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First Findings from FISTERA on Foresight

by Michael Rader and Knud Böhle, ITAS

FISTERA, a thematic network on Foresight on Information Society Technologies in the European Research Area¹, has recently published its first report, an analysis of selected national foresight exercises with respect to their findings on Information Society Technologies (ISTs). The document was prepared by the Institute for Technology Assessment and Systems Analysis of Karlsruhe Research Centre. Some of the main findings on foresight in general and on IST in particular are reported here.

1 Findings on Foresight

The eight exercises were from Austria, the Czech Republic, France, Germany, Hungary, Spain, Sweden, and the United Kingdom. They were selected to represent a cross-section of recent European foresight studies with respect to client, aim and approach. With the exception of Sweden, the national government had commissioned the foresight study in each country. In most cases, the results of the foresight studies were aimed mainly at science and technology decision-makers in or close to government with the Czech study, in the one extreme, focused narrowly on the production of a draft National Research Programme. In the other extreme, Spanish foresight was focused firmly on industry, although it was being funded by ministries.

Four of the studies (Austria, Czech Republic, Hungary and Sweden) were the first endeavours of their kind in the country concerned. The Swedish study has been followed by a second started recently, but in the three other countries nothing definite has yet been decided on follow-up activities at a similar scale, although the final reports of the studies invariably contain a recommendation for further foresight.

The French study is the second of its kind in that country and there have been other foresight-like activities in the past, while in Germany there have been foresight activities of a different kind to that reported here, such as two major Delphi studies closely modelled on the Japanese example (see the article by Cuhls in

this issue). UK foresight has been organised as a programme at science ministry level and has up to now consisted of three distinct phases (see the article by Miles and Keenan on p. 41 ff. of this issue). In Spain, OPTI (Observatory of Industrial Technology Foresight) has been created as a specialised institution to coordinate foresight activities with responsibility for sectoral foresights distributed among research organisations close to various branches of industry.

Findings on Methods

The range of methods varied from panel discussions and brainstorming with fairly modest-scale involvement of actors from outside the panels, to quite sophisticated multi-method exercises including such elements as Delphi surveys, scenario-building and web discussions. There is no single “best” method or “set of methods” for foresight. The suitability of methods depends on the goals of the study and the resources available.

If the goal of the exercise is to identify technologies with great promise for the future but as yet not mature for application, greater effort should be devoted to involving experts than lay people. If the goal is to develop ideas for the application of technology through the creation of networks of stakeholders, participatory methods are essential. If a study consists of several panels or of separate elements, such as surveys, workshops or scenario building, each considering the same technology, it is essential to foresee adequate resources to ensure mutual consideration of results in other elements’ work.

Social Dimensions of Increasing Importance

It is also possible to observe that societal problems are more present in the minds of all foresight makers than in the past. This is not only visible in the advanced societal foresights.

Even in a country like France, ostensibly attempting to define “key technologies”, the items submitted for ranking had a distinct functional dimension. A similar finding was reported with respect to the items formulated for the Delphi survey in the Hungarian foresight programme, whose panels were com-

posed mainly of persons of technological inclination.

In the Czech Republic, the panel dealing with IST was on the “information society” rather than information technology, again providing evidence of the social orientation of foresight.

Increasing Use of Electronic Means of Communications in Foresight

More and more electronic means of communication are used to get more people involved and to broaden participation during the exercise proper and afterwards. Several exercises have used the web as a vehicle to submit draft reports to broad discussion. Something which has not yet been sufficiently examined is whether the use of electronic communications biases participation in one way or the other.

Electronic means are also an important vehicle for the dissemination of the results of the foresight exercises. They are effective means of making reports readily available to a broad audience whose attention they might otherwise have escaped. Another important effect might be learning from experience of others for countries or institutions embarking on their own foresight studies. At least web publication might help foresight beginners select the models which they feel are most relevant for their own endeavours and thus help them in the selection of foreign advisors.

Difficulties in Handling the Time Horizon

It is not really clear if the time horizon selected for the studies, which varied between 5 and 30 years with some studies deliberately setting the time horizon for information technologies shorter, had any impact on the thinking of participants. This could be due to difficulties for participants in truly “thinking forward” more than a few years. It is difficult to escape from “Zeitgeist”.

The question of the time horizon is sometimes regarded as a criterion to decide whether an activity qualifies as genuine foresight or not.

