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# Foresight in Civil Security

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3. IFQ-Jahrestagung „Foresight – between science and fiction“

11.12.2008

## Structure of my talk

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- Future Technologies Division of VDI TZ
- The new meaning of the concept of security
- Importance of security-related foresight
- Selection of security-related foresight activities & results:
  - **European Foresight Monitoring Network (EFMN)**
  - **European Foresight Project on Security FORESEC**
  - **European Security Research and Innovation Forum (ESRIF)**
- Conclusion

## **ZTC and its structural classification within VDI**



## Range of clients - products – client focus

Consulting services for key participants in an innovative system:



## From “state security” to a much broader concept: Post-Cold War & Post-9/11 context

- Europe’s security is compromised by
  - **global challenges**: disease, poverty, competition for natural resources (esp. water) – climate change and global warming, energy dependence
  - **key threats**: terrorism, proliferation of weapons of mass destruction, regional conflicts, state failure, organised crime

- EU enlargement brings the EU closer to troubled areas

*EU Security Strategy “A secure Europe in a better world”, 2003*

- **Globalization creates new risks**, e.g.

- Growing dependence of interconnected infrastructures (e.g. transport, energy, information) increases vulnerability
- Rapid spread of diseases through increased mobility
- Conflicts in remote regions can directly affect Europe’s security
- etc.

*“Research for a secure Europe”, Report of the GoP in the field of Security Research, 2004*

## The new meaning of the concept of „security“

- Characteristics of current security risks and challenges: (*EU Security Strategy, 2003*)  
**asymmetry, anonymity, inability to limit them geographically, connectedness of the threats, blurring boundaries between internal and external security**
- “None of the threats is purely military; nor can be tackled by purely military means” (*EU Security Strategy, 2003*)
- No country can tackle new threats on its own  
 **A comprehensive European security approach is required and is a precondition of numerous Community policies**  
(Lisbon strategy, transport / energy / communications policies, etc.)
- “Technology itself cannot guarantee security, but security without the support of technology is impossible” (*“Research for a secure Europe”, GoP, 2004*)  
 **Increasing importance of security research, reflected in EU Projects and the vision of a EU security research agenda (FP7, ESRIF, ESRAB, etc.)**

## Importance of security related foresight

**„Risk constantly evolves and, without adequate foresight, can render today’s research efforts outdated before they are completed“**

*(ESRIF, Intermediate Report, 2008)*

Foresight increasingly recognised as one of the means

- **to identify new security trends and security-related aspects** (e.g. ethical or economic aspects),
- **to shape tomorrow’s security policies,**
- **to revise / reorient security research programmes** against the background of new trends and trend-breaks,
- **to support assessment of security investments**
- **to foster public debate** and selforganisation of stakeholders in the security domain

*(ESRAB Report, 2006)*

## The European Foresight Monitoring Network (EFMN)

The EFMN is part of a series of initiatives intended to set up a “European S & T Foresight Knowledge Sharing Platform” for policy makers in the European Union and initiated and funded by the EC, DG Research.

### Main Aim:

*Systematically monitor foresight activities and identify future emerging issues and innovations as input for innovation policy and strategy*



