (Multipoint Conferencing Unit (MCU), Gatekeeper, Gateway, Server) installed
2003/12/20	Videoconferencing service is well established, known and used across ETH Zurich
2005/12/20	Transfer into day-to-day operation as a service at ETH
2005/12/31	Project end

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## C2 personETH – Virtual Human Resources Management

<http://proto-pa.ethz.ch> (after 13 November 2003 [www.pa.ethz.ch](http://www.pa.ethz.ch) )

Project type            Information Management  
Keywords:             Human resources management, E-Administration, Workflow management

Project partners:    ETH Personnel Department  
                          – Piero Cereghetti  
                          – Dr Saskia Willemse Kiene

The project personETH aims to develop a new web application for the human resources (HR) management at ETH Zurich. The goal is a paperless workflow system that supports the smooth cooperation between the personnel department and staff, supervisors and organization units. Such a system is part of a modern and customer-oriented HR management.

In a first step of the project all HR processes will be analyzed and documented in digital form. In a second phase selected processes will be automated with an electronic workflow system. This will help to streamline procedures, to accelerate the workflow, and to eliminate errors.

Staff with responsibility for research and teaching can best concentrate on their tasks when they receive efficient administrative support. By streamlining their workflows the administrative units can better meet the needs of academic staff. Electronic means, especially platform-independent web applications, can significantly support this process. A virtual campus needs to be supported by a virtual administration: personETH is a first step in this direction.

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### *Milestones:*

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2003/01/10	Project start
2003/07/20	Prototype of personETH website with process-oriented representation of the services of the Personnel Department.
2003/11/13	Website „personETH“ goes online.
2003/12/19	Prototype of workflow application for a selected pilot process ready for testing.
2004/02/28	Launch of productive workflow system for selected process
2004/03/31	Project end

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### C3 MyLibrary@ETH

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

Project type: Information Management  
Keywords: Online library services, Personalization, Portal, uPortal , XSLT, XML, Tomcat, Java, Cocoon

Project partners: ETH Library  
– Dr Wolfram Neubauer  
– Dr Alice Keller (until September 2003)  
– Judith Bissegger  
– Stephanie Boschung  
– Ketty Ciandrini  
– Ursula Jutzi  
– Andreas Kirstein  
– Wolfgang Lierz  
– Alex Weber  
– Dr. Annatina Zarda

alliera software artisans (external partner)

The project MyLibrary@ETH was launched in January 2003 by the ETH in order to offer users a personalized library portal. The central aim of this project was to provide users with easy access to the library's extensive electronic resources. Although there is a strong focus on the library's electronic information sources the users should also be able to include non-library content. The new tool allows the scientist or researcher to manage all electronic resources required to support his or her work. With the project the library is responding to a customer need, which was identified in a user survey carried out at the end of 2001.

The new tool offers an interface that is intuitive and easy to use. In order to offer users an easy starting point the library has defined a selection of default pages according to the needs of different target groups. Starting from one of these default pages the users are able to refine their personal pages to meet their specific requirements. This practice ensures that only a minimum amount of time and effort is required for the construction of a personal page.

For the technical realisation, the open source software uPortal was chosen as the technical framework. uPortal is an open-standard software using Java, XML, JSP and J2EE. This will also allow synergies with the development work for personalized access for the ETH Zurich homepage.

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*Milestones:*

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2003/01/01	Project start
2003/03/20	Setup of technical platform ready
2003/05/10	First prototype realized
2003/11/10	Productive prototype ready
2004/03/31	Project end, launch of service

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## C5 Career Services – Internet Portal for the ETH Career Services

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

Project type: Information management/Community building  
Keywords: Career planning, Career advice, Career development, Knowledge transfer, Continuing education, Job search, Mobility, Coaching, Mentoring, Business contacts, Practical training

Project partners: ETH Alumni  
– Dr Peter O. Brunner

ETH Juniors  
– Joachim Klement

The web portal for Career Services bundles and focuses the existing services at ETH Zurich for career planning, career choice, career start and professional development. By coordinating existing services of different providers and introducing additional services, ETH Career Services will provide a virtual placement office. This will enable members of ETH to gain a competitive advantage on the job market and to develop themselves according to their individual needs.

The inclusion of alumni into the project will help to intensify the cooperation of ETH with business and industry. The portal will be rapidly implemented thanks to the integration of all relevant units. The project uses the new web corporate design and the web content management system and will thus serve as a pilot for the introduction of these new structures at ETH Zurich.

