

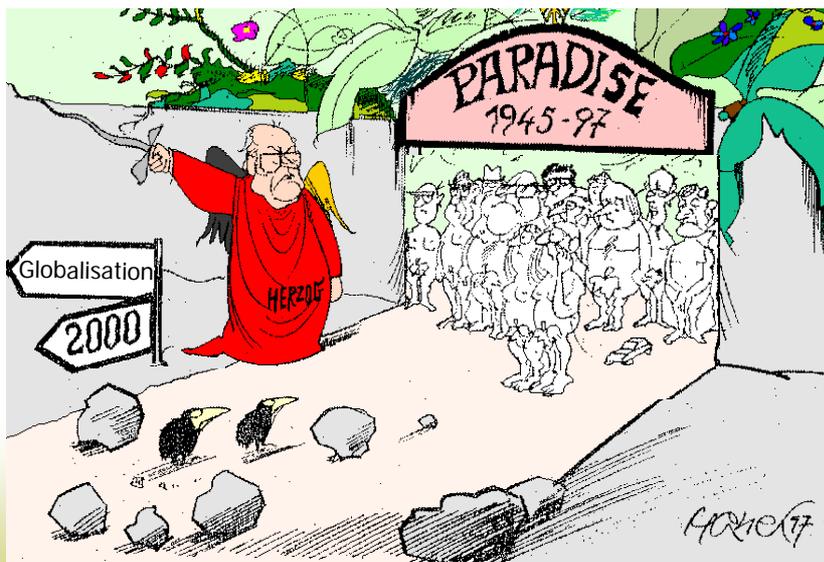


Looking Forward: A Rationale for the Future of the European Research Area

Andrew Dearing
Coimbra Group Annual Conference
Jena, 16th May 2008

1998

Paradise lost...



1998

Irresistible forces...

Tina



"New Game"
institutional
responses

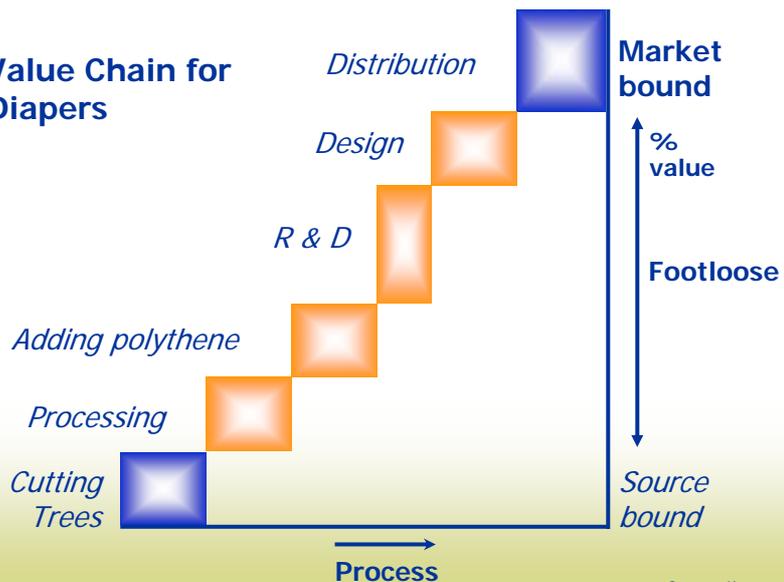
scale
scope
speed

"People Power"
individual
responses

1998

Activities became footloose...

