

Intermediate Evaluation of the ETH World Programme:

Report of the Peer Review Committee
submitted to the Executive Board of the
Swiss Federal Institute of Technology Zurich,
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Intermediate Evaluation of the ETH World Programme: Report of the Peer Review Committee

1. Introduction

The Executive Board of the Swiss Federal Institute of Technology (ETH) Zurich strives to provide excellent conditions and a state-of-the-art infrastructure for research and education and for the related services. As one of the strategic measures to this end, the Board has initiated the programme “ETH World”, which is being implemented as a project of the Vice-President Planning and Logistics.

The objective of ETH World is “to establish a virtual space for communication and cooperation in support of teaching and learning, research and services, independent of time and place”. The programme extends over a five-year period from 2000–2005. As part of the quality assurance measures of the programme, the Executive Board of ETH is responsible for conducting an intermediate evaluation of the programme in 2003, which should cover the period from 2000 to 2003, comprising both a self-evaluation report and an international peer review visit and report.

The peer review committee consisted of

Dr Anthony W. Bates
Dr Daniel G. Bobrow
Professor Dr Richard Ernst
Professor Dr David Hutchison

The team was supported by a rapporteur, Dr. Sybille Reichert, Head of Academic Planning at the Office of the Vice-President for Planning and Logistics.

The evaluation visit to the ETH took place on November 4–6, 2003. During this visit, the Review Committee met with the members of the Executive Board of ETH Zurich, with representatives of the ETH World Programme Management, of the Advisory Committee, of other closely related service units and of the projects carried out within the programme. In addition to the proposed programme, the peers asked and were granted the opportunity also to have lunch with two professors who are more sceptical of and who are not involved in the ETH World initiative. The programme for the visit is given in the Annex.

The preliminary findings were communicated to the Vice-President Planning and Logistics, the director of the ETH World Programme and some members of the advisory committee of the ETH World programme at the end of the visit. On the basis of the discussions and findings, the following report was drafted.

2. Mandate of the Peer Review Committee

The international peer review was mandated to help direct the future strategy, generate new ideas and improve the implementation of the ETH World programme. Since the review is explicitly not intended as an accountability exercise, the peers have refrained from a detailed look at the budget of the programme. Regarding expenditures, only relative weights of expenditure and general questions of efficient use of funds are addressed in this report.

In their evaluation, the peers were asked to address the following areas:

- 1) Evaluation of the objectives of the ETH World programme and of their compatibility with the strategic goals of ETH Zurich.
- 2) Evaluation of the organization of the programme, a general assessment of the activities, the adequacy of funding and the efficient use of the funds.
- 3) Evaluation of the individual projects funded under the ETH World programme, their coherence with the programme objectives and how well they correspond to the needs of the stakeholders.
- 4) Recommendation as to the future directions and improvement in the implementation of the ETH World programme.

The peers were also asked to pay attention to whether or not there are major areas of relevance to the development of higher education and research, which are within the remit of the ETH World programme but have not been addressed or not sufficiently covered by the present activities.

3. Evaluation of the objectives: Goals, Vision, Strategy

The peers find the programme's goals convincing and in tune with the overall claim of the ETH as one of the leading technical universities in the world. In particular, they underline the importance of

- looking at the potential of ICT (information and communication technology) for improving communication within and between the campuses of ETH and to the outside world
- stimulating awareness of digital needs
- ensuring that ETH as a technological institution is a world leader in the use of ICT technology in a university context.

Indeed the *raison d'être* of ETH World is explicitly inserted in the Executive Board's quest to provide excellent conditions and a state-of-the-art infrastructure for research and education and for the related services since ETH World is presented as one of the strategic measures to this end. However, the peers also observed that a shift has obviously occurred in the vision: initially driven by an abstract view of a third campus with new ways of teaching and learning which would create an "augmented reality" where physical and information spaces were supposed to link, an urgent need emerged for concrete ideas as to how such spaces were to be designed and filled with meaning. Thus the early concern among the potential users about the abstractness of the vision, which was exacerbated by the loftiness of the conceptual competition, led to a change of procedure: ETH World reached out to the campus for relevant concrete ideas. This process resulted in more attention being paid to clarity of communication, to impact and focus, as well as in a number of important more easily graspable infrastructure projects with clear benefits to everyone.

