FORESIGHT FOR CHALLENGE ORIENTED RTI POLICY

Recent Experience from Germany
PACITA Conference, Prague 13-15th of March 2013

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Prediction is hard –

especially about the future

(Niels Bohr, Danish physicist)

Foresight supports research and innovation policy

BMBF-Foresight is a strategic tool with the aim to anticipate long-term developments in society and research & technology in early stages

BMBF-Foresight anticipates

- **long-term developments** in research and technology
- and **societal challenges**

on an interdisciplinary basis with a timeline of over 10 years

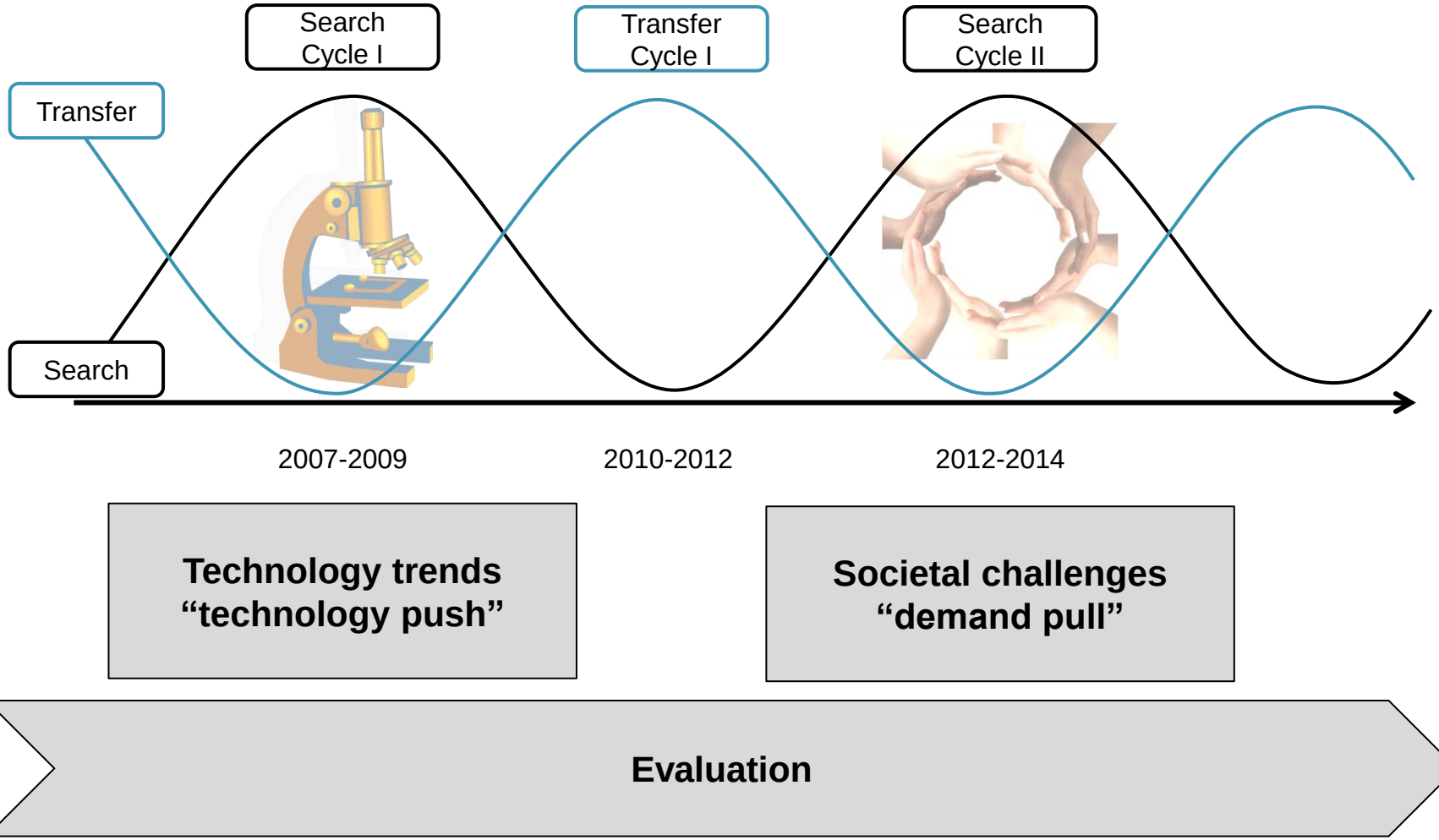
BMBF-Foresight

- thus provides **sound orienting knowledge** for strategic decisions in German research and innovation policy in the early stages of the conceptual phase (solutions for research and innovation, identification of changes in framework conditions). Contributions to future “missions” (priority topics and beacons in research and innovation policy) are to be identified, among others.

The role of BMBF Foresight

- It serves as a “**background**” for dialogues, road mapping and foresight in the specialist programmes and research organizations (longer time horizon, interdisciplinary approach, method-based).
- It is intended to **break with old patterns of thinking** (e.g.: focus on known mega trends).
- It creates free space and stimulates open, creative discussions
- It serves as an “**antenna**” and gives access to results of national and international foresight efforts.
- It ensures a **continuous dialogue with the leading minds** dealing with foresight.
- It is a centralised, interdisciplinary and inter-divisional complement to ongoing foresight activities in the divisions (e.g. trends in nanotechnology, div. 511).

