FP6 *Ex-Post* Evaluation:

Report on Findings of the Expert Group

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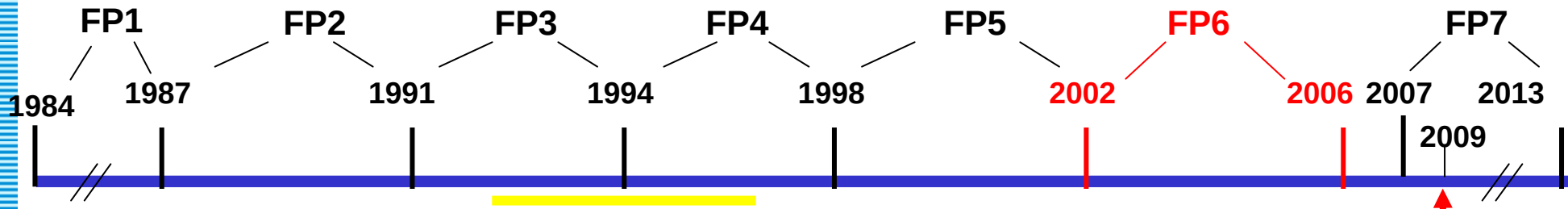
Leibniz Association

Chair of the FP6 Expert Group

EUFORDIA Conference

Prague, 24-25 February 2009

EX-POST EVALUATIONS: FIVE YEAR ASSESSMENTS (FYA)



(FP 3./4.) chairman Vicomte Davignon

FYA-Report 1992 – 1996

(FP 4./5.) chairman Joan Majó i Cruzate

FYA-Report 1995 – 1999

(FP 5./6.) chairman Erkki Ormala

FYA-Report 1999 – 2003

(FP6) chairman Ernst Th. Rietschel

FP6-Report 2002-2006

FP6 *EX-POST* EVALUATION

GENERAL ASPECTS

- **For the first time: comprehensive evaluation of a single FP**
- **The first FP intended to contribute to policy initiatives (ERA, Lisbon goal)**
- **Evaluation panels became more diverse (scientists, science policy experts)**

- **Evidence base was good…….**

FP6 EXTERNAL EXPERTS

Jakob Edler

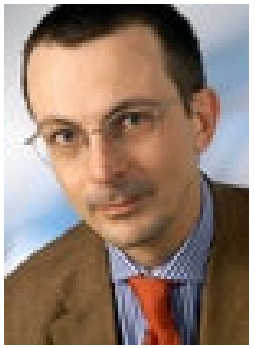
International Dimension

Philippe Laredo

ERA

Tarmo Lemola

Simplification



Michael Stampfer

EAV

Nick Vonortas

Statistical Analysis

FP6 *EX-POST* EVALUATION

GENERAL ASPECTS

- For the first time: comprehensive evaluation of a single FP
- The first FP intended to contribute to policy initiatives (ERA, Lisbon goal)
- Evaluation panels became more diverse (scientists, science policy experts)

•Evidence base was good……but needs improvement

•Particular context of FP6

CONTEXT OF FP6 (2002 – 2006)

- **Withdrawal of companies from fundamental research**
- **Reforms in national universities/research institutes (DE: Clusters of Excellence)**
- **The „Triad“ (Europe, USA, Japan) has lost its quasi-monopole of RTD (China, India, Brazil!)**
- **Social priorities such as climate change and security (post 9/11) play a growing role for non-economic criteria in European RTD**
- **New Member States (10 in 2004, 2 in 2007)**
- **FP6 budget: only 4% of EU Member States‘ combined public R&D budgets**

CONTEXT OF EVALUATION (2008)

- **Global Financial Crisis: problem and opportunity**
- **FP7 underway: midterm evaluation topics**
- **Planning of FP8 envisaged**

FP6 EVALUATION ISSUES

Rationale

- Why intervention in RTD?
- Policy objectives?
- Appropriate way to tackle objectives
- Right goals and scope

Implementation

- Design and goal setting
- New instruments
- Participation
- Suitability and sustainability of instruments
- Assessment of proposals
- *Ex-post* evaluation
- Administration - Simplification
- Knowledge dissemination of RTD results

FP6 EVALUATION ISSUES

Achievements

- **Contribution to ERA**
- **Quality of research results**
- **Effects of FP6 on research and industrial competitiveness**
- **Other goals (e. g. SME´s, gender…)**

Conclusions

Recommendations

Vision for Europe

RATIONALE OF FP6

Problems

- **Market failures**
- **Systems failures**
  (push-, pull-, linear models)
  - policy mix
  - focussing devices
- **Relationship**
  academia – industry –government

Solution

- **ERA, a new policy dynamic**
- **FP6 as a means**
  - to focus and integrate European research thereby structuring ERA and strengthening its foundations

HIGH-LEVEL PROGRAMMATIC GOALS OF FP6

….Knowledge ecology…..

Strengthening the scienctific and technological basis of community industry and encouraging it to become more competitive while promoting all the research activities claimed necessary by other chapters of this Treaty.

