

iKnow*

www.iknowfutures.eu

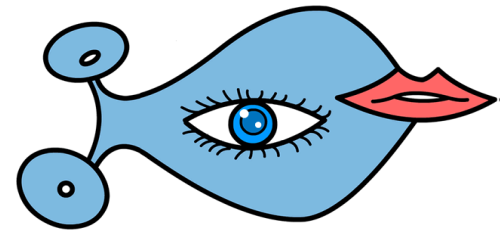
horizon
scanning

2.0

R. Popper (2010)



In cooperation with
EFP



Rafael Popper

iKNOW Scientific Director

EFP WP2 leader - Mapping Foresight

Rafael.Popper@manchester.ac.uk

University of Manchester



Aim

- To elucidate and examine events and developments potentially shaping or shaking the future of science, technology and innovation in the Europe and the world

Objectives

- To **develop and pilot conceptual and methodological frameworks**
 - to identify, classify, cluster & analyse wild cards & weak signals (WI-WE)
- To **assess** selected WI-WE's
 - **implications for, and expected impact on**
 - science, technology and innovation (STI)
 - **relevance for key dimensions of European research & technology development:**
 - Researchers mobility
 - Research infrastructures
 - Research institutions
 - Knowledge sharing
 - Joint Programming (research programmes and priorities)
 - International S&T cooperation



is a 'real'
research + technology development
project

(WI) Wild Cards

- situations/events with perceived **low probability** of occurrence but potentially **high impact** if they were to occur.

(WE) Weak Signals

- **Unclear/bewildering observables** warning us about the probability of future events (including Wild Cards). They implore us to consider alternative interpretations of an issue's evolution to gauge its potential impact.

WI-WE can be...

DESIRABLE

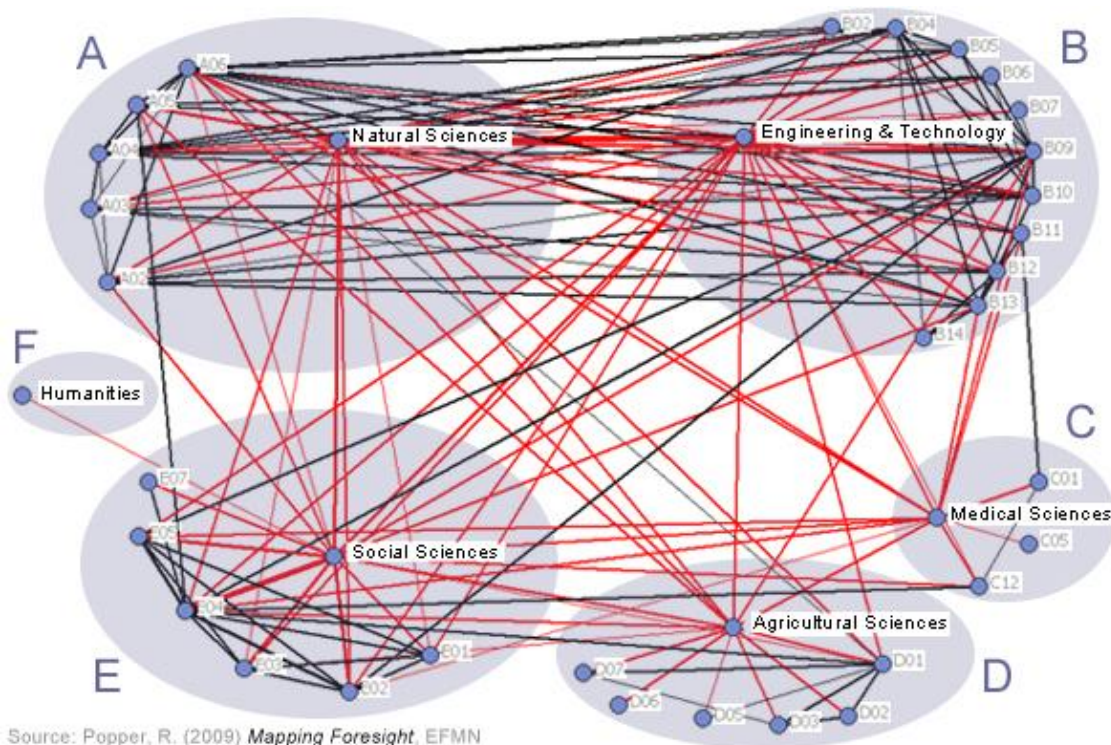
MIXED/
UNCERTAIN

UNDESIRABLE

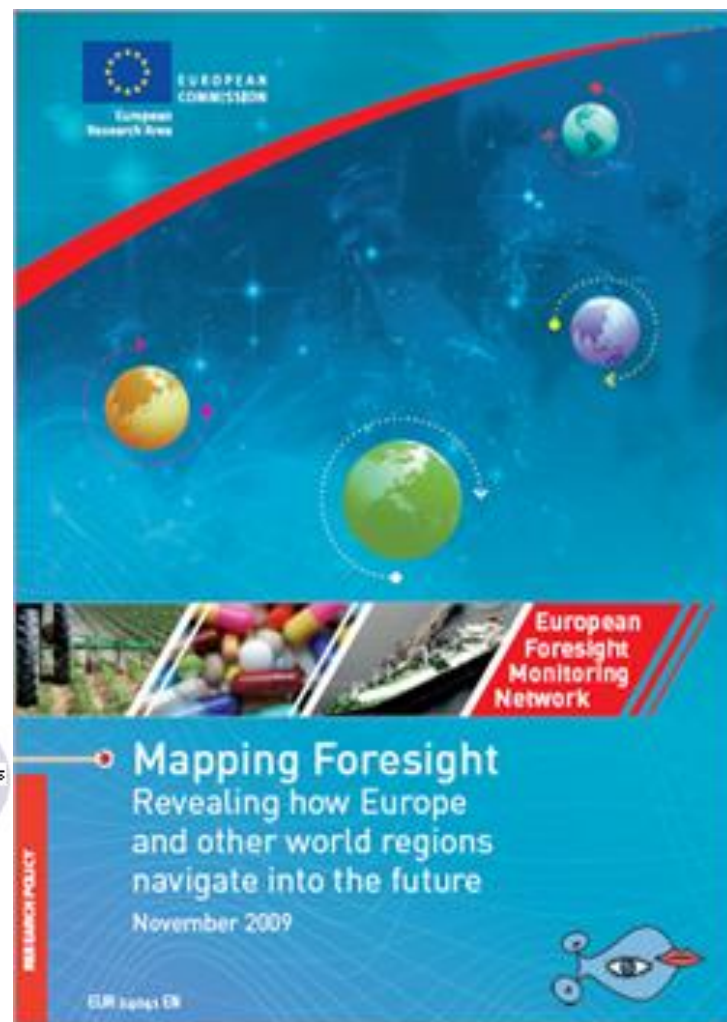
Partly inspired by *Mapping Foresight* against FRASCATI areas

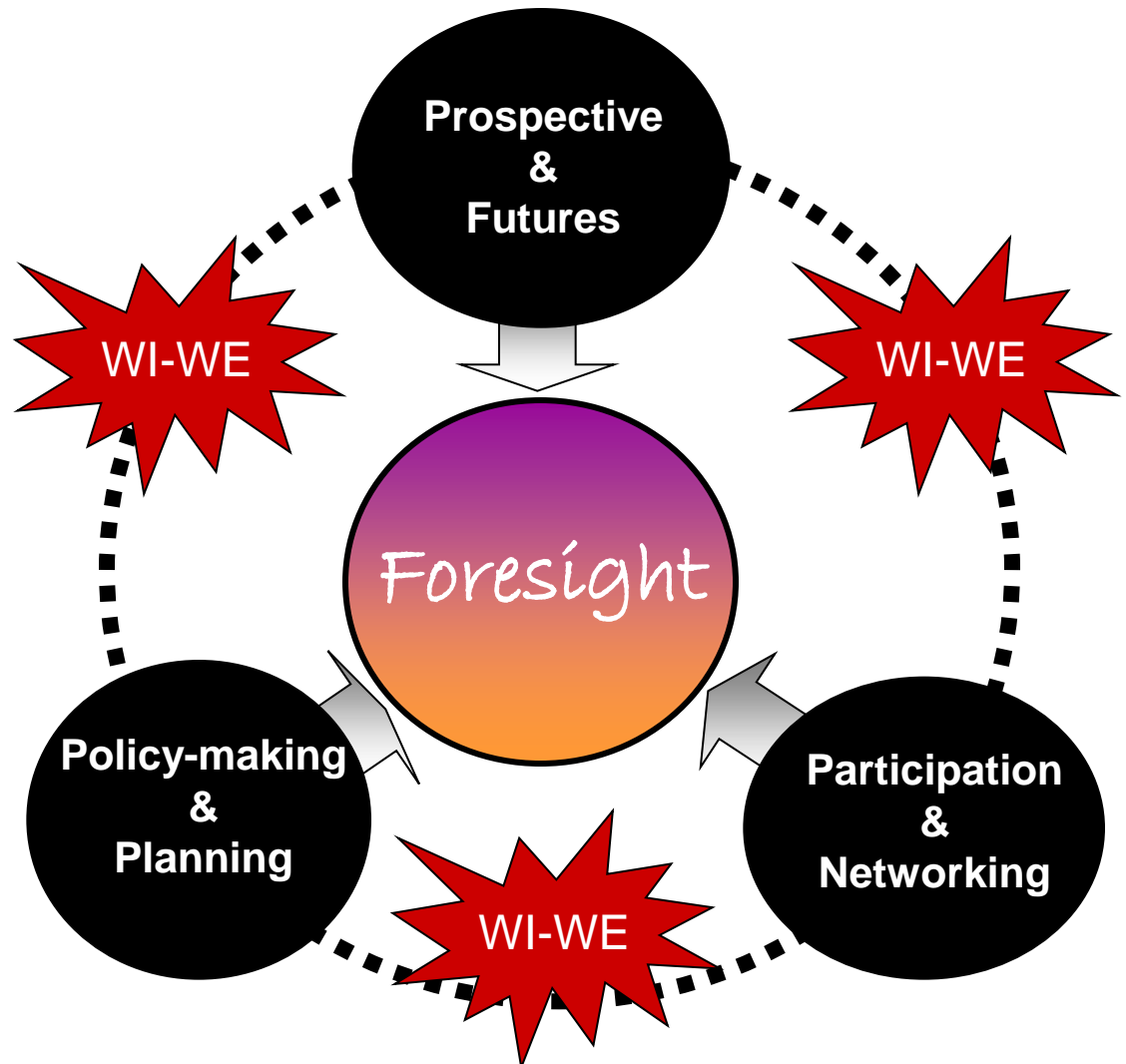
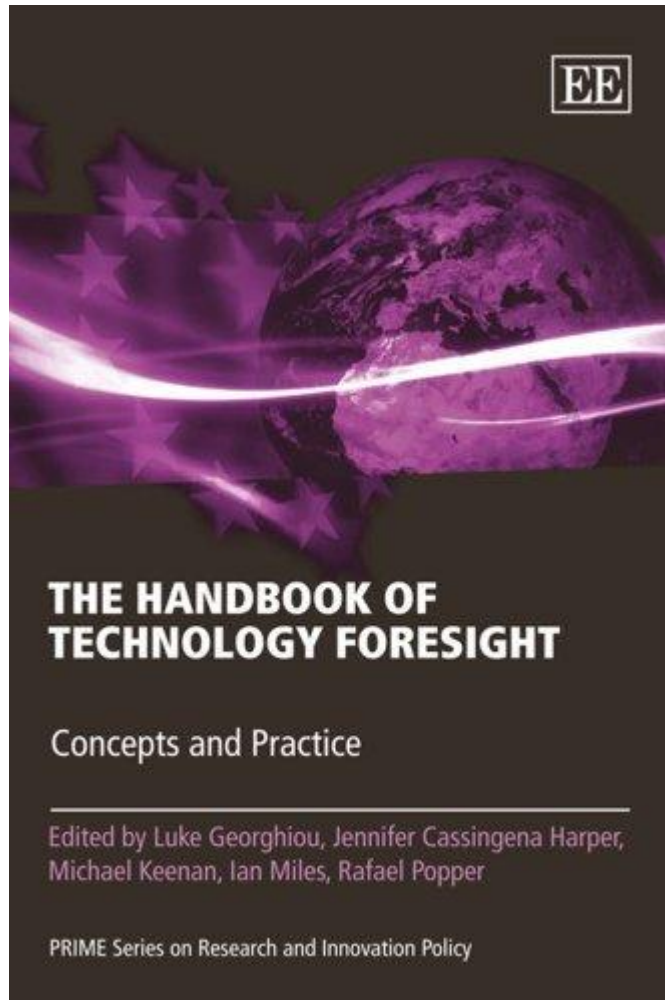
http://ec.europa.eu/research/social-sciences/pdf/efmn-mapping-foresight_en.pdf

In a way, **research in Social Sciences is the 'binder' of all research topics in the foresight exercises**. This is quite the opposite with research within Humanities, which have the least salient links to other research topics in the exercise.