**EFMN**

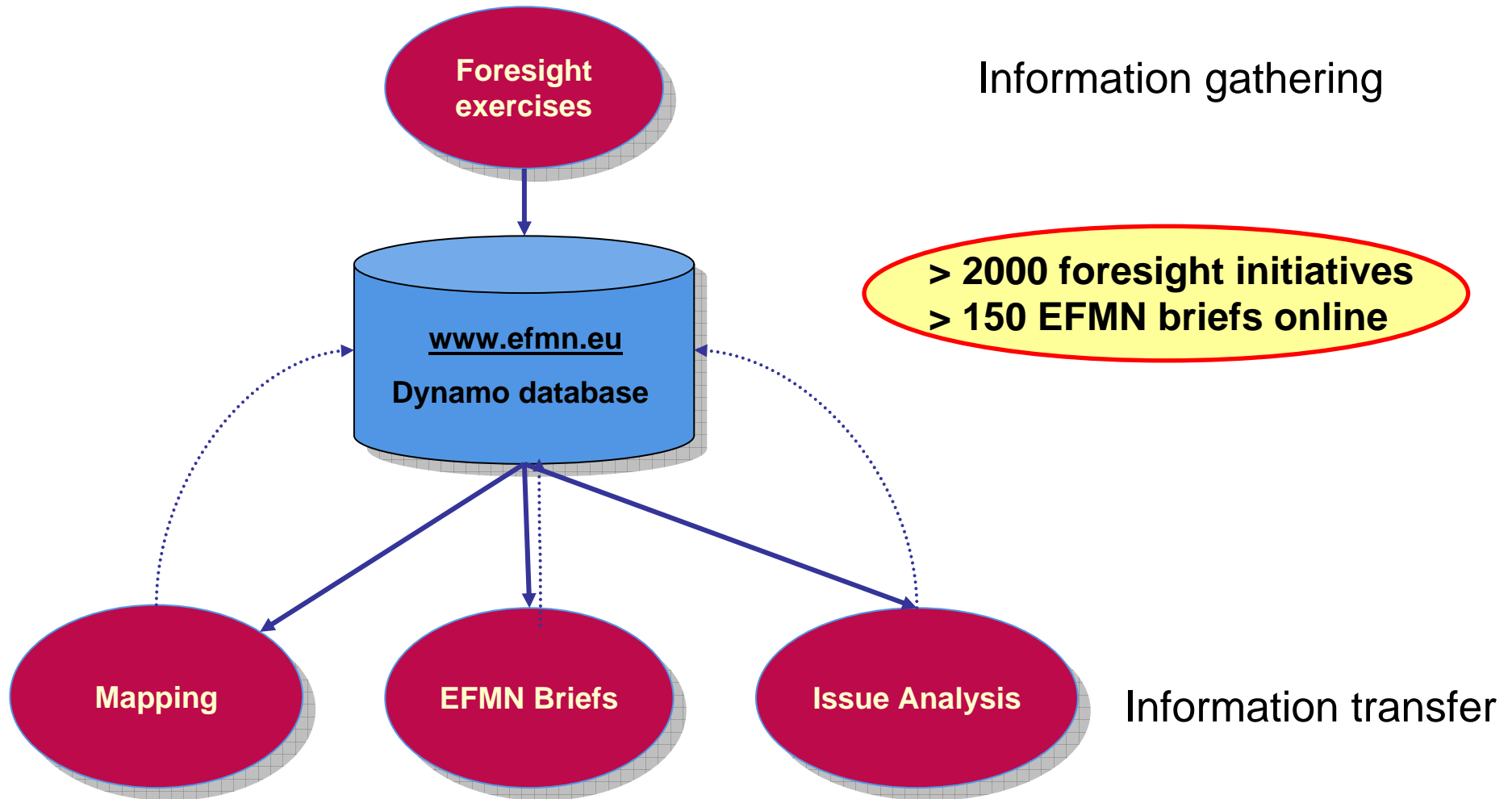
The European Foresight Monitoring Network

[www.efmn.eu](http://www.efmn.eu)

### Objectives:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• <i>Foresight monitoring network</i></li> <li>• <i>Foresight briefs</i></li> <li>• <i>Foresight mapping</i></li> </ul> | <ul style="list-style-type: none"> <li>• <i>Identify key emerging issues</i></li> <li>• <i>Annual workshops</i></li> <li>• <i>Information management infrastructure</i></li> </ul> |
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# The European Foresight Monitoring Network (EFMN) – Approach



## Security in foresights: General findings from the EFMN Issue Analysis

### General objectives of the EFMN Issue Analysis:

- Identifying and analysing key emerging S&T issues that are relevant for EU policies,
- Analysing the policy priorities that emerge from Foresight exercises.

