

Report – ETH Zurich Study Tour

Best Practices in the Use of Information and Communication Technologies in a University Environment

Canada and USA, November 6–13, 2004



ETH *World*

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

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Executive Summary

In November 2004, the Swiss Federal Institute of Technology Zurich (ETH Zurich) organized a study trip to leading universities and research labs in the USA and Canada to learn about best practices in the use of information and telecommunication technologies (ICT) to support teaching, learning, research and services.

Our group was composed of 16 persons: professors and leading managers of the ETH Zurich and the University of Zurich. These persons are actively involved in two important activities of ETH Zurich:

- **ETH World** – ETH World is a program to develop and introduce technologies for communication and cooperation independent of time and place. The program supports all members of ETH Zurich in their core business – teaching, learning, research and the associated management tasks.
- **Definition of a global ICT Strategy** – ETH Zurich is developing a global strategy for the use of information and communication technologies (ICT) in education, research and services. This strategy was submitted for review by the ETH community in January 2005.

Our study trip had the following purpose:

- Learn how similar institutions use ICT (best practices)
- Get input for the definition of the ICT Strategy for ETH Zurich
- Gather further suggestions how to improve the impact of ETH World
- Share and discuss our experiences with similar organizations
- Get input on how to build an environment for synchronous, interactive distant teaching (special interest of University of Zurich)

The visited organizations were (chronological order):

- University of British Columbia, Vancouver
- Silicon Chalk, Vancouver
- Xten Corporation, Vancouver
- Microsoft Corporation and Microsoft Research, Redmond
- University of California, Berkeley
- The Internet Archive, San Francisco
- Linden Lab (Second Life), San Francisco
- swissnex, San Francisco
- Logitech, Fremont
- Institute for the Future IFTF, Menlo Park
- Stanford Center for Innovations in Learning SCIL, Stanford
- Google, Mountain View
- Stanford University, Stanford
- The Computer History Museum, Mountain View

We summarize our overall impression from the study trip as follows:

- ETH Zurich can compete with its peers regarding infrastructure, strategic goals, planning, projects and ICT support.
- All visited organizations share similar problems but have different approaches on how to solve them.
- One of the aspects where we are lacking is in a more effective use of e-Learning (penetration of a few percent at ETH Zurich compared to up to 30% at other universities).
- We have to communicate our strengths in a better, more active way. We have to sell better what we do and the high standards we have.

- Our peers tend to follow a more pragmatic approach, going for simple solutions that can be realized with a reasonable effort. At the ETH Zurich we tend to target the perfect solution, and spend too much time to get there.
- We were able to verify that the new ICT Strategy for ETH Zurich corresponds to best practices. This double check confirmed that we are on the right way. Aspects not covered so far have been integrated into the draft document.
- Our hypothesis about the importance of initiatives like ETH World was confirmed: Similar organizations are needed in a university to promote advanced or new uses of ICT. The impact of ETH World inside ETH Zurich seems to be at least so good as the impact of comparable initiatives in our peer organizations.

This report summarizes the information we gathered during the study trip. For every visited organization we give a short summary of the content of the discussions. We summarize our strongest impressions and what we learned. As reference we give a list of the participants to the study trip and the program of our visits. Finally we close the report with the questions we sent to the hosting organizations to help us in defining our new ICT Strategy.

The support we received during the preparation of the trip and during the trip itself from the representative of ETH in the SF Bay area, Amy Ambrose at swissnex, proved to be essential to the success of our mission.

We would like to thank all hosting organizations. We experienced a warm welcome everywhere. We had open discussions with our peers and learned much. We hope we will have an opportunity to host any one interested in knowing more about ETH Zurich or University of Zurich.

Visited Organizations

University of British Columbia, Vancouver

Overview

Headquarters The University of British Columbia
2329 West Mall Vancouver, BC Canada V6T 1Z4



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Delegation Report

Introduction Impressions: Gorgeous, pedestrian-friendly campus, students sleeping in the library, friendly open-minded people.

Facts & Figures

Ken McGillivray, Director, UBC International

- UBC under British Columbia's Ministry of Advanced Education, which provides overall funding and policy direction
- Population: BC: 4.2 million, Vancouver 2.1 million
- 41,000 students, 3,872 faculty, 6,580 staff
- Budget 1 billion CAD, thereof 40% public funding, 13% from tuition fees, 38% from research grants. 634 million CAD endowment fund
- International undergraduate fee: 16,260 CAD (for 2 terms), graduate fee 13-19 kCAD. National fee 4,500 CAD
- Tuition waived for all doctoral students, general tuition waiving is also being discussed for Masters programs
- 35th in Shanghai World Ranking. Among top ten in North America for spin-off/public founding
- 10% international students, goal to increase this to 15%. Many Chinese, Middle-East (instead of uncomfortable US) and also from the US (cheaper tuition)
- 3 international houses built with partners in Japan (Ritsumeikan University), South Korea, Mexico (Monterrey Tec) on a cost-sharing basis, discussing similar arrangement with Denmark, Turkey
- 8,300 resident beds on campus

- Major expansion and construction work:
 - o Future “University Town” (8 new neighbourhoods)
 - o New Okanagan campus in Kelowna (4 hours drive from Vancouver), former university college split into college and UBC campus, expected to grow from current 3000 to 7000 students in 2009, hiring 40 new faculty by Sep 2005.
 - o New e-learning center (Barber Learning Center) under construction

e-Strategy and
e-Learning

Michelle Lamberson, Director, Office of Learning Technologies

- UBC very decentralized, but with very strong executive leadership (President Martha Piper)
- New campus Okanagan in Kelowna, 4 hours drive from Vancouver: former university college split into college and UBC campus. Expected to grow from current 3000 to 7000 students in 2009, hiring 40 new faculty by Sep 2005.
- Office of Learning Technology: Central resource, coordination and facilitation hub for faculty, staff and students using learning technology to further their teaching and learning goals. Promoting effective practice.
- OLT reports to associate VP reporting to Provost (VP Academic Affairs). “Sister” units: Teaching and Academic Growth (TAG), Distance Education & Technology (DE&T, about to merge with OLT)
- TREK 2000: UBC’s Strategic Vision 1997–2000 (www.trek2000.ubc.ca)
- Strategy built on 5 “pillars”: People, Learning, Research, Community, and Internationalization
- The pillar “Learning” includes strategy aspects that are of particular significance for the use of ICT in teaching and learning. These include
 - o Developing learner-centred undergraduate curricula that incorporate research, international, interactive and interdisciplinary components.
 - o Full integration of IT with instruction in all areas
 - o Ensuring that faculty and staff members are appropriately prepared to function effectively in a learner-centered environment
 - o Developing alternative ways of delivering credit and non-credit programs to students unable to attend classes at regular hours or on campus: creating new programs to address life-long learning needs; expanding continuing higher education programs at graduate level and in professional upgrading
- Faculty incentives: Developing teaching and learning is a volunteer activity. The strong emphasis in the strategic goals serves as incentive, also followed up in reporting. Tenure criteria include teaching & learning grants.
- UBC currently in the process of updating its Strategic Vision (TREK 2010). The draft document will be available on the web site within the next few weeks. New areas include:
 - o – Review criteria for promotion and tenure
 - o – Interdisciplinarity as important principle
 - o – Scheduling of courses

- – Innovation and improvements in learning
- – Support innovative teaching and create new learning opportunities
- Current/emerging topics in E-learning development:
 - Enterprise level course management system (CMS): WebCT Vista
 - Mixed-mode and large-enrolment course improvement
 - E-portfolios
 - Learning objects
 - Social software: Weblogs, Wikis, Community software
 - Integrated laboratory network
 - Tools development
 - uPortal: Pilot project to integrate new library system, E-portfolios, Electronic CV
 - New UBC institute: Scholarship of Teaching and Learning

WebCT at UBC

- WebCT initially developed at UBC, still maintaining close contacts
- currently using WebCT Campus Edition v4.1
- 36,000 registered students, 967 instructors, 704 teaching assistants, active students winter 2003: 19,000
- WebCT Vista will be piloted 2004-05, for the first time such an implementation is based on top-down institutional strategy; pilot to be used to develop the business case for full-scale implementation.
- 30% of all UBC courses are supported by WebCT
- uPortal as a single sign on (SSO) Portal for WebCT and the Student Information Portal
- Courseware system needs to be “bullet-proof” 7x24 available!
- No change of courseware system planned (Sakai...). Software costs are not relevant compared to development/change of processes and support. Time to market is important for universities too!