The current BMBF foresight process evolves in cycles



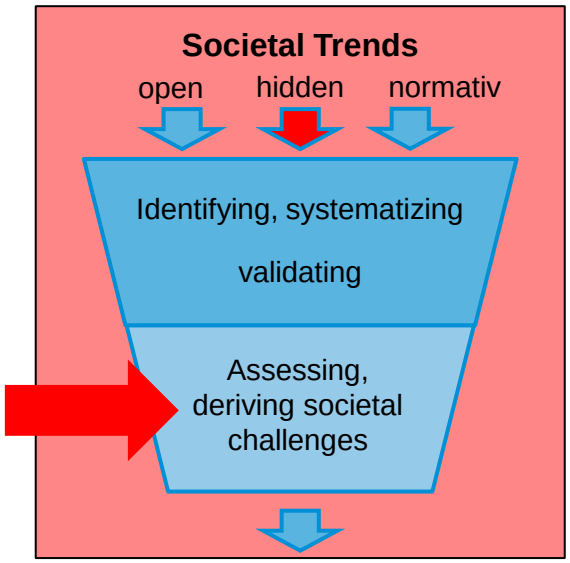
BMBF-Foresight Cycle II_ Overview

- European call for proposals launched by BMBF in 2012
  - Objective: New missions for German research and innovation policy
  - Focus: Societal changes, hidden trends

- Offer from consortium of VDI-TZ and Fraunhofer ISI (AIT subcontract) selected
- Project to last from May 2012 – April 2014
- Time horizon 2030
- Complemented by evaluation process, international sounding board and national board of key innovation system actors and experts

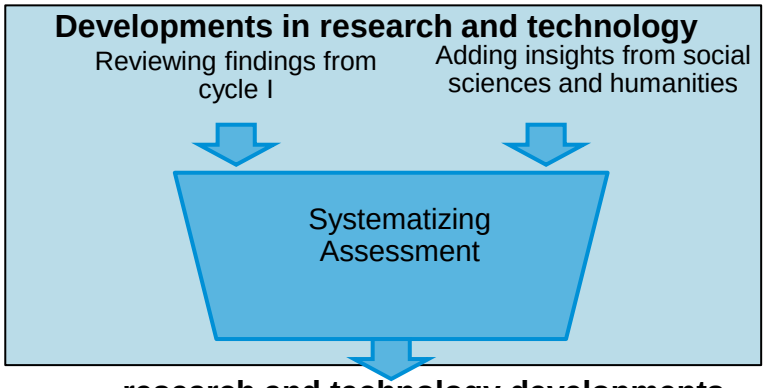
BMBF-Foresight Cycle II_Framework

1. Inventory Society



societal challenges

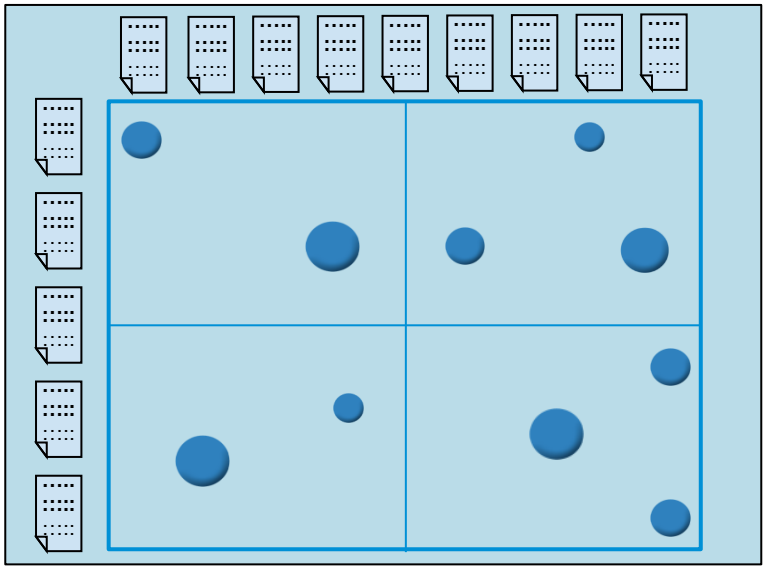
May 2012 – June 2013



research and technology developments

2. Inventory Research and Technology

January 2013– November 2013



3. Linking up developments in society with those in research and technology

July 2013 – April 2014

Contributions from research and innovation to addressing societal challenges in 2030

Identification of Societal Trends

Open Trends

Screening of global sources including foresight and trend reports

Normative Trends

Exploration of value oriented statements and visions from relevant civil society actors.