Most studies set their targets on longer time horizons, usually between 15 and 25 years. The dynamic nature of IST was ac

knowledge in individual cases, by setting a shorter time horizon for panels concerned with IST. However, asking participants to think decades into the future is without doubt a demanding challenge, which has probably not been met in foresight up to now. In its review of past forward-thinking studies (“Technology Hindsight”), the Swedish study identifies the importance of “Zeitgeist”, the influence of the spirit of the times. The impact of this factor is the tendency to assume that today’s problems and technologies will continue to play a similar role in the future and simply to extrapolate the current situation. A result is perhaps a lack of “visionary” concepts in most studies.

An example of the influence of “Zeitgeist” are the energies devoted in some studies to electronic commerce, which was high on the agenda of investors and policy makers at the time. In contrast, GRID computing, which is currently a priority in many countries is only mentioned in few reports.

A problem of most studies is their failure to truly investigate alternative future developments or the possibility of unexpected events (“wild cards”), such as unexpected technological breakthroughs or disrupters (such as the creation of artificial intelligence superior to human intelligence, or more modestly effective machine translation systems) or technology related catastrophes (a new year 2K problem or a collapse of the banking IT infrastructure). Other uncertainties are of a political nature, such as the further development of the European Union.

Lack of Time and Resources to Complete Studies

A complaint about several of the foresight studies was the “lack of time and resources”, either for the entire exercise or for certain of its elements, such as a Delphi study or the use of scenarios. Virtually all of the foresight studies were organised in parallel panels and produced a final synthesis report. Here, it was sometimes pointed out that the final outcome would have benefited if there had been some mutual interchange between the panels to harmonise their work in fields of overlapping interest. In other cases, the time available was too short to adequately integrate such elements as Delphi surveys (Hungary, UK first foresight cycle) or scenarios

(Hungary, Sweden). In the first UK cycle, the preparation of the Delphi survey was felt to have been inadequate. In contrast, much time is usually devoted to networking and dissemination of reports to enable feedback from stakeholders. On the whole, the discussion/feedback element seems to have been the most successful component of most foresight exercises.

Foresight Continues to Spread

Most studies underline the benefits of foresight, for instance in creating networks and awareness of the future, and contain a recommendation for the continuation of activities in this field. Even so, it is not certain if there will be more foresight in each country. Impetus might come from the European level. In Spain and the United Kingdom, bodies had been set up especially to oversee national level foresight. In the case of the UK there are regular reviews (consultations involving many stakeholders) which can result in a redirection of the programme. In Spain, each foresight study is contracted to an institution close to an industrial branch. It is still too early to judge if there will be a continuation of foresight activities in the Czech Republic or Hungary, since the project is either too recent (CR) or still at the discussion/diffusion phase (Hungary). In Sweden, a second project was launched at the end of 2002 and in Germany a new round of “Futur” has been announced (see the articles by Dietz and Cuhls in this issue), while in Austria the Delphi study seems to have triggered special studies by industry, for instance on mobile telephony, to close gaps in the national study. At present, there seem to be no plans for a new national-level study in Austria.

2 Findings on IST

Information Society Technologies (IST) or information and communication technologies (ICT) were treated as a separate area in all but one of the studies. IST played a role in many panels devoted to areas of technology other than information and communication technologies. In some studies they assumed the role of “underpinning” or key technologies. Austria did not group IST under a separate heading since the organisers of the foresight study felt that Austria would not play a major role in this area and

preparatory studies had revealed that IST were not a top priority in the results of most European Delphi studies. Delphi Austria has since been criticised for this omission. It has been suggested that the Delphi study was focused mainly on identifying fields where Austria could play a “leading role” while it might have been more useful to look at those which could be important, for instance, in creating jobs.

Results on IST Seldom Harmonised

Findings on IST tend to be scattered across the reports on each foresight study rather than concentrated in one place. With the possible exception of the Swedish foresight study, the links between the panels were weak and no attempt was made, even by steering committees, to summarise all results on IST/ICT. This may be indicative of lack of time and resources for the exercises.

Information on Visions and SWOT not Revealed in Reports

More information is required on the setting, context and actual work of the foresight studies to provide greater insight into the role of IST in national visions for the future. While virtually all final reports on the studies claim that an analysis of strengths, weaknesses, opportunities and threats (SWOT) was an important element of the studies’ work, the reports themselves contain little explicit reference to the results of such analyses, again with exceptions. The reports also contain little on the visions of the emerging information society guiding the activities on IST. It is possible that there are in fact tacit, shared assumptions amounting to such visions in the individual countries and that these are documented more explicitly elsewhere, e.g. in national e-Society initiatives.

