

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Institutional efforts to improve the quality of modern teaching

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Overview

- Early efforts (1975-2000)
- Exploration (2000-2006)
ETH World, Fonds Filep, ETHplus
- (Re-)Orientation (2005-2007)
New Strategic Focus
- Outlook

Early efforts

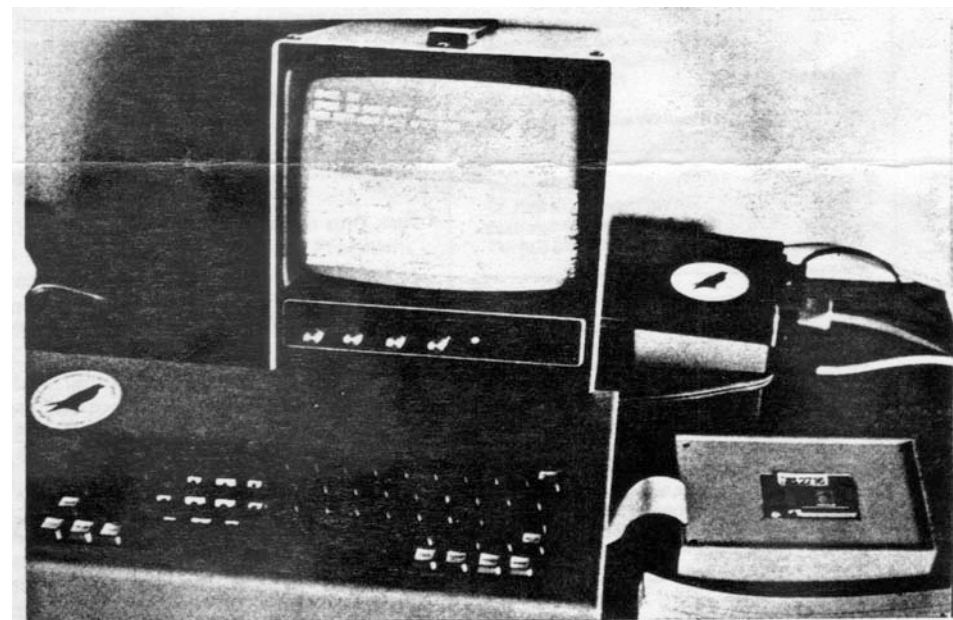
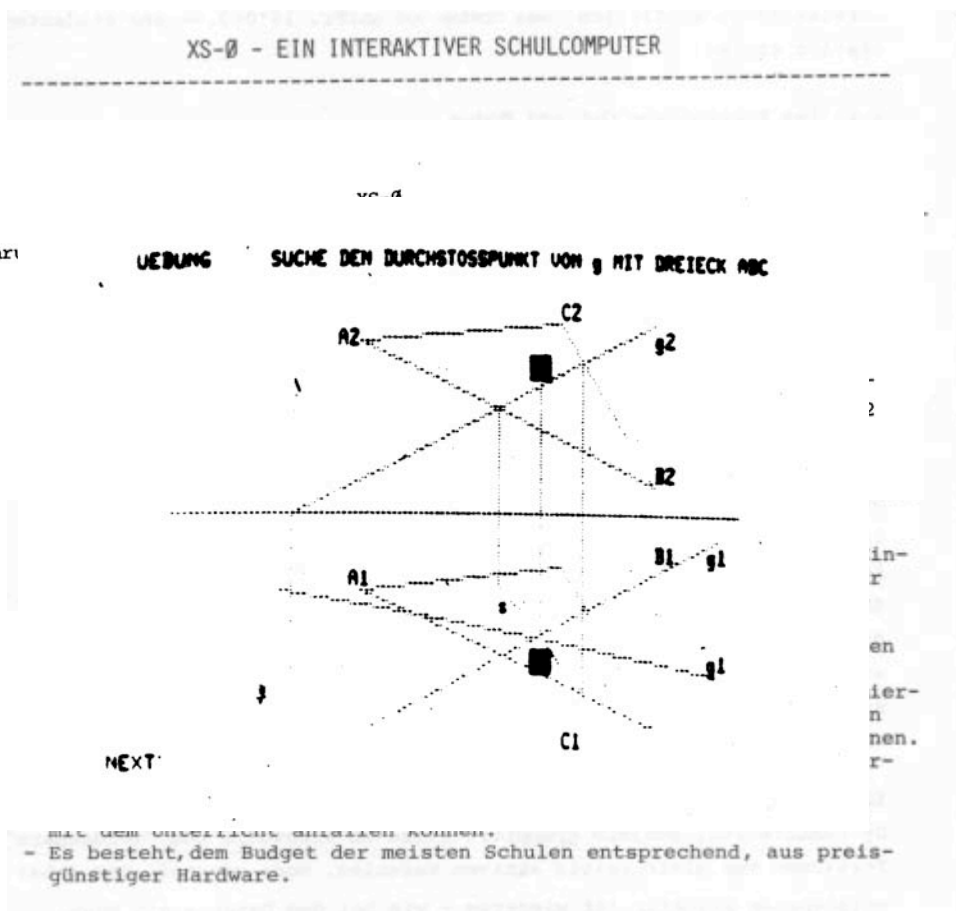
XS-0 School Computer (1975-1980)