But unfortunately, the process of reaching out to the campus for concrete ideas and projects was not accompanied by any attempt to define ETH's strategic goals for the use of information technology with respect to teaching, research and administrative services. Nor were the potential users involved in a process of defining such strategic goals. Thus the ETH World programme, while excellent in its overall goals, management and many individual projects, suffers from a lack of strategic guidance and overall institutional consent which it will need in order to make the best use of the limited resources.

Although the experience of ETH World can be an important influence on determining policy for ICT applications, the responsibility for initiating the process of defining strategic goals for the use and desired benefits of ICT in teaching, learning, research and services lies with the executive board of ETH, in coordination with the potential users. The chosen priorities should reflect an institutional process of goal-setting in order to be in line with the culture of ETH and its firm belief in a "society of champions". Such a process of strategy formulation should be linking departmental deliberations with those of institutional bodies or committees that are most appropriate to set or advise on strategic priorities with respect to ICT in teaching, learning, research and services.

As yet, this institutional task still lies ahead. It will clearly be the most important success factor of the ETH World programme and of the broader impact of any of its many

forward-looking and positive results. If the institution fails to formulate and decide on such strategic goals, it may well become difficult to justify and optimise the considerable investments in up-dating and exploring innovative uses of ICT or in pioneer projects such as those currently funded by ETH World or in the future.

Some examples of questions which should be addressed in such a strategy are given below. These are categorized roughly into four groups (though these categories are clearly not orthogonal):

Project choice and evaluation

- priority programme areas/teaching roles for technology-based teaching (e.g. regarding graduates (Lifelong Learning), desired balance between classroom aids, mixed mode and fully distant)
- what are the requirements for project evaluation
- identification and application of quality standards for ICT-based teaching
- what support could specific teachers and/or departments get for trying experiments that might even “fail”
- how ETH World could bring advantages to researchers (professors and others), for example by exploiting conferencing facilities or by means of information portals

Impact on Education

- the envisioned advantages in the use of information technologies for teaching
- expected benefits of use of laptops in the classroom (see the example of Acadia University in Canada), differentiated by program and discipline areas and measures of success
- current leverage points for the use of ICT in education; how to put in place a process that will keep a current picture of internally and externally perceived opportunities

Relationship to other organizations

- how ETH World relates to the strategy of the Information Services (Library) at ETH
- vision of the role of ICT in administrative services for students and staff
- relation to Continuing Education/ Lifelong Learning strategy and role of ICT in this strategy
- relationship of ETH World to the IT Services, including further development of the wireless LAN and the laptops programme
- support for outreach activities including contact with industry (for example Small to Medium-sized Enterprises, SMEs)
- the relation of the work done at ETH to that done in the external world; how to keep that view updated, and how to decide when to try internal experiments versus using outside results.

Sustainability

- funding strategies to support the sustainable application of ICT in teaching
- how to support the broader adoption of the successful tools and practices, including professional development and levels of technical and instructional support
 - the importance of seeking and including commercial partners (win-win situations), not just as a way to cover costs but as being potentially better suited to conduct the product development
- intellectual property and rights – who owns the ICT material developed, and under what conditions
- major technical bottlenecks to be solved when an overwhelmingly broad usage of ICT-based teaching is to be adopted – issues of scale.

ETH World should be seen as one of several mechanisms for exploring, developing and defining such strategies, but to do this, the ETH executive, in close collaboration with the departments and its members, must more clearly specify and clarify this role for ETH World and other mechanisms.

4. Evaluation of the organization of the programme

The ETH World programme obviously started with some organisational difficulties that have been successfully addressed in the last one and a half years. The review committee was impressed by the efforts undertaken by the programme management to add some “grounding” to the original vague vision and widen the scope of potential broader impact projects. This impression was confirmed by the obvious general approval expressed by all interviewed individuals from projects, advisory committee and related service units. Helped by the simplified organisation of the programme, its director is also to be commended for the success of his own integrative leadership. Generally, the management of projects and the programme as a whole is efficient.