Source: Popper, R. (2009) *Mapping Foresight*, EFMN





Integrating Scanning and Foresight Processes

(Popper, 2010)

Pre-Foresight

Recruitment

Generation

Action

Renewal

Fundamental Elements of a Foresight Process

methods mix

geo-R&D
context

target
groups

codified outputs

domain
coverage

participation
scale

KNOWLEDGE &
SHARED VISION

COMMITMENT &
TRANSFORMATION

INTELLIGENCE &
WISDOM

territorial
scale

ENGAGEMENT &
INTERACTION

prospective
approaches

planning &
decision-making
approaches

evaluation and
monitoring

time horizon

participative
&
networking
approaches

Horizon
Scanning

Strategic Scanning

Step 5: learning

sponsorship

Stakeholders
Scanning

Step 4: wi-we to support **shaping** the
future through *strategic planning*

ASPIRATION
Environmental
Scanning

Step 3: WI-WE to support the **generation** of (new)
knowledge/visions/strategies through the *exploration*,
analysis and *anticipation* of **possible futures**

Step 2: WI-WE to support **mobilising** and **engaging** key players

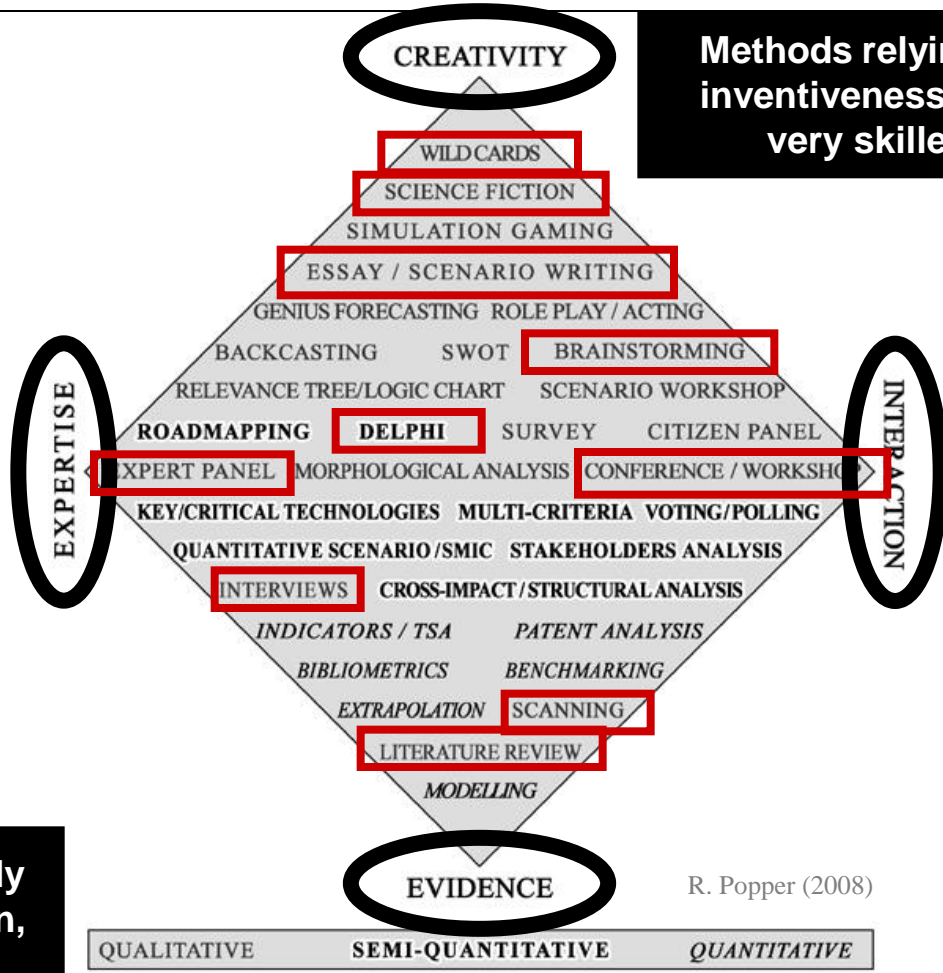
Step 1: WI-WE to support **scoping** the **objectives** and **activities** of the exercise



The Foresight Diamond

Methods relying heavily on the tacit knowledge of people with privileged access to relevant information or with accumulated knowledge

Methods relying heavily on codified information, data, indicators, etc.



Methods relying heavily on the inventiveness and ingenuity of very skilled individuals

Methods relying heavily on the participation and shared views of experts and non-experts

R. Popper (2008)

iKNOW is part of a new initiative supporting Blue Sky foresight research on a wide range of issues which often remain **out of the policy radar**.

To do so, iKNOW is...

1. promoting the production of **warning and policy briefs**
2. developing **new conceptual and methodological frameworks**
3. building **new infrastructures and technological platforms**
4. organising thematic and interdisciplinary workshops/interviews/surveys
5. mobilising research, policy and business communities...

...to pilot new **horizon scanning and early warning practices and systems**.

In other words, iKNOW is interconnecting knowledge and tools **for the early identification of key issues (especially wild cards and weak signals) potentially shaping or shaking the future of science, technology and innovation (STI) in Europe and the rest of the world.**

Major EU state elects neo-fascist leader

001

Transhumanism becomes a significant force

002

Universal electronic systems breakdown

003

Wheat crisis hits humans and animals

004

Floods in Europe cause mass migration

005

Blue Sky Policy Brief 005
02.2010

FP7 themes: health, agro, ICT, nano, energy, environment, transport, IGH, space, security
 ERA goals: mobility, infrastructures, R&D institutions, knowledge sharing, joint programming, cooperation

Author(s)	Joe SAVETZ, Rafael POPPER and Thorald SVENIGDOTIR (University of Manchester), Rob ASHWORTH (Regional Technology Centre North)																
Contributor(s)	David ALEXANDER (University of Florence), Joe BALLANTYNE (The Futures Company), Alastair BROWN (UK Climate Impact Programme), Steve COLEMAN (Creative Concern), Tony DIGGLE (SAM Consulting), Pierre ROSSEL (Swiss Federal Institute of Technology at Lausanne), Anna SACIO (Institute for Sustainable Technologies)																
Manifestation	Sudden development																
Importance for EU	★★★★★																
Strategic attention	by 2030 ★★★★★																
Type of impact	Very negative																
Inspired by	Brainstorming session and group discussions in the iKnow Workshop in Manchester (February 2010)																
Key words	flooding, mass-migration, disaster response, environment																
Potential impacts in Europe	<table> <tr><td>infrastructures</td><td>★★★★★</td></tr> <tr><td>people's lives</td><td>★★★★★</td></tr> <tr><td>legislation & regulation</td><td>★★★★</td></tr> <tr><td>economy & business</td><td>★★★★</td></tr> <tr><td>defence & security</td><td>★★★</td></tr> <tr><td>government & politics</td><td>★★</td></tr> <tr><td>environment & ecosystems</td><td>★★★</td></tr> <tr><td>science & technology</td><td>★★★★</td></tr> </table>	infrastructures	★★★★★	people's lives	★★★★★	legislation & regulation	★★★★	economy & business	★★★★	defence & security	★★★	government & politics	★★	environment & ecosystems	★★★	science & technology	★★★★
infrastructures	★★★★★																
people's lives	★★★★★																
legislation & regulation	★★★★																
economy & business	★★★★																
defence & security	★★★																
government & politics	★★																
environment & ecosystems	★★★																
science & technology	★★★★																
Negligible ★	Minor ★★																
Moderate ★★★	Major ★★★★																
Critical ★★★★★																	

Wild card

Serious protracted flooding of low-lying areas leads to mass migration to higher lying areas and forces a rethink in low country policies. This could be due to e.g. sea level rise, exceptional tide, storm surge, summer drought and consequent fluvial flooding. Migration would flow in unsuspected directions, e.g. Africa which would lead to overcrowding in higher lying areas. This would lead to ghetto formation and possibly civil unrest. Social inequality would increase as higher lying areas would be inhabited by the rich whilst lower lying and high risk areas would be inhabited by the poor.

Surprises ('wild' scenario features)

The wild factor here is not necessarily the flooding itself, which could be inevitable with ongoing rapid climate change. The lack of preparedness and policy measures to cope with the flooding and the likelihood of this happening within the next 20 years would make this a wild card. The issue of migration also adds wildness to this card and the scale and unprecedented way of the migration from lower lying areas. We are at the moment too focused on local disaster plans and not holistic cross-national plans to respond to disasters such as flooding. Migration from EU countries to Africa would make this wild card very wild, as migration stream in this direction is unprecedented in recent history and many African countries are not well prepared to receive a high volume of displaced people. Higher lying and thus sought after areas would quickly become over crowded, and civil unrest is likely to follow. This would also put a strain on natural resources in the most inhabited areas and consequently energy and food safety would be threatened.



Outburst of the black economy

006

Pervasive self-diagnosis and self-treatment

007

Invisibility spray available in "Boots"

008

China's investment and services "great wall"

009

Abrupt disintegration of the Euro Zone

010

Blue Sky Policy Brief 010
02.2010

FP7 themes: health, agro, ICT, nano, energy, environment, transport, IGH, space, security
 ERA goals: mobility, infrastructures, R&D institutions, knowledge sharing, joint programming, cooperation

Author(s)	Thorald SVENIGDOTIR, Ian MILES, Rafael POPPER, Yanuar NUGROHO, Joe SAVETZ, (University of Manchester)																
Contributor(s)	Julia DE CLERCK-SACHSE (European Commission), Daina DUMITRESCU (Institute for Business Administration in Bucharest), Gabriele GRIFFI (University of York), Dirk JOHANNA (Austrian Centre for Social Innovation), Javier MECIJA (Universidad del Valle), Konrad MICULEWICZ (Planning and Landscape Hierarchy University)																
Manifestation	Rapid development																
Importance for EU	★★★★★																
Strategic attention	by 2030 ★★★★★																
Type of impact	Very negative																
Inspired by	Brainstorming session and group discussions in the iKnow Workshop in Manchester (February 2010)																
Key words	Euro zone, financial crises, civil unrest, financial markets, economic crises																
Potential impacts in Europe	<table> <tr><td>infrastructures</td><td>★★★★</td></tr> <tr><td>people's lives</td><td>★★★★★</td></tr> <tr><td>legislation & regulation</td><td>★★★★★</td></tr> <tr><td>economy & business</td><td>★★★★★</td></tr> <tr><td>defence & security</td><td>★★★★★</td></tr> <tr><td>government & politics</td><td>★★★★★</td></tr> <tr><td>environment & ecosystems</td><td>★★★★</td></tr> <tr><td>science & technology</td><td>★★★★</td></tr> </table>	infrastructures	★★★★	people's lives	★★★★★	legislation & regulation	★★★★★	economy & business	★★★★★	defence & security	★★★★★	government & politics	★★★★★	environment & ecosystems	★★★★	science & technology	★★★★
infrastructures	★★★★																
people's lives	★★★★★																
legislation & regulation	★★★★★																
economy & business	★★★★★																
defence & security	★★★★★																
government & politics	★★★★★																
environment & ecosystems	★★★★																
science & technology	★★★★																
Negligible ★	Minor ★★																
Moderate ★★★	Major ★★★★																
Critical ★★★★★																	

Wild card

In order for this to be classified as a wild card this would have to happen quite rapidly. It would be largely unforeseen and any weak signals would go unnoticed. There is a chance that this might benefit some nation states whilst others would be worse off. The impact of this would be on a massive scale and this would lead to the collapse of governments and international institutions. This could potentially give the power over financial practices back to some of the nation states.