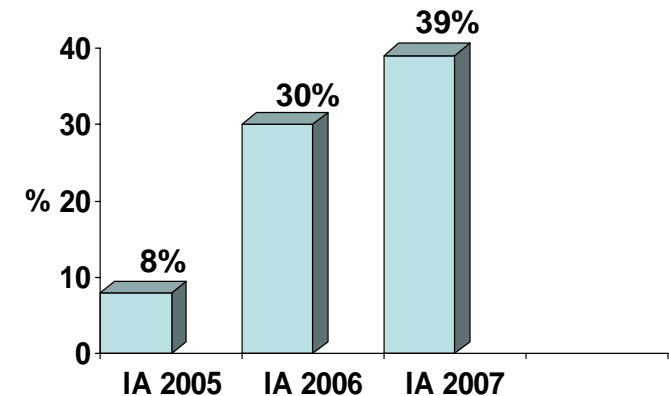
#### ■ Growing importance of security in foresight studies

#### ■ Reflecting the **complexity** of the new concept of „security“, security in foresights is directly connected with socio-economic issues such as, e.g.

- Information Society;
- Reduction of environmental quality / Natural disasters / Epidemics and pandemics
- Over-Exploitation of natural resources / Increasing pressure on infrastructure;
- Social inequality / Growing regional disparities and social marginalization / EU enlargement / Social cohesion

#### ■ ERA-Relevance of security issues

Frequency of security issues in recent foresight exercises



Source: EFMN Issue Analyses 2005-2007

# Providing security and safety to citizens – EFMN Policy Brief (Nr. 134), 2008

- Analysis of 36 foresight studies
- Date of completion: 2000-2007, mostly 2004-2005
- Geographical scope: national level in EU countries and Japan, but also supranational and regional level



## Future Challenge for Europe: Providing Security and Safety to Citizens

Foresight Brief No. 134

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Type of Brief: Overview Date of Brief: Feb. 2008

### Purpose

As stated in the recent EC Communication on 'Reforming the budget, changing Europe' (SEC (2007) 1188), the European Union has a key role to play in 'providing security and safety to citizens'. Especially in the aftermath of 11<sup>th</sup> Sept. 2001 security related issues are becoming an increasingly important facet of global society and have an increasing impact on economy and societies. The issues are manifold and include protecting citizens and state from organized crime, preventing terrorist acts, and responding to natural and man-made disasters. Civil security issues are becoming more and more important to governments and national economies across the globe, and the EU is no exception. The EC sees security research as an important policy objective, which started in 2001 with a 'Dedicated Action on Security Research (PASH)' and is now the tenth theme of the FP7 Cooperation programme. Security and safety technologies are seen to have applications in many sectors including transport, civil protection, energy, environment, health and financial systems.

### Analysing EFMN Documents: TextAnalyst

A selection of 160 foresight and future studies was taken from the EFMN database. These were studies with different backgrounds, scopes, themes, horizons and on different scales. The semantic data-mining tool 'TextAnalyst' was employed to analyse the texts. First, out of the 160 studies, a small number of relevant studies was selected that had links strongly related to the researched topic. TextAnalyst analysed these texts and found the most relevant keywords and semantic relations between the most important words. These terms were compiled into a keyword list for the researched topic. This list of keywords was used to analyse all 160 selected studies. The TextAnalyst provided all sentences containing any of the keywords, with an additional hyperlink in the text file allowing to view the context in which the sentence occurred. The TextAnalyst also gave a semantic relation between the searched keywords and other words. The related terms thus identified were added to the list of keywords. The summary of sentences that contained one or more words from the list of keywords was

