

] *Metalogue*

A Formative Evaluation for ETH World

Interim Report

Dr. Christoph Clases
Dipl.-Psych. Verena Friedrich
Prof. Dr. Theo Wehner

Institute of Work Psychology
Swiss Federal Institute of Technology

Foreword

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

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

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

ETH World, as a strategic initiative of the Executive Board of ETH Zurich, introduces and supports change processes that affect all aspects of the institution's activities. Information and communication technologies are the basis for the tools and services introduced by ETH World, but the social and organizational aspects of the changes are in many respects a far bigger challenge than technology itself.

Technology develops at an extremely rapid pace, whereas social and organizational change in a large, heterogeneous and decentralized institution is a much slower process. The success of ETH World will depend on our ability to reconcile this tension.

It is from this perspective that the Program Management of ETH World regards the "metalogue" project. By accompanying the program and identifying the perceived and desired changes through formative evaluation measures, "metalogue" provides a valuable contribution towards achieving the objectives of ETH World.

When assuming responsibility for ETH World in May 2002, the new Program Management carefully analyzed the program and the ongoing activities. Our conclusions were similar to the findings in this report. By consequence we have made concerted efforts to establish a clearer focus for the strategy of ETH World, to focus new projects on activities with broad impact and benefit, and to increase communication activities. We thereby wish to strengthen the coordination between the various projects and to further the understanding and acceptance within the ETH community for the changes brought about and supported by ETH World.

Zurich, 29 September 2003

Prof. Dr. Bernhard Plattner
Program Director, ETH World

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Main Findings

ETH World is an ongoing initiative whose mission is to generate new information structures at the ETH Zürich. Launched at the beginning of the year 2000 it is designed to end in December 2005. *Metalogue*, a sub-project funded by ETH World, was created in order to carry out a formative evaluation of ETH World from within the program itself. As a formative evaluation project, *Metalogue* strives to supply ETH World with process-related feedback about its overall performance and to allow the program's overall management to be adjusted based on the results of the evaluation. This interim report is one of the feedback mechanisms provided by *Metalogue*.

The data on which the findings reported here are based were collected between June 2001 and January 2003. In March 2003, our interim results were communicated to the scientific advisory board of ETH World. Various methodologies were applied and different actors were involved in the evaluation process (section 1.2). The main findings are described in the following sections.

Finding 1: In the initial stages of ETH World a clear strategic orientation was missing

The heterogeneous set of objectives formulated during the initial stages of ETH World enabled a multitude of actors to apply for projects but at the same time obscured the program's central aims. As the *Metalogue* findings show, project actors have no difficulties relating their projects to ETH World however, there is a great deal of uncertainty as to whether their interpretation is shared by other relevant actors. More specifically, the project actors who were surveyed perceived the program's purpose and design to be too vague and unclear. It is stressed that this finding applies to the initial stages of ETH World (i.e. the first two years). Further research will have to be undertaken in order to assess the extent to which the strategic orientation improved due to changes in program organisation and program management in April 2002.

Finding 2: ETH World - A multitude of affiliated worlds rather than 'one world'

It is not clear whether ETH World is going to develop a sustainable strategy to integrate the projects' products and services into one interconnected virtual world. In particular, project leaders complained that the coordination of activities at the technological level was missing, especially with respect to questions of standardization and compatibility of basic components. They perceived the danger of developing stand-alone solutions that could not easily be integrated in an overall framework and which would lead to a less sustainable implementation.

Finding 3: Access to information and services is the common denominator across various perspectives

Across various target groups and stakeholders, the idea of establishing new infostructures that enable *access to information* was rated as the most important objective for ETH World. These infostructures are to be seen as a technological basis that could be extended and developed in

many different ways such as for instance the development of a new learning culture or the intensification of research collaboration across organisational boundaries. However, the fact that the mere provision of technological infrastructures will not be sufficient to actually integrate new practices into daily work must be taken into consideration.

Finding 4: Important objective is well covered by current project activities

The results show that the issue of access to information and services (the objective rated as most important across all target groups) is covered by current project activities to a substantial degree. Specifically, according to our results, 90% of the projects currently work towards achieving this objective. This finding suggests that a good match between expectations and actual project activities exists.

Interventions

Analysing goals and expectations connected to ETH World

In order to clarify the goals, motives and expectations connected to ETH World, multiple methods were applied to map the viewpoints of different stakeholders. The initial tasks and goals of ETH World set by the program initiators were identified using document analysis, the needs and motives of project leaders were analysed through interviews, the opinions of external experts were analysed in a Delphi study, and computer science students (potential users of ETH World) were surveyed.

Fostering networking through the Metalogue Forum

The results of the analyses described above were fed into the *Metalogue forum*. The Metalogue forum brought together project leaders and program management twice during the last year. Thus far the Metalogue Forum has served two purposes. First, the forum served as a means through which project leaders and program managers jointly negotiated the contents and structure of the ETH World target system (see below). Second, it fostered the exchange of experience and knowledge. As a result, networking among ETH World projects improved.

Establishing a target system that links program and project objectives

In order to integrate the perspectives of program initiators, potential users, external experts and project leaders, the introduction of a target system for ETH World which connects program and project objectives is proposed. This target system would serve as a way to link project and program evaluations and to keep track of the changes in university work practices brought about by ETH World.

Recommendations

Use the target system for project and program evaluation

The target system proved to be a suitable method for structuring the indicators which measure the attainment of project goals. ETH World should thus actively encourage projects to use the target system as an integral part of the process of project evaluation. Moreover, the application of the target system to project evaluation and the systematic aggregation of results will provide critical feedback about the extent to which ETH World has reached its core objectives at the program level. This way, project and program evaluation are connected.

Clarify program identity

The application of the target system will supply ETH World with feedback on its project portfolio and help to clarify its identity. This will not only allow the program management to decide on interventions at the level of strategic program management but will also clarify the specific contribution of ETH World to the overall development of university work practices at ETH Zürich.

Foster the coordination of activities within ETH World

The *Metalogue* forum significantly contributed to the internal coordination and networking among ETH World projects. ETH World should consider the coordination of activities and perspectives within ETH World as a continuous task which is crucial for developing coherent mid- and long-term perspectives. In particular, additional means to support knowledge management amongst projects and with external stakeholders should be considered.

1 Introduction

In this report the interim results of the formative evaluation of ETH World are presented. The *objectives* of this report are

- to give insights into the work accomplished in *Metalogue* so far
- to provide information about strengths and weaknesses of ETH World as a program initiative
- to present recommendations on how to redesign the organisational setup of ETH World.

The report is organised as follows. First, the general approach and the objectives of the evaluation project are outlined. Second, the methodology applied in the different modules, the results obtained, and the conclusions drawn are presented (sections 2 to 4). Third, commendations for redesign are provided (section 5). Finally, a preview of the steps to be taken in *Metalogue* in the second part of the project is given (section 6).

1.1 General Approach

Metalogue was initiated by the Institute of Work Psychology (ETH Zurich) as a formative and participative means for evaluating ETH World. The following concepts constitute the basis for this project.

- *Formative evaluation: Metalogue* as a formative evaluation project is designed to contain feedback mechanisms which can be used to adjust program management based on the evaluation results. A formative evaluation can be considered to be the most sophisticated approach in evaluation research as it needs to integrate the features of summative as well as of processual evaluations. First, a formative evaluation needs to generate strategies and recommendations for steering ongoing, evolving projects in the course of their realization. This means that data that provide helpful feedback need to be generated just as is the case during a processual evaluation. Second, at the end of a formative evaluation process it is further necessary to generate an overall assessment of the project. This second feature means that a formative evaluation also shares some of the crucial characteristics of a summative evaluation.
- *Considering different perspectives: Metalogue* is designed as a participative (i.e. stakeholder-oriented evaluation). In the case of ETH World, the stakeholders are: the initiators of the program, the project leaders (working on projects funded by ETH World), and the (potential) users who are meant to profit from products and services developed by ETH World. In *Metalogue*, the participative approach is implemented with the development of a target system which considers the expectations and needs of various stakeholders and is used for program evaluation.

- *Program evaluation: Metalogue* was initiated in order to evaluate the performance of ETH World as a program initiative. It is important to stress that *Metalogue* does *not* evaluate the various ETH World projects, but it takes into account the results obtained by the various different projects and establishes a strategic linkage between project and program evaluation.
- *Work psychological approach: Metalogue* was designed using a work psychological approach because ETH World is considered to be an initiative that, if successful, will exert a considerable influence on university work places and the ETH Zürich as an organisation by affecting the work environments of: researchers, lecturers, administrative personell as well as those of the students.
-

1.2 Objectives and Methodological Framework

The three main objectives of *Metalogue* are:

- to identify the motives and expectations of stakeholders towards ETH World
- to identify and to evaluate the changes in university work practices due to ETH World
- to formulate strategies for the redesign of ETH World

In the first one and a half years of the project, *Metalogue* has primarily dealt with the identification of different stakeholders' motives and expectations towards ETH World.