E-Portfolios

- Project “Campus-Wide Online Environment for E-Portfolios: Deepening Community and Expanding Use” launched in 2003. Nine pilot projects in different disciplines to explore the effective use of e-portfolios at various levels (university admission, courses, a whole degree program, professional practice, etc).
- E-Portfolios: online collections of an individual’s work chosen to represent their skills and interests to diverse audiences. Through customization e-portfolios allow the user to assemble subsets of their work to present to instructors, potential employers and others (via login).
- Used to document individual learning and growth by UBC students and faculty.

e-Strategy to support the universities strategic goal. Central IT Services have a vision, a mission and a strategic plan (www.itservices.ubc.ca).

IT professionals:

- 83 central IT Services, 140 other central services,
- 200 in faculties
- Total staff in ICT: above numbers times two ~ 800: quite a lot!
- About 120 systems are driven by central IT Services.

From a profit center (Network access: 17\$ per month and port) to a central service founded with the respective money from the faculties.

The network infrastructure was not centralized. The different locations where connected by modem lines! This led to a strong separation of IT services development. To enable a e-University, you need a powerful network. And to bring the different solutions in different locations together, you need to work hard: communication, collaboration, paperwork → visions, strategies, planning.

e-Business: from paper based systems to internet technology. This approach leads to the need of business processes reengineering.

Implemented: ca.13,000 admissions per year. Admission of students on the web: improve service, fast completion, more and better data. Admission rules, based on grades etc.

Student billing system: the central system contacts various systems to gather open bills via web services. (Integration of distributed data by web services).

Business process redesigned: Recruitment, hiring and orientation of new staff.

Planned: Research grant administration.

Some IT infrastructure initiatives:

- IT Security
- Networking

wireless, data, voice, video over IP

- Portal, Collaboration, Calendaring
- Data centre review and renewal
- Identity management
- Web services, service oriented architecture
- Shared, open source development

At ETH Zurich, we identify a similar trend towards (re-)centralization of ICT services. This trend is not driven by top-down requirements and strategies, but by offering high-quality services bottom up. There is a vision since 2000 (ETH World), concepts and strategies are now on the way.

Regarding the “e-University” ETH Zurich is comparable or better

(Lehrbetriebsapplikationen, Identity Management – nethz). The same applies to the IT infrastructure.

Regarding e-Learning UBC as the mother of WebCT is ahead. Browsing their WebPages, it seems that there are a lot of people (support) involved in developing and supporting WebCT not only centrally but also in the faculties.

Strongest Impressions

- UBC offered us a very warm welcome – complete with wonderful flower arrangements – and had organized a perfect day with an interesting program and very dedicated, competent presenters.
- It was striking how everyone at UBC was aware of the institution's strategy and how well they communicated it. Everyone knows the mission of UBC and their part in it. People at all levels in the organization were saying: "We want to be one of the best universities at the world".
- UBC has an e-strategy embedded into its institutional strategy. Technology is clearly seen as a means to an end ("make a difference to the things people do").
- The university-wide learning platform WebCT is deployed very widely. It is considered a mission-critical information system, consequently the introduction of WebCT Vista is handled in a strategic manner.

What We Learned

- There is clearly a strong involvement and commitment to computer-supported learning at UBC. The proportion of faculty involved in e-learning seems to be much higher than at ETH Zurich (30% penetration rate of WebCT among UBC courses vs. about 150 courses at ETH).
- To increase the penetration rate of an accepted basic e-learning platform, a culture of dialogue between academic faculty and IT administration people seems to be key ("try to understand each other's needs and find acceptable solutions"). The example of UBC's Office of Learning Technology shows that it is crucial to do as much communication as possible to get faculty interested in integrating e-learning into their teaching.
- ETH and UBC are remarkably similar with regard to state-of-the-art technology and the kinds of initiatives being launched, but UBC seems to be more conscious of its strategy and can communicate the strategy and goals more effectively. They appear to be doing more with less money, but making big efforts for realizing e-portfolios and web-based courses. Clearly, distance education is more important in a big country.
- However, compared with ETH Zurich they already have a remarkably large IT support organization, which is largely decentralised (ca. 400 FTE IT professionals overall, only 83 of them in central IT services). Their intentions or attempts to re-centralize some of its ICT support are interesting.
- "Time-to-market" is an important consideration concerning e-services for the image of an institution ("to get the best students"). This shows that the work to develop an ICT-strategy for ETH Zurich is very important and must have high priority. It is also crucial to align this ICT strategy with the overall goals of ETH Zurich.
- Our impression that Silicon Chalk is a very powerful tool for supporting classroom teaching and group collaboration was confirmed. The next versions will have some enterprise features, like LDAP integration. Once video it includes video, Silicon Chalk has the potential of replacing the ETH product "PLAY", for real-time streaming and recording.
- E-learning Centre: traditional library space is still important, because users want it. A skilful combination of the traditional library (physical space) and the virtual library is a real challenge.

Microsoft Research, Redmond

Overview

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Delegation Report

We were very kindly received by the representatives of Microsoft responsible for the public sector market. We appreciate very much the hospitality and the fact that José Osuna had traveled all the way from Switzerland to accompany us.

NN, Microsoft Public Sector Market, gave an introduction to the approach taken by Microsoft to support the clients from the public sector. The approach recognizes the fact that Microsoft offers a horizontal "toolbox" of software components (system, middleware and application), but no vertical arrangements of applications to be used by public sector clients. Instead, the assumption is that third-party software developers and manufacturers will provide dedicated application software to fulfill the clients' needs. Sharepoint is one example of a tool belonging to this toolkit, as well as various application packages (such as MS Office and the database software Access, which can be integrated into customer-specific solutions using various application developer frameworks (such as .NET).

Bryan Burnett, Microsoft Research's University Relations Program, emphasized the importance of broadening the scope of research usable by universities by creating external research spots that will support innovation in curriculum and research programs.

Michel Pahud, Microsoft Personal Services, presented Conference XP, a prototype developed by Microsoft Research to support real-time, audio-visual and innovative interactive, multi-party applications. Conference XP is an impressive piece of software, which demonstrably can be used to build novel collaborative applications (cf. the applications for children built in a very improvised way). It is to be noted, however, that Conference XP is not a product, and there is no intention to develop it into a product.

MS DirectShow is a media-streaming architecture for the Microsoft Windows platform that enables high-quality capture and playback of streaming audio and video.

Strongest Impressions

- The generous welcome afforded to us by Microsoft's "evangelists".

- The interest of Microsoft in universities seems very low. It was very difficult to find a common language. We seemed to be talking at cross purposes and the discussion remained at the surface. We also missed a clear statement regarding Microsoft's "solutions strategy" for complex Higher Education institutions. Microsoft, naturally, views the world in a very Windows-centric way.
- The Microsoft Research's work is very interesting, e.g. the presentation about ConferenceXP. The goal of Microsoft Research is to drive innovation, not to produce products. We could sense there to be a lot of potential for collaboration here.

What We Learned

- We should have told Microsoft better what we wanted. A visit to Microsoft Research might have been more rewarding.
- Microsoft's focus within the education market is more geared towards the K-12 and high-school sector. Microsoft invests strongly in the K-12 market. This will have an effect on our future students. But Microsoft does not (yet) seem to be a real partner for top universities.
- Microsoft has a low acceptance (and reputation) in academia (and they are very aware of this). They hope to change their reputation via more open collaboration with universities. If this is true, perhaps interesting and mutually beneficial projects can be achieved. But companies in such a strong market position do not really need collaboration.
- Microsoft seems to lack an understanding of the needs of teaching and learning and they do not really have a specific offering for the educational sector, as they only provide a horizontal platform, but no applications. Business Intelligence and Enterprise Application Integration are important issues also for Microsoft; but: where are the solutions?
- The philosophy and meaning of 'open source'; the struggle between standardized solutions and open source architecture
- TabletPCs is one of the key emerging technologies. Handhelds are becoming multimedia and learning devices.
- For Microsoft's Swiss Academic Relations Manager it should not be easy to reconcile the US (Microsoft) and the Swiss way of thinking.

