FORESIGHT on
INFORMATION SOCIETY TECHNOLOGIES
FISTERA
in the EUROPEAN RESEARCH AREA

Forschungszentrum Karlsruhe
in der Helmholtz-Gemeinschaft
**Institute for Technology Assessment
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Common Features and National Differences
- preliminary findings -

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Outline

1. Some indicators, used in the general section of the case studies, will serve to highlight country differences.

2. Each study will be characterized shortly by six criteria, and one short statement about unique or innovative features.

3. Finally, existing Foresight typologies will be applied to classify and compare the eight studies chosen.

➢ The IST-specific comparison and the comparison of "impact" are not subject of this talk.

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1 General: Some indicators /1

Country	AT	CZ	DE	ES	FR	HU	SE	UK
Inhab.	8.1	10.3	82.4	40.,4	59,3	10.2	8.9	60,1
GDP	211.9	63.3	2,071.2	651.6	1,463.7	57.9	234.1	1,588.3
Per Capita	26,300	13,289	24,100	19,100	23,600	11,840	23,100	23,200
GERD	1.86	1.33*	2.52	0.97	2.13*	0.8*	3.8	1.86
GBAORD	0.66	n.a.	0.82	0,69	0.99	n.a.	0.88	0.69

	EU 15
Inhab.	379.6
GDP	8,827.1
Per Capita	23,300
GERD	1.94
GBAORD	0.77

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1 General: Some indicators / 2

Country	AT	CZ	DE	ES	FR	HU	SE	UK
ICT market value billion EUR	14.6	5.0	137.1	36.6	97.1	4.5	22.6	131.9
as % of GDP 2001	6,87	7,84	6,62	5,62	6,63	7,86	9,66	8,31
% households Internet	49.1	11*	43.7	29.5	35.5	-	64.2	45.0
% of enterprises Internet	84.95	-	83.92	82.56	58*	-	95.21	72

	EU 15
ICT market value billion EUR	609.1
as % of GDP 2001	6.9
% households Internet	40.4
% of enterprises Internet	79.5

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Study 1: Delphi Austria

Duration:	1996 to 1998
Scope	7 problem-oriented fields in technology and society/culture Delphi
Time horizon	15 years, in society/culture Delphi also 5 and 30 years
Main Motivation	"to identify Austrian strength in R&D with sustained future potential"
Methods	Surveys / Panels / Delphi (decision Delphi) / Technology Delphi + Socio-cultural Delphi
Participation	2 surveys addressing > 300 and > 1000 people; panels with 10 to 20 expert for 7 + 7 fields, > 7000 experts addressed in Delphi

Highlight: intensive participation in preparatory phase / broad mix of stakeholders in panels / broad participation in Delphi; Society and Cultural Delphi

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Study 2: Czech Republic - Technology Foresight 2002

Duration:	2001 – 2002 (1 year)
Scope	14 thematic fields; 3 cross-cutting subject matters
Time horizon	10 years
Main motivation	Draft the National Research Programme; including identification of key technologies
Methods	Expert panels; foreign advisors, expert interviews
Participation	Limited expert involvement; 15-20 panellists

**Highlight: re-defining the national research policy /
relatively short time frame and limited participation due to
limited budget / social needs in "social transformation" and
"information society" panel.**

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Study 3: Germany FUTUR

Duration:	2001 – 2002 (ongoing)
Scope	Refining from 10,000 keywords to 6 prioritized lead-visions
Time horizon	20 years
Main Motivation	to provide input for the strategic research funding policies of the BMBF by means of an orientation towards societal goals, aiming at connecting the needs of the society with technological and social innovation; problem-oriented; shared awareness
Methods	Workshops, open space discussions, panels / scenarios – lead visions / future workshops / electronic communication (online-voting) / roadshows /
Participation	Broad societal participation beyond experts (e.g. schools, artists), general public

Highlight: broad participation / many forms of communication and knowledge production / most interesting promise to implement the lead-visions as R&D programme

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Study 4: Spain - Technological Foresight Programme

Duration:	1998 – 2001 (ongoing production of deliverables)
Scope	8 industry sectors; 3 sequential foresight studies were devoted to each of the economic sectors with a shift of focus each year
Time horizon	15 years
Main Motivation	Strenghtening the Spanish innovation system; Exploring future technological trends and needs of Spanish industry; competitiveness
Methods	Panels / Delphi / trend reports / scenario building /
Participation	More than 5000 experts and stakeholders involved in Delphi; high percentage of industry; always more than 50%; in two Delphi surveys more than 80%.