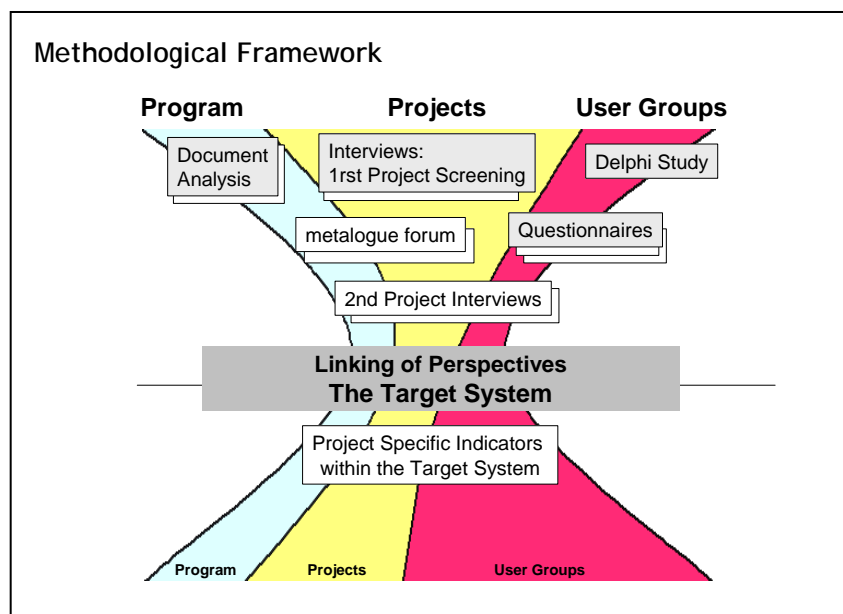


Figure 1: *Metalogue's* methodological framework

In order to reach that goal, various methods were employed (figure 1):

- Initial tasks and goals of ETH World set forth by the program initiators were identified using document analysis (see section 2.1).
- Project leaders' needs and motives were analysed in interviews and discussed in workshops (see section 2.2).
- The opinions of external experts about goals and success factors related to developing a virtual campus were analysed in a Delphi study (see section 2.3).
- Computer science students as potential users of ETH World, were surveyed in order to identify their expectations towards ETH World (see section 2.4).

The *Metalogue* forum, a series of workshops which brought together projects and program leaders twice during the last year, provides a meeting space which allows

- to negotiate the structure and contents of the ETH World target system (see section 3), and
- to exchange experience and knowledge in order to support the internal coordination and networking amongst the ETH World projects (see section 4).

2 Analysing Different Perspectives

In the following sections the perspectives of program initiators, project leaders, external experts and students (as one potential user group of ETH World) are presented.

2.1 The Program Perspective

Ten initial goals and ten initial tasks were set in June 2000 by the program initiators of ETH World (see annex A for the documentation of the whole mission statement). These goals and tasks were used by *Metalogue* as a starting point to involve internal and external stakeholders in discourse about the goals of ETH World and to develop the target system.

The comprehensive list of goals and tasks shows the wide scope of the program: It intendeds to tackle the support of both research and learning methodologies, aims to enable the decentralisation of services, allows for boundary crossing collaboration between departments and institutes, guarantees an optimized access to information and connect virtual and physical worlds – only to name some of the very sophisticated aims of the program.

2.1.1 Conclusions

From the point of view of *Metalogue*, the wide variety of objectives had several consequences.

- On the one hand, the broad variety of objectives certainly enabled ETH World to attract many different groups of people who were interested in participating in the program. During the early stages of the program the broad scope enabled a great variety of projects to be subsumed into the program.
- On the other hand, given the considerations described previously, readers of the original goals and tasks may have had difficulties understanding what ETH World was all about.

It is admitted that this interpretation is speculative to a certain extent however, it became clear that the way in which the initial goals and tasks had been formulated was far from being well-defined or operationalised (i.e. it was *not* clear what the criteria for the successful performance of ETH World could actually be).

For this reason the *Metalogue* research was focused to a large extent on understanding how the various groups of actors which are, directly (operationally) or indirectly (as potential users) involved in ETH World, perceived the initial mission statement. In the following section, data on how these initial goals and tasks were assessed by different target groups of ETH World are presented.

2.2 The Project Perspective

In April and May 2002, the representatives of all ETH World projects were interviewed by the *Metalogue* team in order to gather information about the following topics:

1. Specific objectives of the project and criteria that measure the attainment of the objectives.
2. Barriers experienced in the course of the realisation of the project and need for further support.
3. The specific role of the project in the broader context of ETH World.

It should be highlighted that the data supporting the following findings were collected before April 2002 when the change in program organisation and management was carried out. Improvements in the project leaders' assessment of ETH World due to the new project organisation have not been identified yet but will be part of the next steps in the *Metalogue* project.

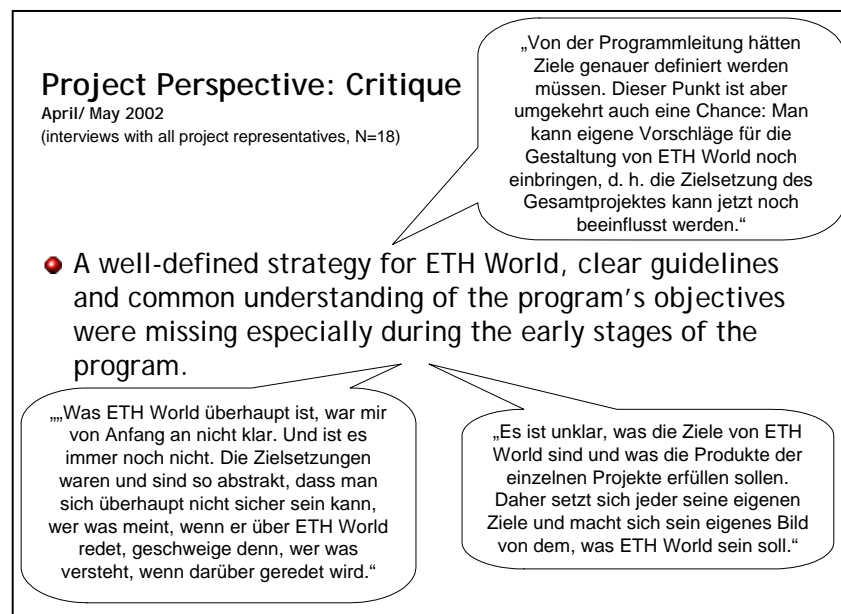


Figure 2: The project perspective: a critique of ETH World I

Project objectives and goal attainment

The objectives and criteria determined by each project have been integrated into the target system of ETH World, which is described in detail in section 3 (see also annex B).

Project barriers and need for further support

The answers to question number 2 brought about not only a first critique of the organisation of the program, but also constructive suggestions for improving the performance of the projects and of ETH World.

As to the critique, almost all (14 out of 17) of the projects missed a clear guideline with respect to the overall strategy. In line with this finding, data also show that a common understanding of the overall objectives of ETH World was missing (see figure 2 for illustrative citations). This critique focused on early stages of the program initiative in particular, however, it also referred to the state of affairs in April / May 2002 when at least some of the projects already were at the end of their timeline.

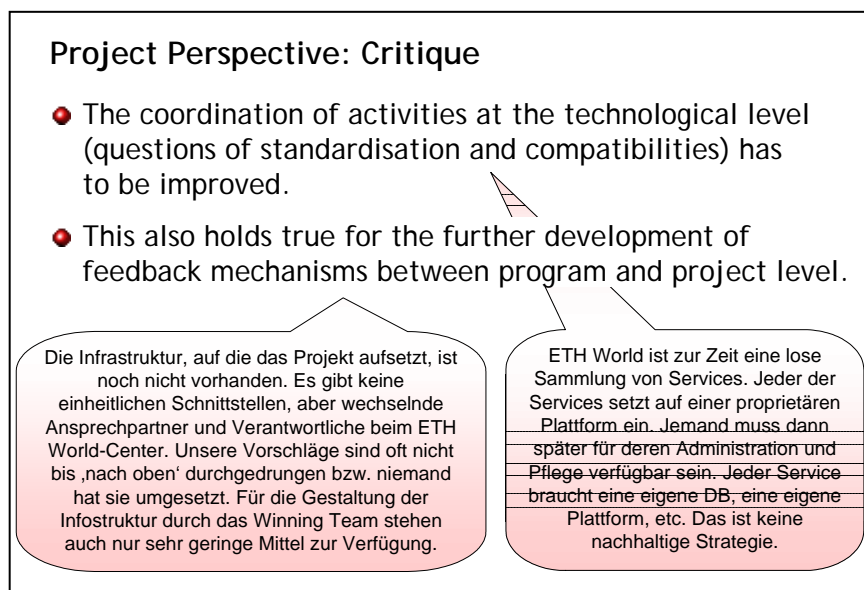


Figure 3: The project perspective: critique of ETH World II

As a further critique, the project leaders criticised that coordination of activities at the technological level was missing, especially with respect to questions of standardization and compatibility of basic components (figure 3). This critique was also due to the perception that at the program level the core objectives were too imprecise and unstable. At that time it was fairly unclear to project leaders whether ETH World was about creating a multitude of virtual university worlds, a common space for interaction, a virtual campus, or “simply a basic infostructure” for various services.