University of California, Berkeley

Overview

Headquarters University of California, Berkeley



URL www.berkeley.edu

Delegation Report

Jack McCredie, CIO and Associate Vice Chancellor, Information Systems and Technology

- Advanced Networking
 - Involved in Internet2 Activities
 - Regional Network "Cenet" (Info in the documentation net)
 - o state-wide network for universities in California and interconnection to Internet2
 - o bringing together all Californian universities
 - o bringing together the national labs
 - o 22 campuses of the 22 Californian master universities
 - o two giga-pops
 - o funded by the individual participants, some private sponsorships
 - close connection to University of Washington in Seattle
 - NLAR: national lambda...
 - NLAR: very advanced research in networking
 - Internet2 is for advanced production services
 - networks has 46,000 connections
- Introduce New Facilities
 - Berkeley is an old campus (100 years)
 - "long tradition of decentralizing"
 - opened a new computing center 2004: much more than a building, opens new opportunities
 - new trends of centralizing (storage, security, networking, communication)
 - o this can be realized with the new building
 - o move of the library system to the new computer-rooms
 - o talking with other 14 departments about sharing this facilities
 - o central backup, central machines,
- Strategic Planning Activities
 - See also <http://technology.Berkeley.edu>
 - Berkeley had completed an overall strategic plan in 2002, one year of discussion, lead to 5 initiatives
 - based on that, they started one year ago an ICT strategy (old plan 1999 – 2003)

- the strategic plan was done within the existing ten committees, including:
 - o ICT Architecture Committee
 - o Security Committee
 - o e-Berkeley initiative
 - o Chancellors Cabinet (not about IT)
 - o Academic Committee on Computing
- Strong involvement of the faculties
- it is a slow process, but there is no need for speed
- Economic decline: reduction of ICT budgets of 16% in the last two years, they think it will grow again 2005/6
- Involvement of the new Chancellor, in that ongoing process
- This planning is a mayor challenge for Berkeley
- e-Berkeley: how can the core processes be improved by the evolving new capabilities of ICT
 - o chaired by the Provost
 - o operated by Chief Budget Officer and Chief Information Officer
 - o are now in the process of re-thinking the whole initiative (started when they had money, 2.2 m \$ the first year, some money in the second year), it is a struggle to keep the enthusiasm, mentioned the example of video streaming
 - o reduction of paper based systems
 - application of students, pre-registration (not funded by e-Berkeley, but an e-Berkeley project)
 - o credit-card processing in a secure way
- Outsourcing
 - They do not much outsourcing, one example is telephony, may change with voice over IP
 - Alumni web-site is managed outside plus some other minor examples
- Staffing
 - About 300 FTE in central IT Services
 - About 400 FTE in decentralised Units
 - Central IT Services hire people and lend them to the departments
 - 32,000 students (22,000 undergraduates)
 - 12,000 faculty and staff (1,400 faculty)

John Conhaim, Director of E-Berkeley, Chancellor's Office

- Overview
 - started with the idea of creating a campus Internet strategy
 - e-Berkeley was born with the goal of using the power of the internet to transform the way the campus operate, from day-to-day function
 - Goals
 - o improve teaching and learning
 - o create easily accessible web sites
 - o improve campus services and reduce cost by putting them online
- Projects
 - Course Web
 - o automatically generated basic web-site for every individual course

- communication (mail) with enrolled students
- Online Grade Book
 - provides an electronic grade book
 - currently used in pilot test for 10 courses
 - available for all instructors in 2005
 - adopted to be the grade book for the Sakai Learning Management System
 - plan to migrate WebCT and Blackboard to Sakai
- WebCast
 - streaming video of course lectures (lecturer and slides)
 - 16 courses per semester (archived)
 - 2000 \$ per semester paid by department (50% of the cost)
 - also special campus events are streamed
- Air Bears
 - 802.11b, 1200 access point, authenticated access only
 - want to extend the WLAN off-campus with mesh networks
 - 95% of the students have computers (40% of them are laptops)
 - 50 computer labs on campus
- e-Travel
 - travel expenses reimbursed in nine business day through e-Travel
- Paperless payment
 - central service for credit card payments
- e-Donations
- Future Projects
 - Student Portal
 - easier to find information
 - uses uPortal
 - Sakai Learning Management System
 - Identity Management System
 - directory services and registries
 - authentication
 - authorization
 - provisioning
 - password management and synchronization
 - federation and trust

Shelton Waggener, Director Central Computing Services, Information Systems and Technology

- Organization
- Reporting, analysis, and Program Office
 - Central infrastructure and campus applications
 - directories
 - mail
 - identities
 - Open Systems, Support Group
 - Data Systems Group
 - Peoplesoft for Finance and HR
 - home-grown every thing else
 - mainframe group
 - storage group

- Business functions
- The Needs
- Understand customer needs (Technical Account Mgmt)
 - Portfolio management (avoid duplications)
 - Architecture, data management
 - Life-cycle planning (funding is normally on a “one-time funding basis” only)
 - Vendor scorecard
 - Standards and reuse of standards
 - Service level agreements: process and response time
 - Monitoring of system performance

David Greenbaum, Director Interactive University Project

- How can we build a cyber infrastructure that will help member of a campus community to engage in the democratization of knowledge?
- Help the campus to share the knowledge
- Importance of public service to university
- Gather, create and share
- What can the tools look like to help students and faculty to do that
- Domains to bring together
 - o Libraries and digital repositories
 - o Educational technology
 - o Web content syndication (weblogs, portals, social software)
- The Scholar’s Box: a tool allowing users to search for and gather images from multiple repositories, to sequence and annotate the images, and then to generate a variety of products from these images (e.g., HTML albums, slideshows, PDFs, METS documents, SCORM-encoded learning objects). Internally
 - o Python based, XML data store, with extensible workflow system. Enables input materials (which themselves may not be XML) to be transformed into desired products. The example shown was the transformation of sites from a search result in Google into a PowerPoint presentation. Input sources Amazon, Google, California digital library, Melvyl, nsdl, calphoto...
 - o Will be available as open source and integrated in Sakei)
 - o Functions: integrated search; collect search results in own collections (data and metadata); export to websites, presentations, other office documents.

Strongest Impressions

- The program at Berkeley was very well put together. Our hosts at Berkeley were quite open with information they gave and had familiarized themselves with our needs and were able present very well against our expectations.
- There are many striking similarities and common problems between Berkeley and ETH Zurich. The E-Berkeley initiative corresponds directly to certain aspects of ETH World.
- The “Scholar’s box” is an impressive tool that would match ETH digital content sources very well.
- There seems to be a trend towards the (re-)centralization of basic IT services.
- In a region with earthquake hazards the IT and storage facilities need additional care.

What We Learned

- Berkeley and ETH Zurich have a lot of things in common (strategy, infrastructure, thinking, possible solutions, “culture”). Problems and initiatives at Berkeley can be mapped almost one-to-one on ETH Zurich. We need to sell our achievements better!
- To change historically grown structures you need to invest in *strategies*. The same applies when facing budget cuts. Strategies generate documents using strong words for simple things. Lasting impact in strategy and planning is based on widespread collaboration: Creating benefits for all involved parties is the key to ongoing support for a strategy.
- ICT excellence goes hand in hand with academic excellence and requires strong interactions and platforms (e.g. steering committees) between the two sides.
- Central strategic planning (in ICT) is a real benefit for the whole university. ICT can be used to bring faculty and administration together and focus on the same goals. It can induce the process of “longer term planning” in the different groups. Furthermore, ICT can have an impact on the self-conception of the students.
- ETH Zurich has a much better funding situation. But Berkeley shows how one can deal with major budget cuts, how to be creative to “maximize the impact of fewer ICT dollars”. ETH Zurich should be more aware about the (still) large resources we have. We should spend the money we have in a better way:
- Many small projects like the revamped E-Berkeley 10k projects may yield a result with a better quality and sustainability. Sometimes less is more, it is possible to leverage on the work done in successful small projects.
- The Scholar’s Box is a good example of a project to democratise knowledge: gather – create – share.
- Points on Shel Wagganer “needs” list may also apply for the ICT Services at ETH Zurich. We need to be prepared for further changes of the organisation of ICT Support
- Make it as simple as possible” (tools, support for academic staff, Berkeley.)

