National Level Foresight in The United Kingdom and Germany

Michael Rader
Institute for Technology Assessment and Systems Analysis
Karlsruhe Research Centre
Karlsruhe, Germany

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Outline:

1. Context of Foresight in the UK and Germany

2. ICT in Foresight in the UK and Germany

3. Foresight Studies in the UK and Germany

   - UK Foresight from the 1990s to the Present

   - German Foresight from the 1990s to the Present

4. Discussion and Conclusions

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1. Context of Foresight in the
   UK and Germany (Statistics)

Country	EU-15	DE	UK
Inhabitants in thou., 2002	379,600.7	82,431.0	60,113.9
Per capita GDP in PPS 2001	23,200,0	24,100.0	23,200.0
GERD as percentage of GDP, 2001	1.94	2.52	1.86
GBAORD as percentage of GDP, 2001	0.77	0.82	0.69

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Context of Foresight in the UK and Germany (II)

- Concern about exploitation of public research by industry

- In both countries other activities – foresight is embedded in landscape of similar studies

- Research landscape probably more fragmented than in Germany – several science organisations exist (MPG, FHG, HHG, DFG) Federal responsibility for research, but not education.

- In UK mainly research councils, government departments. OST coordinates.

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- In both Germany and the UK, there have been three large-scale national foresight exercises:

- **Germany:** Delphi I (1991 -1993)

   Delphi II (1996-1998)

   „Futur" (1998 - 2000[pilot]; 2001-2002 Futur proper)
- **United Kingdom**: First Foresight Cycle (1994-1999)

   Second Foresight Cycle (1999-2001)

   Third Foresight Cycle (2002-present)

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Foresight in the UK (I)

- **Roots in the 1980s (Martin/Irvine, ACARD)**
- **Responsibility of OST (formerly cabinet office, now DTI)**
- **Aims: setting priorities, improving connections between science base and industry, daily life, foresight culture**
- **First cycle organised in panels, included Delphi**
- **"Technology" dropped from title**
- **Consultation phase after completion**
- **Review by POST**

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Foresight in the UK (II) Changes from first to second Cycle

- **First UK Cycle felt to have too great impact on S&T**
- **Need to involve other ministries (OST now in DTI)**
- **Delphi dropped in favour of „knowledge pool"**
- **Recommendation to focus more on interdisciplinary areas**
- **Shift in emphasis toward „networking", creating „forward thinking culture"**
- **Second cycle has „bottom-up" approach, associate programmes**
- **Foresight "kit" and „Young Foresight" Programme as important outcomes.**

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Foresight in the UK (III)

- Third cycle focused on 2-4 subjects per year, selected by experts
- Activities at regional level
- Some networks created in first and second cycles still exist
- Example of continuity? However, refocus after cycle 2 due to decision by new chief scientist!
- What about impact?

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Foresight in Germany (I)

- Ideas about foresight-like activities including participation in 60s/70s
- Recent foresight begins with first Delphi in 1991
- Modelled after Japanese exercise with deliberate aim of comparability
- Two national scale foresights in Germany (1991-1993, 1996 – 1998)
- Smaller Delphi-like studies with aim of informing policy in 1990s
- Impact of Delphis on research priorities probably weak, maybe indirect due to diffusion activities (tailored presentations, newsletter)

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Foresight in Germany (II)

- „Futur" launched after General election, strongly linked with concerns about weak links between science and industry
- Started with pilot on two fields 1998
- Relaunched at grand scale in 2001.
- Deliberate attempts to create broad dialogue, including young people, women, journalists, artists etc.
- Started with future workshops without specific title.
- Collection of ideas/topics which were classified and subjected to filtering process.

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Foresight in Germany (III)

- Result of filtering process are four „Leitvisionen" selected from short list
- Leitvisionen designed as framework for support programmes by BMBF
- Process benefits also emphasised, although not all target groups involved with equal success
- Process emulated in Ministry
- Repeat looks likely

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ICT in the Foresight Process: The UK

(Second foresight exercise only)

- **Treated as „underpinning technology" with specialised members in each panel**

- **Separate panel on „Information, Communications and Media"**

- **Panel had sub-group on Information Technology, Electronics and Communications.**

- **This produced reports on technologies and „visions" (scenarios on impact of ICT), also did SWOT analysis**

- **Report by ICM panel includes 11 recommendations, many on education, but also mainly on framework rather than specific IT**

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Recommendations of the UK ICM panel (2001):

- **The development of universal broadband access** is regarded as too slow if left to market development based on private initiatives. The panel recommends a Government analysis of the impacts of creating universal broadband access itself.