Few Surprises from Foresight on ISTs

The findings on IST contain few surprises and tend to be very much in line with European mainstream thinking. The major visions underlying the studies with respect to IST were very similar and more or less in line with the

Lisbon objectives, Internet uptake, the Information Society for all etc.

Most studies underlined existing IST trends, such as mobile telephony, opportunities in the development of human-machine interfaces. Awareness of the specific needs and the development of interfaces and software to meet the needs of specific groups is perhaps more intensive in Europe than elsewhere in the world due to the vast diversity of cultures and traditions, and to the small size of each regional market. If smaller countries, or even regions, are to participate in full in the oncoming information society, they must adapt existing technology to their own needs. Doing so sharpens awareness of the importance of the factors involved and possibly helps to develop skills which can be put to advantage in other countries.

Major worries are expressed in several foresight studies concerning the danger of loss of qualified experts on the cutting edge areas of science to other countries, either in Europe (for the accession countries) or elsewhere (e.g. Germany, the UK). One of the reasons for this threatened “brain drain” is a shortage of students in the field world-wide, and so education for IST professions is an item high on the agenda of the foresight studies.

Applications Reflect Political Agendas

The major application areas for IST were at the same time usually those high on the political agenda for other reasons, e.g. health care and applications for the elderly. Health insurance and health care systems in many EU member states are faced with a crisis, in which IST can offer partial solutions. In addition, populations in almost all European countries are ageing, drawing attention to potential use of IST in retaining independence of the elderly, and also to the need to design IST specifically for older users. Other examples are transport, government and governance, the environment. The cross-cutting issues addressed in the studies are also usually those with high priority for political decision-makers, e.g. privacy and vulnerability, sustainable development, education etc. In such cases, urgent needs might again produce solutions that can be applied, and thus marketed, elsewhere.

Mutual Learning in Europe recommended

Despite the fact that all countries were either current or future members of the European Union, the European dimension played a minor explicit role in most foresight exercises. Despite the uniqueness of each exercise and its national orientation, there are common concerns, which could probably be addressed better in a cooperative way at the European level. This matter is being addressed both within FISTERA and other EU initiatives.

Note

- 1) This article is based on the synthesis report by Rader, M.; Böhle, K.; Hoffmann, B.; Orwat, C.; Riehm, U.: Report on Findings on IST from Eight Selected National Foresight Exercises, April 2003, <http://www.itas.fzk.de/eng/projects/fistera/wp1reps/d1.1-0304.pdf>.

Apart from the present synthesis report the case studies are being made available individually on the Internet at <http://www.itas.fzk.de/eng/projects/fistera/deliverables.htm>. They are designed as work in progress to be refined over time as additional information on various aspects is provided by local experts, members of the FISTERA network and others. Readers are kindly invited to send comments, criticism and amendments related to these case studies, which will be updated continuously.

For further information on FISTERA see the main project web site is at: <http://fistera.jrc.es>. TA-TuP No. 3/4, 11. Jahrgang – November 2002, p. 183 provides general information on the FISTERA network.

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Information and Communication Technologies at the UNIDO Technology Foresight Summit 2003

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This article is a report on the Technology Foresight Summit which took place from March 27 to 29 of this year in Budapest. It was organized by UNIDO with the main aim of discussing the situation and problems of technology development in Central and Eastern Europe and the Newly Independent States. The report concentrates mainly on the results of the two technical panels at the Summit devoted to developments and applications of Information and Communication Technologies (ICT).

1 Introduction

From March 27 to 29 of this year, UNIDO – the United Nations Industrial Development Organisation organized in Budapest, Hungary, a Technology Foresight Summit with the main aim of discussing the situation and problems of technology development in CEE (Central and Eastern Europe) and NIS (Newly Independent States) countries. The concept of the Technology Foresight Summit 2003 was elaborated by UNIDO and the Hungarian National Committee for UNIDO and TEP – the Hungarian Technology Foresight Programme in 2001. It was intended to bring together the highest policy level representatives to discuss future trends, strengths, weaknesses, threats and opportunities for their countries, companies and regions.

This event has to be seen in the broader context of UNIDO initiatives in the field of foresight. Based on the success of its foresight activities in South America, UNIDO had decided to launch the programme *Regional Initiative for Technology Foresight in Central and Eastern Europe and in the Newly Independent States*. In the framework of this programme, a series of events has taken place already before the summit, such as: a Regional Forum on Industrial Cooperation in CEE&NIS (2000 Budapest), a Regional Conference on Technology