Surprises ('wild' scenario features)

What would be wild about this card is that the economy of the EU will be brutally affected and the deregulation between countries will be evident. The flow of capital and the role of Euro will drop leading to a competitive devaluation of 'new' countries in Europe. There will be huge speculation and proposals of the Deutsche mark as de facto European currency.


Also, what could be considered wild will be the apparent failure of Eurobanc common currency as all efforts to integrate member states' monetary systems come to nothing. Countries pull out of the Euro and revert to national currency or perhaps an entirely non European Currency like the Yen or the Dollar? The EU might disintegrate into different currency zones.

Loss of balance and widening of gaps among the European countries. Rich countries increase the gap against poor countries. Loss of economic integration affects political and cultural integration. Loss of funding of the European project. What is also a wild feature here is the scale of the impact of this wild card, which will be felt throughout societies and even throughout the world.



Exploiting iKNOW Policy Briefs

Author(s)
Contributor(s)
Manifestation
Strategic attention
Type of impact
Inspired by
• iKNOW workshops
• iKNOW interviews
• iKNOW delphi
• iKNOW scanning
• iKNOW Community
Related to
Keywords
Short description
Surprising features



Major EU state elects neo-fascist leader

001

FP7 themes: health, agro, ist, nano, energy, environment, transport, ish, space, security
ERA goals: mobility, infrastructure, rtd institutions, knowledge sharing, joint programming, cooperation

Blue Sky Policy Brief 001
02.2010

Author(s)	Rafael POPPER, Ian MILES, Yanuar NUGROHO, Joe RAVETZ, Thoralf SVENSDOTTIR (University of Manchester)	
Contributor(s)	Julia DE CLERCK-SACHSSE (European Commission), Dalia DUMITRESCU (Institute for Business Administration in Bucharest), Gabriele GRIFFIN (University of York), Dirk JOHANN (Austrian Centre for Social Innovation), Javier MEDINA (Universidad del Valle), Konrad MICULKIEWICZ (Planning and Landscape Newcastle University)	
Manifestation	Gradual development	Potential impacts in Europe
Importance for EU	★★★★	infrastructures ★★★★★
Strategic attention	by 2030★★★★ by 2050★★★★	people's lives ★★★★★
Type of impact	Very negative	legislation & regulation ★★★★★
Inspired by	EC research on Social Sciences and Humanities (Conflicts, peace and human rights)	economy & business ★★★★★
Related to	FP7 projects: CRIC, INFOCON	defence & security ★★★★★
Key words	democracy, far-right, fascism, media, migration, nationalism, politics, racism	
	Negligible ★ Minor ★★ Moderate ★★★ Major ★★★★ Critical ★★★★★	

Wild card
Current socio-economic challenges in Europe (such as demographic pressures and growing unemployment) are creating the conditions for far-right parties to make major gains in the European political arena. Security fears associated with militant Islamism fuel distrust and suspicion about specific ethnic and religious minorities. These developments could eventually create the conditions for a major EU state electing a neo fascist leader.

Surprises ('wild' scenario features)
The existence of political parties with far-right agendas is not a new feature in European politics. What is really 'wild' or surprising in this event is the achievement of sufficient political momentum for a major EU state to elect a neo fascist leader, bringing these movements from the fringe to the centre of politics, and potentially fuelling other far-right parties in Europe and possibly globally. Extreme nationalist feelings could destabilise European political and economic co-operation, while racism and authoritarian practices could undermine fundamental European values and ideals such as the need for social cohesion and social inclusion.

It remains to be seen whether far right movements across Europe could co-operate on matters other than those involving common enemies. The result would be a climate of uncertainty and lack of consensus on the democratic constitution of European societies. An atmosphere of extremist philosophy, harsh policy and political intolerance could possibly lead to the differentiation between first, second and third class citizens.

Disclaimer: The wild card presented in this brief may not happen at all or in the near future. iKNOW is a new EU funded research project aimed to explore surprising events (wild cards) and emerging issues (weak signals) potentially shaping or shaking the future of Europe and the world. Further information at www.iknowfutures.eu

Policy Brief ID

Links to FP7

Links to ERA

Impacts in Europe

- infrastructures
- peoples' lives
- regulation & legislation
- defence & security
- government & politics
- environment & ecosystems
- science & technology

Exploiting iKNOW Policy Briefs

Methodology

- iKNOW workshops
- iKNOW interviews
- iKNOW delphi
- iKNOW scanning
- iKNOW Community

Possible interpretations

Key actors

- Scanners
- Shapers
- Stakeholders

Potential impacts

Potential actions



Blue Sky Policy Brief 001 – Major EU state elects neo-fascist leader

Possible interpretations

There are different readings of such a wild card, for example: the failure of mainstream politicians to respond effectively to current challenges and to engage with shifting populations; the growing power of communicational platforms (e.g. social networks, Internet, tabloid press) making it possible for political narratives of far-right to prevail and gain momentum; the success of some far-right political parties in targeting and promising the 'rule of the young', the growing need for redistribution of resources, political and economic power, among others. Another possibility is the emergence of coalitions founded very much on the notion of threat from alien enemies – at present, Islamists are the prime candidates, but European neighbours could find themselves targets (e.g. consider the claims of some Greeks about German superiority and enmity).



Key actors

Key actors related to this wild card, include:

- **Scanners** or "early warners" such as social and political scientists like the Extreme Right Electorates and Party Success Research Group (EREPS) and investigative journalists;
- **Shapers** (i.e. enablers/inhibitors) such as the education system, mainstream political parties (potentially entering into coalition with the far right, and/or adopting similar policies and programmes), right wing populists, social movements, youth organisations, (trans)national civil society organisations (e.g. Human Rights Watch), and the media; and
- **Stakeholders** positively or negatively impacted such as national governments, civil society, NGOs promoting human rights and minority welfare, the police and law enforcement agencies, among others.

Potential impacts

The impacts of a major EU state electing a neo fascist leader could include: the rise in xenophobia and fears (and associated responses) on the part of minorities and affected groups such as women; the European Union turning inwards (i.e. reducing trade and cooperation with Asia and other regions, including North America); the rethinking of many human rights, including the right for political asylum, in Europe; the development of a "strong state" with punitive policies in social welfare, schools, the justice system, etc.; the intensification of discrimination and lack of tolerance nationally and regionally; the development of national oriented politics; the loss of credibility in the democratic system; the rise of new forms of resistance (including wars), for example.

Potential actions

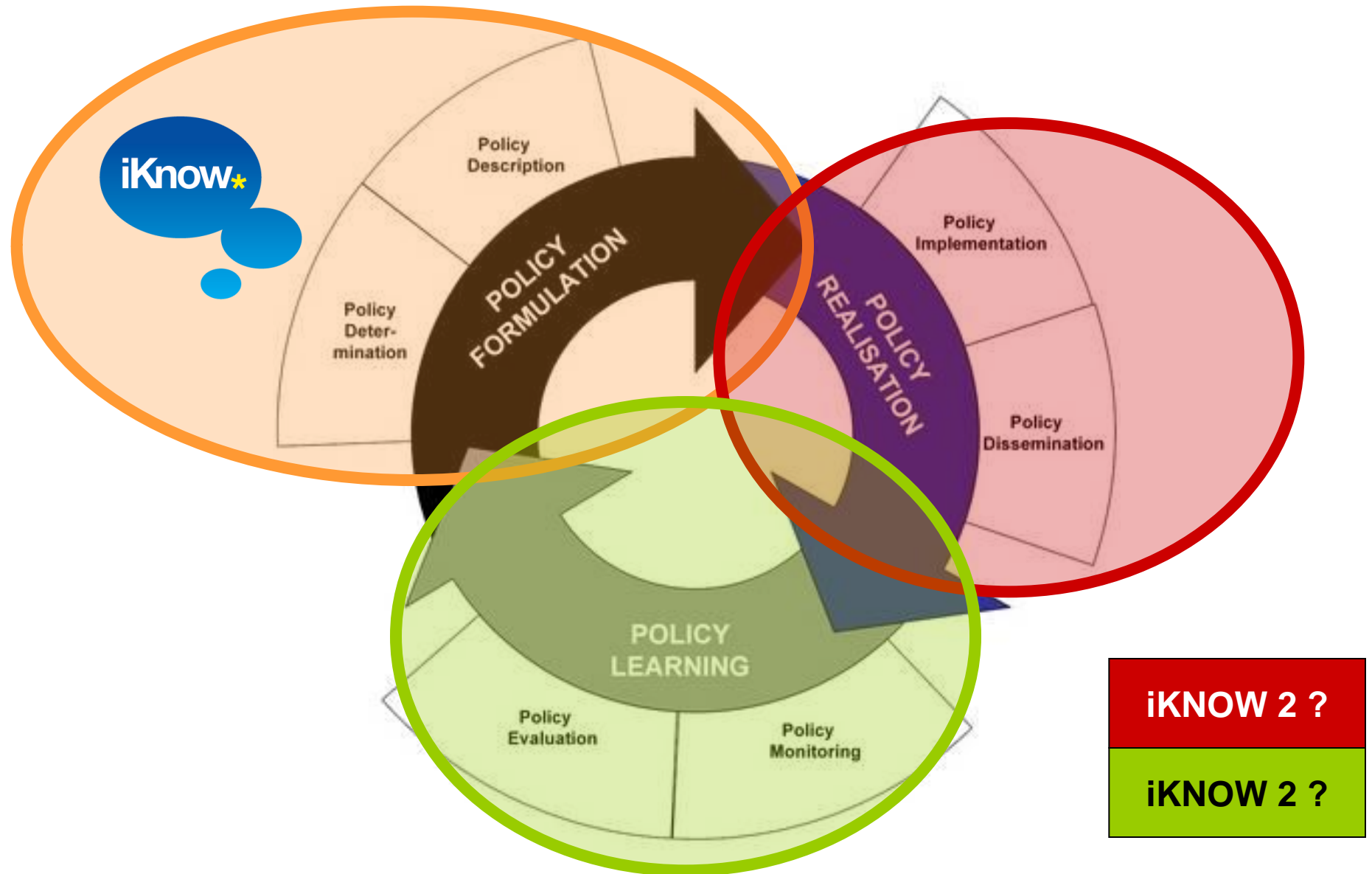
A neo fascist government in Europe would probably lead to new legislation (criminalising some activities now legal, for example), intensive media campaigns proposing "new" welfare solutions, the rise of groups defending basic human values and, at the same time, an increased number of extremists on all sides promoting conflicts and social polarisation. For that reason, a number of early actions (pre-wild card) and early reactions (if the wild card occurs) should be considered:

Disclaimer: The wild card presented in this brief may not happen at all or in the near future. iKNOW is a new EU funded research project aimed to explore surprising events (wild cards) and emerging issues (weak signals) potentially shaping or shaking the future of Europe and the world. Further information at www.iknowfutures.eu



Visualisation

iKNOW links to the Policy Cycle in 2008-2011






Exploiting iKNOW Policy Briefs

Potential actions (cont.)