manually read in the original context and of the sentence or the section where the sentence occurred was regarded as providing new or additional information, this section was copied into a text file in order to avoid any extreme cut-and-paste copying of sentences, statements that were part of a scenario description were not added to the file. After the analysis of the 160 studies, a text file was created containing sections of the original studies with information related to the selected topic and the reference to the original document. The dictionary for the analysis presented here consisted of the following terms: participation, crisis, defence, defense, emergency, energy, intelligence, military, R&D, NR&C, prevention, protection, risk, safety, secure, security, surveillance, terrorism, terrorist, threat and weapon. This analysis is exclusively based on the review of 36 foresight and future-oriented studies completed between 2002 and 2007 – most of them in 2004-2005. While most studies were carried out at a national level in Europe, the pool of sources also included seven studies conducted at the EU-level, eight Japanese national studies, the global study AC4JNU Millennium project, the operational study on information and communication technology (ICT) in the Nordic countries, and one Finnish study of regional scope.

The EFMN is financed by the European Commission DG Research. It is part of a series of activities intended to provide a 'Knowledge Sharing Platform' for policy makers in the European Union. More information on the EFMN and on the Knowledge Sharing Platform is provided at [WWW.EFMN.INFO](http://WWW.EFMN.INFO)

## Two major areas bearing future risks for society:

1. Civil security
2. IT security

### Limitations of the analysis:

- Restricted number of sources
  - Different kinds of results (e.g. in-depth analysis vs. „one-sentence statements“)
- Analysis did not intend to be exhaustive!

## Providing security and safety to citizens – Civil security

Risks	R&D solutions
<p><b>Terrorism and crime prevention</b></p> <ul style="list-style-type: none"> <li>• Increasing dependence on computer networks → increasing vulnerability</li> <li>• Proliferation of NRBC weapons, missiles</li> <li>• Transfer of technical know-how → increasing risk of misuse</li> <li>• Miniaturization of chemical and pharmaceutical manufacturing, genetic and nanotech engineering</li> </ul>	<ul style="list-style-type: none"> <li>➤ DNA profiling</li> <li>➤ Detection, surveillance and monitoring devices</li> </ul>
<p><b>Ensuring safety and security of critical infrastructures</b></p> <ul style="list-style-type: none"> <li>• ICT liability</li> <li>• Transport safety</li> </ul>	<ul style="list-style-type: none"> <li>➤ Identification systems such as embedded codes in airline tickets and luggage</li> <li>➤ Imaging technologies</li> <li>➤ Intelligent transport systems (telematics, video-surveillance)</li> </ul>
<p><b>Food and chemicals safety</b></p> <ul style="list-style-type: none"> <li>• Long-term impact of harmful chemicals on human beings, crops, livestock</li> <li>• Preventing damage to the environment due to chemicals</li> </ul>	<ul style="list-style-type: none"> <li>➤ Miniature systems for chemical analysis</li> <li>➤ Monitoring systems</li> <li>➤ Information systems for the consumer</li> </ul>
<p><b>Threats from climate change and natural disasters</b></p> <ul style="list-style-type: none"> <li>• Natural disasters: volcano eruptions, avalanches, earthquakes</li> <li>• Flooding / Droughts</li> </ul>	<ul style="list-style-type: none"> <li>➤ Predictive systems / Modelling capabilities</li> <li>➤ Observation systems: communication satellites, GPS, unmanned aircraft, etc.</li> </ul>



## Providing security and safety to citizens – IT security

- IT security is seen as a major topic of the future since society increasingly depends on vulnerable, complex IT systems
- Widespread of Aml and new mobility needs (e.g. m-payments) increase risks
- Preventing from misuse of individual data through e.g. authentication and encryption systems
- Duality of IT: RFID implants can be a threat to privacy but can also increase security

**Major challenge: Balancing privacy and security needs!**

## Foresight in civil security: the FORESEC Project (Feb. 2008 – Dec. 2009)



[www.foresec.eu](http://www.foresec.eu)

CRISIS  
MANAGEMENT  
INITIATIVE  
*Building Bridges for Sustainable Security*



systems research  
AUSTRIAN RESEARCH CENTERS



### Objectives:

- Pull together all existing security-related future activities
- Achieve common understanding of the complex global and societal nature of European security
- Facilitate the emergence of a coherent and holistic approach to current and future threats and challenges for European security
- Identify security responses requiring actions at EU-level
- Build a pan-European network around the European security foresight processes