Swiss PTT Videoconferencing for Teaching and Research (ca. 1987)

Telepoly (1993 – today)



The XS-0 interactive school computer (1977)



1 SMAKY6, bestehend aus einer Tastatur mit Elektronik, einem Monitor und einem Speisegerät (im Bild mit PROM-Programmierer)

Significance of the XS-0 project

- Research project
- Focus on methodology of learning and teaching
 - Authoring system and nucleus of an LMS
 - Interactive, use of graphics
- Institutional aspects
 - Dissemination among teachers (Gymnasium)
 - Student group created and encouraged by the researchers
 - Commercialization (failed)
- Lesson learned: Huge effort needed to create content!

Swiss PTT Videoconferencing for Research and Teaching

- Initiative by Prof. Heinrich Ursprung, President of ETH (ca. 1987)
- Videoconference studio run by Swiss PTT located in the ETH Main building
- Goal: Support remote collaboration in research, and teaching remote students
- Project failed
 - Absence of suitably equipped and interested peers
 - Complexity of technology and operation

Telepoly

- Suggested **and funded** by Prof. H. Ursprung, Director Gruppe Wiss. & Forschung (ca. 1993)
- Technology developed in collaboration of ETH and EPFL
- High-performance synchronous remote teaching
- Beta test: Distributed colloquium ETH/EPFL in 1995
- First lecture given to my ETH students from EPFL by Prof. Le Boudec in 1996
- In routine use today between ETH and Univ. Basel
- → NET at ETH 1996/97!

PHARMAZENTRUM
Universität Basel

Pharmazentrum Stockwerke Kragensbau Vorträge Internes

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Telepoly-Hörsaal (tele-conferencing)

Studierende der ETH Zürich (oben links) verfolgen online die Vorlesung von Prof. Beat Ernst in Basel



Der Grosse Hörsaal im Pharmazentrum verfügt über eine modernste Telekommunikations-Infrastruktur. Diese ermöglicht es, zwei oder mehrere räumlich getrennte Hörsäle zu einem virtuellen Raum zusammenzuführen. Vorträge, Experimente, Diskussionen etc. können von allen Standorten aus initiiert und aktiv mitgestaltet werden.

Telepoly - Technologie

Der Hörsaal steht allen Departementen der Universität Basel für Lehrveranstaltungen zur Verfügung und kann auch von auswärtigen Benutzern zur Durchführung von Tele-Konferenzen gemietet werden.

Exploration 2000-2006

- ETH World
- ETHplus
- Fonds Filep

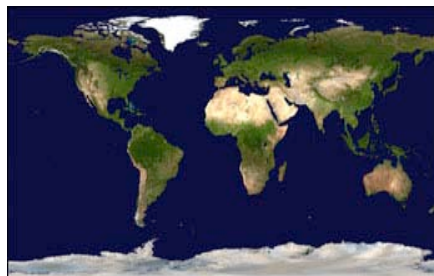


Motivation

- Globalization and internationalization in higher education → worldwide competitive market
- We compete for excellent graduate students, faculty, research projects
- Importance of life-long learning
- Extension of physical space impossible or expensive
- New challenges, but public funding not really increasing
- Novel uses of information and communication technology (ICT) as a strategy for the future