The Internet Archive, San Francisco

Overview

Headquarters Internet Archive
The Presidio of San Francisco
116 Sheridan Avenue
San Francisco, CA 94129



URL www.archive.org

Contact Brewster Kahle, Director

Delegation Report

Introduction What does an “Internet archive” and its physical location look like? We surely expected something different from what we visited in the Presidio district of San Francisco: We arrived at a wooden villa of the size of a nutshell! Inside it was very cosy and we didn’t have the impression to be midst in a digital environment.

We went to the Internet Archive (www.archive.org) with some expectations, e.g. to learn something about different formats suitable for archiving digital objects, to hear something about long term accessibility or something about migration or emulation of digital data.

Our group was warmly welcomed by the founder and director of the Internet Archive, Brewster Kahle, a former librarian who engages himself with much verve in the field of digital archiving. The Internet Archive is a public non-profit institution funded by the government, by foundations and donators.

The starting point for the presentation was the notion of the ancient library of Alexandria – a symbol of universal knowledge in its time (i.e. from the third to the first century B.C.). The present Internet Archive will be universal, too – in its content but also in its access. The technology for realizing this is available. The objective of the Internet Archive is to give everybody access to all human knowledge. This includes born-digital material and material to be digitized: web pages, moving images, audio, software and texts. B. Kahle is confident that we have the possibility to do this, when the political will, technology and money are available.

The Internet Archive belongs to the 200 most popular websites on the internet and has 10 million hits a day. For collecting and creating the content a consortium of 12 National Libraries was installed, with different collaboration projects with outreach programs (especially the Nordic libraries).

Archiving the Web The Internet Archive started its activities in 1996 to preserve web pages for posterity. Today a picture of the whole net is captured every two months. “Each time” about 4 billion pages or 150 terabytes are stored. For safety reasons data is stored in multiple places worldwide. One of the servers is in

Amsterdam.

Archiving Books

How can we increase access to printed books? Simply by digitizing them. In average it costs only 10 USD to digitize a book. A huge digitizing project for books out of copyright is running in collaboration with the Library of Congress, the largest library in the world with 28 million books. Currently 100,000 items are being scanned in India, because it's cheaper than doing this process in the US. Surprisingly for a librarian: content is not selected at all, it's cheaper to just take everything. The images, the result of the scanning process, are transformed to PDFs, the access version. The archival version is stored separately. Publicly available standards are used.

A large problem is posed by so called „orphans“, books out of print but still under copyright. Even though publishers don't deal with this material, a change of the US law would be needed. The Internet Archive is lobbying in this respect.

The Internet Archive is also active in delivering digitized information. „Book Mobiles“ shall help to bring information to people. These vans drive around the US and download public-domain books from the archive via satellite. The „book feeling“ for the customers is recreated by printing and binding a copy from the electronic version. Producing a print copy of a book costs only 1 USD on average.

Public-domain access to music is possible up to 1954 and such digitized music is stored by the Internet Archive in petabyte machines with nearly unlimited storage and unlimited open access. Also music from different rock bands is stored and freely available.

Archiving Movies

Today there exist about 100,000–200,000 films, most of them out of print, and 2 million government film material from the 20th century. Outsourced digitization for a film costs 15 USD per hour film (MPEG2 format, DVD-quality). At the moment about 10,000 movies are available in the Internet Archive. Every day 150 new films are added.

Archiving Television

The Television Archive now constantly records 20 US TV channels.

With a very pragmatic approach Brewster Kahle follows the idea to realize a huge “internet library” which stores all public available information on the world in digital format. Storage is cheap today and the necessary technology is available. But what about cataloguing? B. Kahle's answer: “We are not yet a library. We are an archive.” A very comforting answer for librarians!

Final Remarks

Unfortunately time was too short, many questions remained open. At the end each participant received a small gift: a digitized, reprinted copy of *Alice's Adventures in Wonderland!*

Storage of digital material, guaranteeing its long term accessibility and increasing access to printed material by digitizing is a big challenge also for traditional and electronic libraries.

Links Two samples from the Internet archive:
<http://web.archive.org/web/19970302144655/http://www.ethz.ch/>
(ethz.ch Homepage, March 1997)
<http://web.archive.org/web/19970411181725/http://www.ethbib.ethz.ch/>
(web site of the ETH-Bibliothek, April 1997)

Strongest Impressions

- The Internet Archive and its leader Bruster Kahle have a fantastic vision of digitizing all human knowledge and creative output (books, films, music) and make these available to the world for free (within the limits of applicable copyright and other laws). They have the track record to show that much of the vision can be made reality. The Archive represents a “knowledge democratization initiative” against the “Copyright establishment”
- They provide powerful, simple-to-use knowledge sharing and knowledge management tools with appliance character: plug in and use. They use a strategy of powerful knowledge sharing tools tapping into existing repositories and databases rather than creating new ones.
- The Petabyte file server is already a reality.
- The Internet Archive is a very small building with a huge impact.

What We Learned

- The Internet Archive’s approach is: Just start collecting data without bothering about classification, future generations will be happy to have access to this knowledge. “Don’t plan too much, don’t try to be perfect – just do it”.
- Digitization is cheap (on average 10 USD for a book).
- The necessity and the feasibility of archiving digital contents. Archive books electronically and print them out when needed. People don’t read books anymore but the internet doesn’t contain everything (yet)!
- Collaboration tool including a “3rd generation information discovery” identifying not only contents but also the people with the respective expertise. Meeting with Igor Perisic (Entopia) at Swissnex.

Second Life (Linden Lab), San Francisco

Overview

Headquarters Linden Lab
577 Second Street, Suite 200
San Francisco, CA 94107
Phone +1 415 243 9000
contact@lindenlab.com



URL www.lindenlab.com

Contacts **Cory Ondrejka** – Vice President, Product Development

Cory Ondrejka joined Linden Lab in November of 2000 and brought an extensive background in software development and project management. Most recently, Ondrejka served as project leader and lead programmer for Pacific Coast Power and Light's Nintendo 64 title, "Road Rash." Previous experience includes a position as lead programmer for Acclaim Coin-Operated Entertainment's first internal coin-op title. Prior to Acclaim, Ondrejka worked on Department of Defense electronic warfare software projects for Lockheed Sanders. While an officer in the United States Navy, he worked at the National Security Agency and graduated from the Navy Nuclear Power School. Ondrejka is a graduate of the United States Naval Academy, where he was a Presidential "Thousand Points of Light" recipient and became the first person ever to earn Bachelors of Science degrees in two technical majors: Weapons and Systems Engineering and CS.

Robin Harper (SVP Marketing and Business Development)

Robin Harper joined Linden Lab in 2002 after serving as Senior Vice President of Marketing at Mondo Media, and prior to that as Vice President of Marketing at Ninth House, Inc. Previous to her position at Ninth House, Harper was the Vice President of Marketing at Maxis, a division of Electronic Arts (EA). At Maxis she played a prominent role in their emergence as the leader in PC simulation games and was a core member of the senior executive team that guided the company through their IPO and subsequent sale to Electronic Arts. Also while at Maxis, Harper established SimCity as one of the most recognized brand names in entertainment software, and was named one of the marketing 100 by Advertising Age/Newsweek. She holds an MBA from the University of Chicago.

Delegation Report

Second Life is an online world where many players can interact in real time. Every player is represented in Second Life by an avatar (a virtual incarnation of the player). All objects (houses, cars, chairs, pictures, etc.) have been created by the players themselves. The creators of Second Life simply defined an empty scenery and some basic capabilities, such as communication between inhabitants (chat), the ability to build objects (there is a powerful scripting language to describe the behavior of the objects). They also

introduced a local currency (“Linden Dollars”, L\$). Like in the real world there is day and a night (synchronized with Pacific Time). Differently from us, the avatars never die.

In Second Life there is a large creative freedom. There are almost no rules: only an appropriate, politically correct behavior is expected. Since there are no rules, every one is free to do whatever he or she wants. If you have a walk through Second Life you will recognize avatars doing a host of various things: chatting, dancing to music (the players can decide what music should be broadcasted according to where you are), building new objects, skydiving, playing roulette, etc, etc.