## **FORESEC – Participatory foresight methodology**

The foresight process includes:

- **Scanning previous pertinent work (→ 12 country reports)**
- Participatory methods:
  - e-platform for exchange / interaction among stakeholders and experts
  - Delphi studies (1. round just started in 5 areas: societal changes, political changes, environmental changes, economy, technology)
  - Focus groups
- Scenario analysis
- Technology assessment

**FORESEC analyses European security both in its global context and at societal level in European countries.**

## **FORESEC – Mapping of Security-related foresight activities at national level**

- Security-related foresight activities are still often carried out by the Ministry of Defence – often in connection with the development of national security strategies
- BUT other foresight activities in the public or non-governmental sector / Increasing importance of civil security as topic of foresight activities.
- Highly fragmented field – reflecting the diversity of actors-, lacking coordination  
→ **Dissemination of foresight results, so that they can impact on decision-making, is very challenging!**
- End users unfortunately not always involved in foresight activities

### **Major threats identified are similar across the EU countries:**

Major External Powers, Economics, Organized Crime, Terrorism, Energy supply, Climate Change, Cyber-threats, Infrastructure, Natural disasters, Immigration

## **FORESEC –Different approaches and public opinions on security**

**There are clear nuances in public perceptions and political emphasis placed upon different threats, e.g.**

### **■ Geography / Proximity & History may influence the perception of security**

- Russia is a main security concern for Poland, Finland
- Fears over migration depend on proximity to traditional sources of migrants
- Risks coming from bad infrastructure deemed as particularly high in countries still connected into ageing Russian systems

### **■ Mismatch between perceptions of security at political level and in public opinion**

- EU citizens more worried about unemployment, crime, education, welfare system than about key security threats outlined in national / EU strategies
- Single events can act as catalysts specific countries



**There is no single „security“ concept in public opinion**

**Can there be a single „European security“ despite of different local threats perceptions?**

## The European Security Research and Innovation Forum (09/07-12/09)

- ESRIF is a **voluntary, informal** group of experts representing the **demand and supply side of security technologies, civil society, as well as involving EU representatives.**

### **ESRIF's objective:**

to develop and promote a European civil „**Joint Security Research and Innovation Agenda**“ for all European stakeholders (public and private)

- Coordination between EU / national / regional security research (ERA)
- Link security research and security policy-making
- Going beyond pure research and also embracing innovation elements  
→ Strengthening the EU security market and the competitiveness of industry
- **ESRIF's role is consultative**
- **ESRIF advises on security research and innovation, not on security policy.**

## ESRIF – WP 5 Foresight and Scenarios

- Identification of long-term trends (time horizon: 2030) and challenges
- Development of security-relevant scenarios along following dimensions:
  - **Key dimensions:** Global politics, Global economy, EU's wider neighbourhood, Social cohesion in EU
  - **Further dimensions** (less prioritised): Political cohesion of EU, Acceptability of security measures, Public / Private roles in civil security
  - **Specific threats and challenges:** e.g. Urban security, Criminal networks, Post-modern terrorism