- **"Attention" and data of individual users are seen by the panel as an emerging new "currency"**, which may be traded by consumers in return for goods and services in much the same way as cash. Current data protection regimes are seen as a barrier to this development, and the panel urges for an adaptation of existing laws to enable consumers to balance their right to privacy with the ability to control and trade their data more precisely.

- **Development of an understanding of newly emerging peer-to-peer economic and social activities**.

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Recommendations of ICM panel (II)

- **Adaptation of competition policy** in conformity with the needs of global markets.

- **Empowerment of consumers** through digital and online applications in **education**, encouraging the growth of the "attention" economy, ease of use of services and applications, special assistance for the disadvantaged to participate in the network economy.

- **Fiscal policy for growth**, in particular to encourage technology-led start-ups and to ensure the attractiveness of the UK as a location for technology-driven investment.

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Recommendations of the ICM panel III

- **Regulation for growth and sustainability**, more specifically urging for internationally agreed open standards in electronics, computing and telecommunications. The use of the term "sustainability" in this context mainly implies avoiding the creation of fragmented solutions which are doomed to be abandoned due to lack of critical mass. This obviously also has environmental implications.

- **ITEC education, skills and training**: A major problem apart from **general IT literacy** is seen in the **shortage of skilled manpower for ITEC professions.**

- The creation of universal **broadband networks for learning** is regarded by the panel as a Government priority.

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Recommendations of the ICM Panel (IV):

- New **roles for education and teaching professionals** are needed, in particular involving the use of new technology.
- The panel recommends the creation of a **"Broad Church of Learning"**, involving both official institutions and citizens' homes. The panel recognises the opportunity for the UK to be a "centre of excellence" in developing learning materials. Private and state providers of qualifications should be accorded equal recognition.

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ICT in Futur (I)

- ICT is implicit in all 4 Leitvisionen, and not treated separately
- ICT has most relevance for two visions **„Living in the Networked Society – Individual and Secure"** and **„Understanding Thought** Processes"

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IT in Futur (II) – Leitivision „Living in the Networked Society":

- **Human-Machine Interaction and Mobile devices: language control of user interfaces, new visualisation and flexible display techniques, intelligent paper, better energy supply for mobile devices, semantic web and information logistics.**

- **Embedded Systems: Future needs are adequate and fully-fledged computers, including sensors, actors and wireless networking capacities for controlling a surrounding technical system.**

- **Software Agents: new research field of socionics; research themes:**

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IT in Futur (II) – Leitivision „Living in the Networked Society":

- **process optimisation in shaping interaction between humans and machines or social and IT processes, interaction between machines and partially autonomous systems ,legal problems.**
- **Networks and the Structure of Service Supply: body area networks, ad hoc networks with close-range and medium-range variants, development of innovative services, location based services, problem of moderating network based communication for trustworthiness and security.**
- **Security: role of open source software for IT security and basic research in quantum and DNA cryptography.**

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IT in Futur (IV) Leitvision „Understanding Thought Processes":

- computational neuroscience,

- bioanalogous information processing,

- neuroimplantations, future computer architecture based on asynchronous dynamics,

- error tolerance,

- associative data processing etc.,

- organic computing,

- neuroprotheses like artificial retina,

- systematic biology

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Preliminary findings:

- Differences probably due partly to differences in responsibility for S&T

- Early impact different: (too?) strong in UK, weak in Germany

- Many spin-off activities in the UK (regional foresight, young foresight, associate programmes)

- Networking benefits, forward-thinking culture important in both: refocus in UK, reason for initiating „Futur" as broad dialogue

- Move away from Delphi for different reasons

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Open questions:

- Has foresight genuinely influenced S&T policy, or would it have been much the same anyway?
- What happens to networks after Exercises have finished?
- Problem of exclusion from process

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Conclusions

- **History of Foresight seems coherent in UK, episodic in Germany**
- **Foresight in both countries currently focused on interdisciplinary areas**
- **Need to analyse history and context**
- **IT is mainly treated as an underpinning technology**
- **Results indicate concern in both countries about "preparedness" for the information society**
- **Much work on IT not reflected in final outcomes**