As a result of these issues, project leaders perceived the danger of developing stand-alone solutions that would not easily be integrated in an overall framework, leading to a less sustainable implementation and leaving the projects’ products only applicable at a local level.

With respect to the improvement of standardization and coordination, it was requested that the projects should be informed about clear program guidelines in terms of the overall system architecture which would be dependable on at least a medium-term timescale.

„Es müssen verbindliche Entscheidungen über die Systemarchitektur getroffen und kommuniziert werden. Es sollte Leute geben, die für die Festlegung von Standards zuständig sind, d. h. die Projektleitung von ETH World muss Standards definieren, um Inkompatibilitäten und organisatorische wie technische Probleme zu vermeiden.“

To improve coordination among projects, the project representatives stated that they need to be informed about who is collaborating with whom and where a given expertise is accessible. The know-how gained in various projects should be more clearly documented and made accessible.

„Es geht um die Systematisierung und Institutionalisierung des Austauschs mit anderen Leuten, die bestimmte Projekterfahrungen gemacht haben und ein bestimmtes KnowHow haben, das hilfreich wäre. Jetzt funktioniert der Austausch zwar auch, aber eher zufällig, was viele Unsicherheiten mit sich bringt.“

In figure 4, the main criticisms are listed and the main ideas expressed by our interview partners about how to address these problems are presented.

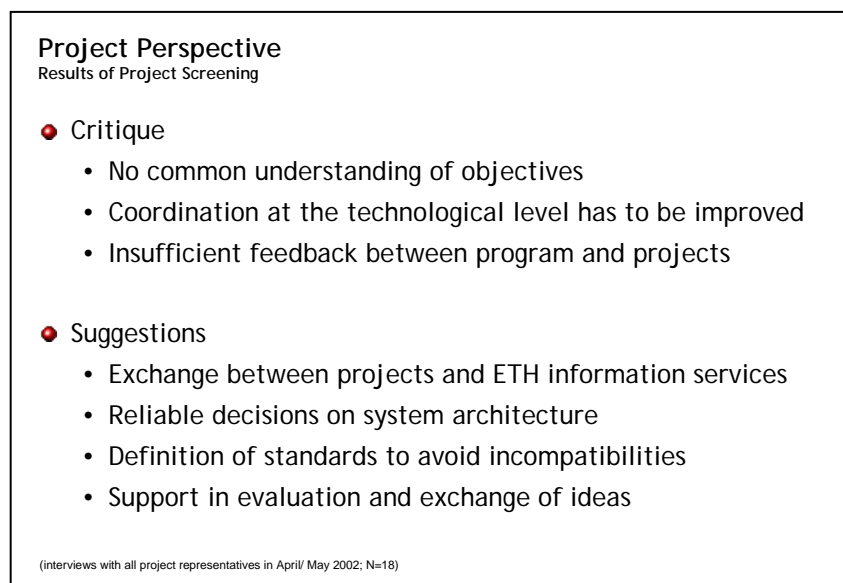


Figure 4: Critique and suggestions from the point of view of ETH World project actors

To improve the interaction and the exchange of knowledge between projects as well as between project and program level, a platform for the exchange of know-how was proposed. Though the *Metalogue* forum was partly perceived as a means to meet these needs, it was also stated that a specific platform for discussing concrete technological issues was missing. In this forum, the “Informatikdienste” of ETHZ should be conceptually integrated.

The specific role of the project in the general context of ETH World

The answers to the third question show the extent to which the projects' objectives and the objectives of ETH World as a program were related. The projects had no difficulties in relating to ETH World, however, the interview partners stated that this relationship was based on their own interpretation of what ETH World is, and that they were unsure whether their interpretation was shared by other projects.

2.2.1 Conclusions

The diversity of objectives pursued by the projects suggest that a redefinition of the goals of ETH World would be useful since the results show that there is much confusion and disagreement about the original goals and measurement criteria of ETH World. The interview data suggests that this confusion arose due to the ambiguity with which the objectives and criteria were originally formulated.

The heterogenous interpretations of what ETH World should be and the missing perception of a common direction in terms of guidelines, standardization and coordination further shed light on a certain insecurity among project leaders as to their concrete position within the program. The suggestions for improvement of collaboration and access to expertise brought forth by the project leaders encouraged the *Metalogue* team to support the exchange of experience and knowledge by means of the *Metalogue* forum.

2.3 Perspectives of Internal and External Experts

A Delphi study was conducted in order to analyse the importance and implications of the original goals and tasks set by ETH World as well as to determine additional motives and success factors with regard to the development of a virtual campus. To this end internal stakeholders (ETH World project leaders, students and administrative staff) and external experts (academic and non academic experts in virtual education) were asked to complete two consecutive questionnaires. In total, twenty one persons participated in both rounds of the study. The questionnaires were designed to obtain both quantitative and qualitative data about the *importance* of the proposed goals and tasks. Additionally, the questionnaire also included open questions about *success factors* for developing a virtual campus.

Results with regard to the proposed goals and tasks

Results of the quantitative data analyses show that the following three goals were judged as *most important*.

- Improve existing and new methods of research and education.
- Improve access to scientific and administrative services both existing and new.
- Adhere to current ethical standards.

While the first two goals were regarded as genuine ‘virtual campus’ tasks, statements show that the goal concerning the ethical standards, though regarded as important, was not considered as an intrinsic virtual campus task but rather as a general precondition.

The following goals and tasks were judged as *least important*:

- Provide optimal communication as well as globally accessible information, not least by breaking down linguistic barriers.
- Extend areas of research with regard to the requirements of an information society.
- Develop existing multilingual qualities of the ETH.

The statements show that participants were most sceptical about the issue of multilingual communication. It was widely agreed that the English language will hold sway as far as virtual education and communication via the Internet are concerned.

Results with regard to additional motives

The analysis of the qualitative data (completion of sentences) revealed *additional needs and motives* which, beyond the proposed tasks and goals, are connected to the development of a virtual campus:

- Allow for place and time independent working and learning.
- Students should be conceived of as the primary target group.
- Enable faster and easier accomplishment of different tasks.

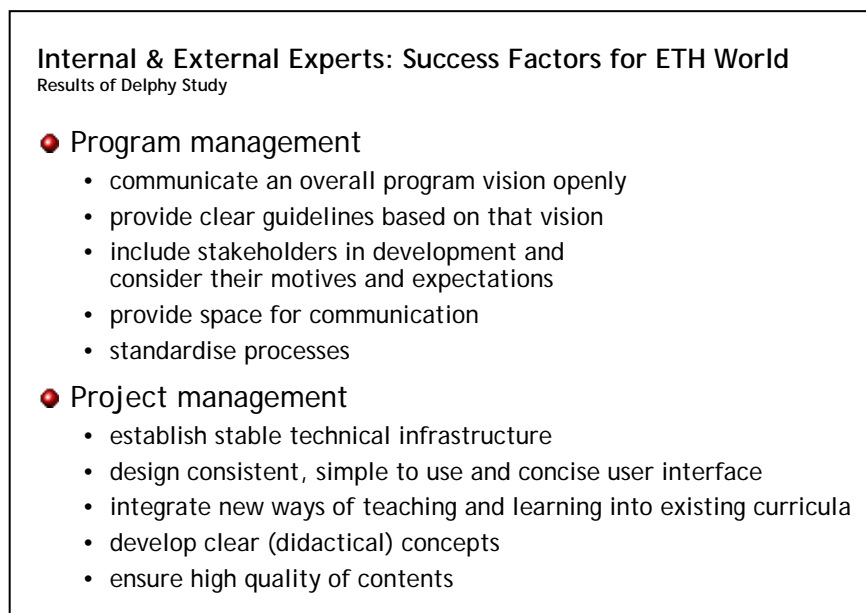


Figure 5: Success Factors for ETH World addressing program and project management

Success factors

The content analyses of the open responses about *success factors* brought about recommendations addressing both program and project management (figure 5). With regard to program management, the importance of clear goals, inclusion of stakeholders, space for communication and the standardisation of processes were named as important success factors in developing a virtual campus. A stable technical infrastructure, a concise user interface, sustainable embedding of new solutions into the existing organisation, clear concepts and high quality should be of concern for the management of projects.

2.4 User Groups' Perspectives: Computer Science Students

In the winter terms of 2000 and 2001 questionnaires were administered to students in the Computer Science Department at the ETHZ. Students were provided with the same questionnaire that was used in the Delphi study (i.e. the students were asked to evaluate the *importance* of the goals and tasks of ETH World from their perspective). Additionally, they were asked whether they knew what ETH World was about, and they were encouraged to express possible *fears* of and *criticisms* about ETH World.