ETH World: A strategic initiative

- Enabling communication and co-operation independent of time and place
- To build a virtual space, interfacing and co-existing with the physical space
- Accessible for all stakeholders
- Broader scope than “just” e-learning



Virtual campus extending and interfacing to the physical locations

- Create new and innovative services
- Improve access to ETH services
- Facilitate cooperation with external partners (the “world”)



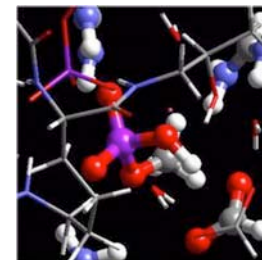
ETH Life – the daily web journal

The screenshot shows the Mozilla Firefox browser window displaying the ETH Life website. The address bar shows the URL <http://www.ethlife.ethz.ch/news>. The website layout includes a navigation menu on the left with categories like News, Top Stories, Science, Campus, and Kolumnen. The main content area features a 'News' section with several articles, each with a thumbnail image and a brief description. The articles include: 'Friedensnobelpreis mit ETH-Beteiligung', 'Neue Rolle für alten Signalstoff', 'Eine Frage von Leben und Tod', 'Ausgezeichnete Karten', 'Neue Bedrohungen - neue Verwundbarkeiten', and 'Time to think'. On the right side, there are sections for 'KOLUMNEN', 'CAMPUS HIGHLIGHTS', and 'SCIENCE LIFE', each with a small profile picture and a list of articles. The browser's toolbar and address bar are visible at the top, and the system tray at the bottom shows the 'Done' status and an 'Open Notebook' icon.

www.ethlife.ethz.ch

Vireal Lab – the virtual-real lab

- Linking virtual and real world
- Intelligent “roomware” for team teaching and learning
- Collaborative work, discussion and learning
- Interactive seminars and colloquia with external partners
- Visualization and manipulation of 3D objects



Videoconferencing

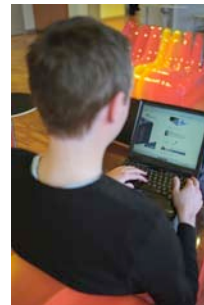
- Make videoconferences as ubiquitous as phone calls
- From personal to large-group videoconferences
- Infrastructure: Hardware recommendations, software licenses, conference bridges, scheduler
- Training, support, helpdesk



www.vc.ethz.ch

Laptops for Students

- Mobile computing with wireless LAN
- Promote computer use and literacy of students
- Integration of privately owned and operated computing equipment into ETH infrastructure
- Create infrastructure for new methods in teaching and learning
 - A large number of new student workplaces



Fonds Filep (from 2000)

- Funds for fostering innovation in teaching
 - New technologies or new approaches in learning/teaching
- Appr. 15-30 proposals per year, 50% acceptance rate
- Ca. 110 projects (several co-funded with SVC)

- Supervision and evaluation: Studienkommission ETH
- Consulting : Filep team/NET
- Administrative management: Staff of the Rector
- Funding decisions: Rector

ETHplus (from 2005)

Recognized need for a paradigm shift:

„From the lone ranger to the dream team“

Autonomous small team

Individual achievement

Solution for single problem

Local processes

→ Well managed project

→ Achievement of an organization

→ Solution framework

→ Process integrated in existing environment

Goal

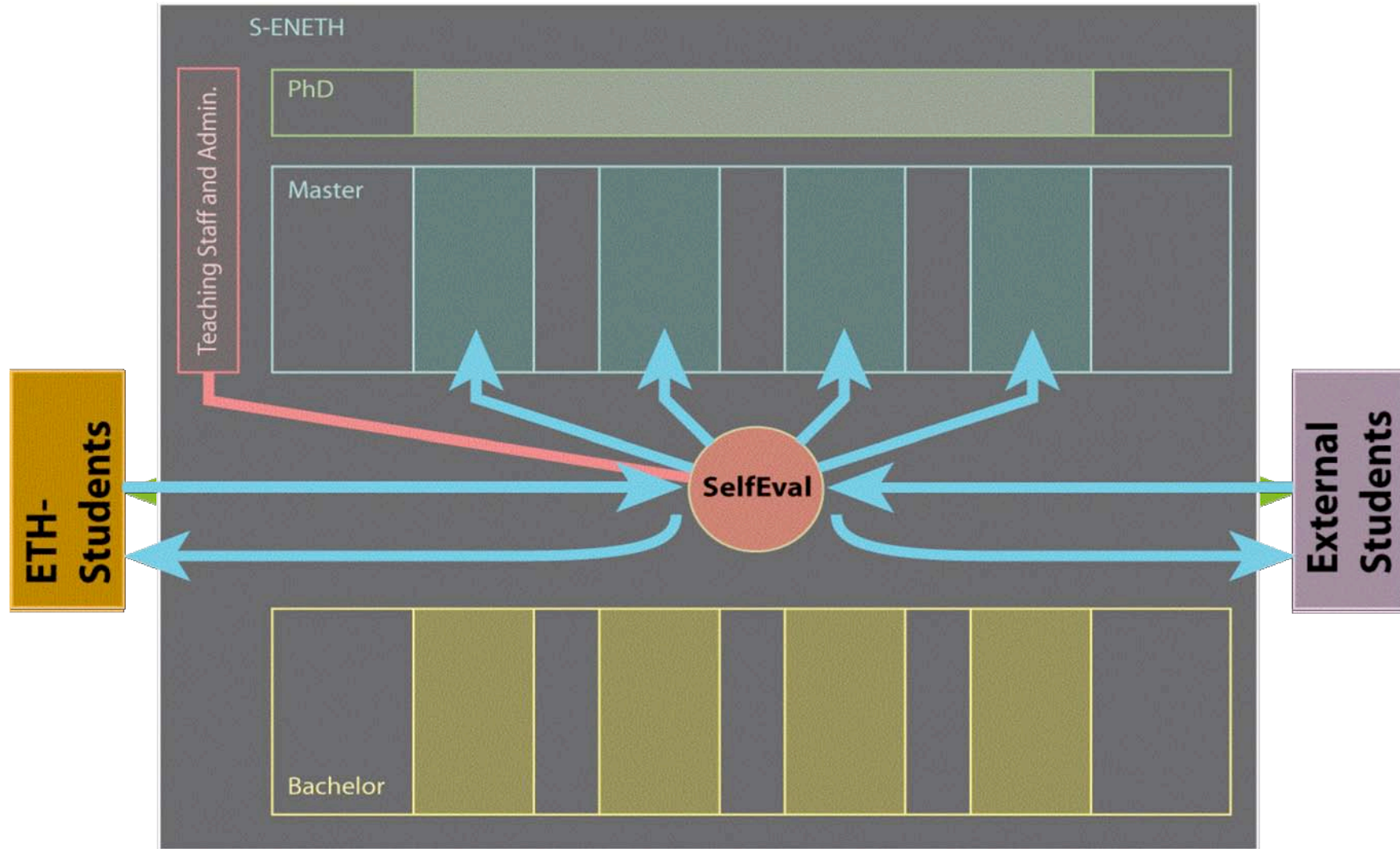
Shooting star project

→ Sustainable product

Challenges

- Increased complexity
 - Content, organization, technology
- Significant effort (and return) for cooperation
- Initial uncertainty as experience from pioneer projects not applicable
- Community-building among department members / stakeholders of the curriculum required
- Need to establish links with university administration and services

The ETH-Plus project **Mobility Matters** supports the Bologna structure ...
...with a platform for gaps in official education and learning material