- policy actions
- business actions
- research actions

Weak Signals




Blue Sky Policy Brief 001 – Major EU state elects neo-fascist leader

- **Policy actions**
Early actions: To make far-right movements more visible (e.g. including lessons from history in education); To reduce social polarisation in education; To enhance democratic participation and consensus building practices; To provide real and practical solutions to problems such as poverty and inequality; To promote community integration programmes;
Early reactions: To avoid radical changes in legislation; To avoid drastic changes in police and law enforcement policies; To defend minorities law; To use soft power to negotiate with far-right regimes; To concentrate power within government alliances; To welcome the displaced and dispossessed.
- **Business actions**
Early actions: To promote corporate social responsibility; To use business power to promote equality and human rights; To make sure equality and human rights are respected in the workplace; To research into integration models.
Early reactions: To continue promoting the above and making sure that that racist/neo-fascist discourses do not dictate their practices; To continue trade with countries outside of EU.
- **Research actions**
Early actions: To promote research on mass media, political discourse and electoral census analysis; To increase research on the current and future effects of migration; To research the roots of far-right wing support and, in contrast, or openness and tolerance and how they may be fostered; To review lessons of authoritarian personalities; To identify and analyse social mechanisms hampering democracy; To explore new ways of addressing inequalities and delivering social change;
Early reactions: Continued research focus on the issues named above. Research community would need to continue presenting research findings that would promote understanding of immigration, inequalities, multiculturalism, tolerance and human rights.

Weak signals

There are several signals warning us about the probability of occurrence of such a wild card. Some of these are related to the political environment, for example: the domination of right wing parties in the last elections to the European parliament; the break away from mainstream parties to the far right; the political momentum gained by the recently created Alliance of European National Movements (AENM), which up to now brings together far-right parties in nine countries (Belgium, France, Hungary, Italy, Portugal, Spain, Sweden, Ukraine and the UK); and the power gained by far-right parties in recent elections in terms of new Members of the European Parliament (MEP) with 3 MEPs for the French National Front (FN), 3 for the Movement for a Better Hungary (Jobbik) and 2 for the British National Party (BNP). Distrust in, and disaffection with, established political parties and elites is a major contributory factor, and is associated with a more general distrust of many experts and their claims – e.g. about climate change. Intimately linked to these political signals, we can see major achievements in terms of media coverage (e.g. the BNP leader was able to reach more people after his appearance in BBC's main current-affairs debate programme Question Time) and the growing number of alternative media, blogs, tabloid press and newspapers endorsing some far-right policies and politicians. Among the socio-economic signals, we can include: the popular backlash against the spread of globalisation; the shift back to nationalism across the EU, which in some countries translates into resentment of outsiders and Islamophobia; the growing concerns about large and uncontrolled population movements (e.g. migration and refugee situations); and the negative impacts of the financial crises (e.g. reduction of public and private investment, loss of jobs, increase of poverty and revival of historical controversies polarising society).

Disclaimer: The wild card presented in this brief may not happen at all or in the near future. iKNOW is a new EU funded research project aimed to explore surprising events (wild cards) and emerging issues (weak signals) potentially shaping or shaking the future of Europe and the world. Further information at www.iknowfutures.eu



Exploiting iKNOW Policy Briefs

Imaginary Call
Thematic area(s)
Research topic

Objective

Expected impact

Importance for Europe





Blue Sky Policy Brief 001 – Major EU state elects neo-fascist leader

Recommended research

Thematic area
Social Sciences and Humanities (SSH) and Security.

Research topic
Future changes in Europe's political landscape.

Recent electoral results in various member states demonstrate a gradual shift to right wing and nationalistic politics. Members of far-right wing and extreme nationalist parties are also winning seats in local, national and EU governmental institutions. The reasons for the shift by voters to the far-right could be attributed to, among other factors, the increasing power of global actors (i.e. loss of the national vision/agenda) and increasing migration. Recent history has demonstrated the consequences of unbridled right wing extremism and research is vital to determine the cause of recent shift toward this ideology so that appropriate response can be formulated.

Objective
Research could focus on shift in public perception which gives rise to far-right electoral shift by studying the roots of right wing support. Research could, for that purpose, focus on analysing mass media and political discourse in order to understand attitudes towards far-right ideology. Research can be both backward and forward looking in that it examines past and contemporary far-right support as well as the future of far-right support in Europe. Research could focus on challenges such as poverty, inequality and immigration to determine their role in public support for far-right ideology.

Expected impact
Research should a) determine the scale of the shift towards far-right political ideology; b) determine variations and commonalities between far-right movements in Europe c) devise strategies for appropriate policy responses across EU; d) inform common legislation and regulation across EU; e) inform educational strategies that will increase democratic participation and teach the history of far-right movements and their influence on European history.

Importance for Europe
Europe has seen, in recent history, the devastating effect of extreme far-right support. It is vital that policy responses which aim to monitor and respond to this shift are informed by research which aims to understand this attitude shift as well as predict foreseeable implications these changes may have. It is furthermore important that EU forms a coherent legislative response that could guide member states in forming their legislation.



interconnecting knowledge

iKNOW is a Blue Sky foresight and horizon scanning research and technology development (RTD) initiative aimed to advance knowledge and tools for the early identification and analysis of events and developments potentially shaping and shaking the future of science, technology and innovation (STI). iKNOW is run by an international consortium lead by the University of Manchester and sponsored by the European Commission Directorate General for Research. By supporting Blue Sky RTD the EC aims to create more proactive European research policies that will be capable of anticipating challenges and opportunities associated to emerging issues, wild cards and weak signals (W-WE). Wild Cards are situations/events with perceived low probability of occurrence but potentially high impact if they were to occur. Weak Signals are unclear observables warning us about the probability of future events (including Wild Cards). They implore us to consider alternative interpretations of an issue's evolution to gauge its potential impact.

Disclaimer: The wild card presented in this brief may not happen at all or in the near future. iKNOW is a new EU funded research project aimed to explore surprising events (wild cards) and emerging issues (weak signals) potentially shaping or shaking the future of Europe and the world. Further information at www.iknowfutures.eu



Links to FP7

Links to ERA

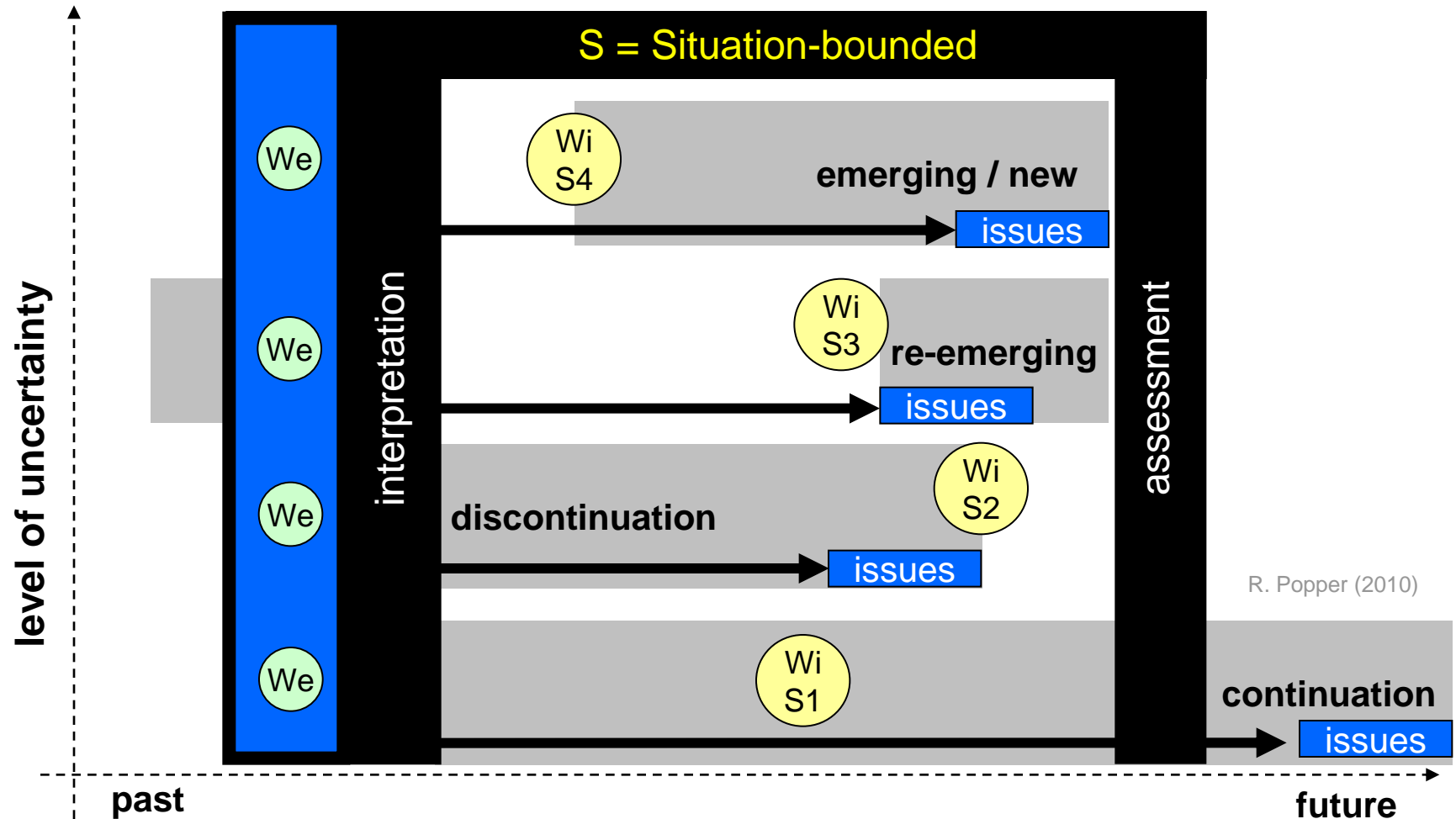
Impacts in Europe

- infrastructures
- peoples' lives
- regulation & legislation
- defence & security
- government & politics
- environment & ecosystems
- science & technology