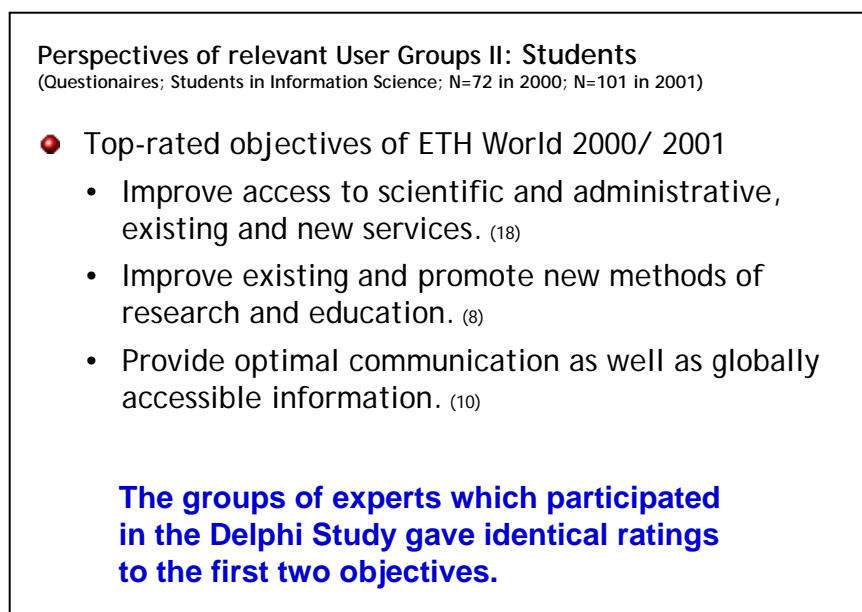


Figure 6: Objectives of ETH World with high relevance for students of computer sciences (2000 [N=72] and 2001 [N=101])

The decision to survey computer science students was triggered by the idea that they would be familiar with the issues dealt with in ETH World. It is not expected that the results obtained in this survey show a representative overview of the perceptions of students at the ETH in general. However, these data provide a first glance at the perspective of one set of possible users of

ETH World. Interestingly, figure 6 shows that the two tasks and goals which were rated as most important in both questionnaires match the results derived from the Delphi Study exactly. The third most highly-rated objective was the provision of “optimal communication as well as globally accessible information”.

In November 2001, when the students were asked about what they knew about ETH World 70% of the students did not have a concrete understanding of ETH World (figure 7).

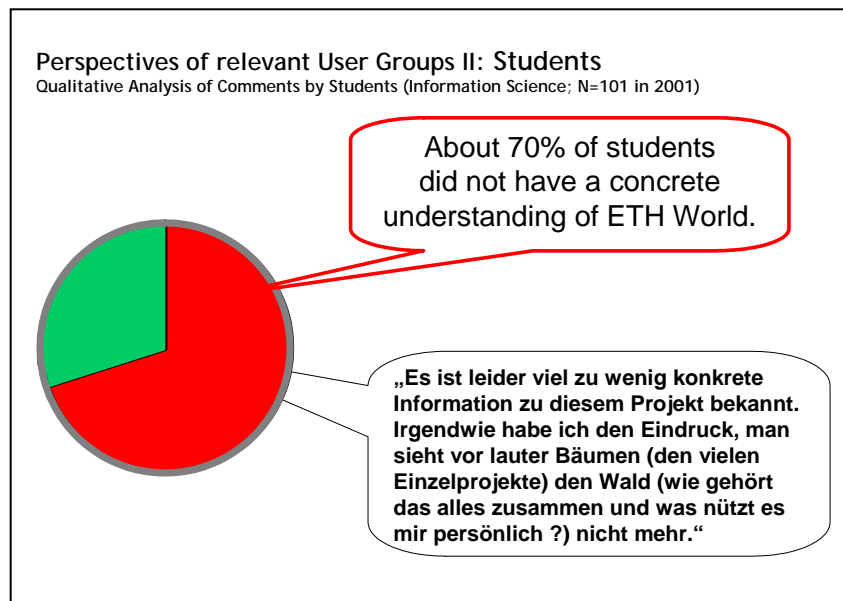


Figure 7: Unclear profile of ETH World in the perspective of students of computer science (2001 [N=101])

The profile of the program initiative was perceived as being too vague and unclear by those surveyed. However, after the students had been given detailed information about ETH World and had been asked to reflect on the impact the initiative might have on the way in which they work, their perceptions changed as they now perceived the program as being an interesting and positive initiative (figure 8).

Results also show that students are concerned that face-to-face contact among students will be replaced by electronic contact, and even more so, that face-to-face contact between students and lecturers will also disappear.

The expectation that ETH World would probably be of no practical relevance for the students within the timeframe of their studies was identified as a main obstacle for their participation in ETH World. Further, students were not aware of how to contact the ETH World representatives for requests and feedback (fig. 8).

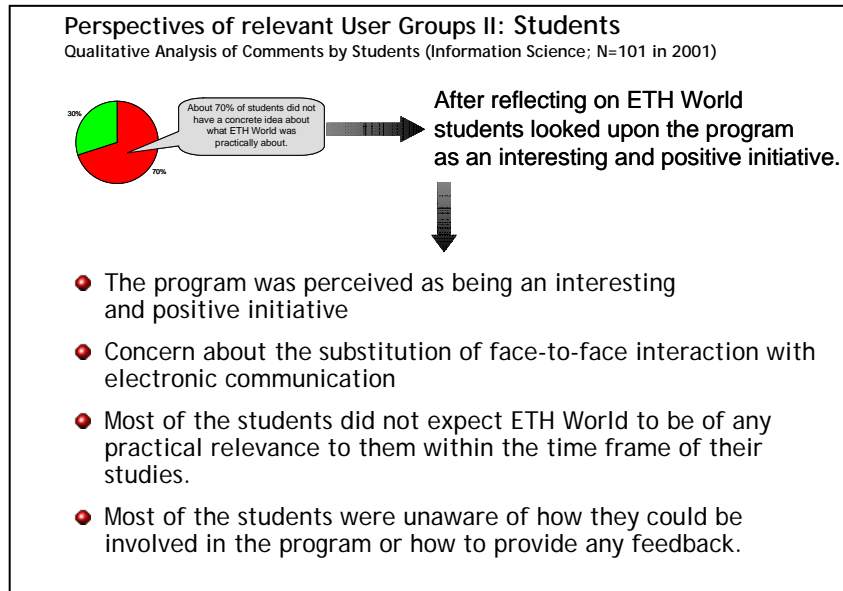


Figure 8: Computer science students' attitudes, concerns and obstacles to active participation in ETH World (2001 [N=101])

2.4.1 Conclusions

A closer look at the tasks and goals that were rated as being highly important by students shows that on the one hand students respond to the broad variety of goals encompassed by ETH World (i.e. they do appreciate support for research, lectures and administrative services). On the other hand, it becomes obvious that the notion of "access to information" is a dominant topic which supports the idea that ETH World should develop infostructures which enable greater access to information and which improve communication.

The fact that 70% of those surveyed were not aware of what ETH World is about supports the notion that, at least at the end of 2001, the purpose and the contents of ETH World were unclear and unknown to many of its potential users. This result suggests that internal ETH information about ETH World has not really been effectively disseminated to the students.

Data also suggest that ETH World will only be accepted if it successfully convinces students that the new technologies will help to *augment* rather than to replace personal, face-to-face contact between students and lecturers.

3 The Target System

A target system was established for ETH World on the basis of the initial goals and tasks, the results of the interviews with project leaders, the student survey and the Delphi study. The target system was conceived as a benchmark with which to measure and to assess the actual program implementation.

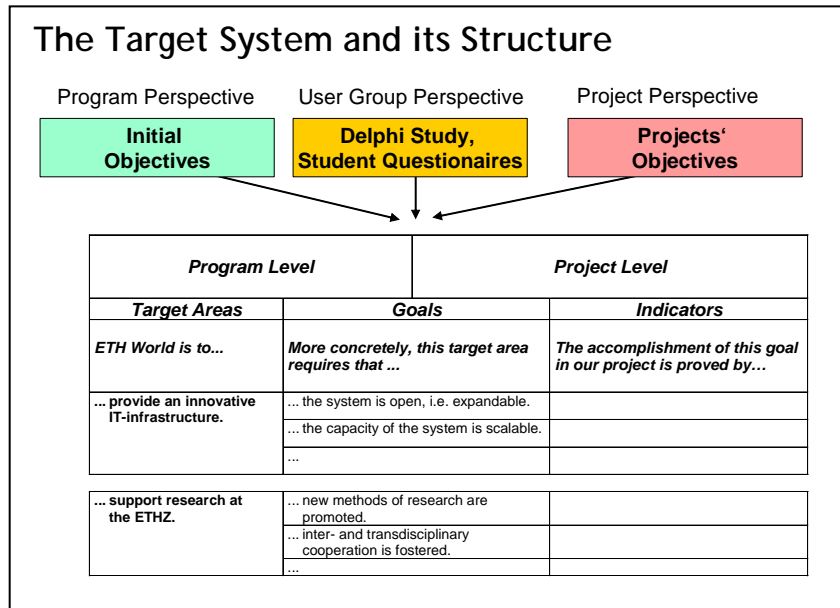


Figure 9: Connecting different perspectives – establishing the target system.

The target system was structured in a way that allows for linking *project goals* to superordinated *program goals and target areas* (figure 9). The projects themselves generate the *indicators* of goal attainment on project level, and the degree of goal accomplishment is evaluated by every single project (which is done by the projects themselves, but can also be supported by the *Metalogue* team). In this way, the results of the project evaluation can be aggregated and evidence of goal attainment at program level is achieved (for a comprehensive overview of the target system see annex B).