Workshop with stakeholders and researchers on the core issues identified (cultural diversity, new modes of governance, sustainability and societal progress, social cohesion, virtual worlds)

Hidden Trends …

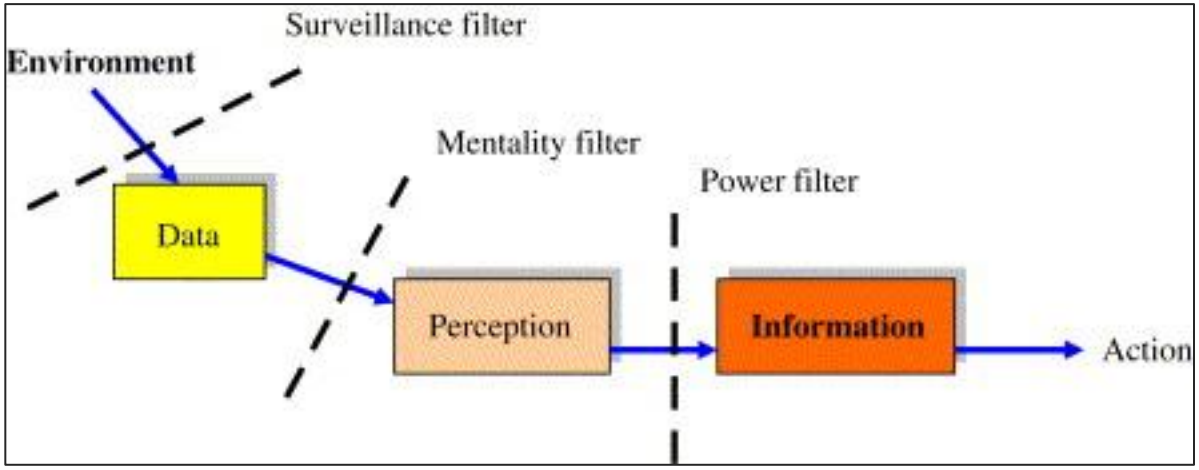
Currently

- 62 societal trends selected (from ca. 200 initially identified) and captured in a structured template.
- External feedback from BMBF departments, international sounding board and national board

Why “Hidden Trends”?

Often we fail to recognise relevant changes because our perception is structured by today’s filters (Ansoff 1975):

- Surveillance filter (what do we observe? Limited by resources)
- Mentality filter (what do we perceive? determined by cognitive structures formed by the current paradigm) Also: peripheral vision, paradigm blindness
- Power filter (what do we recognize? Determined by organisational routines)



Leena Ilmola , Osmo Kuusi
Filters of weak signals hinder foresight: Monitoring weak signals efficiently in corporate decision-making,
Futures Volume 38, Issue 8 2006 908 – 924, p.912 (citing Ansoff 1984)

Perception Filters II

- Additional aspects from more recent foresight theory
  - Confirming trend bias
  - Overconfidence
  - Over-prediction
  - “end of history illusion”
  - Filters cannot be eliminated but opened up

Focus “Hidden Trends”: Tiny matters matter for great transitions

Considerations:

- Social practices are a key element in “great transitions”
  - Challenge led innovation policy requires a solid understanding of societal change
- Innovation policy used to focus on technological change
  - Several insights from social sciences and humanities “hidden”

For tackling great transitions those “hidden” societal trends relevant that point towards fundamental “transformations” of today’s paradigms, as these may:

- affect the way we perceive “great transitions”
- shed a different light on the potential of the present for “great transitions” (both opportunities and barriers).

Such transformative changes that challenge our anticipatory assumptions cannot be extrapolated from today’s observations: we need experimentation and imagination