It also became obvious that considerable care and attention has gone into clear communication and a coherent communication policy. The promotion of ETH World to the university has improved significantly. The peers found it more difficult to establish, however, to what extent the efforts of the programme management were actually acknowledged by the original sceptics and critics of ETH World and taken up as an offer for dialogue. Here again, it would be useful if a wider process of institutional goal-setting would reach out to the departments to indicate how innovation in teaching, learning, research and services could possibly be served by ICT.

This would complement the communication strategy of the ETH World programme management. Indeed a constructive cooperation could be established where the central strategic questions asked by the board and deliberations orchestrated by the departments were helped by the ETH World programme management, which would present relevant ICT projects and developments inside and outside the ETH World programme. In order to give potential users more opportunities to better appreciate advantages and possible drawbacks of the use of ICT in the departments, ETH World should bring in from other world-class organizations high-quality examples of ICT for teaching, learning and research purposes, to show international models of innovative

practice that could inform ETH professors on the potential benefits of ICT in their teaching provision and research practice.

The peers were impressed by the interaction of ETH World with related services. ETH World's relationship with the Centre of Teaching and Learning, NET, Filep and IT Services seems to be good, with regular information flow and mutual participation in each others' advisory structures. Moreover, the existing funding channels are clearly viewed and treated as complementary, with the related parties able to transfer proposals from one channel to the other when their focus shifts. Similar comments apply to the relations to the Centre of Teaching and Learning and IT Services. Given the good cooperation with related services, what seems to be a confusing array of similar types of funds and services (viz. ETH World, Filep, Centre of Teaching and Learning, and with its NET and didactics centre ("Didaktikzentrum")) seems to be manageable for the insiders. It remains doubtful, however, whether the potential applicants for these funds and services know whom to turn to and when, and with what expectations. Although the current interaction between ETH World and other units works well, this depends heavily on the personal skills and attitudes of the individual directors. The ETH executive should develop a clear vision of how these different units should relate, and should work towards developing an organizational structure that would support this vision.

The peers doubt whether the existing support structures allow for the broader impact which ETH and ETH World should aim for at this point. NET seems the obvious candidate for coaching a wider group of users in the use of ICT for their own innovation in teaching and learning. However, the peer review committee is not convinced that NET or any other service is currently in a position to recommend which tool or development inside and outside ETH should be used by a user who doesn't already know what he or she wants and only has a general sense of the purpose for which ICT support might be helpful. Furthermore, the resources needed to accompany the induction into the use of a given technology may be considerable and would certainly go beyond the scope of the current NET. The ETH World programme also seems to be the wrong organisational unit for such support since it is supposed to explore new developments but has neither the aim nor the resources to serve as a general support structure for the introduction of ICT. Hence, once ETH has defined a strategy for the use of ICT in teaching, learning, research and services, it would have to devise the appropriate support structures and resources to meet these aims. This should include a transition strategy from experimental to service status. Fortunately, the foundation for such a support structure is already laid so that ETH can advance quickly once the priorities are set.

While the coordination with related units works well, the review committee sees considerable room for improvement of the coordination between related ETH World projects. An initial recommendation by the programme management to the project leaders to get in touch with related projects will presumably prove insufficient to ensure that projects generally interact in their development. A case in point is the set of Portal projects inside and outside of ETH World which are in need of developing both a common underlying infrastructure and a distinct niche for their content development.

The advisory committee of ETH World seems to be working well. While it surprised the review committee to see the programme director as head of the advisory committee, such a union of executive and advisory power became understandable given the earlier fragmentation of steering roles. The open communicative style of the programme

director also seems to make this structure less problematic than it appeared at first glance. In its current composition the advisory committee offers the advantage of including technical and advanced user perspectives. At the same time, it is not the right body for strategic advice on the use of ICT at ETH. For this purpose, some institutional forum is needed. The peer review committee took note of the existence of the informatics committee of ETH as well as of the more technically oriented IT experts' committee ("ITEK"). However, since neither of these committees seems to focus on strategic questions of the use of ICT in all core processes (and the former includes members of other institutions), it is unclear to what extent they could be used for this purpose and whether they offer the right composition for larger strategic purposes relating to ICT. Whatever the case may be, some such institution-wide body will have to be created and/or used for the sort of strategic advice that ETH could benefit from as a catalyst for the setting of goals that should guide ETH World (or its successor). In other words, the ETH Executive Board needs a body that provides it with advice on strategies and policies relating both to general ICT issues and to the application of ICT for teaching, research and administration. This advisory board should be widely drawn to represent ICT and educational technology specialists as well as ETH-internal users of ICT. Such an advisory board would also require broad acceptance by the ETH academic community.