What is the difference to the real world? In fact there seems to be a lot of similarities between the virtual and real worlds. To analyze and study Second Life you would use typical disciplines and concepts created to analyze and study the real world, such as sociology, psychology, architecture or economics. The biggest difference to the real world is the speed at which things happen. Instead of needing months and years to develop new ideas or products, put them on the market and see how people react, in Second Life it is only a matter of days.

At the moment there are daily some 15,000 users in Second Life who carry out a total of 55,000 different trade transactions. The value of the economy over a year is of about L\$ 880 million (every week each avatar receives automatically L\$50 from the creators of the game). About L\$180,000 are converted every month outside the game using trading platforms such as Ebay. The conversion factor (“exchange rate”) is about L\$ 180–200 per US\$.

About 25% of the users spend more than 40 hours a week online. They use a couple of hours per week to change the aspect of their avatar. Many employees of Linden Lab are former players of the game. The one-time cost for an avatar is US\$10. To build something permanent you have to own land (US\$100 one-time and US\$10 monthly). There is also the possibility to rent islands where no one can see what your are building for US\$200 a month.

Second Life is also being used by universities and hospitals to experiment in this new virtual space. For example, a doctor of the University of California at Davis built a space for experimenting with virtual hallucinations like schizophrenic patients. There are also classes in game design and architecture.

Strongest Impressions

- Linden Lab and the Internet Archive show how small and focused organizations can be powerful and effective and how intermediate technology and unrestricted distribution can increase the sharing of knowledge.
- “Second Life” is an incarnation of the virtual campus promoted by ETH world!

What We Learned

- Not everyone in the group was convinced of the need for a “second life”? The virtual world might be full of opportunities, but can also be somewhat scary and lack human feelings.
- On the other hand, many aspects of Second Life show that there is a life in the virtual world. The platform shows many of the possible implications on how people interact and communicate in the future. The social implications of multi-player games that create a virtual world are fascinating and scary at the same time.

Logitech, Fremont

Overview

Headquarters Logitech Inc. Corporate Headquarters
6505 Kaiser Drive
Fremont, CA 94555 USA
Tel +1 510 795 8500 Main

URL www.logitech.com

Contact Philippe Depallens, Director, Video Services

Delegation Report

- Presentations
- Phillipe Despalens, Director Video Services, Logitech
 - Prof. Bernhard Plattener, ETH World, Demonstration of Second Life (example of a virtual university)
 - Angela Marti, Swiss Re, Zurich-San Francisco Initiative: a group of 18 students and two teachers from Kantonsschule Enge were also attending the meeting
 - Thomas, Teacher Kantonsschule Enge

- Philippe Despallens
- To date Logitech has sold 500 million computer mice
 - 100 million products/year, 1 billion US\$ turnover, 125 million US\$ profit (2003)
 - Products (in addition to mice)
 - o Web cams, keyboards, loudspeakers, Bluetooth headsets, intelligent pens, remote controls
 - o For video: web cams, video telephones, set top boxes, Internet cams
 - 1999 Rubicon Project: Make video-(conferencing) easy
 - o Foundation of the spin-off SpotLife!: Personal Video Broadcasting
 - o 2002 SpotLife! goes back to Logitech and becomes video group inside the company
 - o Development of the Logitech Video division (Instant Messaging and Video Client).
 - o MSN Messenger Client with Video-Service from Logitech (launched June 2003): more than 5 million video sessions every day.
 - Next Steps:
 - o Audio/video "phone" functions via PC with Internet access of 128kbit/s or higher
 - o Video accelerates the conversion to communication over broadband
 - Strategy for video at Logitech:
 - o Best in class
 - o Broadband only
 - o Leverage established communities
 - o One-click Video Call
 - o Presence and capability signaling
 - o Good audio, fluid video
 - Demo von MSN Client (Beta) with impressive video und audio functions
 - VoIP players:

- Community providers (MSN, Yahoo, ...)
- Newbies (Vonage, Net2Phone, other VoiP-Providers)
- Old giants (AT&T, Sprint & co)
- Logitech can play a role by the community provider (development and integration of audio/video software in the proprietary clients with the goal to increase the number of sold web cams).
- ETH World and ICT Services will try to cooperate with Logitech to test their new SIP client with audio/video and IM.

Strongest Impressions

- Voice and video applications, such as MSN Messenger, are improving technically and need to be considered seriously.
- VideoCall for Broadband integrates voice and video: Sends and receives video at 320 x 240 pixels at a speed of up to 15–20 frames per second. The application also allows participants to share images and PowerPoint presentations during a call. “Video Call for MSN” is in preparation (joint project with Microsoft).
- It was nice to meet the Swiss high school students: a nice exchange program.

What We Learned

- “Voice over IP” audio-video services are the next “revolution” under way and will influence the way we will communicate in the (near) future. This also means new economic models for the telecommunication and Internet industry and a significant savings potential regarding communication costs at ETH Zurich.
- Videoconferencing will become a basic service for teaching and research (if it’s as simple as phoning).
- Logitech shows the newest trends in computer gadgets: Instant messaging and videoconferencing over MSN Messenger will be the communication of the kids next year. However, discussions with the students show that they don’t want social life to be replaced by virtual worlds
- The example of Logitech shows that an increasing number of applications which are interesting for ETH (i.e. not Microsoft Office) run on Windows only. However, other examples (Google, Linux boxes) show that Windows is not dominant everywhere

Institute for the Future, Menlo Park

Overview

Headquarters 2744 Sand Hill Road
Menlo Park, California 94025
Tel +1 650 854 6322



URL www.iftf.org

Contact Marina Gorbis Director Technology Horizons Program

Dr William Cockayne, Director

Delegation Report

Introduction The Institute for the Future (ITFF) is an independent nonprofit research group. It works together with organizations of all kinds to help them make better, more informed decisions about the future. Their credo is: „We provide the foresight to create insights that lead to action.“

The IFTF was founded in 1968 by a group of former RAND Corporation researchers with a grant from the Ford Foundation to take leading-edge research methodologies into the public and business sectors. The Institute focuses on the innovation at the intersection of new technologies and social organization.

The methods for doing this work vary: Methodological diagnostics at the IFTF, lots of ethnographical work globally, modelling, scenario work, evaluation. The inputs are mostly controlled consumer surveys using the Delphi Method.

Map of the Decade The Zurich delegation was handed a so-called „Map of the Decade“ – an annotated, at-a-glance graphic roadmap that outlines paths that connect seemingly unconnected trends to provide logical and coherent views about how the decade could unfold. Every two years IFTF completes this map, concentrating on the technology horizon looking two to ten years out.

The map explores the key transformative technologies in biotechnology, information technology, material science and energy, with particular emphasis on the intersections of these technologies. When combined with the internal technology knowledge, the map serves as a basis for identifying core competencies, strategic advantages and potential new opportunities for the own institution.

Environment for Innovation Marina Corbis leads the Technology Horizons Program. Her work focuses on the innovation at the intersection of new technologies and social organization. During her presentation she explained the objectives of her research:

Why do people innovate? Why do people accept new products and integrate them? How do disciplines collaborate in new ways? What are some of the key

concepts? E.g. when working together on open source software people come together in a new space. The worldwide collaboration on Wikipedia is an example for innovation bound by passion for accumulating a tremendous amount of information.

Marina Corbis reminded, that we are living in the age where people are overwhelmed with information coming from different channels. Bringing the right information to the right person at the right time and in the right format will be a task for the future, also for libraries!

Strongest Impressions

- The IFTF represents a special and interesting view of evolving technology and a holistic approach to identify future trends and developments. By putting together today's technical experiences they predict tomorrow's technology.

What We Learned

- People are increasingly overloaded with information. Selecting and filtering information from different channels is becoming an increasingly important task.
- A key question is: When is the "right" time to enter/invest into new technologies?

Stanford Center of Innovation in Learning (SCIL)

Overview

Headquarters Wallenberg Hall (Building 160, located at the front of Stanford's Main Quad at Stanford University)

URL scil.stanford.edu

Contact Reinhold Steinbeck, Associate Director, Learning Design

Delegation Report

SCIL After touring the Stanford campus we arrived at the Wallenberg Hall (wallenberg.stanford.edu), where Bill Cockayne gave us an overview of the SCIL facilities.