Three Horizon Framework

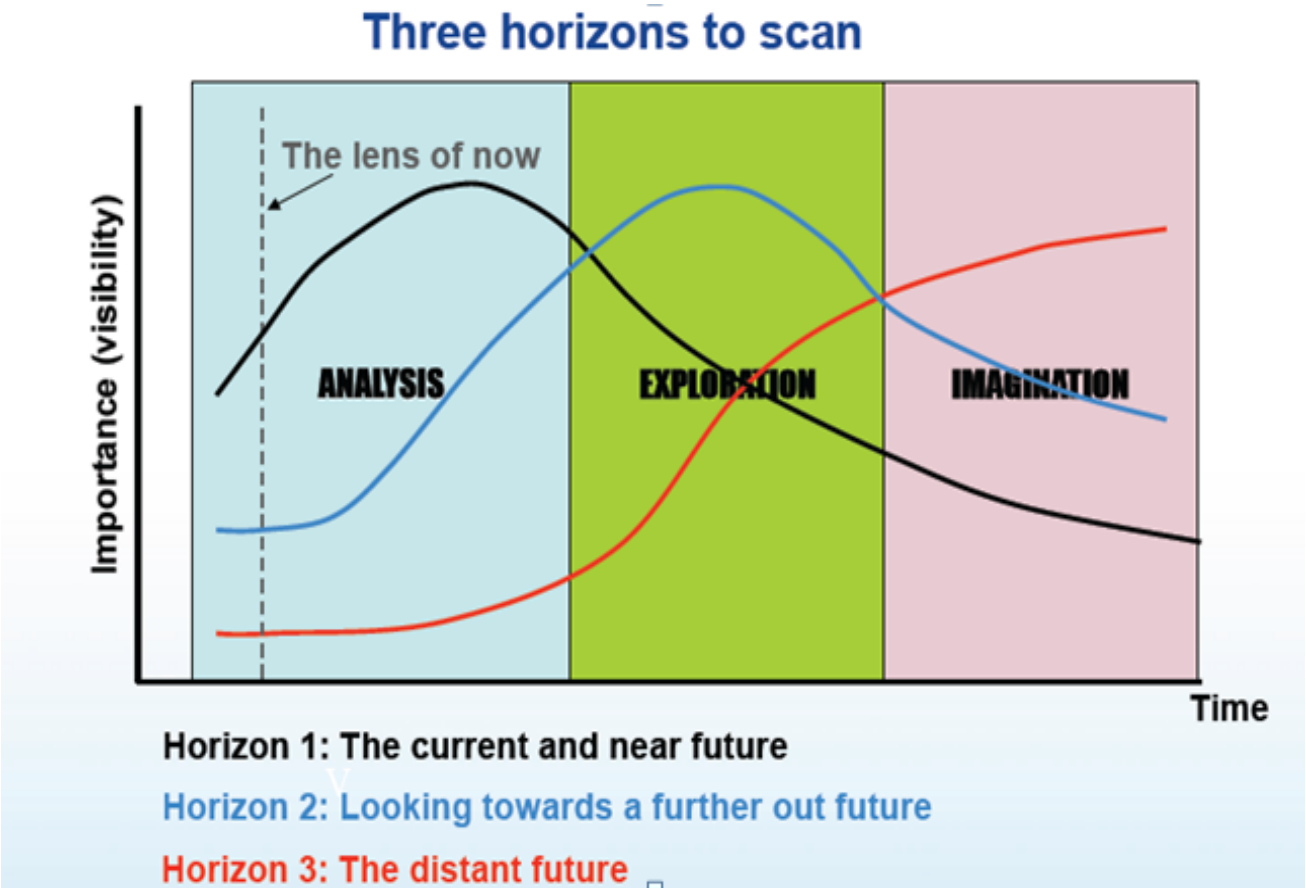


Image: http://paul4innovating.com/2010/09/10/the-three-horizon-approach-to-innovation/

Identification of “Hidden Trends” within BMBF Foresight: I/III

Core Approach: Systematically opening up perception and mentality filters

- Screening for “hidden trends” in eleven “need areas”*

  Mobility, food, health, quality of environment, shelter, personal security, social relations, communication, happiness, meaning, curiosity/learning, self expression/clothing

*Derived through analysis of different strands of research (philosophical anthropology, indicators for wellbeing/quality of life (OECD), Psychology (Maslow pyramid))

Identification of “Hidden Trends” II/III

For each need area:

- Systematic screening of non-mainstream media outlets
- Identification of actors with imagination capacity beyond today’s trajectories based on foresight and “lead user theory”:
  - Demand pioneers: feel certain societal development earlier than others due to specific needs (e.g. parents of disabled children)
  - Lead users: demand pioneers with knowledge and resources to act on their need (Founder of neighborhood initiative Vienna)
  - Antennas: Feel certain developments earlier because of close contact to demand pioneers (e.g. parkour coach) or avant-garde positions (e.g. artists)
- Intense involvement through interviews and creative workshop

„Hidden“ Workshop

Identification of “Hidden Trends” III/III

Other measures to counteract the perception filters:

- Use of creativity and collective intelligence techniques
- Systematic taking into account of countertrends and “negative” developments
- Involvement of actors with diversity of backgrounds
  - panel of doctoral students from different disciplines and regions to counteract organisational filter

Example 1 „Hidden Trend“

A new culture of swapping is emerging

Swapping of clothes, shoes, furniture and other commodities is en-vogue. Swapping takes different forms between fully commercial, welfare oriented and private. Motives are ranging from sheer need in emergency situations to sustainability oriented values and the desire for simpler lifestyles and less consumption.

AUSTRIAN INSTITUTE OF TECHNOLOGY
TOMORROW TODAY

Fraunhofer ISI

Example 2 „Hidden Trend“

Citizen science

More and more citizens are doing research of their own accord and increasingly are being directly integrated into scientific research projects. Citizen research is spreading, among other things, due to ever more powerful information and communication technologies, open data and increasingly affordable laboratory equipment.