5. General assessment of the activities

In general, ETH World has had a strong impact on the potential innovative use of ICT at ETH through the establishment of a wireless LAN at strategic points in the two ETH campuses and through the project Neptun. It has accelerated the introduction of new technology on campus and generated some interesting practical demonstrations. It has helped to put in place an IT infrastructure which should enable a wide array of innovative uses of IT in teaching, learning, research and services. It is expected that the impact of the various infrastructural projects will become highly significant in the future.

ETH World has also helped to bring people together who are engaged in IT support and innovative projects and who can now develop common projects or goals together.

The present bottom-up procedure of ETH World is in line with ETH culture and style which builds on trust in faculty and their leadership, by offering incentive funds for projects which are proposed from the bottom-up. ETH World has also encouraged a trust in the ability of the service and administrative areas to build and develop a new technology base, addressing its representatives as imaginative innovators rather than as routine administrators. It has helped convince institutional leaders and many individuals that the ETH needs some separate incentive funds for projects which fall neither within the usual scope and criteria of teaching innovation projects nor within the primary aims of internally (or externally) funded research projects.

However, apart from easier access to the relevant technology, ETH World has not yet achieved a broader impact with its innovative projects. For instance, we found no evidence of widespread and sustainable use of ICT in regular teaching and learning activities, as distinct from special projects. For this purpose ETH as an institution will need wider and more concrete institutional goals concerning the use and benefits of IT in core processes as well as support structures outside of the ETH World programme itself.

Furthermore, as yet, ETH World has not been able to induce a wider mentality change in the mainstream IT users of ETH to accepting that more adventuresome uses of IT in teaching, learning or research are worth the required time investment. For such a mentality to develop, ETH World will need wider support from the academic community in general.

While producing many innovative projects and tools, a number of these projects have been too inward-looking and not always aware of relevant developments elsewhere. This seems to be particularly the case with respect to learning content management, e-learning projects and Web-based administrative systems. It is important to differentiate between technology invention/development and innovation in teaching. The attraction of inventing/developing technology inside ETH has obviously been a strong pull on many of ETH's engineering spirits but may have distracted from a closer look at technological developments and models of good technology-based teaching practice outside ETH. For instance, it is just as innovative to take already existing technological products and apply them in a new way to teaching and learning. This is less of an economic risk than re-inventing the wheel and developing new technology, which in most cases will require substantial investment and commercial partners if it is to be successful.

Having already asked for state-of-the-art descriptions in project proposals, the programme management and advisory board should push this issue further and even coach the project developers in taking full account of developments outside of ETH. Likewise, the potential benefits of creating alliances with other developers in the area, also those from the business world who may bring a different potentially complementary focus and support sources, should be explored more widely. There seems to be widespread unnecessary abstention from closer contact with the relevant business sector and no supporting brokerage service to look for the right partners. In a number of cases (e.g. Information search and communication, Chemistry Contact Network, Neptun, togETHer), projects would clearly benefit from seeking and including commercial partners (in what could easily become win-win situations) not just as a way to cover costs but as being potentially better suited to conduct the product development.

The mandate clearly stresses the formative value of this evaluation. Thus accountability is not its primary function. Nevertheless the peer review committee came to the general conclusion that the funds of the ETH World programme were put to efficient use, with the exception perhaps of aspects of the implementation of the conceptual competition. Since ETH World was to function as a pioneer programme, the investment should also be measured with the sort of yardstick applied to other forms of venture capital. Judging ETH World from that viewpoint, the project can claim effective use of its funds. It is more difficult to assess to what extent the overall level of funding was adequate since this judgement should be based on more concrete goals for ETH World than the ones defined so far, and on the value of alternative proposals for funding that are outside the scope of the peer review team. Both the programme management and the individual projects have received a level of funding that seems to be in tune with similar projects in other leading universities. In future, more resources will clearly have to be spent on adequate support structures (inside or outside ETH World) to ensure a broader impact of successful projects, as pointed out above.