3.1 Analysing Priorities

As an attempt to further refine the aims and the design of ETH World, project leaders (N = 20) and a group of students (computer science, N = 106) were asked to assign weights to the target areas and goals of the target system in accordance with their perceived importance. The items at a given level were weighted in such a way that the weights sum up to 100.

Figure 10 shows the mean weights that were assigned to ETH World's target areas by project leaders (red line) and students (green line). As can be seen in this figure, the mean weights for all target areas vary between 4 and 19. The target areas concerning *access to information and services* was weighted as most important both by project leaders and students, the students' weighting being even higher than the project leaders' rating. User needs, IT infrastructure and learning culture were also weighted as important, but interestingly, the target areas concerning the learning culture was weighted significantly *less* important by students than by project leaders. The target areas pertaining to the development of standards, the ETH community and the sustainability were weighted as least important both by students and project leaders.

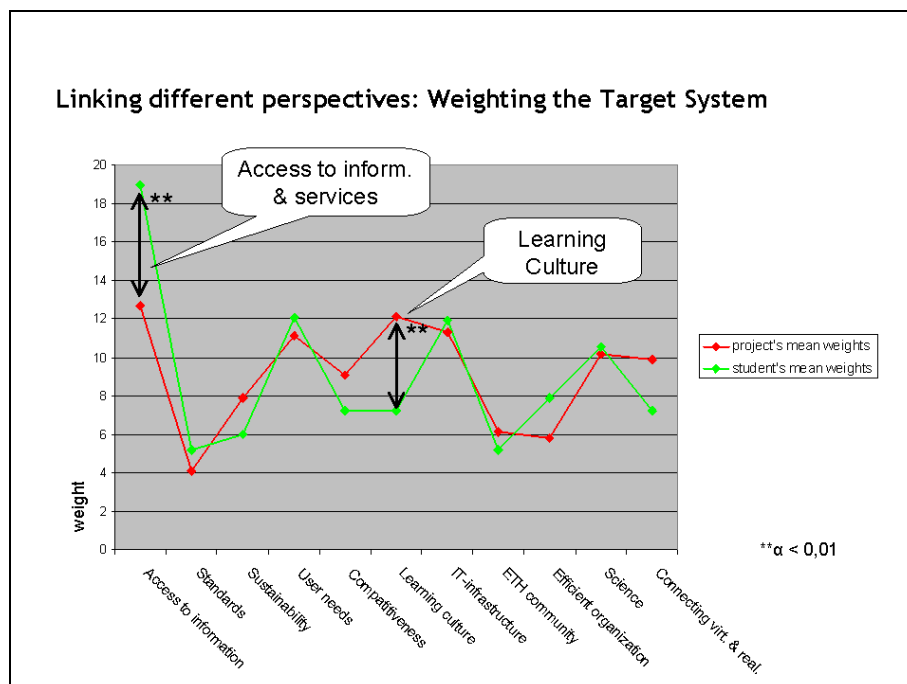


Figure 10: Weighting of ETH World target areas by project leaders and students

In order to analyse whether the weightings were homogenous within the groups, boxplots were produced for the project leaders' weightings and the students' weightings. The results of these analyses show that the weightings within the project leaders' group were extremely heterogenous. Specifically, the two target areas with the largest interquartile range were the ones that refer to *access to information and services* and to *learning culture* (interquartile range = 15). This finding suggests that the target areas with the highest mean weights (i. e. the ones that had been weighted as most important) are at the same time the most controversial ones.

3.2 Program Implementation

As a first analysis of the program implementation, the project leaders were asked to select the goals in the target system, which correspond to the goals of their respective projects. The aim of this survey was to provide an overview of the actual project activities and compare these activities to the weights allocated to ETH World’s target areas.

Figure 11 shows the results of this survey. The black line indicates the total number of projects that selected one or more goals belonging to a particular target area. The target areas with the highest project activity (eighteen projects out of twenty selected these areas) are the ones that refer to ‘access to information and services’, to the ‘establishment of standards’, and to ‘sustainability’. It becomes apparent that the target area which is rated as most important is well covered by current project activities, but at the same time two of the target areas which are rated as *most unimportant* (‘establishment of standards’ and ‘sustainability’) are also covered by 90% of the projects.

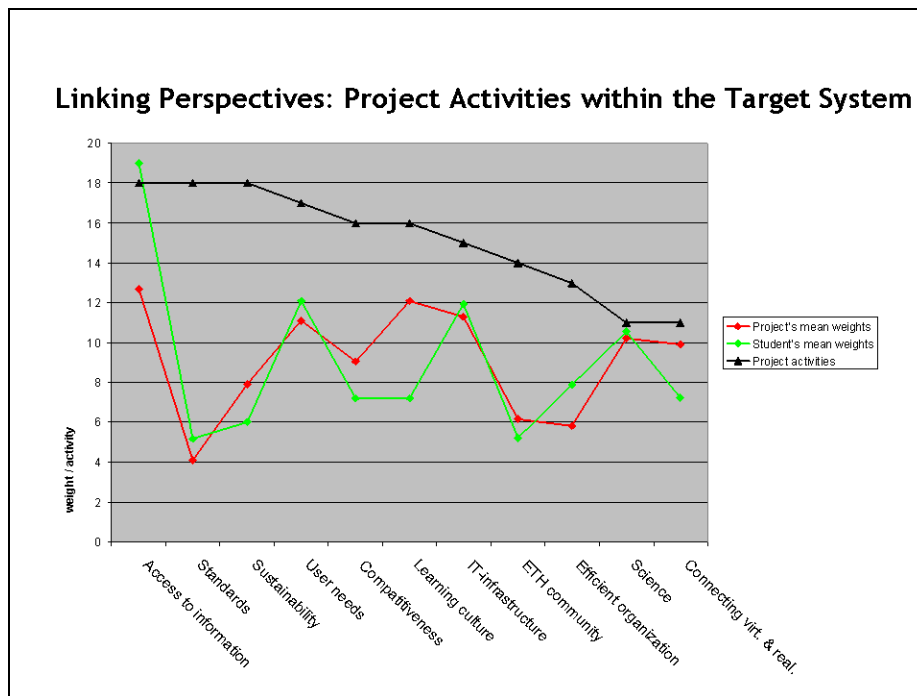


Figure 11: Project activities within ETH World in comparison to weights.

3.2.1 Conclusions

The issue of access to information and services was the target area that was weighted as most important by both project leaders and by students, and it was also rated as highly important in the previous surveys (i.e. the Delphi study and the student survey). Although the project

leaders' weightings show considerable variance, it is safe to say that different stakeholders expect ETH World to guarantee optimal access to information and services.

Considering this, the high coverage of this target area by project activities seems beneficial. At the same time 90% of the projects are working on target areas that are only of low importance. This discrepancy might call for countermeasures in terms of grant politics.

Another issue may be cause for concern: 80% of the projects contribute towards the improvement of the learning culture, a target area which appears to be a controversial topic (i. e. a target area which is rated as important by project leaders but rated as rather unimportant by students). This finding suggests that it may be useful to clarify the core aims and target areas of ETH World. In doing so, a clear demarcation between ETH World and other programs such as for instance fonds filep could be established (see section 5).

4 Internal Coordination and Networking

In the run-up to the first *Metalogue* forum which was held at the end of May 2002 (t1) – a network analysis was conducted to assess the interrelation between the ETH World projects. To this end, a questionnaire was administered to each project. The project leaders were asked to answer the following questions with regard to all other projects:

- Do the results of project X affect my project?
- Do the results of my project affect project X?

The analysis was conducted again after the first *Metalogue* forum in June / July 2002 (t2).

Results of questionnaire survey at t1

The findings of a joint analysis of the data collected at t1 are illustrated in figure 12. This figure depicts a graphical illustration of the project landscape of ETH World, reflecting the input-output relations between projects as perceived by the project leaders.