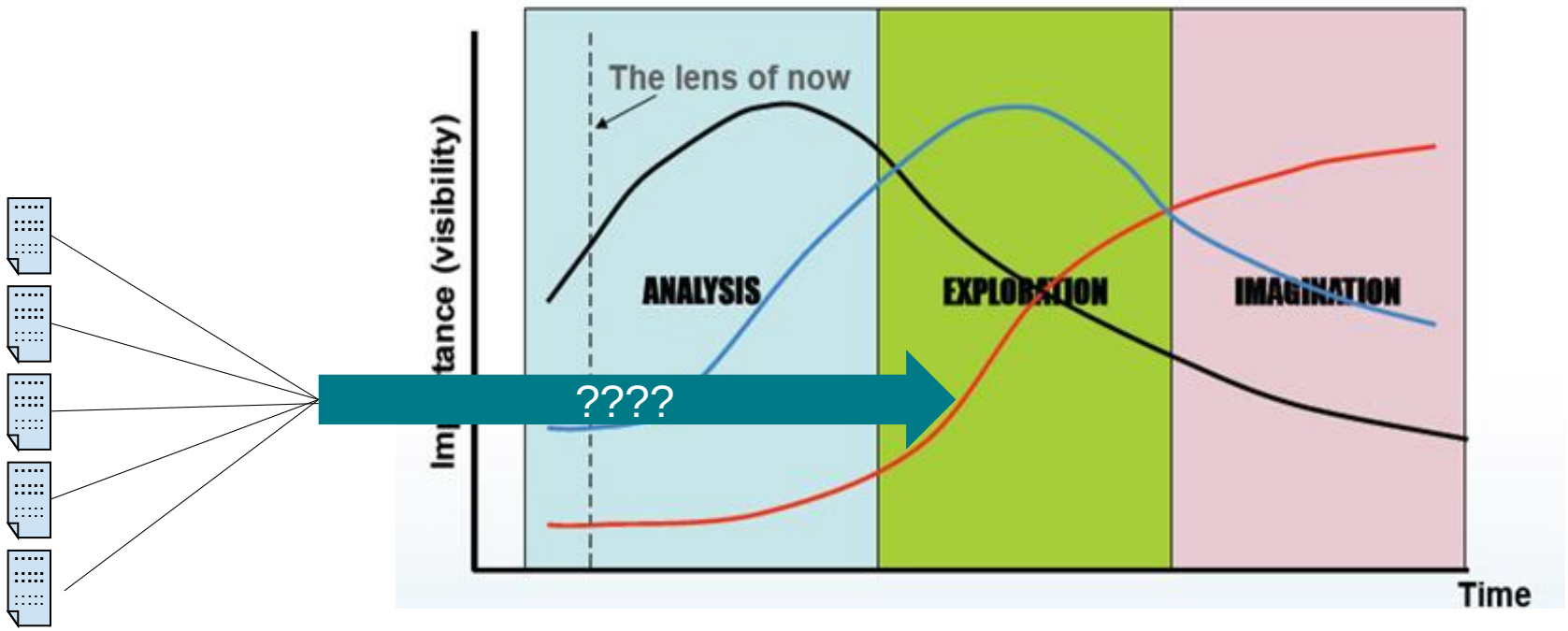
Example 3 „Hidden Trend“

Public Spaces

The societal relevance of public spaces is ever more recognized. At the same time the use of public spaces is being contested. On the one hand new practices like urban hacking, urban gardening and urban sports are emerging. At the same time public spaces are being privatised or restricted to commercial uses. Others are neglected due to strains on community budgets. In the long run, demographic change and rising energy costs will add up to the need for solutions.

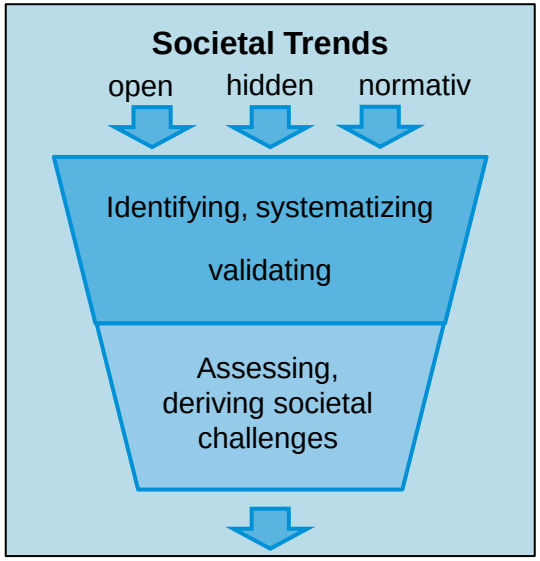
Next step

Assessment of „transformation potential“ of clusters of trends through collective imagination & experimentation