6. Evaluation of individual projects

The peer review team did not have enough time to evaluate properly the individual projects. We are concerned that any negative criticism may be unjust or unfair to these projects. Nevertheless, there did seem to be several common themes that emerged from our somewhat superficial examination of projects.

Some general remarks:

- Some (stand-alone) projects have successfully made the transition into main stream use (in particular E-Collection, ETH Life).
- Wireless LAN & Neptun have met with a positive response from students, faculty and staff and have improved flexible access to information but so far they have had little impact on teaching and learning.
- Research into ICT applications in education requires networking, collaboration and partnerships if they are to succeed. The compartmentalization and isolation of ETH World projects is therefore quite disturbing. There seemed to be little interest in working collaboratively with other projects within ETH World, and little attention is being paid to what is being done outside the university in other institutions and especially the commercial sector. Too many of the ETH World projects seemed to be private research projects. Although ETH World can do more to provide integration within its own projects, the responsibility for collaboration, networking and awareness of developments outside ETH is clearly that of professors and researchers.
- The several projects associated with the identification and management of digital materials need to be better integrated, and brought under a single project with sub-projects, to ensure common standards and inter-operability. Potential end users need to be more involved in the design and application of these projects.
- There is no institutional strategy for supporting the broader adoption of these technologies.

Remarks on specific projects

Given the short amount of time for viewing each poster and discussion, the comments on individual projects should be seen as impressions rather than judgements. These have been communicated directly to the projects.

7. Recommendation as to future directions and possible improvements in the implementation of the ETH World programme

To summarise the findings and recommendations made above, the review committee would like to highlight the following points:

- There is a strong need for an organisation such as ETH Zurich to support pioneering projects. Thus ETH World or something like it should continue past 2005.
- ETH World needs stronger guidance from the ETH Executive Board, based on broad consent within the academic community of ETH, with respect to long-term strategy for the development and application of ICT throughout ETH Zürich.
- To achieve this there needs to be broader discussion throughout the institution concerning the future leverage of ICT in core processes, and articulation of issues between critics and supporters of ETH World's role in promoting these goals.
- The advantages of the usage of ICT in teaching should be clearly demonstrated in order to allow potential users to make an educated choice.
- ETH World should be encouraged to continuously evaluate technological, pedagogical and organisational ICT developments outside the institution and support testing of promising developments within ETH.
- ETH World should take more of a leadership role in identifying potentially new technological developments in broad consultation across the university. For example, for future calls for proposals, ETH World should include a pre-proposal phase to be able to prioritise two or three areas of technological developments.
- There is a need for a senior champion (leading a cross-institutional strategy group) to advise the executive board of ETH and its departments in formulating their strategy on ICT application to the core processes of the institution.



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APPENDIX

Intermediate Evaluation of ETH World

Mandate to the Peer Review Committee

From
The Executive Board of the Swiss Federal Institute of Technology Zurich,
represented by Prof. Dr. Gerhard Schmitt, Vice-President Planning and Logistics

To the Peer Review Committee:
Dr Anthony W. Bates
Dr Daniel G. Bobrow
Professor Dr Richard Ernst
Professor Dr David Hutchison

Zurich, October 24, 2003

1. Introduction

The Executive Board of the Swiss Federal Institute of Technology (ETH) Zurich strives to provide excellent conditions and a state-of-the-art infrastructure for research and education and for the related services. As one of the strategic measures to this end, the Board has initiated the program "ETH World", which is being implemented as a project of the Vice-President Planning and Logistics.

The objective of ETH World is to establish a virtual space for communication and cooperation in support of teaching and learning, research and services, independent of time and place. The duration of the program is 2000–2005. The Executive Board of ETH will perform an intermediate evaluation of the program in 2003.