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### *Milestones:*

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2003/02/01	Project start
2003/01/25	Start of pilot phase (1 year).
2003/04/10	Homepage <a href="http://www.career.ethz.ch">www.career.ethz.ch</a> goes online. Extensive PR activities
2003/04/30	Project end

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## C6 togETher – Collaborative Work over Networks for Research and Education

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

Project type: Information Management  
Keywords: Videoconference, Remote collaboration, Augmented reality, Application sharing, Visualization, Whiteboard, User-interface evaluation, Distributed systems, C++ application development

Project partners: Center for Product Development, Department of Mechanical and Process Engineering  
– Dr Andreas Kunz  
– Mihnea Constantinescu  
– Christoph Ganser  
– Daniel Richard

The project "togETher" aims to develop new technologies and tools for the efficient, network-based collaboration of virtual teams.

The project has four phases:

1. Survey of user needs for video and collaborative conferencing systems
2. Evaluation of products for „Application Sharing“: the joint use of local applications over a network
3. Development of an application for two-dimensional “Joint Editing”: synchronous work on a joint document over data conferencing
4. Development of an application for three-dimensional “Joint Editing”: synchronous work on 3D-objects using augmented reality

The usability of the new systems will be tested with usage scenarios. The broad implementation of the results within ETH will be supported. The project cooperates with the ETH World project “Videoconferencing”.

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### *Milestones:*

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2003/04/01	Project start
2003/07/01	Evaluation of proliferation of and user needs for network-enabled conferencing systems
2003/10/01	Market survey of conferencing systems
2003/12/01	Concept for data conferencing systems based on user survey
2004/04/01	Development of network-enabled data conferencing prototypes
2004/07/01	Second evaluation of proliferation of network-enabled conferencing systems
2005/10/01	Development of data conferencing software.
2006/04/01	Evaluation of software with test scenarios.
2006/03/31	Project end

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## C8 Building IP – Integration of Pervasive Media Technology into the HIL Building at ETH Zurich

<http://www.caad.arch.ethz.ch/CAAD-Extern/1188>

Project type: Infostructure elements  
Keywords: Web transactions, Application middleware, Bea application server, J2EE, Java Beans, Enterprise Java Beans, Databases, Oracle

Project partners: Chair of Computer-aided Architectural Design (CAAD), Department of Architecture  
– Prof. Dr Ludger Hovestadt  
– Odilo Schoch  
– Mathias Ochsendorf  
– Torsten Spindler  
  
Institute of Hygiene and Applied Physiology, Department of Industrial Management and Manufacturing Engineering  
– Dr Sissel Guttormsen

The aim of the project is to develop and install an Internet Protocol based system for the control of a lecture hall at ETH Zurich. Various hardware components will be systematically connected through IP, such as light fixtures, video projector, microphone, loudspeaker and room reservation system. The building services these components produce (e.g. light, sound, video projection, room reservation, videoconferencing, or automated documentation) are controlled with modular software. For accessing the different hardware devices, an abstracting middleware is implemented by using Open Services Gateways in Java. The link between the different devices and with the users is implemented independent of specific interfaces and file formats. The goal is a plug & play system for a great variety of devices, offering services such as “video”, “projection”, “sound” or “information”. Open standards will be used as far as possible.

The project is structured into two phases: Within the first phase, the rooms of the Chair of CAAD will be retrofitted with integrated building services in order to install and evaluate different systems in lab-like conditions. User interfaces will be developed and implemented. In the second project phase, which is still to be approved, the results will be transferred and implemented in a lecture hall and further developed so that it can be used for further lecture rooms at ETH Zurich and other institutions.

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### *Milestones:*

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2003/07/01	Project start
2003/10/31	Interactive presentation system in CAAD meeting room FIL E 15.1
2004/05/31	“Integrated services” installed in the CAAD rooms HIL E 15.1 and seminar room HIL E 19.1; implementation of user interfaces, screens, reservations etc.
2004/09/30	End of phase 1, interim evaluation
2005/01/31	Inauguration of lecture hall HIL E 9 with “Integrated services” and integrated exercises
2005/03/31	Documentation
2005/04/30	Project end

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## **List of Annexes**

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- 1 Frequently Asked Questions
- 2 ETH World Competition Summary of Main Tasks

# ETH World FAQs

## What is ETH World?

ETH World is a program to establish a virtual space for communication and cooperation independent of time and place. The program aims to make this space widely used and accessible to all stakeholders of ETH Zurich.

ETH World supports all members of ETH in their core business - teaching, learning, research and the associated management tasks. The program enables new forms of networking and cooperation with business, industry and society.