- On the ground floor, alongside the “Learning Theatre” seminar rooms are located, which are mostly used for group work. The rooms are equipped with video cameras and digital smartboards with touchscreens. Copy cams are provided to record whiteboard notes, so that they can later be digitized and processed, adding to what Bill called “multiple layers of media”. So called “room wizards” are placed outside each room, providing the users with a means to see and manage reservations for the shared spaces.
- On the fourth floor we experienced the benefits of a large, open and flexible space for a variety of group activities. In this space Marina Gorbis and Peter Banks explained the activities of the Institute for the Future.
- After passing by the Main Quad, which contains the universities earliest buildings, we visited a class where mechanical engineering students worked together on highly explorative projects. These projects are completed within three quarters, and are sponsored by companies, such as BMW or Volkswagen. We could see the results of earlier group work hanging from the ceiling: bicycles made of cardboard. We learned that laptops are not used anymore, because “students just won’t carry them around”, as Bill explained.
- Before moving on to see a video-taped and broadcasted class, we went to see a low-tech lecture room for design classes. Bill pointed out that project based learning and cooperation with companies are particularly important for the students to learn about project management, planning, mentoring and sponsoring.

Strongest Impressions

- The “lean” class room for the design class of Larry Leifer seems to represent a “new simplicity”. The students exclusively use a wiki for group communication.
- The Stanford Center of Innovation in Learning (SCIL) removed the SmartBoard or SmartSymposia from the high-tech lecture rooms because they were not used by the lecturers.
- Collaboration is a result of good tools used and good physical environment. The “media rooms” (flexible infrastructure of furniture and ICT) at Stanford are a good model.

- Stanford is rich compared to Berkeley. Still, the technology used seems not to be more advanced than what is in use in Zurich.

What We Learned

- Stanford vibrates with an entrepreneurial culture (everybody creates their own company). As a consequence the university is also much better connected to companies than ETH Zurich.
- SCIL provides new, interactive technology for smaller working groups in a dedicated transmutable environment as a strategy in education and teaching. Collaboration is enhanced by creating collaborative spaces in the physical world (not in the virtual world!). Working together in the physical world does not necessarily need very much technology.
- Collaboration needs to be enabled through adequate infrastructure: flexible floor plans, mobile furniture, accessible internet and power everywhere. To support collaboration and group work the necessary skills need to be taught (active listening, conducting difficult conversations, mediation and conflict resolution, joint project planning, coaching). ETH Zurich needs to draw on the experiences of its own Vireal Lab project!
- Lecturers need a profound introduction in the use of the technical tools in a high-tech lecture room before they start with teaching.
- In comparison with the “high-tech room” at Stanford ETH Zurich has a very good ICT infrastructure (e.g. the media room D 16).

Google, Mountain View

Overview

Headquarters 1600 Amphitheatre Parkway
Mountain View, CA 94043
Tel +1 650 623 4000

URL www.google.com

Contact Dr Robert Griesemer, gri@google.com

Delegation Report

Immediately when entering the lobby at Google's headquarters you get a feeling for the nature of their business. A display in the lobby shows samples of searches submitted to one of the Google websites. The business of Google is search, very quick information searches for an incredible number of persons simultaneously. The different languages and character sets remember us how global the business of Google is.

The meeting at Google was organized by Dr. Robert Griesemer, an alumnus of ETH Zurich. The goal was to get an overview of the company and their technologies, and to have a discussion with the many alumni of ETH Zurich working for Google.

We started our visit having a look to facilities, which are situated in a former Silicon Graphics office building. Google pays special attention to the well-being of the employees. Scattered throughout the buildings are self-service cafeterias offering a large choice of soft drinks, organic juices, fruit and snacks. There is also a laundry and the employees can have a massage at their work place. A woman hosting a hair cut salon is stationed in the courtyard. Most employees are very young (at least to our eyes), their background is very international.

On another display there is the rotating representation of our globe. Colored columns of light represent the number of concurrent search requests from around the planet.

After the tour of the facilities we started the main session. First we had a presentation of a new plug-and-play appliance, developed for customers wanting to improve information retrieval on their intranet: The appliance searches for all possible information on the internal network. It is fully managed by Google, i.e. they provide all the necessary upgrades and support in case of problems.

The presentation was followed by an open discussion with some ETH alumni. It was impressive to see so many former ETH students working for Google. We were able to learn about their motivations and to better understand the culture of this very special company.

We concluded our visit at the restaurant of Google with a common dinner in the "Charlies", the Google restaurant. Good food can be an important part of a company culture.

Strongest Impressions

- Google is a very special company with its own particular culture and a strong feeling of belonging. Many little details all serve to reinforce this culture.
- Google excels based on simple and minimal reporting but maximum small group (up to 4 persons) collaboration. Improvement is based on fostering group ventures. It is the group that ignites the spark

in people's heads, it is also the group that creates the commitment which turns the initial euphoria into a sustainable effort.

What We Learned

- Google provides an ideal example of campus life for tech types. This would be a good place for ETH to study how to establish a campus life more accommodating of US students. Physically bounded, connected, open spaces, all personal needs addressed (transport, laundry, food, haircuts, "sports" and other interactive team opportunities), constant intellectual stimulation (lecture series, 80/20% work/play split), soft hierarchy, mutual respect, clearly stated, shared goals/objectives/rules, "democratic" communication tools/practices in place.
- Google as a ubiquitous search engine in the future for searching the internet, the intranet, library resources, personal files, etc. (In the mean time Google launched "Google Scholar"!). Information retrieval within ETH Zurich could be massively enhanced by using the Google 'Search Appliance Box'. But first we need to solve access/security issues.

Stanford University, Stanford

Overview

Headquarters Stanford University,
Stanford, California 94305,
Tel. (650) 723 -2300

URL <http://www.stanford.edu>

Delegation Report

Teamspace – David Futey, Associate director, Academic Computing Teamspace

- <http://iwork.stanford.edu>
- <http://teamspace.stanford.edu>
- Teamspace is purposefully designed for group collaborative work.
- Collaboration is key element in academic programmes.
- Teams of 2-6 working on collaborative group projects using multiple laptops (Windows/Mac OS X).
- At the moment only 1 station with 2 large LCD screens, wireless.
- For students available 24/7.

Digital Language Lab Joseph Kautz, Jkautz@stanford.edu

Language Lab

- Inhouse learning management system
- Course work: speaking, listening, writing
- recording → development can be seen
- on-line language assessment
- self learning rooms & teaching rooms
- infrastructure for handicapped persons (e.g. Braille)

Academic Computing, Library Tech Desk

- Academic Computing: division of the Stanford University Libraries.
- Academic Computing provides technology, expertise and resources in support of the University's academic mission
 - public computing (e.g. in the residences, Meyer's, and libraries)
 - technology help for students via Stanford's Residential Computing program
 - Technology help for faculty via the Academic Technology Specialists and the Academic Technology Lab
 - Support to other organizations who in turn support the University's mission.
- Students: Mac's and PC's (almost 100%, but only 5% laptops)
- CourseWork, Stanford's course management system
- Same software all over the campus; standardization, but special software can be ordered.
- Central IT-services (network, registration)

- Decentral services & support (libraries, departments)
- Multimedia studio (cf. “free cutting” at ETH).
- Flexible classrooms (WLAN, PC’s, Screens, furniture (tables, boards, chairs) on wheels)

Sakai Project

Marc Brierley, UI Developer, Sakai Tools Team, Stanford
(<http://sakaiproject.org/>)

- 2003 Sakai 1.0: Stanford University, MIT, Indiana University, University of Michigan, uPortal Consortium, Open Knowledge Initiative (OKI) at MIT: open source tools: software infrastructure, research support collaboration system, enterprise services-based Portal.
- 2004 Sakai 2.0: SEPP: Sakai Educational Partner’s Program with more than 45 universities (2 from UK)
- 40 FTE’s in the project; US\$ 2.4 Mio. grant from Mellon Foundation, 10 mio project over all
- Annual membership (SEPP): US\$ 10’000
- Sakai is not a course management system, but is a collaboration and learning environment

Project incites
(innovative
Collaborations
for the
Integration of
Technology in
Education at
Stanford)

Claudia Engel, Academic Tecnology Specialist, Anthropology, Stanford
Jeremy Sabol, Academic Tecnology Specialist, Center for Teaching & Learning

- <http://incites.stanford.edu/>
- The aim of the inCITES project is to contribute to the pedagogically informed use of technology in education.
- Collaboration with faculty, academic technology specialists, educators, designers, and many others
- Set of tools, practices, and guidelines to disseminate examples and facilitate critical discussions about the usefulness of new technologies to support learning.
- 1995: ATS System (Academic Tecnology Specialist) at Stanford.
 - o 1 ATS within 1 academic department: total 10-11 persons (FTE)
 - o non-dept. programs: 6-7 persons (FTE)
 - o enabling and bridging between lecturers and technicians
 - o ATS must have own experience in teaching (otherwise not accepted...)