Value Chain for Diapers



Source: Kearney

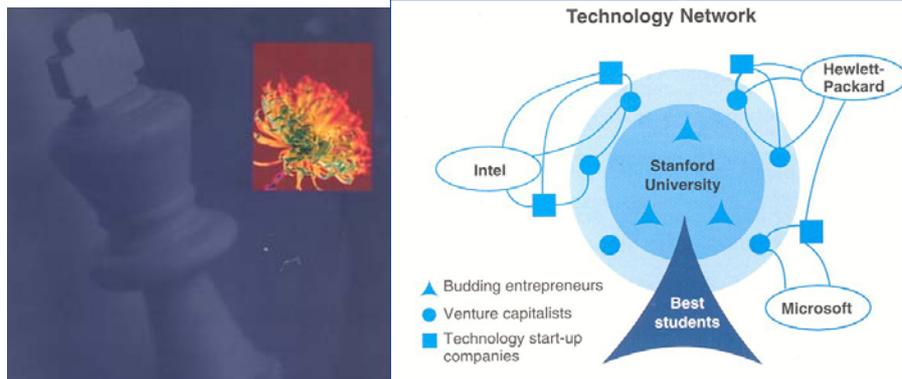
1998

Firms learned to cope...



1998

Innovation networks emerged...



"Increasingly the best organisations will be those that learn to make the technology network operate to their advantage"

Group Scenarios 1998-2020

Source: Royal Dutch Shell

2000

Impact on the knowledge economy was not simple...

“Provides new R&D capabilities as well as new markets”

“Provides a response to – but also helps create – complexity, expense and time pressures”

“The more these new capabilities warp time, the less relevant the linear model of R&D becomes”

Source: OECD

2006

NEW! Pringles PRINTS

Look for new Pringles Prints with Daytona 500 trivia printed directly on the crisps in stores now! They have the same irresistible Pringles taste, but with printed fun on every one. Pringles Prints are available in classic Original flavor in both the can and Snack Stacks® sizes.

Enter to win a Daytona 500 Race Weekend with Darrell Waltrip! You and a guest could be part of the Great American Race—the 2006 Daytona 500. **>> enter now!**

Could Your Idea Be Printed on Pringles?

Get in on the Pringles Prints fun! Help us brainstorm new topics—from brainteasers to sports trivia, and everything in between. Who knows? Your idea just might end up printed on Pringles!

Submit Your Idea

Coming Soon...

Can you outsmart “Survivor” trivia on Pringles Prints? Look for “Survivor” trivia printed on Pringles Prints in stores March 2005.

2005

From Closed "NatLab" to Open "High Tech Campus"



2007

Multimedia computers...

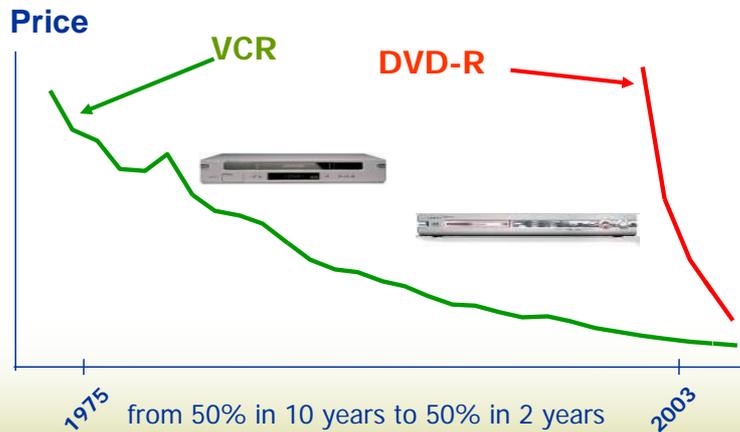
- WCDMA2100 (HSDPA), EGSM900, GSM850/1800/1900 MHz (EGPRS)
- Up to 160 MB* internal dynamic memory
- Memory card slot supporting up to 2 GB microSD memory
- Conference call
- Push to talk (PoC)
- Speaker independent name dialling (SIND)
- Voice commands
- Voice recorder
- Talking ringtone
- Integrated hands-free speaker
- Concatenated SMS, picture messaging, SMS distribution
- MMS, automatic resizing of your megapixel images (max 300 KB size depending on the network)
- Predictive text input: support for all major languages and Asia-Pacific
- Integrated wireless LAN (802.11 b/g)
- UPnP (Universal Plug and Play)
- Integrated Bluetooth wireless technology v.2.0 EDR
- USB 2.0 via Mini USB interface and mass storage mode support drag and drop functionality
- 3.5 mm stereo headphone plug and TV out support
- Nokia PC Suite connectivity with USB, Infrared and wireless technology
- Local synchronization of contacts and calendar to PC using compatible connection, Remote over-the-air synchronization (J2ME)
- Java MIDP 2.0, CLDC 1.1 (Connected Limited Device Configuration)
- Personal Information Management (PIM), Advanced S60 PIM features including calendar, contacts, to-do list, and PIM printing