(Re)Orientation 2005-2007

- E-Learning Strategy



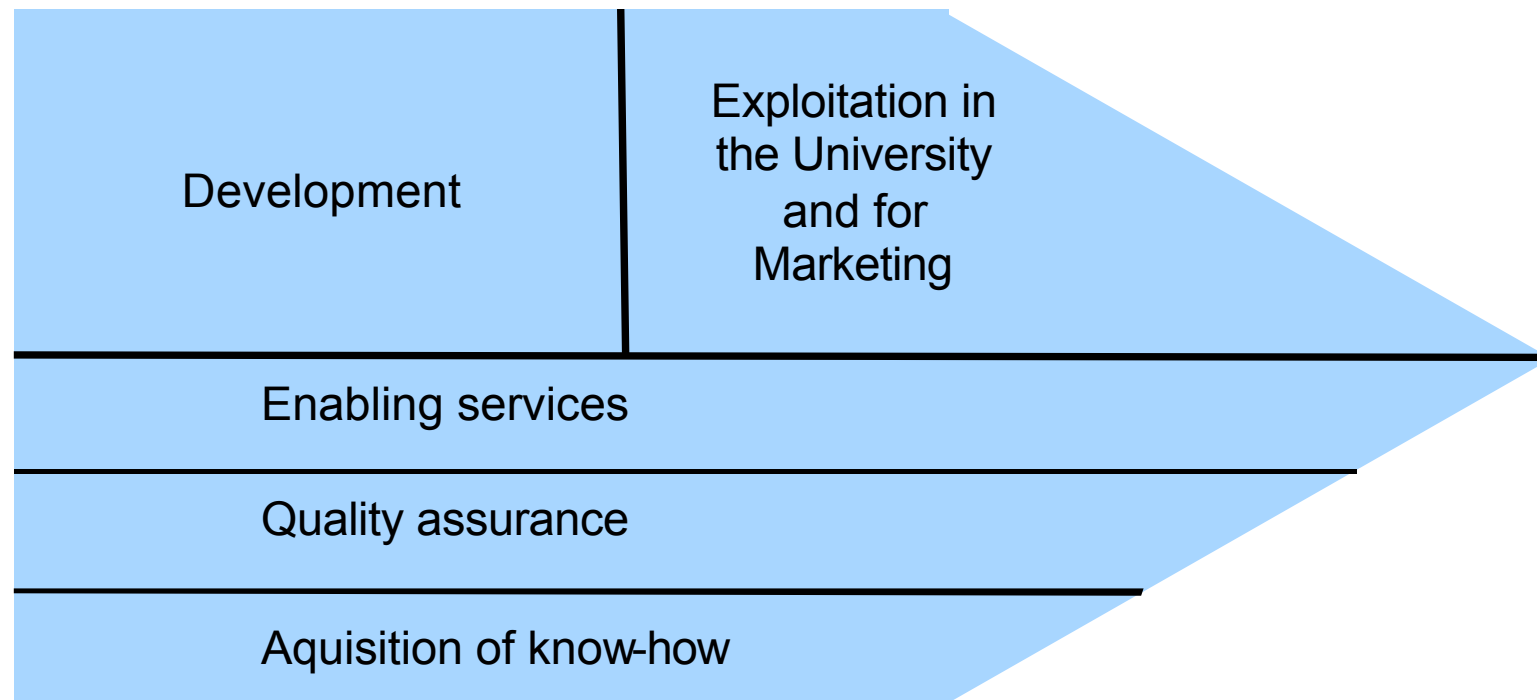
E-Learning strategy: The vision

- Easy access to on-line resources for students; effective support for lecturers.
- Excellence in teaching and learning: E-learning where additional value is created.
- Innovation through expertise: Monitoring of ICT developments and creation of innovative products.
- Achieve synergies with internal and external networks and partnerships.