Strongest Impressions

- Sakai is a large project with influential players (Stanford, MIT, University of Michigan, Indiana University, the uPortal consortium) who are joining forces to integrate and synchronize their considerable educational software into an integrated collection of open source tools.
- The Academic Technology Specialists (ACT) are an interesting concept. E-learning specialists, co-funded by central means and by the departments, and located in the departments. (A similar concept exists at the University of Zurich.) We were somewhat surprised at the strong role of the library in academic computing.

- There is no institutional pressure to implement ICT in education at Stanford. Extremely dynamic and enthusiastic faculty and staff provide unique learning experience in combination with state-of-the-art ICT (learning spaces).
- “TeamSpace”: a technology-enhanced learning space for groups of students. The students bring their own laptop and connect to the system. The sharing occurs across the users’ laptops when connected to the TeamSpace environment along with the ability to open documents on one of two 40-inch LCD screens. Document editing using the LCD panels is collectively controlled.
- The InCites project uses a conversation-oriented approach to guide teachers in building up courses on the web.

What We Learned

- A lot of very diverse things are going on at Stanford. In many respects Stanford seems to be very similar to ETH Zurich – and they work on the same problems we do.
- The Academic Technology Specialists (ATS) model of a shared central and decentralized support structures is worth looking closer at, as well as the experiences of the University of Zurich.
- It is not easy to bring technology into faculties, but it’s worth undertaking well planned efforts. ICT in learning needs to be mainly based on faculty centred initiatives. Do as much communication as possible to get the lecturers interested in integrating e-Learning in teaching. Creating a single e-learning course in a conversation oriented approach gives the lecturer a chance to look at the whole curriculum.
- Sakai will not be a “simple” course management software, it will be a collaboration and learning environment. . It may have considerable influence on the future use of e-learning and should be looked into as a potential Learning Management platform for ETH Zurich. OLAT, the open source learning management system of the University of Zurich, certainly has a new competitor!
- ETH and the University of Zurich should have two or three experts participating in international open-source projects, such as uPortal or Sakai.

Computer History Museum

Overview

The
Computer
History
Museum

The Computer History Museum is the world's largest and most significant history museum for preserving and presenting the computing revolution and its impact on the human experience. It allows you to discover how computing became the amplifier for our minds and changed the way we work, live and play.

There are several pieces in the museum donated by ETH Zurich two years ago.

The Computer History Museum's Visible Storage exhibit area is open on Wednesdays and Fridays with tours starting at 1:00 and 2:30 pm.

Computer History Museum, 1401 N
Shoreline Blvd.,
Mountain View, CA 94043
Tel: 650-810-1010



Strongest Impressions

- The visit to the Computer History Museum was excellent and served as a reminder of the incredibly rapid development of computers

Program

Saturday, 6 November – Transfer Zurich–Vancouver

- 12:00 Meet at Zurich Airport, check-in individually,
British Airways, Check-in 1 (former Terminal A)
(seats pre-reserved for the whole group)
- 12:30 Latest Check-in time
- 13:20 Flight Zurich – London (LHR) 14:15 / BA 713
16:35 Flight London (LHR) – Vancouver / BA 85
18:05 Arrival in Vancouver
- Transfer to Hotel, Check in
Hotel Sheraton Wall Center in Vancouver
1088 Burrard St., Vancouver, V6Z 2R9
Tel +1 604 331 1000, Fax + 604 893 7200
- Dinner individually of as a group (for those who feel like it)

Sunday, 7 November – Vancouver

- Breakfast at leisure
- 10:00 Joint activities
- Museum of Anthropology
 - Stanley Park
 - Granville Island
 - Lynn Canyon Suspension Bridge
- 17:00 Briefing and welcome reception
(Conference room at Hotel Sheraton Wall Center)
- 18:30 *Dinner invitation from Silicon Chalk*
Nikko Japanese Restaurant, 1008 Robson St, Vancouver
Contact: Murray Goldberg, President and CEO

Monday, 8 November – Vancouver

- 8:00 *University of British Columbia, Vancouver, <http://www.ubc.edu>*
Taxi transfer to University of British Columbia:
Liu Institute for Global Issues, The University of British Columbia
6476 NW Marine Drive, Vancouver, BC, Canada V6T 1Z2
- 8:30 Start of the presentations
- Xten Corporation (Meeting at UBC), <http://www.xten.com/>*
Contact: Lorne Reicher
- 16:15 Transfer to the Hotel (luggage pick up)
17:00 Transfer Vancouver – Redmond (by private buses)
- 20:30 Arrival in Redmond, Check in Hotel
Hotel Fairfield Inn Marriott (Within Walking Distance of Microsoft Research)
14595 NE 29th Place Blvd, Bellevue, WA 98007, Tel + 425 869 6548
- 21:00 Reception with Dinner by Microsoft

Tuesday, 9 November – Redmond

Microsoft Research, Redmond, <http://research.microsoft.com>
7:15 Shuttle depart at Hotel Fairfield
7:45 Arrive at Building 2 Room 2103, Sign In
8:00 Presentation by Microsoft Research
10:00 Presentation by Personal Services Group
12:00 Catered Lunch and Wrap Up
13:30 Company Store and Museum Visit
14:30 Shuttle Arrives to Building 127 to go to airport

17:56 Flight Seattle – San Francisco / AS 386
20:04 Arrival San Francisco

Transfer to Hotel, Check in
Rickeys Hyatt Hotel, 4219 El Camino Real, Palo Alto, CA 94306-4493
Tel +1 650 352 1234, Fax +1 650 424 0836

Dinner at Rickeys Hyatt Hotel

Wednesday, 10 November – San Francisco Bay Area

University of California, Berkeley, <http://www.berkeley.edu/>
7:30 Shuttle depart at Hotel
8:50 Welcome address
Meeting Location: On Bancroft Avenue in front of Sproul Hall.
• Gail Stern, Director of International Protocol
9:00 Presentations block 1
Meeting Location: 340 Stephens Hall (Center for Middle Eastern)
• Jack McCredie, Associate Vice Chancellor for Information Systems and Technology and
Campus Chief Information Officer
• David A. Greenbaum, Director, The Interactive University Project, Information Systems
and Technology
10:00 Presentations block 2
• David A. Greenbaum, Director, The Interactive University Project, Information Systems
and Technology
• Various Staff members, Information Systems and Technology
12:00 Lunch at Faculty Club

The Internet Archive, San Francisco, <http://www.archive.org>
14:00 Presentation of The Internet Archive
• Brewster Kahle, Director
15:30 Transfer to swissnex

Linden Lab (Second Life), <http://lindenlab.com>
16:00 Presentation of Second Life
• Cory Ondrejka (Vice President of Product Development)
• Robin Harper (SVP Marketing and Business Development)
17:00 Break

Dinner Discussion at swissnex
18:00 One-on-one meetings
18:30 Reception start
19:00 Welcome speech
19:15 Presentation of ETH World, Professor Bernhard Plattner
19:30 Discussion: Toward a virtual campus? (Moderated by Professor Plattner)
20:30 Networking,
21:00 Reception end, Transfer to Ricky's Hyatt Hotel