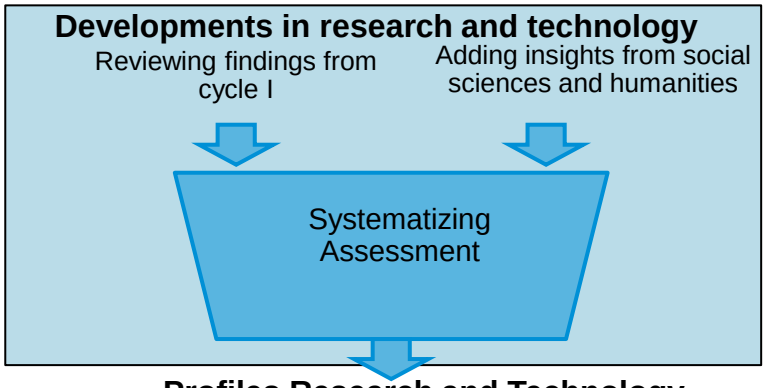
Outlook

1. Inventory Society



Profiles societal developments

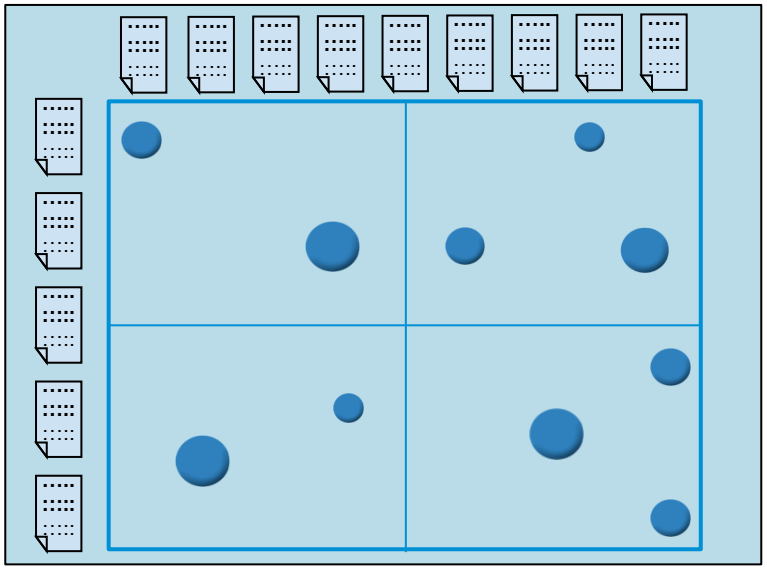
May 2012 – June 2013



Profiles Research and Technology