Highlight: industrial foresight / broad participation / sequential panels with shifting focus.

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Study 5: France - Technologies Clés 2005

Duration:	1998 – 1999 (published2000)
Scope	8 thematic panels; in the end 119 critical technologies
Time horizon	5 years
Main Motivation	Identifying critical technologies, which French enterprises ought to develop, and defining a national and European technology policy based on the position of France and Europe in global competition; to update former exercise
Methods	Panels / experts survey / Internet forum of experts
Participation	More or less 12 experts per panel and further 500 additional experts involved

Highlight: short time horizon / more open than 100 technologies clés / assessing the strengths of both France and the EU

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6. Hungary - Hungarian Foresight Program

Duration:	1997 – 1999 (2 years)
Scope	7 thematic panels (+ 1)
Time horizon	15 – 25 years
Main Motivation	Enhancing competitiveness; improving quality of life; identify problems to be addressed by research; identify required changes in regulation and government policies; how to meet the challenges of EU accession.
Methods	Panels / 15 to 25 background papers per panel / Delphi / visions and scenarios /
Participation	11 to 24 experts per panel; > 2,000 experts involved in Delphi; > 100 workshops

Highlight: unique case of a third generation Foresight ambition of an accession country

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Study 7: Sweden – The foresighted society

Duration:	1998 – 2000 (3 years)
Scope	8 thematic panels
Time horizon	10 – 20 years
Main Motivation	"To strengthen a futures-oriented approach in companies and organisations, to identify areas of expertise with potential for growth and renewal in Sweden, to compile information and design processed for identifying high-priority areas in which Sweden should build expertise".
Methods	Expert panels / scenario building / many workshops over a long time
Participation	Ca. 15 experts per panel; broad dissemination and awareness activities

**Highlight: not carried out on behalf of a government / shared awareness / focus on societal technology demand and use.
A novel feature: Technology Hindsight**

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Study 8: United Kingdom – Second UK Foresight Cycle

Duration:	1999 – 2002
Scope	8 panels 3 thematic panels; 30 associate programmes
Time horizon	Ca. 15 – 20 years
Main Motivation	Forward thinking; setting science and technology priorities
Methods	Expert Panels / task groups / some scenarios / consultation
Participation	Panels with public participation

**Highlight: most sophisticated design / bottom up approach /
associate 30 programmes / "young foresight"**

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Some findings/hypotheses

– Of the eight exercises reviewed, two can not be classified as fully-fledged Foresight, namely the French and the Czech exercise, because of a lack of broad participation.

– We also observe that societal problems are more present in the minds of all foresight makers than years ago. This is not only visible in advanced societal foresights.

– The role of the time horizon chosen (between 5 and 30 years) is rather unclear, but worth discussion.

– More and more electronic means of communication are used to get more people involved and to broaden participation during the proper exercise and afterwards.

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Comparison along Foresight typologies /1

Thematic class:	technology area	Economic sector	Policy area	strategic issues
Main objective:	research priority setting	National innovation system		shared awareness
Actor involvement	no direct implication	limited		Many groups of social actors

Adopted (but modified) from R. Barré 2002

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Comparison along Foresight typologies /2
Barré applied to the eight cases

Country	AT	CZ	DE	ES	FR	HU	SE	UK
Thematic class / focus								
Technological developments	**Y,** but	**Y**	—	**Y**	**Y**	**1/2**	—	**Y**
Economic sectors	**Y**	**Y**	—	**Y !**	**Y**	**Y**	—	**Y**
Policy areas	**Y**	**Y**	**1/2**	—	—	**Y**	**1/2**	**Y**
Societal problems	**Y !**	—	**Y**	—	—	—	**Y**	**Y**

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Comparison along Foresight typologies /3

Barré applied to the eight cases

Country	AT	CZ	DE	ES	FR	HU	SE	UK
Objectives								
Research Priorities	Y	Y	Y	Y	Y	Y	Y	Y
NIS	Y	Y	—	Y	Y	Y	—	Y
Shared Awareness/ FS-Culture	Y		Y	—	—	Y	Y	Y

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Comparison along Foresight typologies /4
Georghiou applied