Thursday, 11 November – San Francisco Bay Area

- 8:30 Fry's electronics, Fremont, <http://www.frys.com>
Depart from Hotel
- 9:00 Arrival at Fry's electronics (shopping)
- 10:00 Transfer to Logitech
- Logitech, Fremont, <http://www.logitech.com>
Meeting with high school delegation from Zurich (18 students, 2 professors)
- 10:20 Arrival to Logitech Fremont facility
- 10:30 Presentation of Logitech
- Philippe Despallens, Director, Video Services
 - Background information about Logitech and Video Services Division
 - New technologies and directions using video communication
- 11:30 Lunch with discussion
- How to serve the university market?
 - The future of ICT and virtual campus
- 12:30 Transfer to IFTF, Menlo Park
- Institute for the Future IFTF, Menlo Park, <http://www.iftf.org/>
(Meeting held at Wallenberg Hall on Stanford campus)
- 13:30 Presentation of IFTF
- Marina Gorbis, Director Technology Horizons Program
 - Bill Cockayne, Associate Director of the Stanford Humanities Center
- Visit to activity spaces connected to research labs, courses or a combination of both
- SHLoft / Stanford Humanities Lab in Wallenberg Hall
 - me310 Loft in Terman Engineering
 - d.School iLoft in the Center for Design Research
- Stanford Center for Innovations in Learning, <http://scil.stanford.edu/>
- 14:45 Presentation of SCIL
- Dr. Reinhold Steinbeck
- 15:45 Transfer to Google, Mountain View
- Google, Mountain View, <http://www.google.com/>
- 16:15 Arrival at Google
- 16:30 Tour of some of the Google facilities
- 17:00 Informal discussion in a meeting room w/ Google engineers/former ETH alumni
- 18:30 Dinner at Charlie's (the Google cafeteria)
- 20:00 Transfer to Ricky's Hyatt Hotel

Friday, 12 November – San Francisco Bay Area

- Wrap Up Study Trip (Conference room at Hotel Hyatt)*
- 8:30 Farewell breakfast and Wrap up study trip
- 9:30 Transfer to Stanford
- Stanford University (Stanford), <http://www.stanford.com/>*
- 10:00 Presentation of Academic Computing
- Lois Brooks, Director of Academic Computing
 - InCities, <http://incites.stanford.edu/>
 - Sakai, <http://sakaiproject.org/>
 - Meyer team space/iworks, <http://iwork.stanford.edu/>
- 13:00 Lunch on your own, sightseeing, shopping
- Palo Alto downtown
 - Stanford Shopping Center, Palo Alto
 - The Computer History Museum, Mountain View
- 15:45 Meeting at Hotel (luggage pick up)
- 16:00 Transfer to San Francisco International Airport
- 19:30 San Francisco – London (LHR) 14:00 (13 Nov) / BA 286

Saturday, 13 November

- 15:15 London (LHR) Zurich 18:00 / BA 718

List of participants

- Amy Ambrose, swissnex
- Armin Brunner, Head of Section Communication Services, ICT Service, ETH Zurich
- Dr. Michele De Lorenzi, Head Technology Exploration, ETH World, ETH Zurich
- Roland Dietlicher, Head of Section, Basic IT Services, ETH Zurich
- Dr. Andreas Dudler, Director ICT services, ETH Zurich
- Verena Friedrich, Doctoral student, Institute of Work Psychology, ETH Zurich
- Heinz Gabathuler, Joint head, Department of Multimedia & E-Learning Services, IT Services, University of Zurich
- Ulrich Gysel, Attaché for Information Technology, Embassy of Switzerland in Washington D.C.
- Anders Hagström, Program manager, ETH World
- Dr. Reinhard Hobi, Multimedia coordinator, Vetsuisse-Faculty, University of Zurich
- Daniel Künzle, Director of the Center for Higher Education, ETH Zurich
- Arlette Piguet, Head of the headquarters of the Consortium of Swiss Academic Libraries, ETH Library
- Dr. Robert Perich, Director of Finance & Controlling, ETH Zurich
- Prof. Bernhard Plattner, Professor at the Computer Engineering and Networks Laboratory; Program Director of ETH World
- Eva Ramminger, Head of branch libraries and user services, ETH-Bibliothek
- Dr. Hanspeter Scherbel, Departemental manager, Mathematics Department, ETH Zurich

ICT Strategy

ETH Zurich as institution

In the strategic plan 2004–2007 ETH Zurich has set itself the following goals for the year 2007:

- **to be exemplary in education** – by being highly attractive for students in a demand-oriented education landscape, by offering state-of-the-art teaching and learning based on an educational offering which allow for internal and external transfers, internationally compatible degrees, quality assurance through co-ordinated evaluations;
- to carry out leading-edge research and knowledge transfer as nationally embedded and internationally leading Research University – through the highest attractiveness for the best researchers, discovery of new areas, strong disciplinary research, consistent material support for qualitative growth;
- **to be exemplary in university management** – through optimal support of the academic core areas, professional management of activities and resources, integral resource planning regarding professorships, degree programs and services for related scientific areas, as well as development of all staff members.

The key question for the development of the global strategy for the use of ICT in education, research and services is:

1. How can information and communication technologies (ICT) contribute to reaching these goals?
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To find detailed and practical answers, in the following are specific questions concerning the core processes of ETH Zurich. During the study tour, through presentations and discussion, we hope to find suggestions to answer to these questions as well as examples of best practice.

Questions for the development of the ICT Strategy

2. Teaching and learning

How can the use of ICT add value to teaching and learning?

- For which subjects/contents?
- For which forms of learning (e.g. self-study, “blended learning”, group work, distance learning...)?
- On which levels (basic year, Bachelor’s program, Master’s program, doctorate, continuing education)?

How should the learning control be designed, if ICT are increasingly used in education? Under which conditions can/must ICT aids be allowed in exams?

Which ICT tools and technologies (web-based learning platforms, laptops, computer labs, video conferencing, video streaming...) are particularly suited for which contents and learning forms?

Which measures (technical, pedagogical, financial support, training for faculty, basic module “ICT Literacy” for students...) are necessary in order to facilitate the use of ICT?

How can the administrative work of teaching and administrative staff be supported and made more efficient with the help of ICT? Are there additional ICT tools and services that could facilitate the planning and organization of the studies and the document and knowledge management (inscription, selection of courses, management of the ECTS credits, uniform web environment for all courses...)?

3. Continuing education

How can ICT be used to support continuing education? How can ICT be used to increase learning flexibility (independence of time and place, minimized absence from workplace, self-paced learning, access to up-to-date learning content, relevance to practice...)?

What incentives could be put in place to support the continuing education goals?

How can the synergies between the regular academic programs and continuing education be exploited? How does the use of ICT add to this potential?

4. Research

How should the priorities be set for improving the ICT infrastructure and services for research:

- for communication and cooperation with other units or persons within ETH?
- for communication and cooperation with external organizations or persons?
- to ensure the necessary computing power and communication bandwidth?
- for the provision of information?
- for information management?
- for the publication of research results?

Who should procure/develop and operate this ICT infrastructure (centralized/decentralized)? Why?

What measures (technical support, consulting, funding...) are necessary to facilitate the use of ICT in support of research? What are the priorities? Who should produce these services (centralized/decentralized)?

What standard ICT equipment do you consider appropriate as working environment of your doctoral students/postdocs?

- in the office?
- in the laboratory?
- when travelling?
- at home?

5. Outreach and cooperation with business, industry and society

For which outreach activities is the use of ICT particularly relevant and important? What ICT tools are particularly suited (target-group-specific portals, web platforms, Videostreaming...)?

What services for business, industry and society could be provided more easily or more extensively with the help of ICT? What new services should be made available with ICT (competence database, technology monitoring, networking opportunities, mentoring, knowledge transfer...)?

How could an optimal combination of internal and external ICT development be established? What criteria should be used to decide what is developed internally and what is outsourced?

6. Internal services

Which administrative and academic services could be improved or organized more efficiently with the help of ICT (management services, central scientific services)?

What additional services for ETH members should be offered as e-services?

What infrastructure components (e.g. electronic signature, access authorization...) should be developed to support e-services?

How can the additional use of ICT employment support or extend the services of the ETH Library?

What new instruments and processes must be established in order to secure the archiving of the rapidly growing quantity of electronic data for posterity?

7. General questions

How can new ICT tools and services be disseminated to a broad range of users within ETH Zurich?

How can the introduction of promising tools and technologies be made more efficient (exploration, evaluation, funding, roll out)?

According to which criteria should ICT development projects be financed? By whom?

How can the synergies between the support services of the different units (IT Services, Network of Educational Technology, IT Support groups of departments and labs...) be strengthened?

In what areas (bandwidth, data storage capacity, computing power...) is there a need to improve the ICT infrastructure?

What organizational or administrative barriers should be eliminated in order better to tap the potential of new technologies (employment conditions, restrictions when using external funding...)?

Are their specific challenges related to the protection of intellectual property in the field of ICT developments?