- Settings Wizard for easy configuration of e-mail, push to talk and video sharing.
- 5 megapixel (2592 x 1944 pixels) camera, Carl Zeiss optics, Carl Zeiss lens, MPEG-4 VGA video capture of up to 30 fps
- Connection to compatible TV via Nokia Video Connectivity Cable
- USB (included in box) or wireless LAN/UPnP
- Call and video sharing support (WCDMA network services)
- External flash
- Stereo microphone
- Album/blog: photo/video uploading from gallery
- Weblog 2.0 support
- Image and still image editors
- Director for automated video production
- Print solution, Transfer photos directly to compatible printer or kiosk
- PressShare solution, Easy sharing of captured photos and directly from the gallery or straight after capture
- PressTransfer solution, Transfer and organise photos and between your device and compatible PC
- Music player - supports MP3/AAC/AAC+/eAAC+/WMA/M4A playlists and equalizer.
- WMA 2.0 & WMDRM support for music
- FM radio (87.5-108MHz /76-90MHz) with Visual Radio support
- GPS
- Nokia Web Browser with Mini map
- Supported video formats : MPEG-4 , H.264/AVC , H.263/3GPP, RealVideo 8/9/10

Source: Nokia

2006 Globalization and managing product life-cycles



2008 Strong growth in demand happened somewhere else...

- Steel cord demand in China grew by **36% per year** over the past 8 years. **China has become the world's largest market for steel cord.**
- Demand in the rest of the world is following the growth of the tyre markets : **2% growth rate**

Irresistible forces...



Tina

Liberalisation
Globalisation
Technology

**connected
multi-discipline
service-oriented
business model
global
Open**

Ambitions for European Research Area

- More dynamic private research investment
- Effective tools to protect intellectual property
- Obstacles to mobility of researchers removed
- A greater place for women in research and the young to be attracted into research and careers in science
- Europe to offer attractive prospects to the best brains
- Networked European S&T centres of excellence (incl virtual)
- Regions to play a more important role in the European research effort
- Scientific communities of Western and Eastern Europe better integrated

Kuhlmann - Scores left out

PRIME NoE ERA Dynamics - New configurations of knowledge, institutions and policy in Europe

Aho Group called for a four pronged Innovation Strategy

2006 Simultaneous and synchronous actions at all levels in:

1. Creation of a market for innovative products and services
[**adequate demand pull**]
2. Providing sufficient resources for R&D and innovation
[**adequate supply push**]
3. Improving the structural mobility of Europe
[**responsiveness, connections** and **reduced transaction costs**], and
4. Building positive attitudes and a culture favourable towards entrepreneurship and risk taking [**mindset**]

European Research Area – Analysis based on deficit and supply...

2000 *"Above the European research effort as it stands today is no more than the simple addition of the efforts of the 15 Member States and the Union. This fragmentation, isolation and compartmentalisation of national research efforts and systems and the disparity of regulatory and administrative systems only serve to compound the impact of lower global investment in knowledge."*

2004 *"There is overwhelming evidence of the vital importance of boosting R&D as prerequisite for Europe..."*

ERA Rationales Expert Group Outline Report

- Move the Rationale for European Research Area from deficit to opportunity by introducing a strong content dimension
- Be more coherent with philosophy of Aho report: demand, supply, connections, resilience
- Express ERA's objectives in terms of maximising value contributed by research to economic, social & environmental goals
- Encompass the entire research system including business, RTOs and wider stakeholders
- None of the recommendations conflict with the 2007 Green Paper: it's really about a change in mindset

Full report is available at http://ec.europa.eu/research/era/progress-on-debate/expert-groups-analyses_en.html
See also Nature, 24 April 2008, (452) 935-936

Competition, cooperation and coordination

Competition is the prime driver of research excellence but too much becomes dysfunctional

Creates high transaction costs and squeezes ability of institutions to develop autonomous strategies.