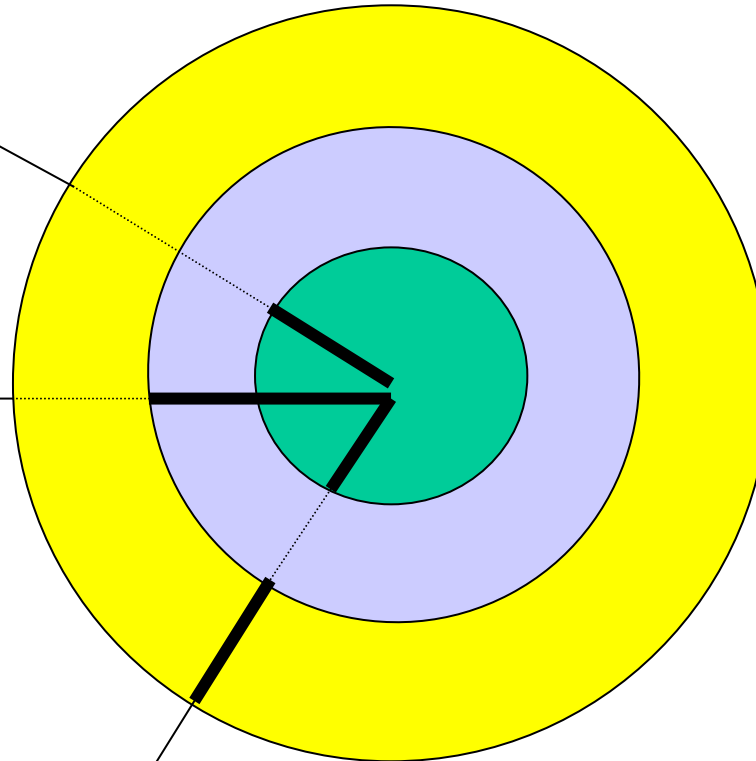| 1. Generation FS	2. Generation FS	3. Generation FS
"… consists of technology forecasts	"…. combines technology and market perspectives"	"… integrates technology, markets and the social dimension"
Main orientation: S&T system	*Main orientation:* National innovation system	*Main Orientation:* Socio-economic problems and new type of governance
Main interface: science and research policy	*Main interface:* science / research policy / industries & markets	*Main interface:* science / research policy / industries & markets / society at large
Technology Foresight	Innovation System Foresight	Societal Foresight

Types of Foresight
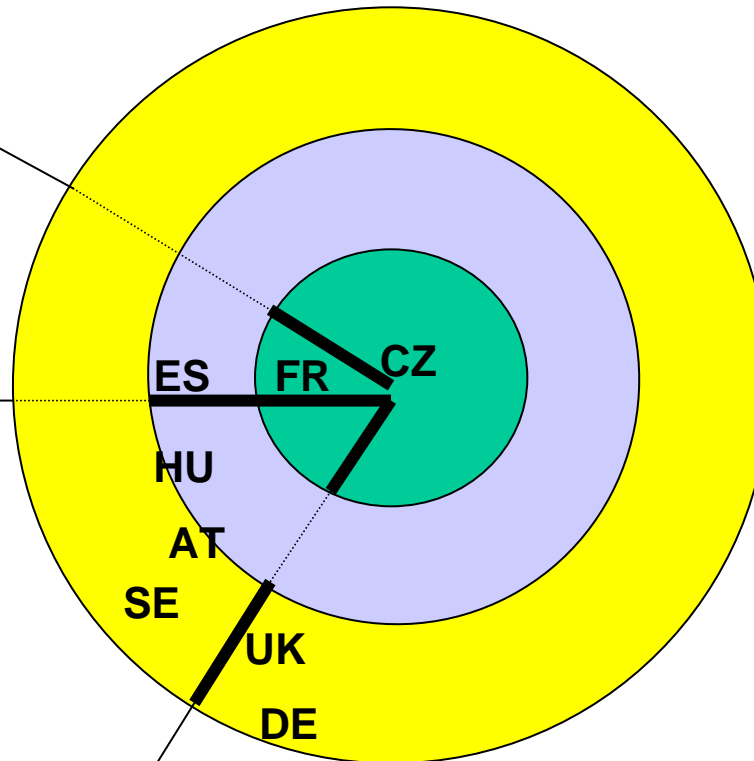
S&T Foresight

NIS - Foresight

Societal Foresight

Types of Foresight

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Final remark

➢ The findings presented are preliminary and deserve validation by experts and insiders.

Thank you very much for your attention.