…..innovation systems…..

PROBLEMS WITH GOALS OF FP6

- **Jump to detailed work programmes with little consideration of the adequacy of these programmes and their budget for reaching goals.**

- **Only few of FP6 goals were:**
  - **S pecific**
  - **M easurable**
  - **A ttainable**
  - **R ealistic**
  - **T imely**

PROBLEMS WITH SUBGOALS OF FP6

Non-SMART

- **Support development of ERA**
- **Counterbalance weakness of European research and innovation**
- **Make a tangible improvement in Europe´s innovation performance**

SMARTer

- **Promote researcher mobility**
- **Develop common infrastructures**
- **Set standards for the wider safe use of radioactive materials**

IMPLEMENTATION

- **Design process**

  - **FP draft discussed by MS council, EP, DG (co-decision)**
  - **Process not well documented**
  - **Logic and final choice remain opaque**
  - **Decentralized process would require strong coordination**

- **Recommendation**

  - Transparency and Documentation
  - Development of programme logic
  (targets, SMART subgoals, strategy, instruments, adequate budget etc….)

STRUCTURE AND BUDGET OF FP6

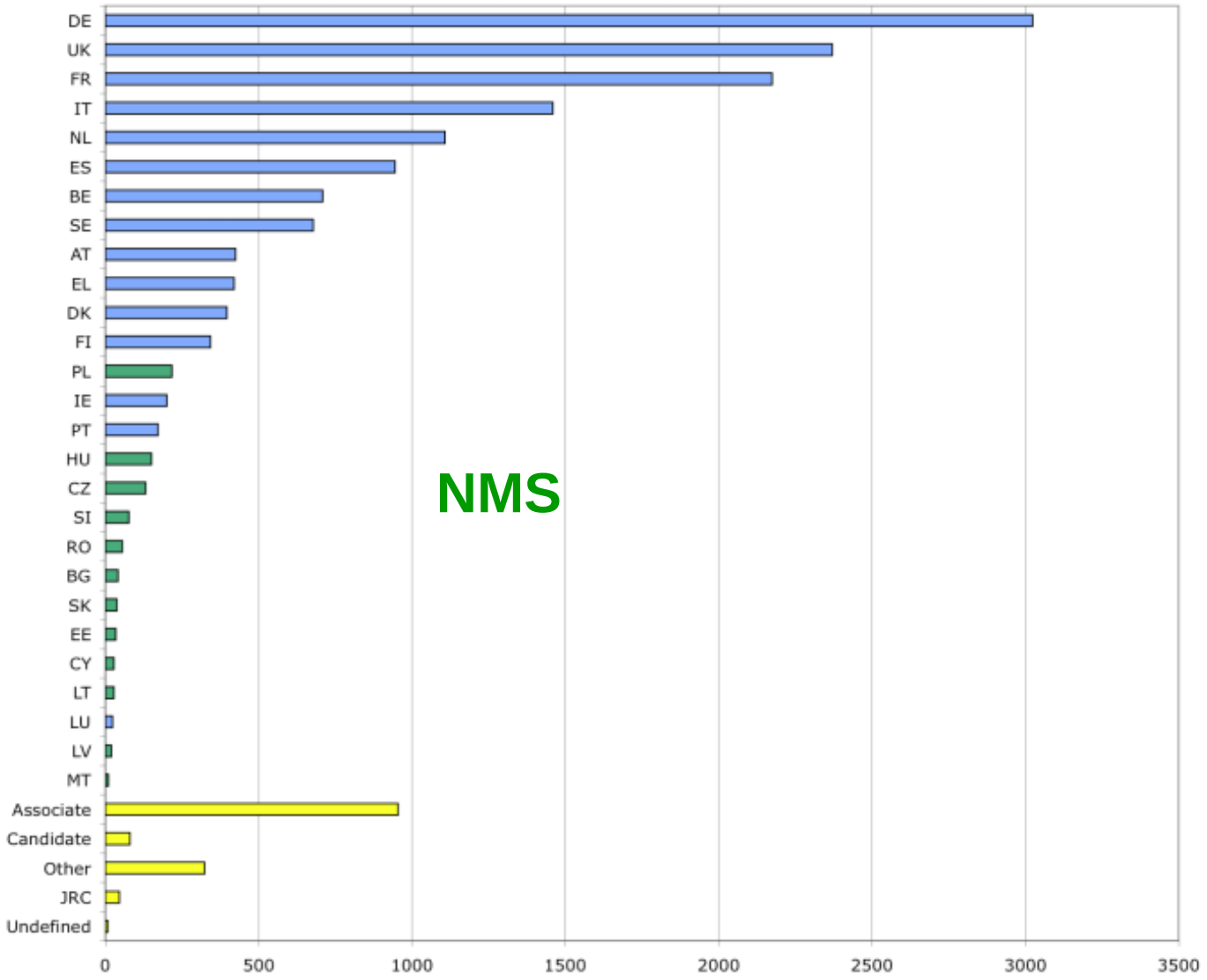
FP6 for RTD and Demonstration Activities	**17,883 (€m)**
1. Focusing and Integrating Community Research (7 Thematic Priorities; specific activities; horizontal research incl. SMEs; JRC)	*14,682*
2. Structuring ERA	*2,854*
3. Strengthening ERA	*347*
EURATOM	**1,352 (€m)**
• ***Priority thematic areas***	*978*
• ***Other activities***	*55*
• ***JRC***	*319*
Grand Total:	**19,235 (€m)**