Scanning Framework

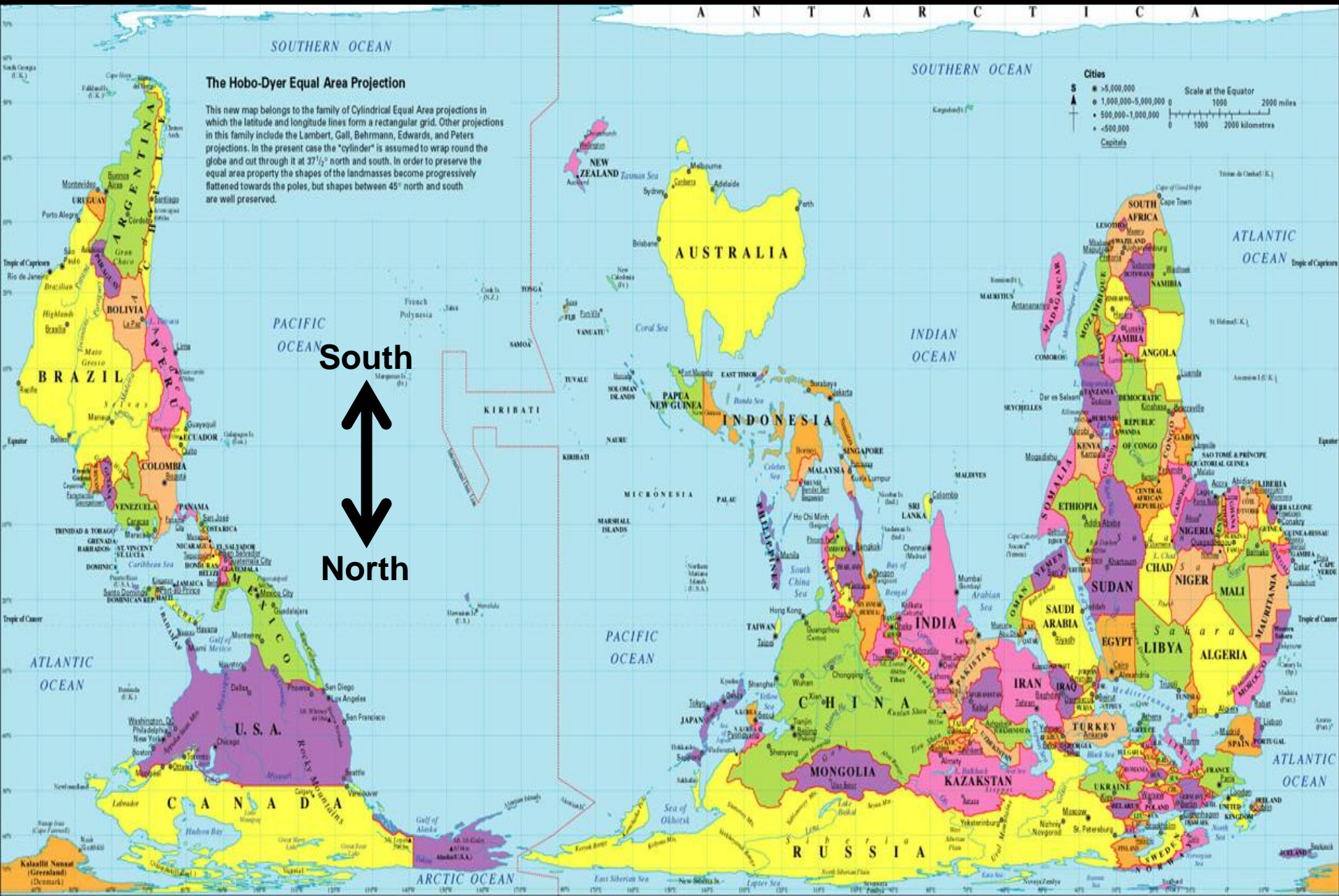
horizon
scanning
2.0

R. Popper (2010)

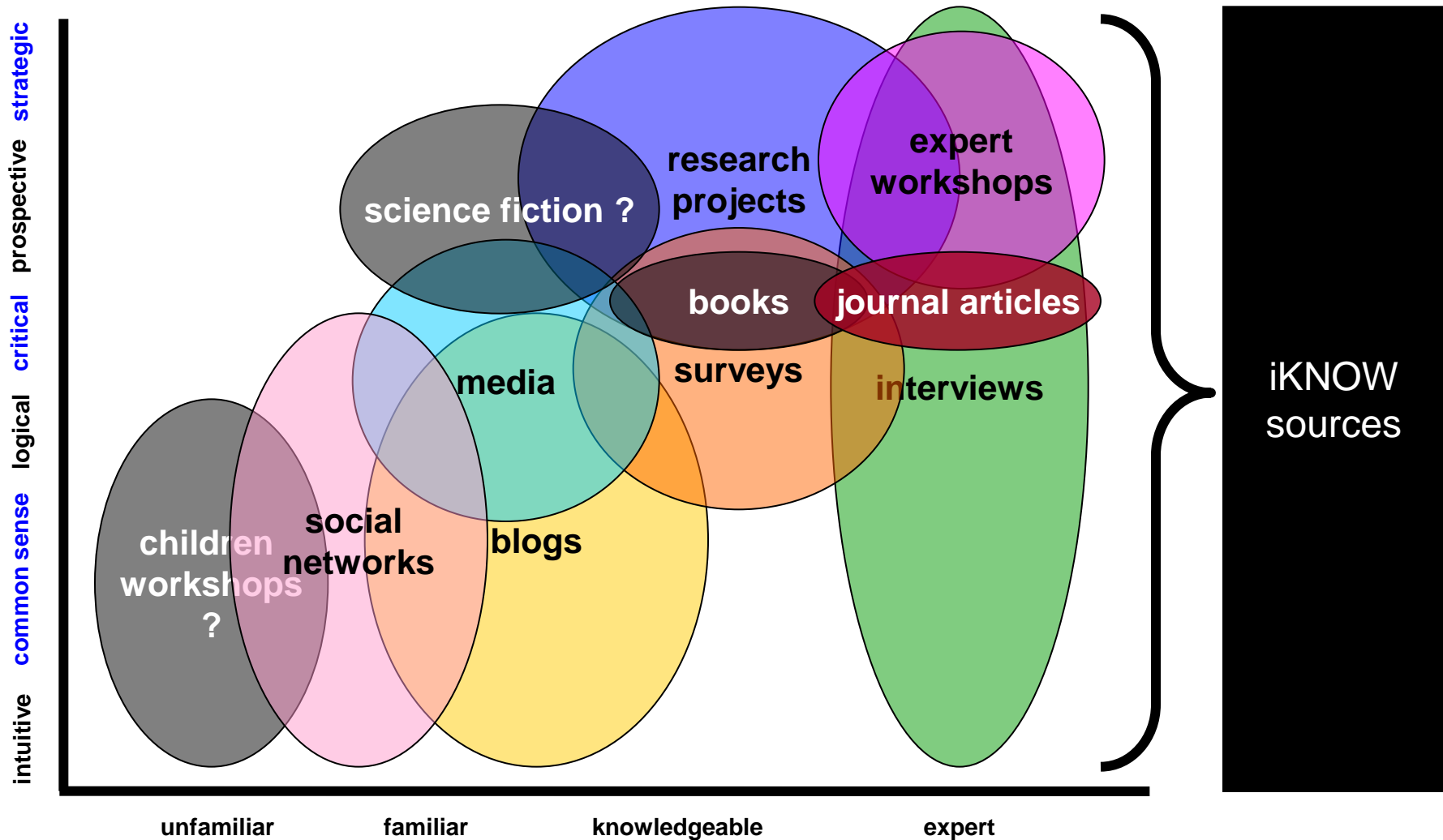


Interpretations are really important

McArthur's Universal Corrective Map of the World



Knowledge sources



iKnow*

Workshop Day 1

horizon
scanning
2.0

welcome
+
introduction



keynotes
+
key issues



iKNOW outcomes

'wild' situations

- Wild features / factors
- Interpretations
- Impacts
- Actors
- Actions*
- (Weak) Signals

actions / recommendations

- Policy
- Business
- Research



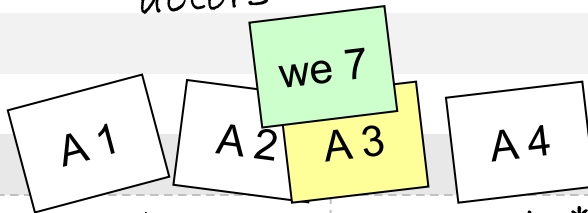
Day 2 Tasks

Historic
01

UK Parliamentary system
undermined by MP expenses
(moat cleaning on the taxpayer)

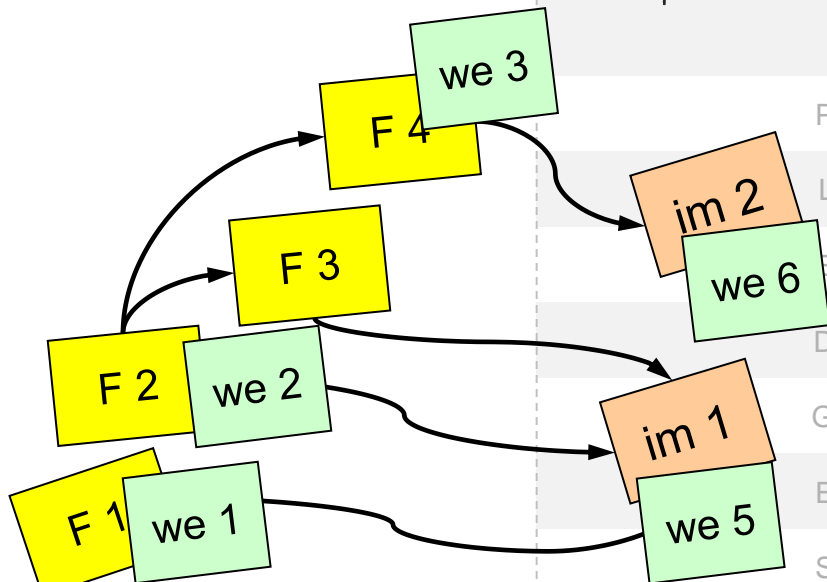
actors*

global
european
national



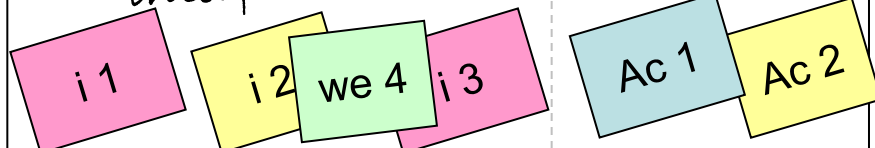
wild-timeline

Impacts*



interpretations

actions*



Historic
02

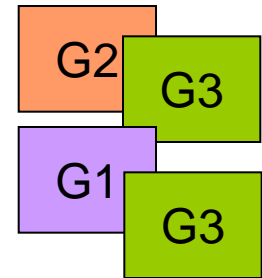
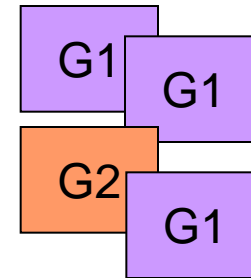
World financial crisis
"why did no-one see it coming?"
(Queen Elizabeth, Oct 2009)

SSH+

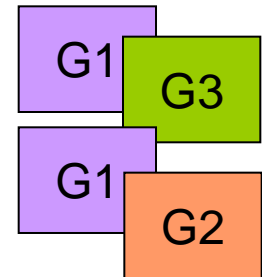
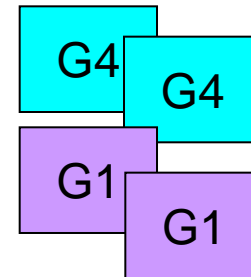
early actions
pre-wild card

early reactions
post-wild card

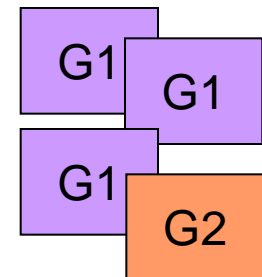
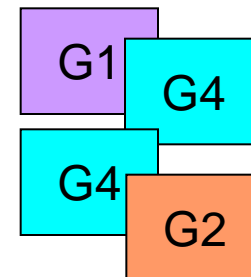
policy