ETH World thus contributes to maintaining and strengthening the international competitiveness of ETH Zurich.

## How will ETH World change ETH Zurich?

You could call ETH World a "change program", but it is not the intention of ETH World to impose top-down changes on ETH. New technologies are rapidly changing our everyday lives, both private and at work. There are only very few - if any - ETH employees today who don't use a computer in their work. Surprisingly, the teaching and learning processes are the ones that have been least affected so far.

ETH World wants to reinforce these changes and ensure their broad impact by introducing new tools and applications to support teaching, learning, research, the provision of services, and the associated management tasks. But the change initiated by ETH World is not only a technical process: it is also - and perhaps above all - a social and organizational process.

## How can I contribute to the building of ETH World?

ETH World is being built in the form of many individual projects and activities. Some of these are partly financed by ETH World, and all units of ETH Zurich can apply for such funding (see Call for Proposals). But the objectives of ETH World are also pursued through many other means, e.g. in the many e-learning projects carried out within the FILEP funding program, or in the form of other development activities in the departments or individual laboratories, the Computing Services (ID), the new ETH Teaching and Learning Center (ELZ), and in other units.

But the "proof of the pudding is in the eating": ETH World is a success when it becomes part of everyday life at the university, when the new tools and services get used. So, for example, a student registering online, a professor integrating laptops in her teaching, a staff member looking up information over the wireless LAN infrastructure during a meeting, or an alumna accessing personalized information are contributing to the building and use of ETH World.

## How much does ETH World cost? Can ETH Zurich afford such a program in times of financial austerity?

ETH World is a six-year program running to the end of 2005. The direct budget for 2003 is CHF 4.5 million. In addition, the units responsible for ETH World projects contribute own funding to their activities, many with as much as 50% of the total costs. In fact, compared with the many activities and units across ETH Zurich that share the goals of ETH World but are funded through other channels, this is still a modest sum.

ETH World is not a luxury program: it supports ETH Zurich in reaching its strategic goals. ETH World also ensures a more efficient and effective use of scarce resources. It helps to coordinate various projects and activities. This enables scattered groups to bundle their resources, together make things they could not afford on their own and speed up development.

### **Who / how many people are involved in the implementation of the ETH World program?**

There are 8 persons working part-time in the Program Management Team; the twenty-six projects involve some 60 persons. Then there are the activities and units that are not funded by ETH World but pursue similar goals, such as the FILEP projects, the Computing Services (ID) or the Network for Educational Technology (NET). And, last but not least, there are all the users, who transfer ETH World from vision to reality.

### **Does ETH World make ETH Zurich into a distance education university? Will the students in the future stay at home and learn over the Internet?**

Independence of time and space does mean increased flexibility for students to plan where, when and how they participate in a learning event. However, it is not the strategy of ETH Zurich to become a distance education university. ETH World introduces new technologies, especially the Internet, to support and complement traditional teaching and learning. Continuing education is probably an area where "pure" distance learning opportunities have the largest potential. But as a research university ETH Zurich is and will remain an institution where physical presence is important for all activities.

### **Where can I find out about e-learning courses offered by ETH?**

The DEEDS project is preparing a central access point for all e-learning products offered to the public by ETH Zurich and makes them accessible on the Internet. But most e-learning materials used at ETH Zurich are integral parts of the "regular" teaching and are not intended as stand-alone learning modules.

### **What's the practical benefit of ETH World?**

For some projects the impact and benefit is fairly evident, e.g. the projects Neptun and Wireless LAN. These projects with broad impact, potentially affect all or most ETH members. Other projects, such as arc-line or Vireal Lab have similar broad impact for more precisely defined target groups.

ETH World also puts in place the infrastructure for new services, e.g. through the project IT Building Blocks. Here, the benefit is less visible, but because this project makes new, useful services possible, the benefit is also broad.

And finally, there are a number of "blue-sky" projects. These projects, e.g. Entry Points or Advanced Querying and Coordination of Multimedia Information explore new technologies and applications. They have a great potential benefit, but on a longer term.

The social and organizational change brought about by ETH World will "make the ETH a better world" to study and work in. This is probably the most sustainable benefit of the program.

### **ETH World seems to be focused on teaching, learning and research. How can ETH World help me in my administrative tasks?**

ETH World supports all members of ETH in their core business: teaching, learning, research - and the associated management tasks. A very practical example of support for administrative work is the new staff portal, which is being developed with the support of ETH World. This portal will provide faster access to information and easy access to all e-services at ETH Zurich.