No one-size-fits all prescription for cooperation and coordination

Each sub-field at different stages of development has its own needs

Misleading to speak of single market for research in Europe

Complex systems of markets (at the corporate end of the scale and for scientific labour), quasi-markets (attempts to commercialise public labs) and competitive allocation of public resources for research which do not operate on market principles

Interlinked core elements...

- Engage research system in Europe's response to a series of **Grand Challenges**
- Develop a **research-friendly ecology** to allow actors and institutions to work together in productive networks
- Achieve a step-change in the quality of dialogue and linkages between supply and demand for research to **re-orientate strategic and applied research in close support of policy and regulation** at EU level

Grand Challenges - where no-one can play well unless everyone plays



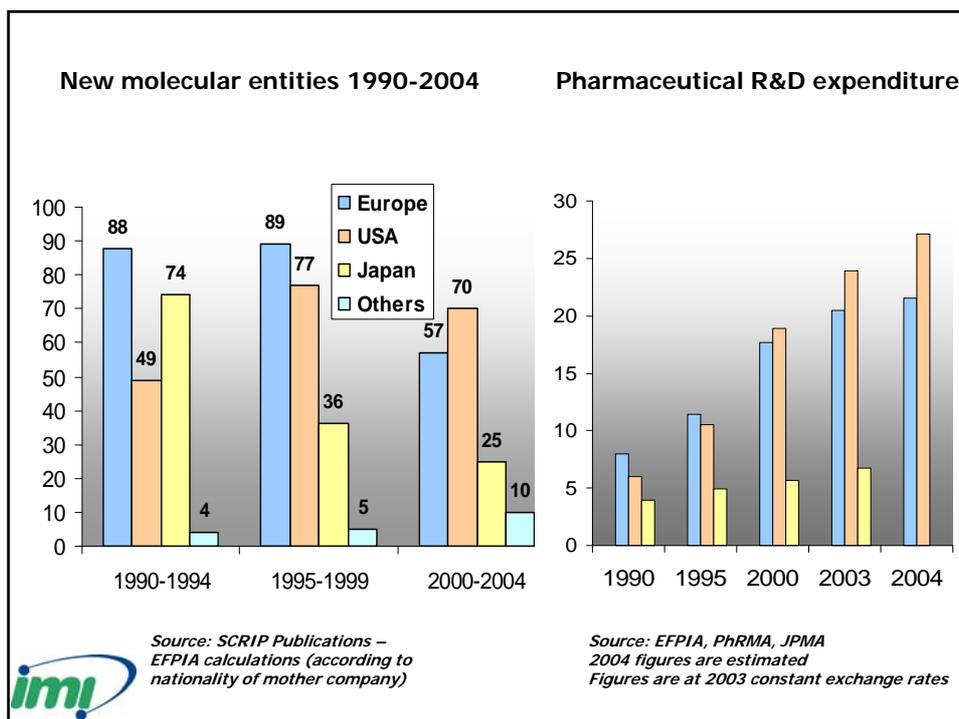
Three types of Challenge

- **Economic challenges**
 - correspond to the agenda set out by the Aho Group and need to engage business through a combination of supply-side measures for promotion of RTD and demand-side measures to create innovation-friendly markets
- **Social and environmental challenges**
 - causes and consequences of issues such as climate change, food and energy security and the ageing society
 - will the initial drive have to come from governments?
- **Science and technology**
 - collective ability to respond to opportunities in frontier research
- In fact all are related – **organising “people issues”**