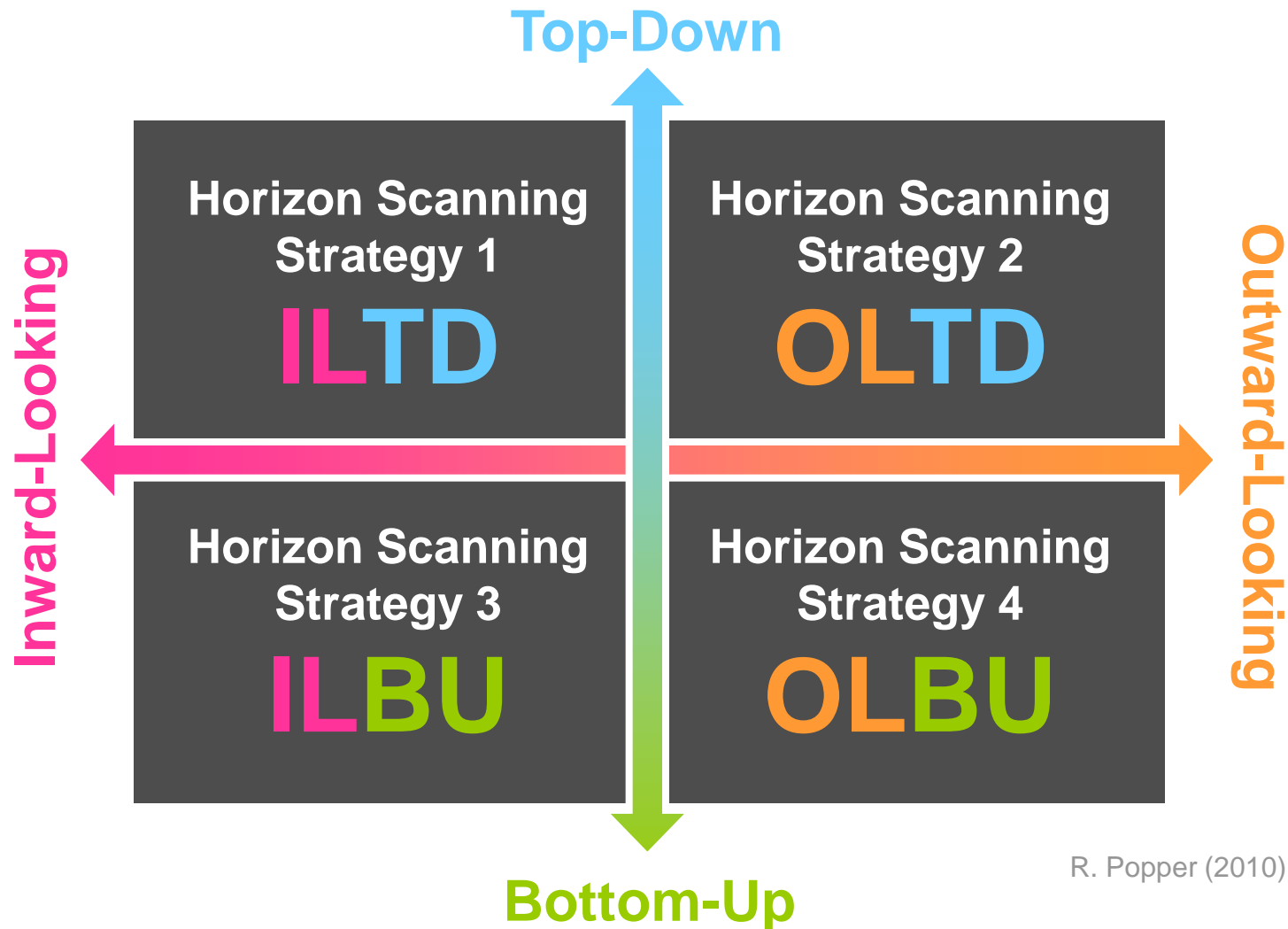


business



research





iKnow*

Scanning Spaces

horizon
scanning

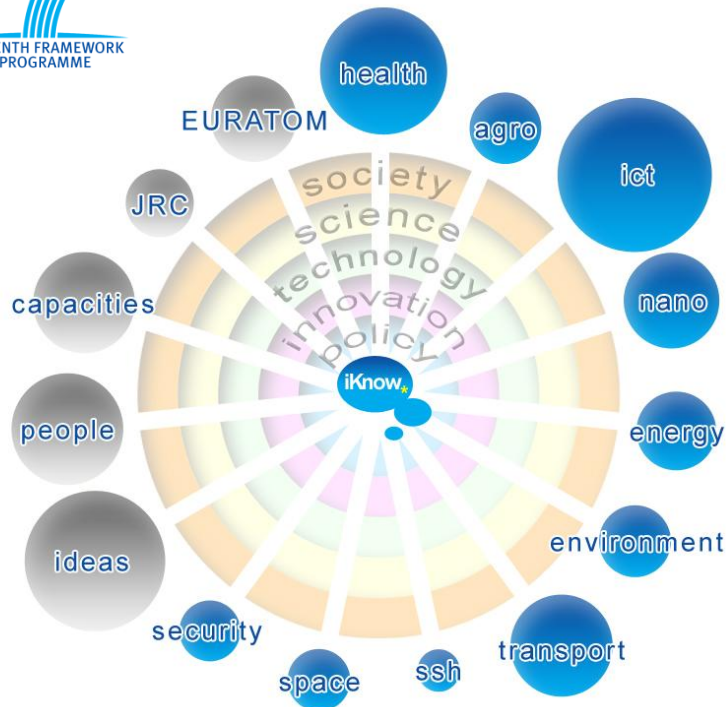
2.0

R. Popper (2010)

2009 Space



interviews



2010 Space



Etc.

interviews

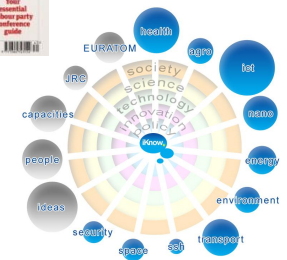


social networks

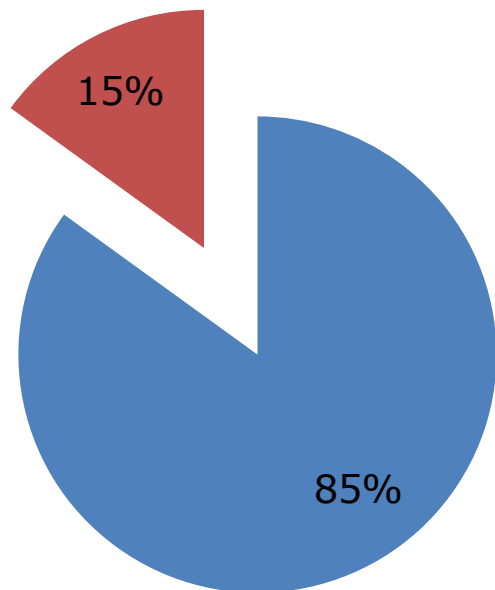


blogs

scientific journals

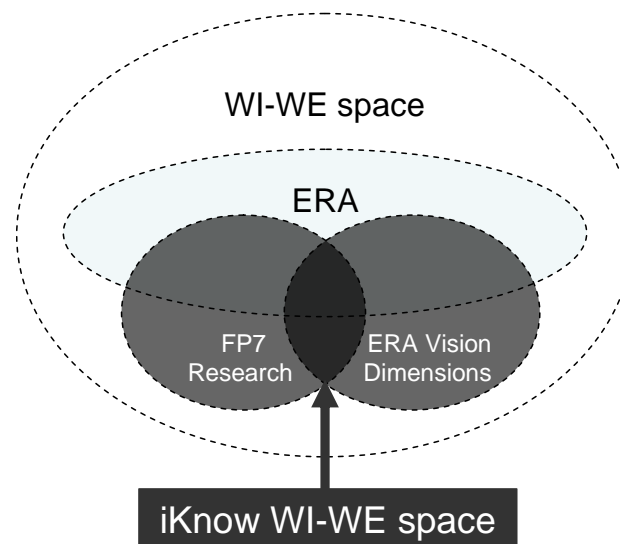


iKNOW's Policy Space

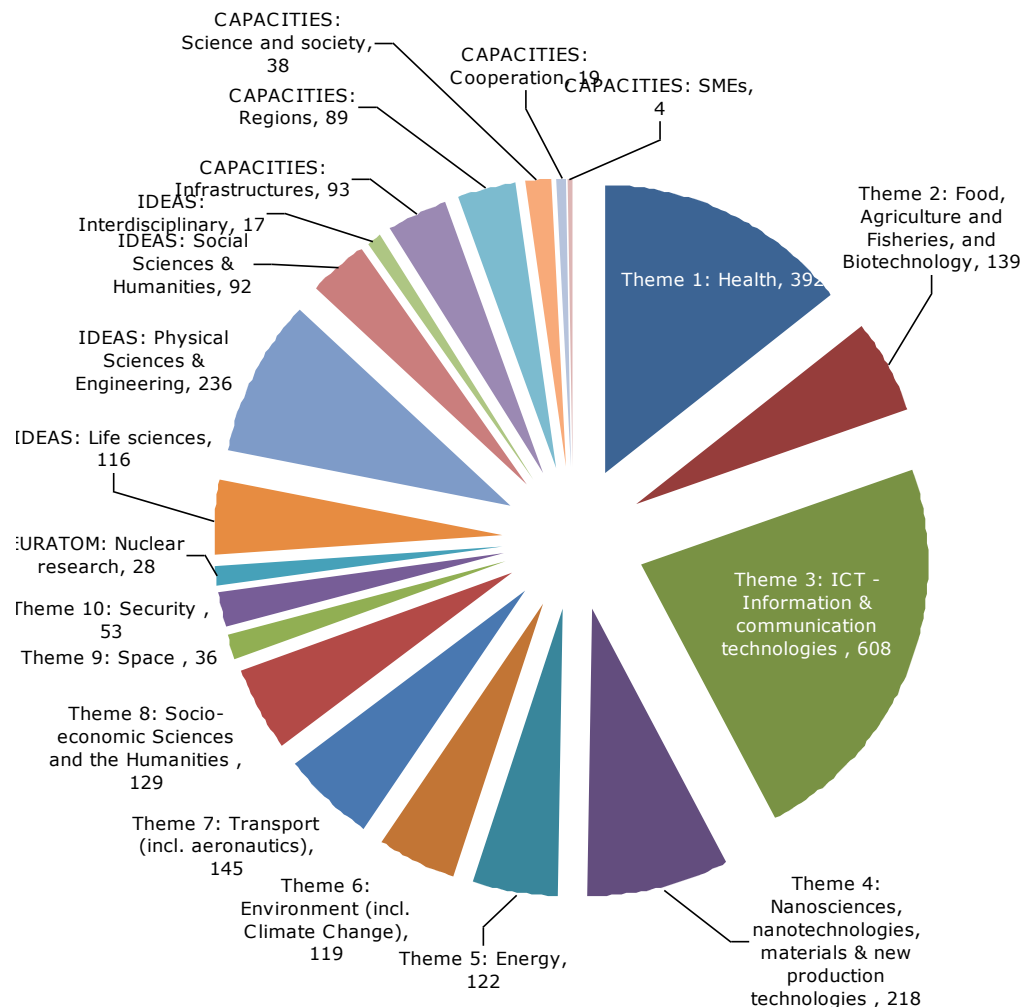
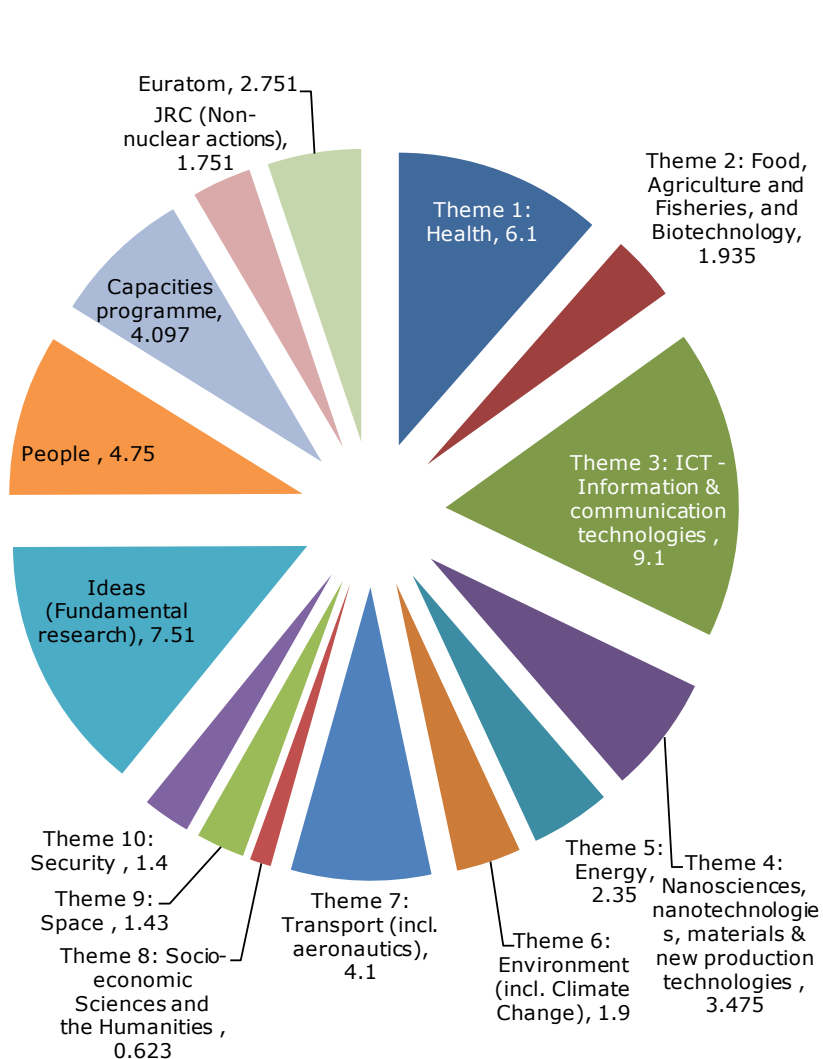