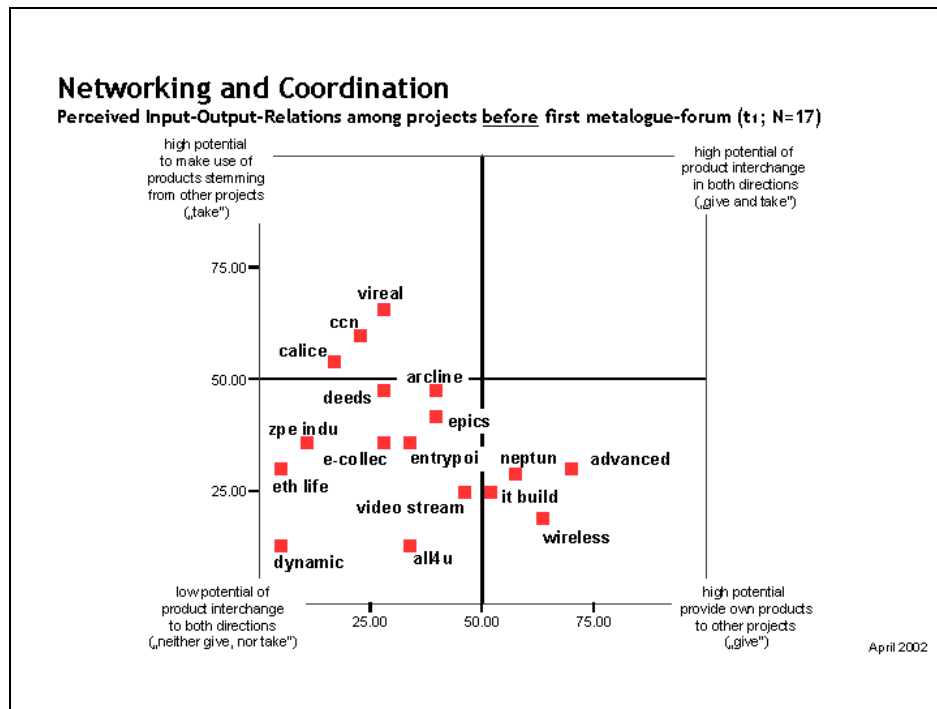


Figure 12: Internal Coordination and Networking (t1)

In this figure, the first quadrant (top right) contains projects that have a high inter-project product interchange potential (both “give” and “take”). The third quadrant (bottom left) represents the opposite case (i. e. projects with a low potential for both making use of and providing products for other projects). The second quadrant (bottom right) represents projects which are judged as being unable to profit from other project’s products but whose products may be of use to other

projects. The fourth quadrant (top left) represents project that may use other projects' products, but that cannot provide products for other projects.

The results depicted in figure 13 show that 10 out of 17 projects are located in the third quadrant. These projects show only a low potential for both making use of and providing products to other projects.

Improving networking with the *Metalogue* forum

One of the means with which *Metalogue* related the perspectives of the different actors involved in ETH World is through the *Metalogue forum*, which has brought together projects and program leaders twice during the last year. The forum was meant to support the networking amongst the ETH World projects. As the results show, the forum successfully influenced the way in which the relations amongst ETH World projects were perceived by project leaders.

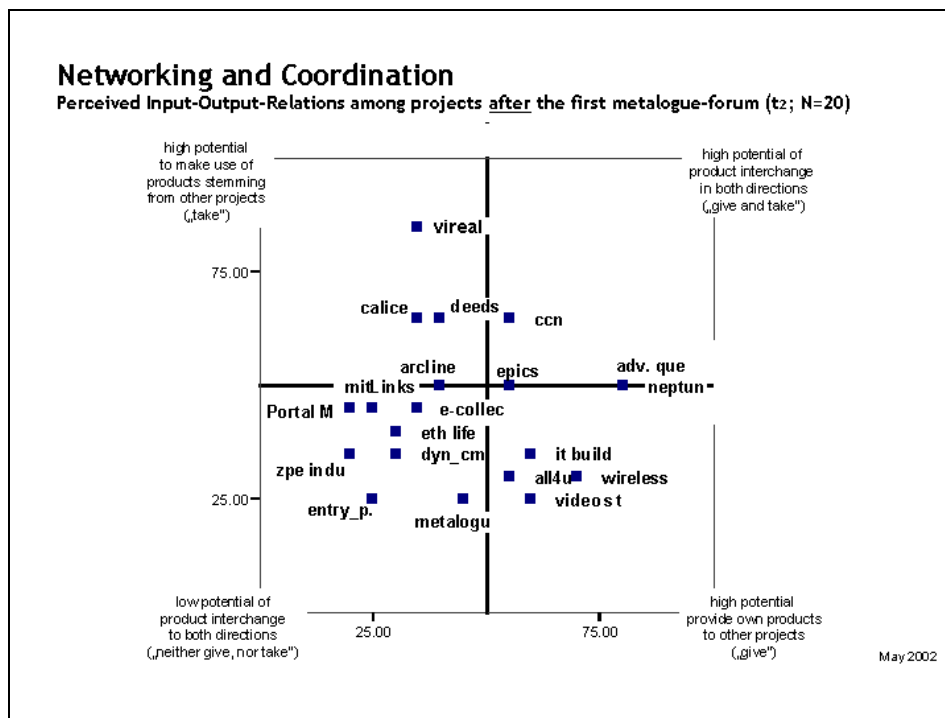


Figure 13: Internal Coordination and Networking (t2)

Results of questionnaire survey at t2

Figure 13 shows the results of the second survey. These data were collected using the same questionnaire that was used at t1. It becomes obvious that the situation changed after the exchanges and interactions which took place during the *Metalogue* forum as it is clear that the project leaders had a much more balanced picture of the project landscape at t2. In total at t2, eleven projects were now perceived as having a medium to high potential for product

interchange with other projects (both “give” and “take”) and fewer projects are located in the third quadrant.

4.1.1 Conclusions

One might conclude that the intervention of the first *Metalogue* forum led to significant changes in the project leaders’ perceptions towards each others’ projects. The opportunity to exchange experiences, to describe one’s own project and to learn about other projects obviously changed project leaders’ perceptions of the input-output-relations of their projects with respect to other projects. Nevertheless it would not be realistic to expect every project to be in the first quadrant (i. e. to have a high potential for product interchange with other projects).

What is crucial is that project leaders are now aware of which products or what knowledge they might exchange, receive or provide. This was not the case prior to the first *Metalogue* forum. As new projects emerge within the scope of ETH World and others reach completion or will be completed in the near future, this exchange of experience and knowledge should be institutionalised because purely informal contact relies on random encounters (see recommendations in next section).

5 Suggestions and Recommendations for Redesign

Based on the findings presented in this report, a variety of strategies for improving the performance of ETH World as a program are proposed. These recommendations may be divided into three interrelated management intervention areas (figure 14).

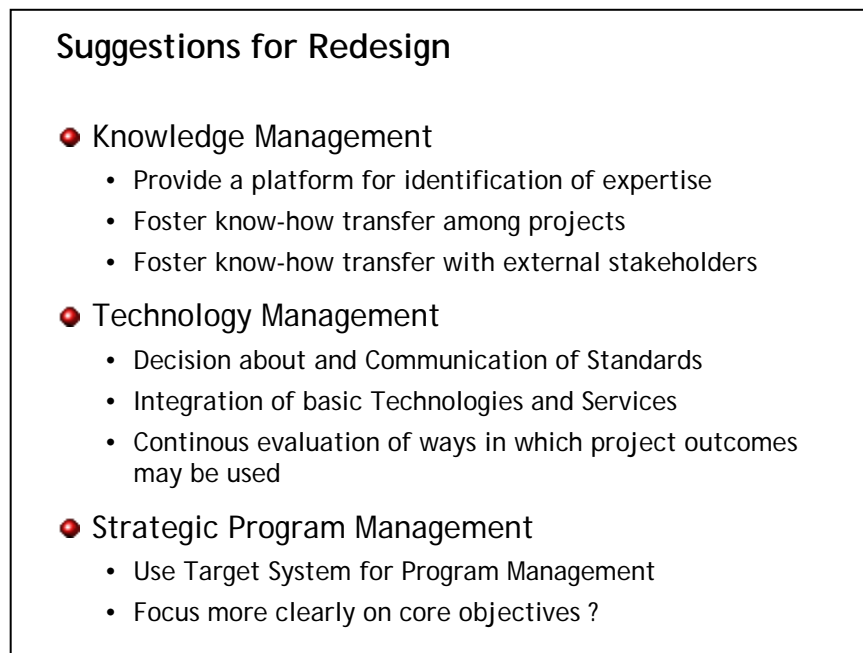


Figure 14: Overview of strategies for the redesign of ETH World

The strategies for intervention target the ways in which ETH World currently deals with the challenges of:

- *knowledge management* - the question of how to deal with the knowledge generated both at the operational level by the various ETH World projects and within the broader context of interaction with external experts
- *technology management* - the ways in which the technologies and services produced within the scope of ETH World are to be coordinated, integrated and further developed with regard to the technology landscape of ETH Zürich in general
- *strategic program management* - the strategies which program leaders should formulate in order to further nurture a sustainable development of ETH World.

5.1 Knowledge Management

With respect to the issue of knowledge management three main areas for management intervention were identified:

In the first place, a *platform for the identification of specific expertise* relevant for developing innovative infostructures should be provided. This platform should not only focus on the expertise available within the scope of ETH World, instead it should also try to integrate internal and external knowledge and expertise. For example, this could mean integrating the “Informatikdienste” as well as other program initiatives and facilities within ETHZ such as the fund *filep* and the *Network for Educational Technologies (NET)*. Additionally in order to expand the possibilities for international collaboration, relevant expertise external to the ETH Zürich should also be made visible on that platform. In line with one of the core aims of ETH World: to provide cutting edge infostructures connecting the physical with the virtual space, the setup of an electronic information platform that makes various types of expertise not only virtually visible but also physically accessible could strongly foster the *knowledge on knowledge* within and beyond the scope of ETH World.

Secondly, it is our contention that the provision of a technological platform would not be sufficient to support knowledge management needs within ETH World. For this reason it is recommended to systematically provide opportunities for the exchange of experiences and knowledge gained in *face to face settings*. The *Metalogue forum* has proven to be a useful method for coordinating different perspectives about the objectives of ETH World in general and the various projects in particular (e.g. by negotiating the target system, see section 3). It also helped to improve the internal coordination and the networking amongst ETH World projects (see section 4). Apart from the *Metalogue* forum, more specific meetings could be initiated striving to tackle specific topics that might be of relevance to a group of ETH World projects and to external stakeholders.