Core criteria for Challenges

Need to illustrate and quantify by example

- **Relevance**
 - demonstrated by contribution to European-added value through trans-nationality, subsidiarity and the need for a minimum critical effort
- **Research dimension**
 - to ensure the buy-in of the research community and the potential to induce improvements in efficiency and effectiveness
- **Feasibility**
 - as an economic or social investment in terms of research and industrial capability and a viable implementation path



Capitalising upon interdependencies Innovative Medicines Example

Academic groups	Can't apply knowledge without the industry and thereby gain value from their intellectual property
Clinical groups	Do not have capability to develop the new biological tools
The SME's	Need academia for ideas, cannot maximise value from tool discovery unless applied by industry
The pharmaceutical industry	Cannot maximise use of new tools unless accepted by the regulators, which can only be done by sharing and pooling data
Government agencies	Face pressure to speed patient access to new medicines without increased risk, need better information for risk/benefit and cost/benefit analyses
The patients	Need to feel part of the process to ensure their willing co-operation

Research-friendly ecology

Ecology rather than research & innovation system as organising principle to describe rationale for ERA

Share the focus on interactions, structuring environmental features, the need to marshal competences, and critical role of education and research as knowledge infrastructure

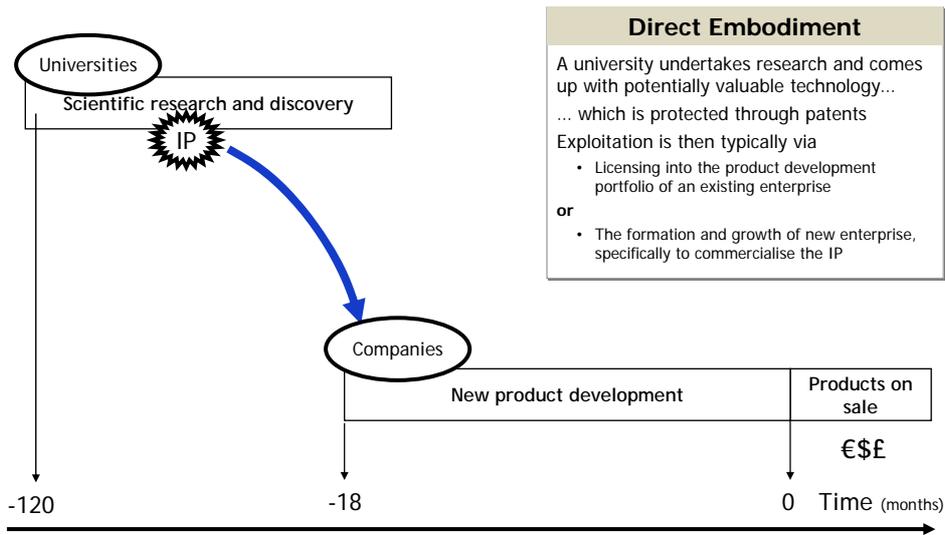
Adds focus on distribution and abundance of research performers and their interactions with one another and the broader environment

Low transaction costs, responsive and resilient

The Missing Mezzanine

We have unwittingly all been using the wrong models...