2. Inventory Research and Technology

January 2013– November 2013



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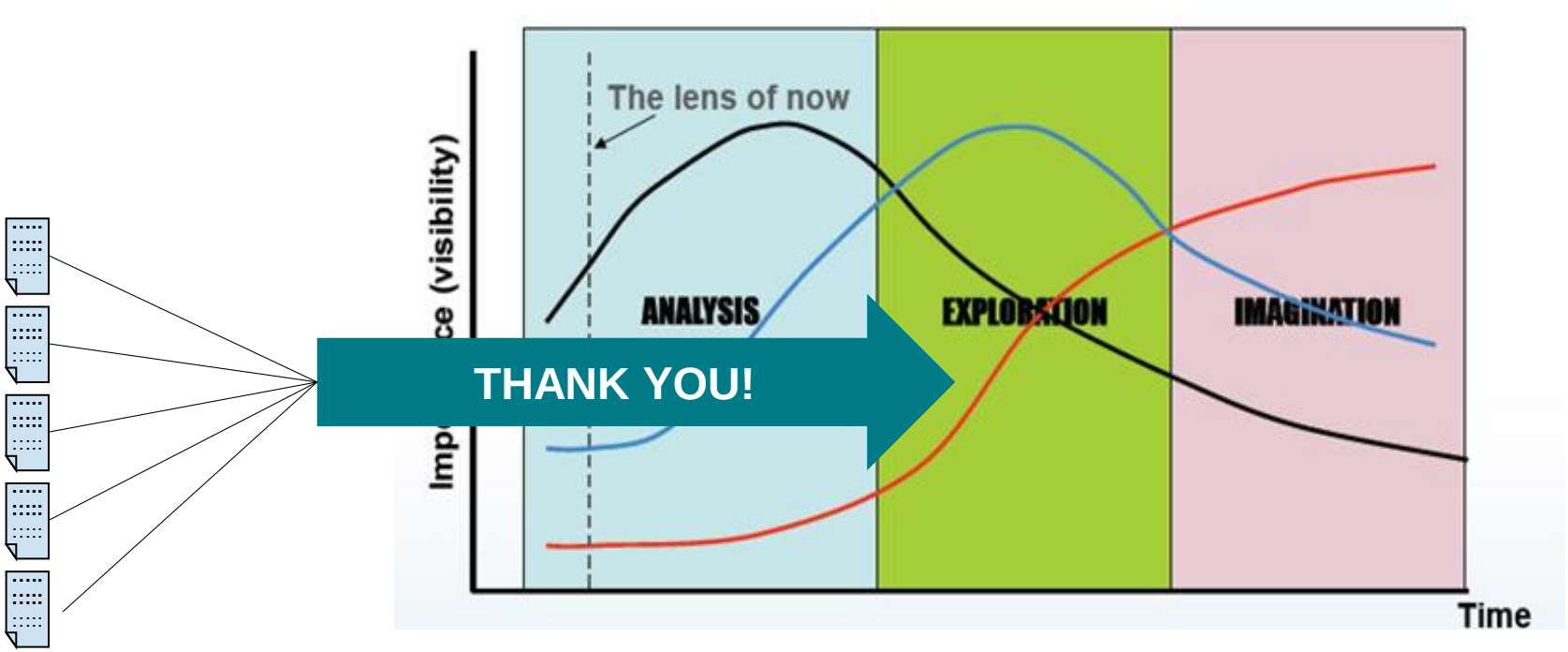
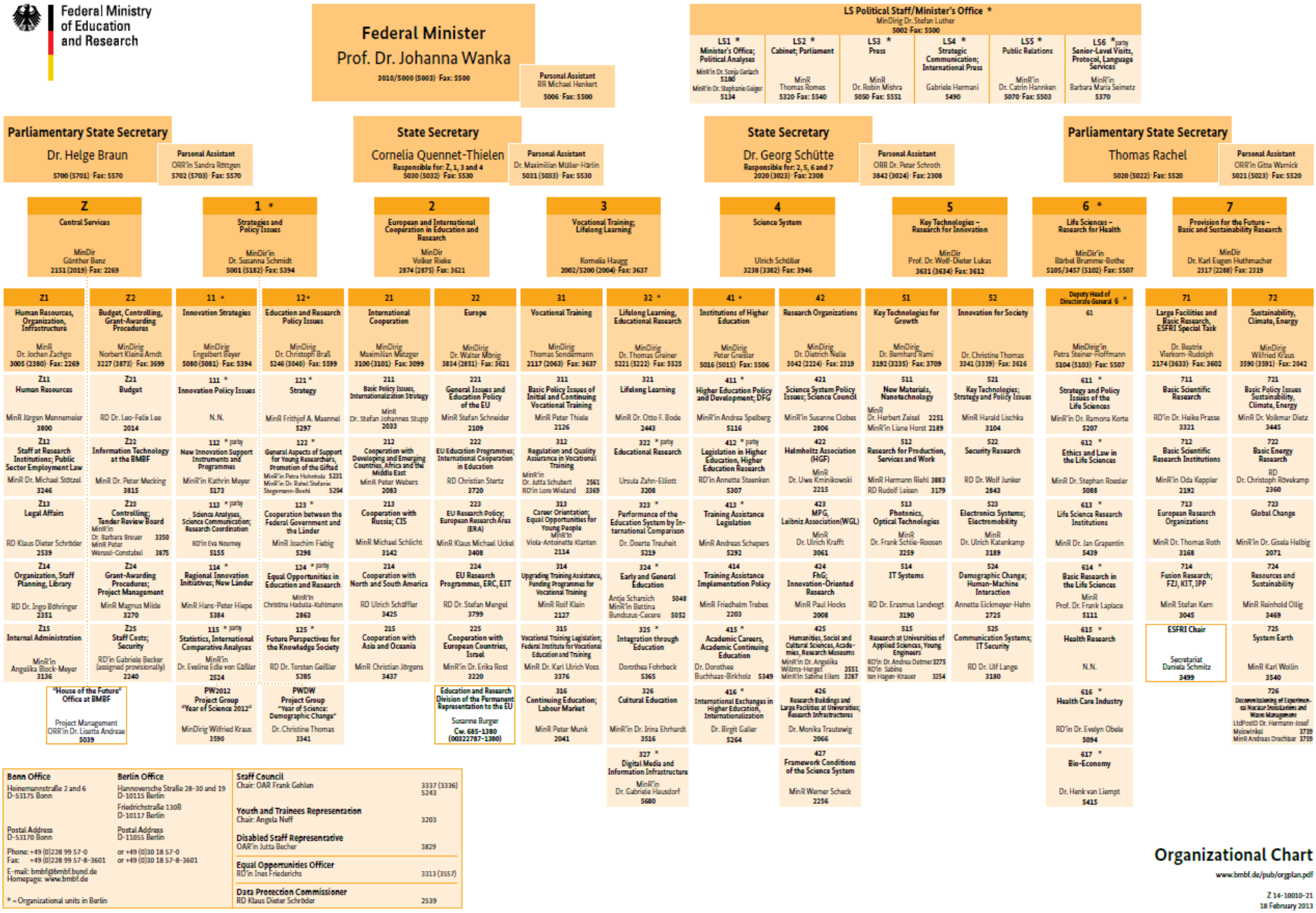
July 2013 – April 2014