- Research Programmes conceived, developed and implemented nationally
- Research Programmes conceived, developed and implemented through intergovernmental organisations (such as CERN, EFDA, EMBL, ESA, ESO, ESRF, ILL, EUREKA, EURATOM and FP7)

**iKNOW
aims to inform
intergovernmental
policymaking**



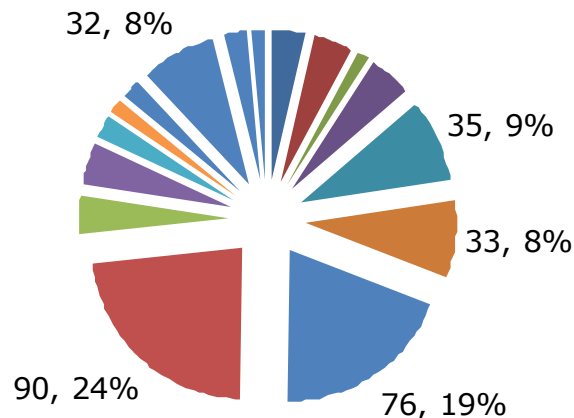
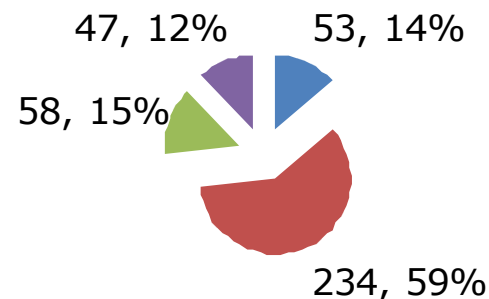
Scanning over 2,500 projects funded between 2007-2010



01. Health (392 projects scanned 2007-2010) € 6.1 billion

FP7 (11%)
Coo (19%)

- Biotechnology, generic tools and medical technologies for human health
- Translating research for human health
- Optimising the delivery of health care to European citizens
- Other actions



	■ High-throughput research
	■ Detection, diagnosis and monitoring
	■ Prediction of suitability, safety and efficacy of therapies
	■ Innovative therapeutic approaches and interventions
3	■ Integration of biological data and processes: large-scale data gathering, systems biology
4	■ Research on the brain and related diseases, human development and ageing
2	■ Transnational research on infectious diseases
1	■ Transnational research on other major diseases: cancer, cardiovascular disease, diabetes/obesity, rare diseases, other chronic diseases
	■ Translation of clinical outcome into clinical practice, including better use of medicines
	■ Quality, efficiency and solidarity of health care systems
	■ Enhanced health promotion and disease prevention
	■ Horizontal cooperation and support actions
	■ SICA on Optimising the delivery of health care to European citizens
5	■ Coordination and Support actions
	■ Responding to EU policy needs
	■ Specific International Cooperation Actions (SICA)

zpunkt

36 WI-WE

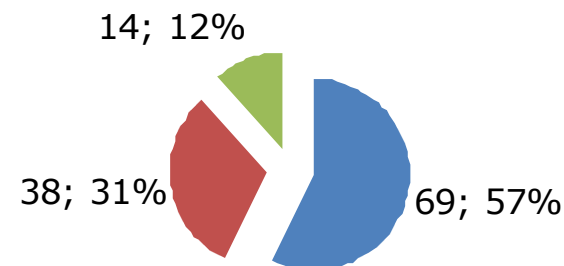
14 Wild Cards
22 Weak Signals



02. KBBE (139 projects scanned 2007-2010) € 1.9 billion

FP7 (4%)
Coo (6%)

- Sustainable production and management of biological resources from land, forest and aquatic environments
- Fork to farm: Food (including seafood), health and well-being
- Life sciences, biotechnology and biochemistry for sustainable non-food products and processes



■ Enabling research

1

→ Increased sustainability of all production systems (agriculture, fisheries and aquaculture)

■ Optimised animal health production and welfare across agriculture, fisheries and aquaculture

2

→ Socio-economic research and support to policies

■ Consumers

■ Nutrition

5

→ Food processing

5

→ Food quality and safety

■ Environmental impacts and total food chain

4

→ Novel sources of biomass and bioproducts

3

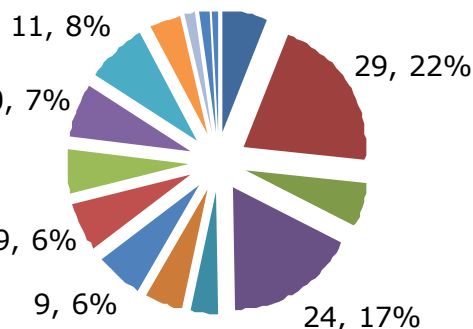
→ Marine and fresh-water biotechnology (blue biotechnology)

■ Industrial biotechnology: Novel high added-value bioproducts and bioprocesses

■ Biorefinery

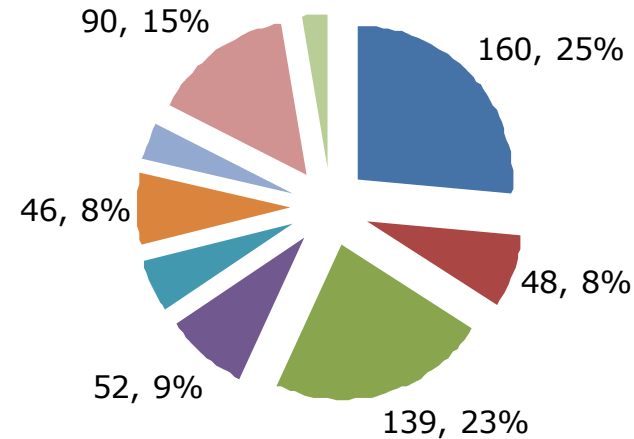
■ Environmental biotechnology

■ Emerging trends in biotechnology



03. ICT (608 projects scanned 2007-2010) € 9.1 billion

FP7 (17%)
Coo (28%)



- 1 → Pervasive and trusted network and service infrastructure
- 5 → Cognitive systems, interaction, robotics
- 2 → Components, systems, engineering
- 4 → Digital libraries and content
 - Towards sustainable and personalised healthcare
- 5 → ICT for mobility, environmental sustainability and energy efficiency
 - ICT for independent living and inclusion
- 3 → Future and emerging technologies
 - ICT: International cooperation



97 WI-WE

47 Wild Cards
50 Weak Signals

WI-WE Management System

Today (06.2010)

438 WI-WE

273 WI

165 WE

43 scanners



iKnow project
7th framework programme
theme 8: socio-economic sciences and the humanities



Welcome, Rafael Popper
(UNIMAN)

[Edit your user profile](#)

[>>> switch to administration](#) [Logout](#)



WI-WE Bank



Wild Cards



Weak Signals



WI-WE Scan

Quick Scan



NEWS



▼ iKnow Project

learn about the iKnow project

[description](#)



[objectives](#)



[workplan](#)



[methodology](#)



[team](#)



[activities](#)



[contact us](#)



[go community](#)



► Wild Cards & Weak Signals Bank

▼ My Latest WI-WE

Welcome to iKnow WI-WE Bank

Inside the WI-WE Bank, so far we have mapped **273 Wild Cards**, **165 Weak Signals** (total of **438 WI-WE**) and **43** active members. You will be able to view Wild Cards (WI) and Weak Signals (WE), create your own Wild Cards and/or Weak Signals, answer to Wild Cards and Weak Signals Dephi. You can also contribute to other member's Wi-We as they can contribute to yours.

What do you want to do ?



Create / Enter a weak signal

[Create your Weak signal now](#)

Create a Wild Card



Create a Weak Signal



Scan Wi-We(s)





Members login



[Forgot password ?](#) | [Request Registration](#)



WI-WE Bank



Wild Cards



Weak Signals



WI-WE Scan

Quick Scan



NEWS



▼ iKnow Project

learn about the iKnow project

[description](#)



[objectives](#)



[workplan](#)



[methodology](#)



[team](#)



[activities](#)



[contact us](#)



[go community](#)



► Wild Cards & Weak Signals Bank

► Wild Cards & Weak Signals Scan

▼ Popular WI-WE Tags



[All Tags](#)

[Wild Cards](#)

[Weak Signals](#)

▼ Newsletter



iKNOW Registration Request

Please enter information about yourself

All fields are mandatory

Your Full Name

Your Organization
(use "other" if not applicable)

Your E-mail

Describe Your Request Briefly

Please describe briefly (in 15 to 30 words) why would you like to access iKNOW tools

Protection code

Spambot protection



(Please write the code from picture below)

[Request Registration](#)

www.iknowfutures.eu

Scanning by knowledge sources

WI-WE Bank
 Wild Cards
 Weak Signals
 WI-WE Scan

[NEWS](#)

▶ iKnow Project

▶ Wild Cards & Weak Signals Bank

▶ My Latest WI-WE

▼ My WI-WE Profile

▼ Wild Cards & Weak Signals Scan

Scanning all WI-WE
 [→ view all](#)

Wild Cards
 Weak Signals

Type of WI-WE: [all WI-WE](#) | [Wild Cards](#) | [Weak Signals](#)
 Group of WI-WE: [your own](#) | [your organization](#) | [iKnow partners](#) | [iKnow community](#)

Filter: Inspired by

Sources: ▶ FP7 other EU other IGOs RTOs government business NGOs lawmakers/politicians scientists/researchers celebrities/artists blogs social networks TV/radio corporate press community press fiction books/movies magazines academic journals foresight/futures history/past event interviews workshops/meetings ERA dimensions ▶ community spaces other

	date	headline	key words/tags	FP7 theme
	07.06.10 09:14:14	Collapse of Social Systems: The Poor Old	system collapse, medical treatment, social system, poverty , old-age	FP7-HEALTH
	14.05.10 13:42:16	New ice age	climate change , environment , weather, ice age, survival	WM-BELGIUM
	12.05.10 10:20:48	"Cheap liquid fuel production from algae replaces oil by 2030"	biofuel	WM-FINLAND
	12.05.10 09:49:40	Female empowerment	ethics , politics , Gender equality, minority rights, women's rights, social change	
	12.05.10 09:20:11	New US pro-war President	conflict , security threat ., war, terrorism, nationalism, blocks	WM-CZ

36 WIs: 33% 43% 19% 5%
 18 WEs: 39% 23% 38% 0%
 WI-WEs: 54 total 79 edits

quick scan

quick scan

[scan WI-WE](#)

[scan WI](#)

[scan WE](#)

[scan deleted WI-WE](#)

iKNOW's list of European Grand Challenges



European Grand Challenges

21 Challenges of the 21st Century

www.iknowfutures.eu
Working Paper



June 2010

About iKNOW's list of European Grand Challenges

The list of European Grand Challenges presented in this **Working Paper** is the result of extensive discussions led by the University of Manchester team of the iKNOW project. The first list of Grand Challenges was developed by Rafael Popper, Ian Miles, Joe Ravetz and Yanuar Nugroho. This list was circulated to receive feedback from iKNOW partners with science, technology and innovation policy expertise: Finland Futures Research Centre, Z_punkt, UK's Regional Technology Centre North, Czech Republic's Technology Centre of the Academy of Sciences, and Israel's Interdisciplinary Centre for Technology Analysis and Forecasting. Subsequently, after several rounds of interactive discussions and email exchanges, the list was expanded to twenty Grand Challenges. Among the iKNOW colleagues invited to these discussions were: Jari Kaivo-Oja, Tuomo Kuosa, Cornelia Daheim, Ines Lietzke, Karlheinz Steinmüller, Martin Fatun, Karel Klusacek, Ondrej Pokorny, Ondrej Valenta, Aharon Hauptman, Yoel Raban and Yair Sharan.