many which need: highlight



The Missing Mezzanine

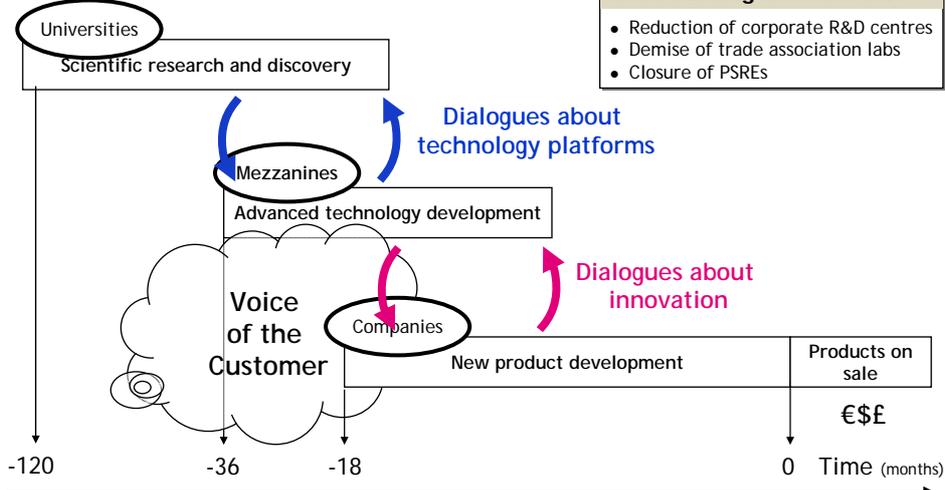
A key factor to bridge the gap

many which under light work!

Advanced Technology Development

Gone missing from the UK?

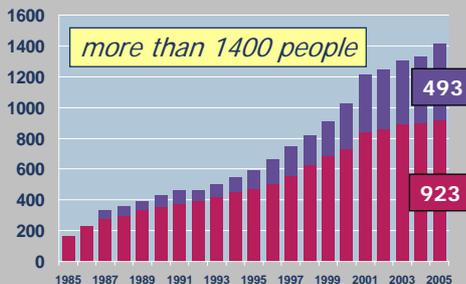
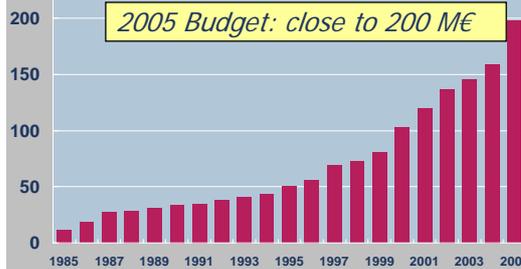
- Reduction of corporate R&D centres
- Demise of trade association labs
- Closure of PSREs



IMEC - Steady Investment – World Class

1984

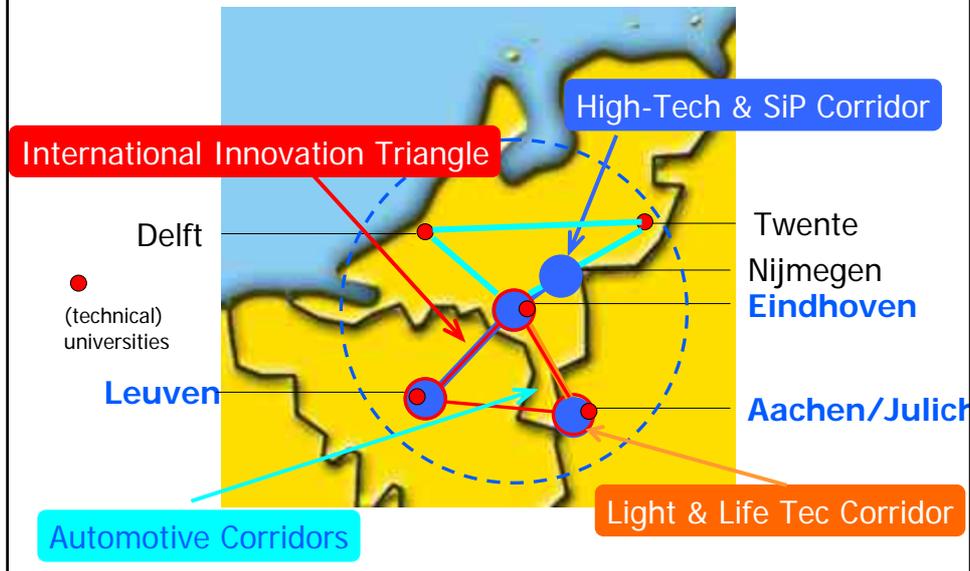
Established by state government of Flanders in Belgium
 Non-profit organization
 Initial investment: 62M€
 Initial staff: ~70



2006

One of the largest independent R&D organizations in this field, worldwide
 Annual budget : close to 200M€ (includes 35 M€ grant from government)
 Staff: more than 1400
 Collaboration with >500 partners
 < 18% government/state funding

Emerging Euregional High Tech Ecosystem



Research funding organisations drive up quality...

