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Futur – The German Research Dialogue EFMN Foresight Brief No. 1

Title: Futur – The German Research Dialogue (Futur – der Deutsche Forschungsdialog)
Author: Susanne Giesecke of ARC Systems Research Susanne.Giesecke@arcs.ac.at
Sponsors: The Federal Ministry of Education and Research - Bundesministerium für Bildung und Forschung
Type: National foresight process - covering various fields of S&T as well as socio-economic and socio-cultural trends
Organizer: IFOK (Institut für Organisation und Kommunikation) in co-operation with Fraunhofer ISI, IZT, VDI/VDE-IT and Pixelpark
Duration: 2001-2005 **Budget:** €2-3M per year **Time Horizon:** 2020

Identifying the Future Needs of German Society

Futur - the German Research Dialogue is designed to assess the future needs and demands for science and technology and to consider their broader implications for the socio-economic and cultural development of the country. The intention is to include a large number and broad variety of participants in the exercise representing not only science and technology but also the various stakeholders of German society. So far about 1250 experts have been involved.

A New Approach to R&D Agenda Setting

A major motivation for the German Research Dialogue is the search for new topics to be funded by the Federal Ministry of Education and Research. The traditional process of generating funding priorities and setting agendas essentially covers traditional or established disciplines and does not provide opportunities to pursue truly innovative and new topics. A new approach is therefore required to bring together very different kinds of expert to produce unusual perspectives and new ideas.

The main objective is to identify new priorities for future R&D funding activities that would:

- Respond to relevant societal needs and demands,
- Bring together different fields in an interdisciplinary approach,
- Support the competitiveness of the German economy and
- Be innovative.

The identified priorities did not necessarily have to be technology related but they had to fit within the range of responsibilities of the Federal Ministry of Education and Research.

Public Participation

The German Research Dialogue has a very broad participatory approach. It is still ongoing and so far it has gone through two successive rounds of research dialogue. A third round is under preparation. At the beginning of each new round a large set of ideas and possible subjects for future research is introduced to



a large number of experts representing various scientific and societal fields – experts from research organisations, NGOs, education, culture and industry.

In the first round these ideas came from the Futur consortium. In subsequent rounds new ideas are generated by online discussions involving members of the Futur community. Some experts are nominated by the consortium or by the ministry. However anyone interested in contributing can apply to participate in the activities that make up the research dialogue, and become members of the Futur Community.

To get started participants gather together to deliberate in open conferences or in similar but not strictly structured events. The subjects that seem most interesting are discussed, selected, and condensed.

In subsequent events - spread over the following year - the topics are filtered once again and focused by groups of selected experts representing different disciplines to cover as many aspects as necessary.

This entire process is supported by creativity workshops and future workshops (Zukunftswerkstätten).

In each round of the research dialogue, representatives of the ministry are included in the working groups to make sure that the results can be translated into policy activities that fall within the competence of the ministry. The selection round is finalized by a voting process. Various approaches are used including online-voting among the actors involved. In the last round of the research dialogue somewhere between 12 and 20 subjects compete against each other until two to four priorities are identified and presented to the ministry for policy implementation.

Identification of Lead Visions

Futur - The German Research Dialogue has now entered its third round. Four 'lead visions' have been formulated and agreed upon for policy action by the ministry in charge. These topics link socio-economic and technological trends in a complex and inter-dependent way. The technology and socio-economic dimension of these visions cannot be strictly separated from each other.

These Lead Visions and further topics currently under discussion by expert focus groups in cooperation with the ministry are briefly described in the following sections. They correspond to socio-economic or cultural trends and trend breaks identified in the course of the research dialogue.

Socio-Economic Challenges

'Creating Open Access to Tomorrow's World of Learning' is a lead vision hinting at a society where every individual is capable and willing to continue learning throughout life. It envisages a society where each member is guaranteed access to his/her individual worlds of learning, adaptable to personal needs, comprising institutional as well as human resources. Other aspects of this lead vision are questions of certification of education and qualification as well as the networking of locations offering education.

'Healthy and Vital throughout Life by Prevention' is a lead vision that reflects the aging society in Germany – not only in order to save medical costs. The goal to stay healthy by preventive activities rather than mending health problems by conventional medicine is to be attained by means of health-

conscious behaviour by each individual. The focus is thus put on research and development to create the conditions for efficient prevention in the future.

'Quality of Life through Healthy Nutrition' addresses the question how a balanced diet can increase human health. The topic has recently become a lead vision and touches issues such as sustainable supply chain of nutrition, transfer from nutrition science into every-day practice, and the role of the food sector in the innovation system.

'Water as resource – visions for a guaranteed supply and access for all in the 21st Century' is not a lead vision yet but one of the topics presently discussed for becoming a research priority. This theme is going to deal with new technologies for the processing, distribution, use, regeneration and substitution of water and will be coupled with new concepts of water management for contributing to a sustainable and efficient use of water. The issue will be combined with the underlying thematic of complexity management.