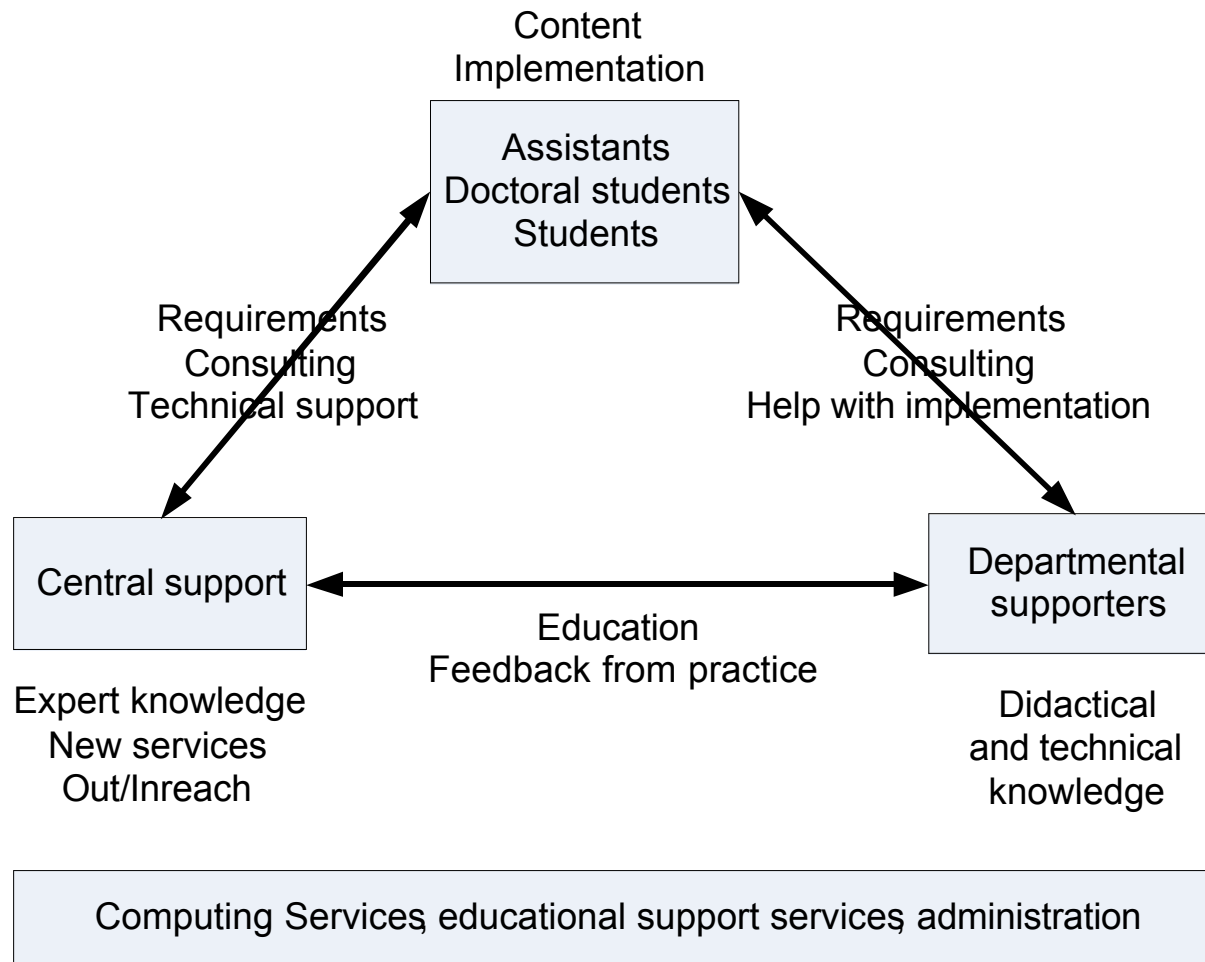
Strategic goals

- E-learning offerings
 1. Unified presentation of learning units and on-line resources for each curriculum
 2. ETH positions itself in the market for continuing education (if market study indicates good opportunities)
- Production of e-learning material
 3. Production and dissemination of e-learning material is done professionally
 4. All interested lecturers are educated to use e-learning
 5. Centralized and de-centralized network of supporters is established
- Marketing
 6. E-learning offerings are known by all stakeholders and partners
- Reflection
 7. Systematically check whether we are on the right track

The business model



Roles and coordination of stakeholders



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Outlook



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Proceed with the process of change

- ✓ Strengthen central support processes
- ✓ Re-focus the innovation funds (Filep)
- ❖ Strengthen de-centralized support: Departemental e-learning supporters
- ❖ Define QA processes
 - Do a market study on continuing education
 - Develop open content concepts
 - Develop external partnerships
 - Involve students

Departmental supporters (Departementspezialisten)

Construction and Geomatics	Engineering Sciences	Natural Sciences and Mathematics	System-oriented Sciences	Humanities, Social & Political Sciences
Architecture	Mechanical and Process Engineering	Chemistry and Applied Biosciences	Earth Sciences	Humanities, Social and Political Sciences
Civil, Environmental and Geomatics Engineering	Inf. Technology and Electrical Engineering	Biology	Environmental Sciences	
	Computer Science	Physics	Agricultural and Food Science	
	Materials	Mathematics		
	Management, Technology and Economics			

Innovative teaching Scenarios

- Max. 15 kFr. to implement innovative ideas
- Vision: Broadening deployment of eLearning with a pedagogical focus
- Good response: 18 proposals with high quality

Further issues for implementation

- I-Lab: systematic innovation management
- ETHplus: further projects?
- Partnerships

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Questions? Discussion!



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