The organizational coordination with *external stakeholders* is the third area for management intervention. In this respect, further improvement of the coordination with other initiatives and services within and outside ETH Zürich is recommended. This especially holds true for the funds *filep* which aims to develop innovative learning environments. As the Institute of Work Psychology is involved in the evaluation process of *filep* projects and *filep* as a program initiative, it is proposed to organize an improved exchange of ideas both at the operational project level as well as at the strategic level of program management.

5.2 Technology Management

In terms of technology management it has become obvious that for the time being the question of *standardization* has been of ultimate importance for most of the projects in order to avoid the production of stand-alone solutions. Clear decisions about basic standards should be developed and communicated. This holds true especially for the long-term perspective of ETH World and the question of how to reach *sustainable* program management. Although the issue of standardization has not been rated as a primary target area for ETH World in the target system, interviews show that standardization has to be regarded as a basic precondition for integrating various modules and services developed in ETH World projects into a common and consistent technological framework.

This issue is closely related to the second technology management task, which is to *integrate basic technologies and services*. Results of our research have shown that from the point of view of the projects in particular, a lot of practical problems exist which need to be tackled (see section 2.2, figure 3).

Thirdly, the sustainable integration of products and services developed by the ETH World projects into day-to-day work practices at ETH Zürich brings about the need for continuously *evaluating* how the outputs of the various ETH World projects may be used.

5.3 Strategic Program Management

Based on our findings two main issues should be dealt with at the level of *strategic program management*. In the first place it is recommended making *use of the target system* provided by *Metalogue*. This target system was consolidated by integrating a broad variety of perspectives (program initiators, project leaders, further internal and external experts, students, etc.) and therefore represents different *motivations and expectations* with respect to ETH World. The target system provides a means to strategically and systematically link the program's objectives and the accomplishment of those objectives at the operational level. By making use of the target system in project evaluation and aggregating the results at the program level the overall performance of ETH World may be monitored.

A second issue is connected to the question of whether ETH World as a program should focus more clearly on one or two core objectives. As it becomes obvious when a closer look is given to the broad variety of objectives represented in the target system, a strategic task for program management should be to clarify whether all the objectives should be pursued with the same intensity or whether, instead, some of the objectives should be defined as *core objectives* which would then be given greater attention and receive a greater allocation of resources. However, the issue raised here is not only about resource allocation, it is also about the challenge to cope

with questions regarding the *identity and the specific contribution of ETH World* to the overall development of university work practices at ETH Zürich.

6 Preview on Next Steps

The next steps to be taken in *Metalogue* are sketched in figure 15. The main focus will be on the various user groups and the work practices which are actually or potentially influenced by the outcomes of ETH World.

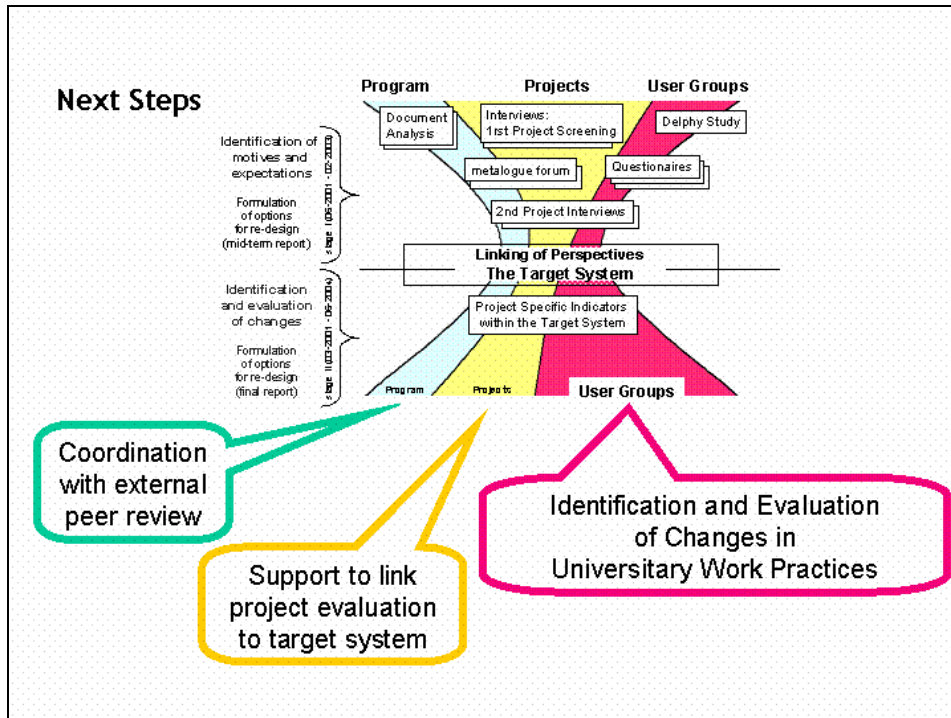


Figure 15: Preview of the next steps in the *Metalogue* Project

Steps at the program level

As the interim outcomes of *Metalogue* might be useful for other reviewing processes, a task will be to coordinate the formative evaluation process pursued by *Metalogue* with other evaluation processes planned by ETH World (e.g. the international peer review planned for 2003). On request *Metalogue* will provide reviewers with further information about the results of the program evaluation obtained thus far.

Steps on the project level

Metalogue has offered to provide consulting concerning strategies and methodologies for project evaluation. It is suggested to make use of the target system as a tool to coordinate program and project perspectives. If program management decides to encourage ETH World projects to systematically apply the target system for project evaluation a systematic linkage of project evaluation to program evaluation would be possible.

Steps on the level of user groups

The second half of the *Metalogue* project will examine the effects of ETH World on the users. In particular, the changes at the workplace ETH Zurich created by ETH World will be the main focus of attention. It is planned to have a closer look at a series of representative impact projects in order to examine the ways in which university work practices are changing in practice as a result of the products and services provided by the ETH World projects.

Annex

Part A: Initial Goals & Tasks of ETH World

Annex A is a direct quotation from the ETH World Webpage of June 2000:

“SUMMARY OF THE OVERALL PROJECT

ETH World - What is it all about?

ETH World is a project of strategic importance for the future of the ETH Zurich. With ETH World the existing physical locations, "Zentrum" and "Hönggerberg", will be augmented by a virtual space, which can be regarded as a virtual campus. With ETH World the physical infrastructure and communication will be integrated to form an infostructure. This infostructure is the backbone around which a diversified virtual space can be built. Different entrances (portals) lead into this virtual space, which itself is divided up into subspaces. This space is made dynamically utilizable through this accessibility. All members of ETH will have the opportunity to input structure to this virtual space and make it flexible and equipped for future needs. This space with the name ETH World extends the existing infrastructure and supports research, teaching and learning as well as administration at ETH Zurich. Due to the various ways of organizing this virtual space ETH World will become an exciting journey into the future, which is just beginning.

Tasks

1. ETH World should be understood as an instrument to improve existing and to promote new methods of research and education, without being an open university in the classical sense of distant learning. A significant expansion in the teaching and learning culture will lead to an improvement in the relationship between students and staff (learning teams), thus eliminating unnecessary hierarchical structures. The autonomy and responsibility of individuals for their own personal development should be greatly enhanced in the future. Intellectual discourse between all members of the ETH community will be intensified and lifelong learning and collaboration will be fostered. It will act as a comprehensive platform for visual and aural (audio) communication, furthering the growth and advancement of knowledge. This key purpose - pertaining to the development, compilation and presentation of scholarly material - should be a main objective of the proposed design schemes.
2. ETH World should act as a community-forming entity. Identification with the academic institution needs to be fostered. Its users - students, teachers, researchers, staff members, alumni, and associated individuals - form a collective. The campus as a virtual territory fulfils in this sense a symbolic function in regard to the identity of the

ETH community. This image-forming role of ETH World must be addressed by the proposals submitted.

3. ETH World is a network for communication and interaction. It enhances the human-machine and human-machine-human interface. Insofar as most users own or have direct access to communication devices, ETH World provides the interconnection network for the complete exchange of information. This question of the ingenious organization of digital and information technology must be integrated into the design proposals.
4. ETH World will comprise a space through which to navigate and communicate with other users. Its organizational structure and the quality of its visual appearance will play a substantial role in providing accessibility and ease of movement to prospective users. The structural and formal properties of this space as well as the means of navigation will need to be addressed conceptually by the design proposals.
5. ETH World will comprise different territories of various degrees of accessibility ranging from exclusively private to highly public domains including gradations therein. Each user will operate from a home base moving gradually from one territory to another. The formation of several roles and identities should be possible. Groups of users might form an enclave within the system or create a collective platform from which to operate. This field of interconnected, partially overlaid, or juxtaposed territories is to be taken into consideration by the proposed schemes.
6. ETH World could be viewed as an assemblage of heterogeneous components. Whereas its structure might be that of a loose assembly, essentially decentralized in its overall organization, hierarchies will, as necessary, be introduced locally. Access will be provided by means of multiple entry points. This combination of decentralized and centralized organizations should be a constituent part of the designs.
7. ETH World implies the chance to develop the existing multilingual qualities of the ETH and Switzerland to a new scientific culture within the ETH and in a global dimension.
8. ETH World should be conceived as a dynamic system in a state of perpetual evolution. While its structure and the elements of its formal appearance might be partially defined, the system will nevertheless need to be able to accommodate unforeseeable changes. Users will contribute actively to the growth and transformation of the system. The framework suggested needs to be open and adaptable in its structure. The technical implementation behind the proposal has to support the requirement of openness and adaptability.