### **What were the results of the conceptual competition organized by ETH World in 2000? Can the results already be seen?**

The "beyond Luxury" team that won the ETH World conceptual competition presented a broad spectrum of visionary ideas. Reality introduces constraints of time and money. The first steps of the implementation, which is now under way, focus on personalized access to information. A team from mitLinks AG have worked with the ETH Web Office and the Computing Services (ID) to redesign the ETH web site. They are developing the new ETH portal that will allow for personalized access for different target groups. The first results will be visible during 2003.

The Program Management will ensure that the original visions are captured and that they are implemented wherever it makes sense and is possible.

### **Are privacy and security aspects considered sufficiently by ETH World?**

The new information and communication technologies generally pose enormous challenges for the protection of privacy and security. ETH Zurich is fully aware of the responsibility and ensures that all necessary precautions are made. Privacy protection is enshrined in law, but this is not enough. Acceptance and effective use of the new technologies are based on the trust of all users, and this trust must be earned through transparency and reliability. As we depend on technical tools more and more, we become increasingly vulnerable. Therefore ensuring data security and the integrity of the technical infrastructure is of paramount importance.

### **What will happen with ETH World when the program comes to an end in 2005?**

ETH World aims to develop and implement tools and services that become part of the regular activities of ETH Zurich - the sooner the better. When the program comes to an end in 2005 these will continue to support ETH in its core business and help to maintain and strengthen its international competitiveness.

### **Wouldn't the development promoted by ETH World happen anyway?**

Of course it would, at least some of it. But ETH World accelerates the development. Thanks to coordination of activities and projects many overlapping efforts are avoided and economies of scale are generated. Thus larger development projects can be financed for which there would otherwise not have been sufficient resources.

### **Many institutes and departments had already developed their own learning platforms. What is the added value of ETH World?**

Freedom of research and teaching is a fundamental principle of academic culture, and ETH World does in no way infringe on this freedom. And ETH Zurich is such a large and heterogeneous organization that one solution will not fit everyone. But ETH World can help to coordinate those activities that want or benefit from closer cooperation. Not everyone wants, can afford or is able to reinvent the wheel.

### **How is ETH World different from other virtual university initiatives?**

The comprehensive approach makes ETH World unique: the program addresses all areas of activity of ETH Zurich and supports all its members in their core business - teaching, learning, research and the associated management tasks. ETH World thus contributes to maintaining and strengthening the international competitiveness of ETH.

### **Does ETH World cooperate and share experience and information with other universities in Switzerland or internationally?**

International interaction is a normal part of all academic activities at ETH. To what extent and in what form this exchange or cooperation takes place in ETH World depends on the individual projects. Many of the projects have been presented at international conferences or exhibitions. Experiences are being documented in scientific papers. Frequent visits to and from ETH Zurich contribute to a steady flow of exchanges.

### **How is the knowledge that is generated within ETH World transferred outside the university?**

Openness and sharing of information are characteristic of a university. Wherever possible ETH World supports the use of open source software and materials, a sign of its openness to cooperation and exchange. And ETH World enables new forms of networking and cooperation with business, industry and society, for example through the ETH Alumni portal or the Industry portal of the Center for Product Development.

## SUMMARY OF MAIN TASK

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Imagine a campus, a virtual one. Design this campus! You are asked to submit a conceptual design - a strategic masterplan. ETH World is primarily an infostructure project to be conceived in a virtual space and virtual dimension. We are looking for an ingenious and realizable concept for the integration of people, new media, research, learning, and the existing architecture of the ETH Zurich within a global context. The development of a design vision must take the following items into account:

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| <p>I. ETH World should be understood as an instrument to improve existing and to promote new methods of research and education, without being an open university in the classical sense of distant learning. A significant expansion in the teaching and learning culture will lead to an improvement in the relationship between students and staff (learning teams), thus eliminating unnecessary hierarchical structures. The autonomy and responsibility of individuals for their own personal development should be greatly enhanced in the future. Intellectual discourse between all members of the ETH community will be intensified and lifelong learning and collaboration will be fostered. It will act as a comprehensive platform for visual and aural (audio) communication, furthering the growth and advancement of knowledge. This key purpose - pertaining to the development, compilation and presentation of scholarly material - should be a main objective of the proposed design schemes.</p> | <hr/> <p>Research and<br/>Education</p>              |
| <p>II. ETH World should act as a community-forming entity. Identification with the academic institution needs to be fostered. Its users - students, teachers, researchers, staff members, alumni, and associated individuals - form a collective. The campus as a virtual territory fulfils in this sense a symbolic function in regard to the identity of the ETH community. This image-forming role of ETH World must be addressed by the proposals submitted.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <hr/> <p>Interactive<br/>Community</p>               |
| <p>III. ETH World is a network for communication and interaction. It enhances the human-machine and human-machine-human interface. Insofar as most users own or have direct access to communication devices, ETH World provides the interconnection network for the complete exchange of information. This question of the ingenious organization of digital and information technology must be integrated into the design proposals.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <hr/> <p>Human and<br/>Machine Interface</p>         |
| <p>IV. ETH World will comprise a space through which to navigate and communicate with other users. Its organizational structure and the quality of its visual appearance will play a substantial role in providing accessibility and ease of movement to prospective users. The structural and formal properties of this space as well as the means of navigation will need to be addressed conceptually by the design proposals.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <hr/> <p>Structural and<br/>Formal<br/>Framework</p> |
| <p>V. ETH World will comprise different territories of various degrees of accessibility ranging from exclusively private to highly public domains including gradations therein. Each user will operate from a home base moving gradually from one territory to another. The formation of several roles and identities should be possible. Groups of users might form an enclave within the system or create a collective platform from which to operate. This field of interconnected, partially overlaid, or juxtaposed territories is to be taken into consideration by the proposed schemes.</p>                                                                                                                                                                                                                                                                                                                                                                                                                  | <hr/> <p>Public and Private<br/>Territories</p>      |

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| <p>VI. ETH World could be viewed as an assemblage of heterogeneous components. Whereas its structure might be that of a loose assembly, essentially decentralized in its overall organization, hierarchies will, as necessary, be introduced locally. Access will be provided by means of multiple entry points. This combination of decentralized and centralized organizations should be a constituent part of the designs.</p>                                                                                                                                                                                          | <hr/> <p>Multiplicity</p>                |
| <p>VII. ETH World implies the chance to develop the existing multilingual qualities of the ETH and Switzerland to a new scientific culture within the ETH and in a global dimension.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                   | <hr/> <p>Multilinguality</p>             |
| <p>VIII. ETH World should be conceived as a dynamic system in a state of perpetual evolution. While its structure and the elements of its formal appearance might be partially defined, the system will nevertheless need to be able to accommodate unforeseeable changes. Users will contribute actively to the growth and transformation of the system. The framework suggested needs to be open and adaptable in its structure. The technical implementation behind the proposal has to support the requirement of openness and adaptability.</p>                                                                       | <hr/> <p>Dynamic System</p>              |
| <p>IX. ETH World, following the tradition of the ETH Zurich as a public institution, pursues a role of cultural significance. It must adhere to the current ethical standards of the ETH Zurich. The proposals need to comply with this overriding objective.<br/><a href="http://www.ethworld.ethz.ch/doc/bot.pdf">http://www.ethworld.ethz.ch/doc/bot.pdf</a></p>                                                                                                                                                                                                                                                        | <hr/> <p>Socio-Cultural Implications</p> |
| <p>X. ETH World, while primarily belonging to the realm of virtual reality, must closely interact with the physical reality of existing and future facilities. The relationship between the virtual and the physical spaces must be addressed in its structure and formal manifestations. This dialogue as well as potential forms of its implementation - both within the virtual and physical domains - must be at the core of the ideas presented. ETH World should enhance the value of physical campuses. This implies as well the concentration and improved utilization of existing and future infrastructures.</p> | <hr/> <p>Virtual and Physical Space</p>  |

ETH World provides a unique opportunity for distinction by achieving a much higher degree of integration of people, new media, research, learning, and the existing architecture of the ETH Zurich within a global context. This will be all the more necessary as increasing decentralization and individualization present a growing demand for symbols that allow identification with the university as well as for a strengthening of community spirit.

To this end, one part of the competition task requires solutions to the challenges of setting up these new virtual opportunities. The virtual reality is to be set in relation to the physical presence of the ETH Zurich, and both are intended to develop a common identity. For that, also the physical reality (buildings, visual appearance, infrastructure) must take account of this new identity which is made possible by the virtual campus.

The ETH's outward appearance on both the virtual and the physical levels should facilitate identification and continuation of the university's global activities. The goal is the widest possible acceptance of the project and its active support by both ETH members and the general public. To this end, concepts are required for structural alterations, design elements, events etc. which will result in a sustained positive presence of the ETH and thus in a new corporate identity