Technological Trends

'Understanding thought processes' was identified as a lead vision for the exploration of how the brain manages information processing, cognition and creativity. This topic is coupled with concerns on how teaching and learning strategies can be more efficient. One anticipated area of application is the development of medical neuro-prostheses that could give physically challenged people a new perspective. A new and comprehensive approach that was to be pursued with the lead vision would be the experimental combination of computer simulation and mathematical models as it is undertaken in computational neuroscience.

'Living in a Networked World: Individual and Secure' is the title of the lead vision that wants to create a more personal access to the ongoing and accelerating networking of information technologies. It is thus oriented at adapting digital networks according to the user by acknowledging his/her autonomy and individual needs. Besides, the networked world is supposed to serve as a reliable infrastructure, allowing a bi-directional flow of information any time, any place and at any situation. Even though the networks and technologies should be individualized, the social context of the individual always has to be taken into consideration to prevent social isolation.

'Bionics: Ideas from Nature for intelligent housing' is based on the assumption that by analysing and copying construction principles as they are applied by nature housing can be adjusted and designed according to the changing demands and needs of inhabitants. This strategy is supposed to increase the quality of living and at the same time decreasing the energy consumption. Principles of sustainability are to be combined with user friendliness, aesthetics and marketability.

'Biological engineering' is a subject for a possible future lead vision aiming to use biological systems, biological engineering and engineering sciences. The expectation is that this combination would open up new possibilities for the systemic technical use of biological systems.

Bottom-up Process

The German Research Dialogue Futur was designed as a bottom up process. That is to say that the priorities were formulated over the course of a range of conferences, workshops, focus group meeting as well as online-voting. The direction and results were open. What makes this process and its results so important to German society and to the Ministry of Education and Research is the consensus it achieved over the research topics that should be addressed through funding today in order to have a comfortable life beyond the year 2020 and in order to maintain a sustainable standard of living for generations to come.

From Participation to Implementation

Futur – The German Research Dialogue is a process initiated and funded by the Federal Ministry of Education and Research and it is primarily interested in the formulation of new research priorities. The assessment of future developments falls into the domain of the ministry. Futur does not however touch upon policy issues that fall within the jurisdiction of other ministries or political actors.

For the first round of Futur no additional money was available for funding programmes that would act upon the Lead Visions by supporting research intended to contribute to their development. Nevertheless funding is available through existing R&D programmes to pursue these issues.

All issues identified as future R&D priorities by the German Research Dialogue address expected opportunities and challenges as well as obstacles to progress. Each issue raised requires an individually designed solution. It is too early to present results of the projects that have only recently started and most of these will run for a couple of years.

Redefining Funding Programmes

The Lead Visions have helped to identify a number of priorities for R&D policy makers in Germany. Some of these are being addressed on the basis of projects funded in existing or new funding programmes.

The most prominent ones which are already being acted upon are as follows:

- Among the projects with regard to the lead vision *'Living in a Networked World'* the ministry initiated *'Verisoft'* to support the development of IT security standards. The project's goal is to achieve the uniform and formal verification of computer systems and to mathematically prove the correctness of the systems used. This research will be applied to the automotive industry, security technology as well as to the medical sector.
- Another project initiated was *'SmartWeb'* in order to develop software that helps the web to understand the content of entire sentences.
- In response to the lead vision *'Understanding Thought Processes'* the ministry set up a *'National Network on Computational Neuroscience'* consisting of local centres reinforced through the concentration and expansion of already existing capacities.
- An ongoing medical research programme took up the incentives given by *'Healthy and Vital throughout Life by Prevention'*. Accordingly prevention research projects will develop new concepts and instruments against the diseases of civilisation.

Other Lead Visions have not yet been transferred into funding programmes.

The lead visions and any additional activities that might derive from the process as a whole, represent a consensus achieved by the actors involved – both the experts and the representatives from the ministry.

Issues, risks and controversial debates were addressed in the focus groups that helped to formulate the Lead Visions. This

does not mean that all critical factors have been solved. On the contrary, this should be a part of the programmes funded in response to and intended to address the Lead Vision.

Sources and References

<http://www.futur.de>

<http://www.futur.de/en/6451.htm>

Bundesministerium für Bildung und Forschung (2003):
Futur – der deutsche Forschungsdialog. Eine erste Bilanz. Bonn

About the EFMN: Policy Professionals dealing with RTD, Innovation and Economic Development increasingly recognize a need to base decisions on broadly based participative processes of deliberation and consultation with stakeholders. One of the most important tools they apply is FORESIGHT. The EFMN or European Foresight Monitoring Network supports policy professionals by monitoring and analyzing Foresight activities in the European Union, its neighbours and the world. The EFMN helps those involved in policy development to stay up to date on current practice in Foresight. It helps them to tap into a network of know-how and experience on issues related to the day to day design, management and execution of Foresight and Foresight related processes.