The list of Grand Challenges was further developed and described in terms of their (1) **relevance for Europe**, (2) **relevance for research** and (3) **feasibility as an economic or social investment**. These criteria were identified by the European Research Area Expert Group on **Challenging Europe's Research: Rationales for the European Research Area**. The ERA Expert Group was chaired by Luke Georgioui and its members included Jennifer Cassingena-Harper, Philip Cooke, Susan Cozzens, Andrew Dearing, Luisa Henriques, Jerzy Langer, Philippe Laredo, Luis Sanz Menendez, Matthias Weber and Rafael Popper.

The description of the Grand Challenges (GCs) against the three selected criteria is still an **open process** initiated by the University of Manchester team, with Thordis Sveinsdottir playing a significant role since January 2010. The list was then socialised and shared with more than 40 experts participating in the iKNOW workshops in the United Kingdom and Czech Republic. During this socialisation process, the iKNOW team opened the discussions in search of additional inputs to the existing list or new ideas for potentially one additional GC. As a result, one of the keynote speakers invited to the Prague workshop (Simon Forge from SCF Associates) suggested the inclusion of *education standards and investments* and participants of the workshop as well as iKNOW partners unanimously recognised it as perfect candidate to complete the iKNOW's list of European Grand Challenges. Later on, Simon Forge sent us valuable inputs for the description of the twenty-first GC.

If you wish to contribute to iKNOW's list of European Grand Challenges, please contact Rafael.Popper@manchester.ac.uk or Thordis.Sveinsdottir@mbs.ac.uk

iKNOW's list of European Grand Challenges

Criteria to select Grand Challenges

Attractiveness

Criteria 1: Relevance for Europe

Question: Is it relevant to address at a European level?

- Does it show European added value?
- Is it based on an issue which is pan-European or regional within Europe e.g. Baltic/ Mediterranean?
- Does it correspond to a policy/strategy area that is already addressed at European level or has substantial potential to do so?
- Does it concern/have relevance for most Europeans?
- Is there a minimum critical effort required that cannot be achieved without European cooperation?
- Does it secure a distinctive European position in addressing a global challenge?
- Is there a specific advantage for European industrial or other actors to work together in the framework of the challenge?

Criteria 2: Relevance for Research

Question: Is there a clear research dimension contribution?

- Is research a critical component of the response to the challenge?
- Does the challenge have the potential to mobilise the research community and induce gains in efficiency and effectiveness?
- Will there be benefits to training and education?
- Will the knowledge generated be accessible to others in Europe who might benefit (if necessary on commercial terms)?

Feasibility

Criteria 1: Socio-economic feasibility

Question: Is it feasible as an economic or social investment?

- Can projects/programmes be framed to address aspects of the challenge in terms of SMART objectives (Specific, Measurable, Achievable, Relevant and Timebound)?
- Do the achievable goals nonetheless represent stretch targets? Can a viable economic case be made?
- Is there a decision path that will mobilise the necessary resources?
- Is there a research base of sufficient size and quality in Europe from which to launch the initiative?
- Is there a sufficient industrial capability or policy implementation capability in Europe to be able to realise the outcomes of the project/programme?
- Is there buy-in from all major groups of actors?
- Is there clear appeal for the research community to become engaged?
- Does it capture the public and the political imagination?

References

- Georgioui, L., Cassingena Harper, J., Cooke, P., Cozzens, S., Dearing, A., Henriques, L., Langer, J., Laredo, P., Sanz Menendez, L., Weber, M. and Popper, R. (2008), **Challenging Europe's Research: Rationales for the European Research Area (ERA)**. Report of the ERA Expert Group, European Commission, DG Research, EUR 23328 EN. Available at http://ec.europa.eu/research/era/pdf/eq7-era-rationales-final-report_en.pdf

List of iKNOW Grand Challenges

1.	Water security/vulnerability.....	5
2.	Energy security/vulnerability.....	6
3.	Diseases, health and well-being.....	7
4.	Sustainability (climate change/resilience).....	8
5.	Ageing and other demographic tensions.....	9
6.	Food security, diet & culture.....	10
7.	Globalization vs. localization.....	11
8.	Social cohesion vs. alienation.....	12
9.	Techno-security, hazard & risk.....	13
10.	Behavioural change vs. inertia.....	14
11.	Knowledge and technology sharing and asymmetry.....	15
12.	Work-Life balance and mental health.....	16
13.	Ethics/abuse of future S&T developments.....	17
14.	Crime/corruption vs. justice/transparency.....	18
15.	Governance and trust in governments.....	19
16.	Coexistence vs. conflict.....	20
17.	Social pathologies & ethical behaviour.....	21
18.	Social exclusion & poverty.....	22
19.	Prosperity & political stability.....	23
20.	Urbanization vs. counter-urbanization.....	24
21.	Education standards/investments.....	25

iKNOW's list of European Grand Challenges

1. Water security/vulnerability



Attractiveness

Question 1: Is it relevant to address at a European level?

Europe is facing growing water shortages like many other regions in the world—especially Southern Europe and Mediterranean countries.

Water crises can increase the risk of conflict, in addition to being a threat to human life, economic growth and industry.

EU needs to form a forward looking strategy to manage water supply and demand.

Vulnerability of drinking water distribution systems to deliberate attacks could have major public health, economic and psychosocial consequences.

EU needs to form a consistent emergency strategy to cope with deliberate attacks on water systems.

Question 2: Is there a clear research dimension contribution?

Climate change leading to increasing droughts and floods, which affect the supply of water, fuel the need for continuous environmental research.

Innovation needs to be guided by research into how to ensure sustainable water consumption/use.

Research is being carried out already under EU FP7 into how best to ensure the security of water systems. See projects like WASSERMED and SECUREAU.

Feasibility

Question 3: Is it feasible as an economic or social investment?

Water security is an enabling condition for development and necessary for a range of sectors economic growth, agricultural, health etc.

Research base is strong in Europe – projects such as WASSERMED have a consortium of 14 partners from a range of European research institutions.

Water crises put water safety in the headlines and thus this has become a public and a political issue

References

<http://www.secureau.eu/>

http://cordis.europa.eu/fetch?CALLER=FP7_PROJ_EN&ACTION=D&DOC=2&CAT=PROJ&QUERY=012674d4f0fe32ce26a925a8&RCN=93573

http://ec.europa.eu/research/water-initiative/pdf/water-for-life_en.pdf

<http://www.euwi.net/>

http://ec.europa.eu/development/center/repository/F13_water_fin_en.pdf

Identification of emerging issues

horizon
scanning

2.0

R. Popper (2010)



All tags

Wild Cards

Weak Signals

All tags

Wild Cards

Weak Signals

All tags

Wild Cards

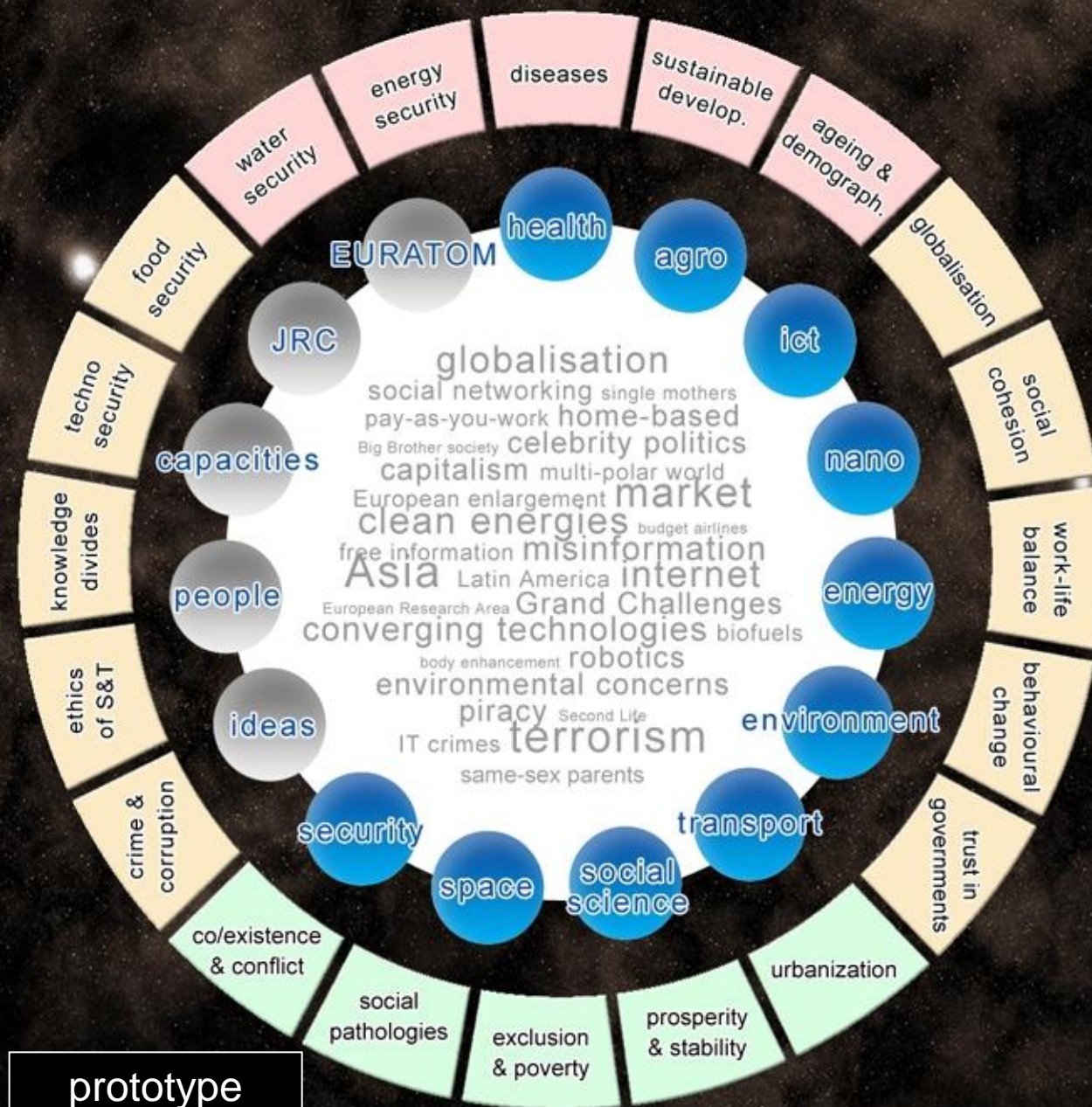
Weak Signals

top
Wi-We
keywords

top
Wi
keywords

top
We
keywords

interdisciplinary and interactive **early warning system**



interconnecting knowledge
(convergence-interdisciplinary)

new research questions

new research agendas

impact on Grand Challenges

identification of problems

identification of solutions

relevance to EU research

sense-making

pattern recognition

emerging issues

informing policy

possible futures

prototype

Despite the continuous efforts made by individual European countries *to improve the efficiency and relevance of public research systems*, the growing complexity and pace of progress in science, technology and innovation (STI) in the 21st century require the creation of a dedicated pan-European and international community contributing to this endeavour.

Such a community should be encouraged to play an active role in the development of participatory and state-of-the-art horizon scanning systems capable of interconnecting knowledge and mapping foresight for the identification and analysis of key issues related to major social, economic, environmental, political and technological (STEEP)

- Goals
- Challenges
- Opportunities.

This is why the European Commission (EC) has funded iKNOW and the European Foresight Platform projects. These projects are particularly aimed *to support the development of proactive research policies.*

The European Foresight Platform (EFP) is a coordination and support action aimed to consolidate the information and knowledge base on futures research.

To do so, EFP is

1. promoting the production of policy and methodology **briefs**
2. contributing to the identification of **good practices**
3. supporting **policy workshops** and community building
4. developing a **fully-fledged mapping environment** or **wikiforesight** system capable of **mapping foresight and forward-looking experiences** in Europe and other world regions.

Furthermore, **EFP's Mapping Environment** is powered by **iKNOW platforms**, thus making it capable of supporting:

- sophisticated scanning and
- in-depth network analysis

...of **practices**, **outcomes** and **players** (POP) in foresight & forward-looking