9. ETH World, following the tradition of the ETH Zurich as a public institution, pursues a role of cultural significance. It must adhere to the current ethical standards of the ETH Zurich. The proposals need to comply with this overriding objective.
10. ETH World, while primarily belonging to the realm of virtual reality, must closely interact with the physical reality of existing and future facilities. The relationship between the virtual and the physical spaces must be addressed in its structure and formal manifestations. This dialogue as well as potential forms of its implementation - both within the virtual and physical domains - must be at the core of the ideas presented. ETH World should enhance the value of physical campuses. This implies as well the concentration and improved utilization of existing and future infrastructures. ETH World provides a unique opportunity for distinction by achieving a much higher degree of integration of people, new media, research, learning, and the existing architecture of the ETH Zurich within a global context. This will be all the more necessary as increasing decentralization and individualization present a growing demand for symbols that allow identification with the university as well as for a strengthening of community spirit. To this end, one part of the competition task requires solutions to the challenges of setting up these new virtual opportunities. The virtual reality is to be set in relation to the physical presence of the ETH Zurich, and both are intended to develop a common identity. For that, also the physical reality (buildings, visual appearance, infrastructure) must take account of this new identity which is made possible by the virtual campus. The ETH's outward appearance on both the virtual and the physical levels should facilitate identification and continuation of the university's global activities. The goal is the widest possible acceptance of the project and its active support by both ETH members and the general public. To this end, concepts are required for structural alterations, design elements, events etc. which will result in a sustained positive presence of the ETH and thus in a new corporate identity.

Goals

1. ETH World will support and augment research facilities with new types of communication technologies. ETH World will offer to education a vital platform for time- and space-independent, collaborative and learner-oriented activities. Special emphasis will be given to continuing education and life-long learning.
2. ETH World will improve access to scientific and administrative, existing and new services.
3. ETH World will connect the virtual and the physical spaces.
4. ETH World will provide optimal communication as well as globally accessible information, not least by breaking down linguistic barriers.

5. ETH World will strengthen the different ETH departments and their interdisciplinary collaboration.
6. ETH World will create synergies through the integration of advanced research, education and infrastructure.
7. ETH World will extend areas of research with regard to the requirements of an information society.
8. ETH World will support students, employees, professors and alumni of the ETH Zurich in their efforts to promote the development and globalization of the ETH community.
9. ETH World will provide a forum for cooperation and knowledge transfer for the benefit of business, politics, non-governmental organizations (NGOs) and society as a whole.
10. ETH World will enhance the ETH's attraction for potential students, cooperation partners and faculty members as well as for sponsors and professional bodies.“

Part B: The Target System for ETH World

The target system for ETH World is composed of the expectations and motives of different stakeholders representing the various actor groups within and outside ETH World. The sources from which the respective objectives originate are explained in the legend (see below).

	Übergeordnete Zielstellung für ETH World (target area)	Teilzielstellung für ETH World (goals)	
<i>Quellen</i>	<i>ETH World soll...</i>	<i>Konkreter bedeutet dies, dass ...</i>	<i>Quellen</i>
E	... zur Wettbewerbsfähigkeit der ETH im globalen Bildungsmarkt beitragen.	... die Attraktivität der ETH für relevante Zielgruppen verbessert wird.	E
		... mit Produkten aus ETH World Kostenersparnisse erzielt werden.	P
		... die internationale Vernetzung der ETH gefördert wird.	P, E
		... mit Produkten aus ETH World Einnahmen erzielt werden.	P
P	... einen nachhaltigen Einfluss auf die tägliche Praxis an der ETH ausüben.	... Projekterfahrungen zugänglich gemacht und ausgetauscht werden.	P
		... die Projektergebnisse und -produkte im Alltag genutzt werden.	P
E	... die Forschung an der ETH unterstützen.	... die Entwicklung neuer Forschungsmethoden gefördert wird.	E
		... inter- und transdisziplinäre Zusammenarbeit gefördert werden.	E
		... der Prozess der Erstellung wissenschaftlicher Publikationen unterstützt wird.	P

The Target System for ETH World (continued)

	Übergeordnete Zielstellung für ETH World (target area)	Teilzielstellung für ETH World (goals)	
Quellen	ETH World soll...	Konkreter bedeutet dies, dass ...	Quellen
E	... zur Entfaltung einer neuen Lernkultur beitragen.	... die Entwicklung neuer Lehrmethoden gefördert wird.	E
		... der didaktische Mehrwert neuer Lernmedien genutzt wird, indem z. B. Möglichkeiten für kooperatives und problemorientiertes Lernen ausgeschöpft werden.	S, E
		... Lernen flexibilisiert wird, d. h. individuelle Präferenzen bzgl. Lernort, Lernzeit und Lerntempo berücksichtigt werden.	E, D
		... Metakompetenzen wie Medien- und Lernkompetenz der Studierenden gestärkt werden.	P
		... die Vorbereitung von Lehreinheiten vereinfacht wird.	P
		... die didaktischen Kompetenzen der Lehrenden gestärkt werden.	P
		... neue Lehrangebote in bestehende Curricula integriert werden.	P
		... die Studierenden mehr Eigenverantwortung für ihre persönliche Entwicklung übernehmen.	E
		... kontinuierliches lebenslanges Lernen gefördert wird.	E
		... die Beziehung zwischen Lehrenden und Studierenden verbessert wird.	E, S
E	... die virtuelle mit der realen Welt verknüpfen und dadurch Synergien erzielen.	... die physische Infrastruktur effizienter genutzt wird.	E
		... Informationen und Objekte aus beiden Welten so verbunden werden, dass gewünschte Informationen schnell aufgefunden werden.	P
P	... eine innovative IT-Infrastruktur zur Verfügung stellen.	... das System offen, d. h. erweiterbar ist.	P
		... die Leistungsfähigkeit des Systems skalierbar sein muss.	P
		... die Sicherheit im System gewährleistet sein muss.	P
E	... den optimalen Zugang zu Informationen und Dienstleistungen sicherstellen.	... ein einfacher, plattformunabhängiger Zugriff auf Dienste und Informationen möglich ist.	P
		... ein zeit- und ortsunabhängiger Zugriff auf Dienste und Informationen möglich ist.	D
		... leistungsstarke Suchmechanismen zur Verfügung stehen.	P
		... die langfristige Sicherung von Daten gewährleistet ist.	P

The Target System for ETH World (continued)

	Übergeordnete Zielstellung für ETH World (target area)	Teilzielstellung für ETH World (goals)	
Quellen	ETH World soll...	Konkreter bedeutet dies, dass ...	Quellen
D	... die Bedürfnisse der Benutzer berücksichtigen.	... dem persönlichen Bedarf der Benutzer an Informationen und Dienstleistungen Rechnung getragen wird.	P
		... das Interface benutzerfreundlich gestaltet ist.	E
		... das System dynamisch, d. h. durch den Benutzer beeinflussbar ist.	E
		... das System fehlertolerant ist.	P
E	... zur Entwicklung der ETH-community beitragen.	... Kommunikation und Kooperation quer zu Hierarchien und Arbeitsschwerpunkten gefördert wird.	E
		... die Identifikation mit der ETH gestärkt wird.	E
		... die Informiertheit der Hochschulgemeinschaft sichergestellt wird.	P
P	... effizient organisiert sein und zur effizienten Organisation an der ETH beitragen.	... die Zusammenarbeit und Abstimmung von ETH World mit anderen Programmen und Institutionen gepflegt wird.	P
		... die Suche nach Kooperationspartnern an der ETH systematisiert wird.	P
		... administrative Abläufe vereinfacht und beschleunigt werden.	D
		... hierarchische Strukturen flexibilisiert werden.	E, P
P	... die Erarbeitung von Standards an der ETH vorantreiben.	... technische Standards etabliert werden.	P
		... Datenschutzbestimmungen eingehalten werden.	P
		... Copyright-Regelungen befolgt werden.	P
		... alle Aktivitäten im Rahmen von ETH World einer Qualitätssicherung bzw. Evaluation unterzogen werden.	P
		... der Zugang zu Informationen demokratisiert wird.	P

Legende

E – Programmperspektive

(mission statement der Initiatoren von ETH World vom Juni 2000, siehe S. 9)

P – Projektperspektive

(Interviews mit ETH World-Projekten und metalogue forum in 2002, siehe S. 10)

S – Perspektive der Studierenden

(Befragung von Informatikstudenten in 2000, 2001 und 2002, siehe S. 15)

D – Perspektive externer Experten und ETH-interner Beteiligter

(Delphi Studie in 2001/ 2002, siehe S. 13)