Require a more coherent voice in the European arena.
Influence limited by lack of unitary umbrella organisation

Peer review offers more potential than common pots

Opportunity to raise standards across Europe through more transnational peer review

ERA role could be to create European College of Reviewers to facilitate the process

Charitable or philanthropic foundations deserve greater attention in ERA thinking

Among their strengths is the ability to articulate demands for research from citizens.

Universities empowered and business engaged...

Universities play a crucial role but diversity has to be recognised

Pressing need for universities is to replace bureaucratic restrictions with autonomy and accountability as part of their Research Ecology

Firms play central role in the wider research and innovation ecology but they have not strongly engaged with ERA

Priorities are to achieve the innovation-friendly market and engage in vertical actions for market creation as part of Grand Challenge approach

Support initiatives should follow the supply chain and not attempt to target SMEs separately from their main customers.

Research Ecologies require reinforced pathways between small and large firms and between firms and public research

Markets established for applied research...

- Pressing need to open up the European market for applied research services
- Research and Technology Organisations can fill in the "missing mezzanine" in the ecology but have minimal cross-border business
 - Non-national EU enterprise income less than 5% of turnover of €5.8 billion for top 9 RTOs
 - Non-national governmental business is negligible
- Measures needed to stimulate mergers, joint ventures and other linkages
- Consideration should also be given to specific subsidies for cross-border business

Researchers mobilised...

At the level of individual researchers, principal needs are to tap a wider pool of talent and to tackle the unsolved problem of cross-sectoral mobility

- needed to meet the demands of knowledge circulation and exchange
- aim should be permeable institutions but national action to remove barriers must precede transnational initiatives

More research needed on the role of social exclusion from research

Cohesion and equity addressed...

- Regions require research institutions that are engaged with their own context and local users
 - Access to the benefits of research and innovation cannot be achieved purely through knowledge transfer
 - Practising research, particularly of an applied, problem-solving nature, is needed for a community to remain in the networks which circulate knowledge and to achieve absorptive capacity to use that knowledge
 - Ideally, institutions should also be linked to the provision of higher education.
- ERA can reinforce knowledge flows in and out of regions
 - Natural conduit for connecting to firms and research institutions in other countries
 - Better networked institutions are more able to attract and retain talent.

Closer links created between European Research and European Policy...

- Much closer alignment between research carried out at a European level (Framework Programme and coordinated national research) and support for European policies
- ERA benefits can be gained across full range of policies and regulatory responsibilities that Member States agree for European level
- Argument does not apply to the ERC and other research where principal goal is promotion of excellence and capacity – but it does apply to most of the rest of research currently conducted at European level

Purpose, meaning and relevance expressed...

- Make **compelling case for real shift in resources**
 - More meaningful to citizens and political leaders
 - More relevant to all research actors
 - Better articulation of balance of demand and supply
- **Institution in its setting**, reinforced by related variety
 - Promoting networked specialisation and localised concentration
 - Linking complementary capabilities
 - Competing for larger and longer term units of funding
 - Placing more responsibility on competent regional authorities
 - Improved professionalism in terms of managing today's priorities

Care over preconceptions and realities...



- “Relevance” [Grand Challenge and Local Ecology mean relevance is determined by need, expressed by demand, not by central planning]
- “Larger role for governments” [Learn from markets]
- “European” [Show how European dimension can achieve more relevance and responsiveness to local needs and personal interests than purely national approaches]
- “Budget for Framework Programme” [New approach needed]
- “Red tape and bureaucracy” [Yes, but..]
- That word “Open”

2008

TINA and ERA...



Grand Challenges Effective Governance

Liberalisation	scale
Globalisation	scope
Technology	speed

**Research and Innovation
Ecologies
Effective Institutions**