2. Mandate

The review is carried out as an international peer review to help direct the future strategy, generate new ideas and improve the implementation of the ETH World program. The review is not intended as an accountability exercise. The present document mandates the aforementioned experts to perform this intermediate evaluation.

3. Scope

The evaluation covers the period from 2000 to 2003. It should address the following areas:

- 1) Evaluation of the objectives of the ETH World program and of their compatibility with the strategic goals of ETH Zurich
- 2) Evaluation of the organization of the program, a general assessment of the activities, the adequacy of funding and the efficient use of the funds
- 3) Evaluation of the individual projects funded under the ETH World program, their coherence with the program objectives and how well they correspond to the needs of the stakeholders
- 4) Recommendation as to the future directions and improvement in the implementation of the ETH World program

Attention should especially be given to the following question: Are there major areas of relevance to the development of higher education and research, which are within the remit of the ETH World program but have not been addressed or not sufficiently covered by the present activities?

4. Organization of the work of the Review Committee

- The Review Committee will elect a Chairperson from among its members. The committee will decide how to organize its work.
- A self-evaluation report by the ETH World Program Director provides the Review Committee with background information as a basis for their evaluation. The Committee members are free

to decide which objectives and activities they wish to focus the review on. They may also ask for additional information as required.

- An evaluation visit in Zurich will take place November 4–6, 2003. During this visit the Review Committee will meet with the members of the Executive Board of ETH Zurich, with representatives of the ETH World Program Management, the Advisory Committee and the projects carried out within the program. The proposed program for the visit is given in the Annex.
- Secretarial support will be provided during the on-site visit so that the Review Committee can prepare its preliminary report during that time. At the end of the visit, the Committee will present its findings to the Vice-President Planning and Logistics of ETH Zurich, Professor Gerhard Schmitt, and to the ETH World Program Director, Professor Bernhard Plattner.
- The final report of the Review Committee is to be sent to the Vice-President Planning and Logistics of ETH Zurich no later than December 10, 2003.
- All material and formal aspects of the evaluation and its organization are under the supervision of the Vice-President Planning and Logistics of ETH Zurich.

ETH World

International Peer Review 2003

PROGRAM

Tuesday, 4 November 2003

Arrival, pick-up at airport, check-in

Opportunity for individual discussions and visits

1930 Dinner with the members of the Executive Board of ETH Zurich and the ETH World Program Director, hosted by the President, Prof. Olaf Kübler

Wednesday, 5 November 2003

0845 Pick-up in hotel lobby

0900–0930 Welcome

Briefing on behalf of the ETH Executive Board / Prof. G. Schmitt

0930–1000 Internal discussion: organization of work, methods

Coffee

1000–1100 Presentation by ETH World Program Director, Prof. B. Plattner
– ETH World overview, concepts, strategic goals, organization, achievements

1100–1200 Project presentations: Infrastructure projects:
IT Building Blocks, Wireless LAN, Neptun, WebCMS, Personalized
Access to Information (Portals)

1200–1300 Lunch

1315–1330 Transfer to Campus Höggerberg

1345 Coffee

1400–1700 Project presentations (poster session)
Refreshments served during the session

1700– Review Panel closed session

1930 Dinner

Thursday, 6 November 2003

- 0845 Pick-up in hotel lobby
- 0900–1030 Meetings with members of the ETH Executive Board
– President, Prof. Olaf Kübler
– Rector, Prof. Konrad Osterwalder
– Vice-President Research and Business Relations, Prof. Ulrich Suter
– Vice-President Planning and Logistics, Prof. Gerhard Schmitt
- Coffee
- 1030–1230 Additional presentations and discussions with key persons as requested by the Review Panel
- 1230–1330 Lunch
- 1330–1600 Review Panel closed session
- 1600–1700 De-briefing, presentation of preliminary recommendations to Prof. Schmitt, Prof. Plattner and members of the Advisory Committee

Rapporteur: Dr Sybille Reichert, Office of the Vice-President Planning and Logistics

The ETH World Program Director, Prof. Bernhard Plattner, and the Project Manager, Anders Hagström, will be available for interviews and explanations during the whole duration of the review.