### 4 Scenarios with specific security-related challenges

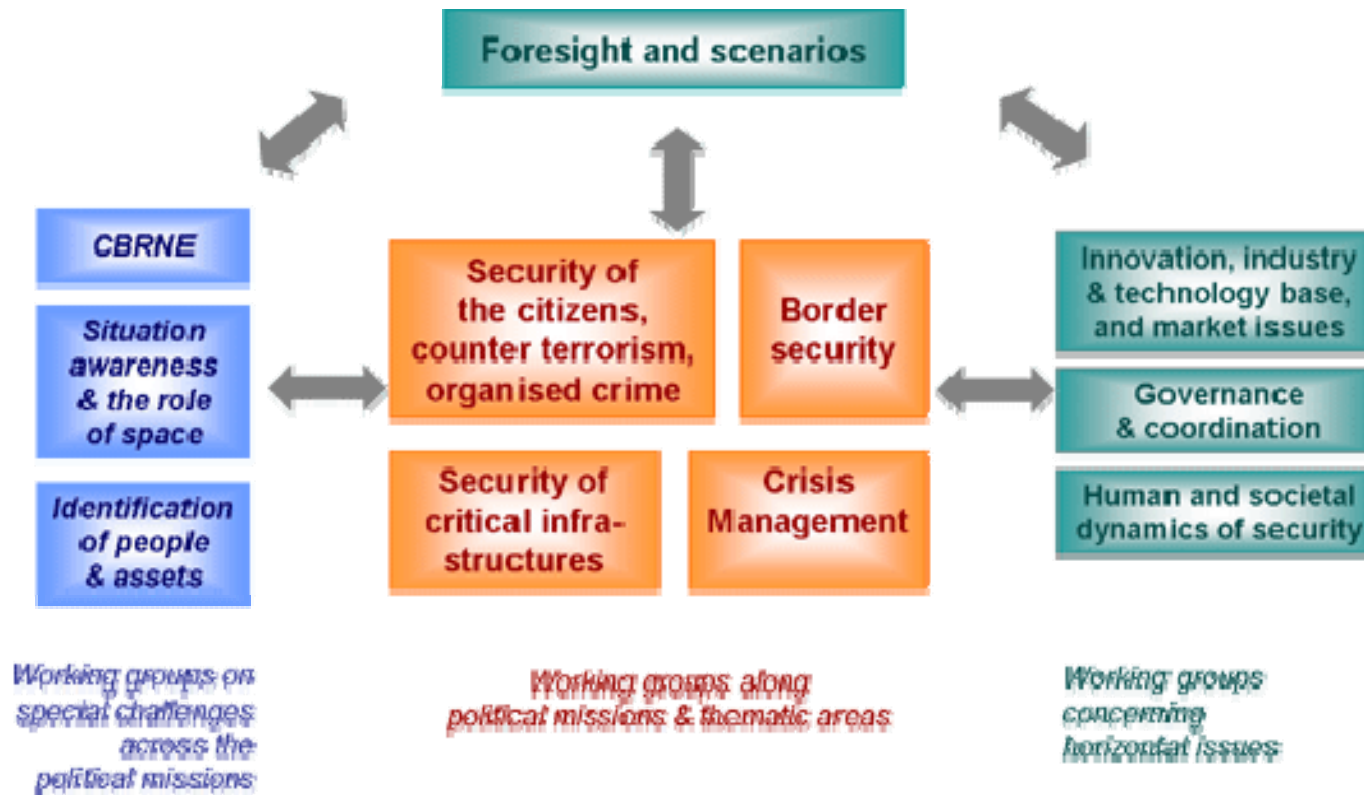
G: Global governance  
M: Multi-polar realism  
N: New welfare for all  
W: The West against the rest

**Wild Cards tested against all context scenarios!**

## ESRIF: Foresight supporting the identification of R&D needs

All ESRIF working groups work in parallel and in systematic coordination with each other.

Predictions and expectations about future developments flow into the work of other ESRIF working groups.



## Conclusion

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- **The concept of security has become broader and more complex:**  
**From state security to „human security“ / „comprehensive security“**  
**There seems to be no single concept of „security“ valid for all EU countries**
- **Growing importance and complexity of security issues are increasingly being reflected in foresight activities**
- **Foresight activities still highly fragmented** → Impact on decision-making is challenging
- **Controversy: Does the division internal security vs. external security / civil security vs. military security still make sense?**
- **(Public) Acceptance of security strategies / R&D programmes based on foresight results highly dependent on the involvement of all security stakeholders**  
(Important role of the social sciences / humanities)

**Thank you very much for your attention!**

For further questions:

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