Contributions from research and innovation to addressing societal challenges in 2030


The lens of now
ANALYSIS
EXPLORATION
IMAGINATION
Time
THANK YOU!

BACKUP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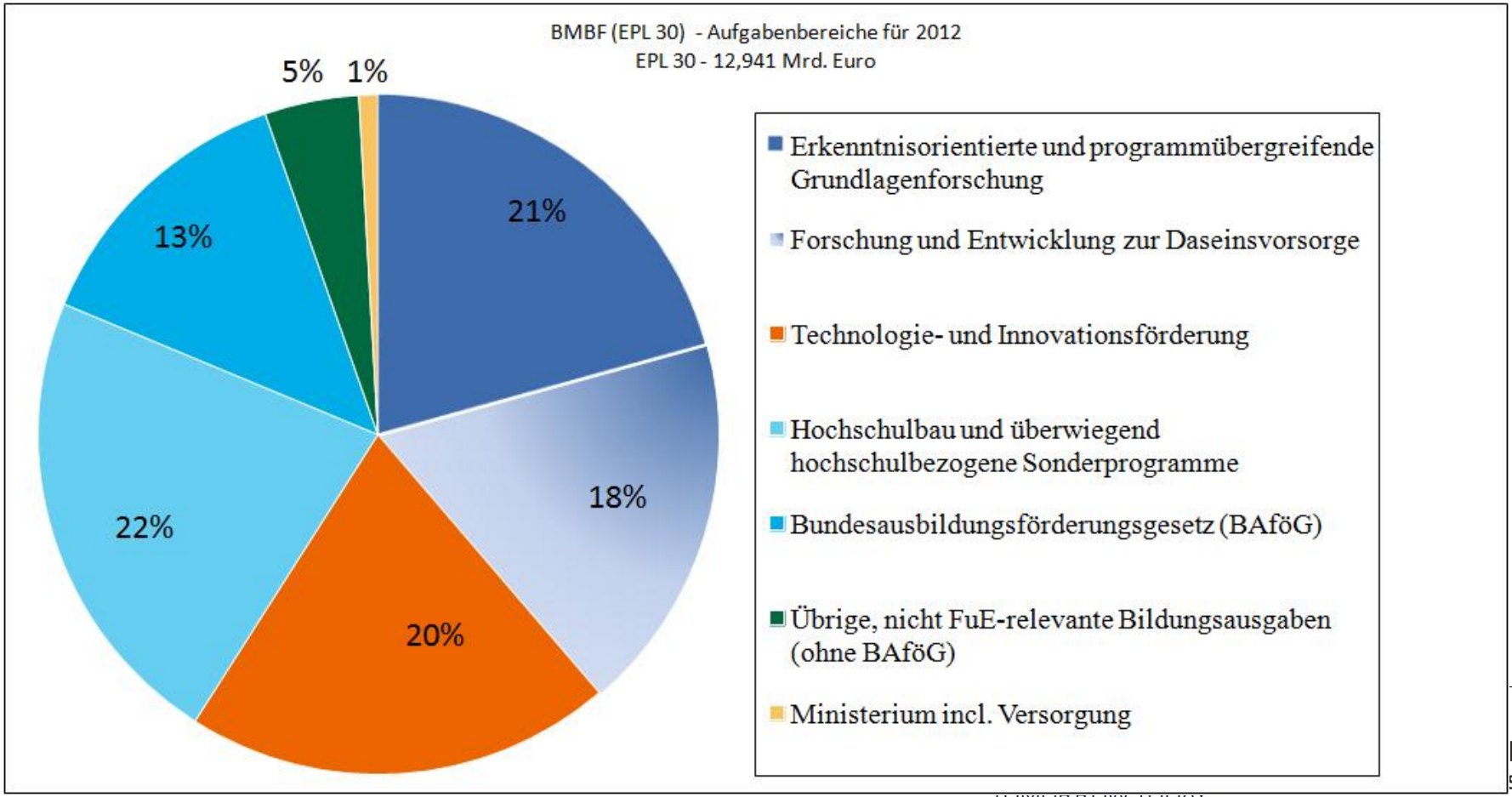
* = Organizational units in Berlin
Staff Council
Chair: OAR Frank Gehlen 3337 (3336) 5243
Youth and Trainees Representative
Chair: Angela Neff 3203
Disabled Staff Representative
OAR'in Jutta Becher 3829
Equal Opportunities Officer
RD'in Ines Friederichs 3313 (3557)
Data Protection Commissioner
RD Klaus Dieter Schröder 2539
Organizational Chart
www.bmbf.de/pub/orgplan.pdf
Z 14-10010-21
18 February 2013

BMBF Budget (2012)



BMBF Foresight Cycle I identified 7 new cutting-edge fields

I. Updating the 14 cutting-edge fields of the High-Tech Strategy

II. Identification of 7 new cutting-edge fields

1. Human-technology cooperation

Development of a new research perspective for the complex interaction between human beings and technological development – the human being as a measure

2. Deciphering aging

Research for a better understanding of aging as a central multi-factor process over the entire lifespan

3. Living spaces for the future

Development of intelligent infrastructure systems in the conflict area between new regional planning, lifestyles and technologies

4. ProducingConsuming2.0

Development of viable forms of value creation at the interface between environmental technology, production and services by means of transformative innovations

5. Transdisciplinary models and multi-scale simulation

Development of integrative simulation methods as a central cross-cutting approach to coping with the complexity of the sciences and humanities

6. Time research

In-depth understanding of time-dependent technologies and processes with critical timelines

7. Viable energy solutions

Development of new approaches and ways to optimize the pooling of numerous research approaches

Central results of the BMBF Foresight Cycle I

1. Varied impact on agenda setting in research and innovation policy

- Development of **horizontal and interface topics** which are not addressed in mono-disciplinary approaches, such as human-technology cooperation
- BMBF has assumed a **pioneering role** during the course of the process
- Identification of **new topics**, such as producing / consuming (PC 2.0), chronobiology

2. New ideas for specialist divisions at the BMBF

- **Internal service provider** for divisions (reflect their foresight activities, address new topics)
- **Cooperative interministerial work** on the field ProducingConsuming2.0 in five BMBF divisions and BMU (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety), BMELV (Federal Ministry of Food, Agriculture and Consumer Protection) and BMWi (Federal Ministry Economics and Technology)
- **Establishment of BMBF division 524** “Demographic Change, Human-Technology Cooperation”
- Further cutting-edge fields (aging, living spaces, energy) become part of the forward-looking projects of the **High-Tech Strategy**

3. Broad reception and discussion of foresight results by the specialist public