Sustainability of the Information Society

Roadmap
of the Prospects of Shaping the Development of Information and Communications Technologies

Opening the Potential for Innovation – Heightening Environmental Compatibility

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In its report "Concept Sustainability", the 13. German Bundestag's Enquête Commission "Protection of Humanity and the Environment" pointed to the necessity of integrating aspects of sustainability into the development and utilization of modern information and communication technologies. Picking up on this idea, a motion was made in the German parliament to authorize the creation of a roadmap for sustainability in the ICT (Information and Communication Technology) sector – a resolution which was agreed upon in May 2000. In an effort to implement this resolution, the government and the **Federal Ministry of Education and Research** initiated the project NIK (*Nachhaltige Informations- und Kommunikationstechnik*, or Sustainable Information and Communications Technologies) and commissioned the German Aerospace Center (DLR) to carry out the project. The objective of NIK is to link development toward the information society with the concept of sustainability. A dialogue between the business world, the scientific community and policy makers should produce "paths of innovation" for technological, economic and social developments.

The "Roadmap of the Prospects of Shaping the Development of Information and Communication Technologies" represents a contribution toward early coordination of the medium and long-term developments in the ICT sector with the needs and demands articulated by politics and society – thereby helping to define these developments in such a way to facilitate implementation. In addition to ecological challenges and paths of innovation, the roadmap should spell out concrete objectives and measures. For the implementation phase, commitments governed by time horizons will be sought from all parties involved. In the long-run, this should strengthen regional competitiveness in the global marketplace.

In a first step, the DLR – together with its partners the Institute for Future Studies and Technology Assessment (IZT), the Beratungsbüro für Umwelt- und Unternehmensentwicklung (BfU), and the Fraunhofer Institute for Reliability and Micro-integration (IZM) – developed a conceptual framework for the roadmap. This involved analysing existing activities which promote sustainability in ICT, identifying fields of action for a first round of new activities, and defining concrete focus topics within these fields of action. The selection of the fields was then validated within the

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framework of a survey of enterprises which delivered an unequivocal vote for priority concentration on the following areas:

- Design for Environment (DfE)
- End of Life (EoL)
- Marketing und Consumption (M/C)

The defined focus topics, in addition to possessing relevance to the chosen fields of action, are profoundly current and concern a large enough number of actors to allow the creation of a roadmap within the framework of a dialogue based on voluntary commitments. The focus topics are as follows:

- Sustainability and Mobile Communication (DfE for third generation mobile communication devices)

  The objectives of this initiative include the determination and assessment of the influences which all elements within the chain of mobile (wireless) communication exercise on the environment.

  All significant players from the mobile communications sector in Germany and Europe are represented in the initiative's network.

  The roadmap to be created should set time horizons for the implementation of product specifications (e.g. for base stations, mobile telephones, routers …). Examples of specifications include lead-free connection technologies, energy efficiency, battery standards, environmental management standards for carriers, recycling standards for products, and re-use applications (front-end, middle area, back-end).

- Monitor Recycling and Display Technologies (EoL)

  The manufacturers Schott, Phillips und Samsung produce approximately two-thirds of all cathode ray tube glass in the EU at production sites in Germany. In the ZVEI working group for picture tube recycling, European manufacturers have agreed on a standardisation of the glass used in CRTs. Today, discarded monitors are in large measure collected for recycling. The potential for high-grade recycling, however, has not been adequately exhausted.

  Beyond a base of 15 % mixed glass, recycled funnel glass makes up approximately 5 % of the total melt for new funnel glass at Schott. The existing state of facilities, however, actually allows for up to 30 % - with certain modifications even as much as 50 % would be possible. The other manufacturers are operating in a pilot phase.

  In 10 to 20 years, flat screens based on LCD technology will likely have replaced CRTs. Until then, high-grade material recycling must be pursued with the highest priority, and an exit strategy must be formulated for the period of time when the supply of funnel glass available for recycling exceeds the amount which can be used in the production of new funnels. At the same time, an entrance scenario must be implemented for the recycling of LCD displays.

- Public Sector Procurement (M/C)

  The public sector represents an important customer when it comes to purchasing PC systems (PCs and peripherals) and communication devices. The use of tendering procedures and the practice of granting framework contracts which then take effect in other departments often lead to long-

standing cooperation between buyer and seller. The “power of mass procurement” can be utilised to assure that only those systems which meet the defined criteria for sustainability are considered for purchase. These criteria can be expanded still further as long as they remain attainable in both a practical and an economic sense.

The use of electronic data processing in procurement represents a further potential for increasing economic and ecological efficiency. More extensive use of ICT in procurement processes in the public sector is a subject which is currently being widely discussed – for example, in connection with demands for “leaner” government.

As a next step, scenarios and trends for each of the three topics will be discussed in focus groups and refined to the point where they can be implemented (until spring 2002). Coupled with time horizons within which the partners (voluntarily) commit themselves to implementation, each of these focus topics will ultimately lead to the development of sub-sections of the overall roadmap to be created. In autumn 2002 first experiences of the roadmapping process can be presented.