OVERVIEW OF FP6 PARTICIPATION

- 213 Calls for proposals
- Attraction of 56,000 proposals (390,000 potential participations)
- 23,000 Marie Curie actions

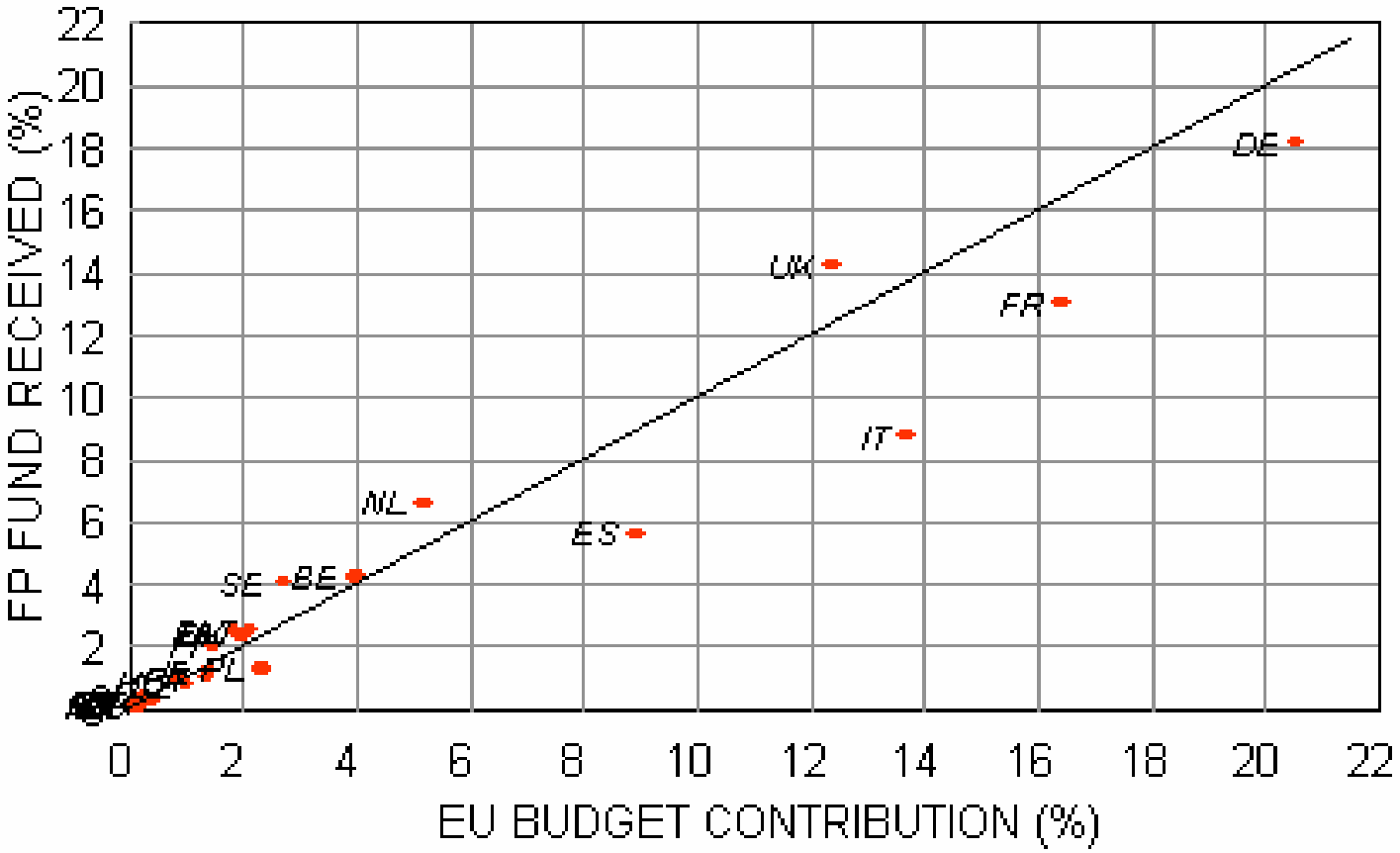
	FP5	FP6	FP5 excluding HRM	FP6 excluding HRM
Total number of contracts	16,553 ↘	10,058	12,391 ↘	5,485
Total number of participants	84,267	74,400	75,046	65,960
Ø number participants per contract	5.1	7.4	6.1	12.0
Total EC financial contribution (€m)	13,065 ↗	16,669	11,808 ↗	14,952

COMMUNITY CONTRIBUTION IN FP6 BY COUNTRY



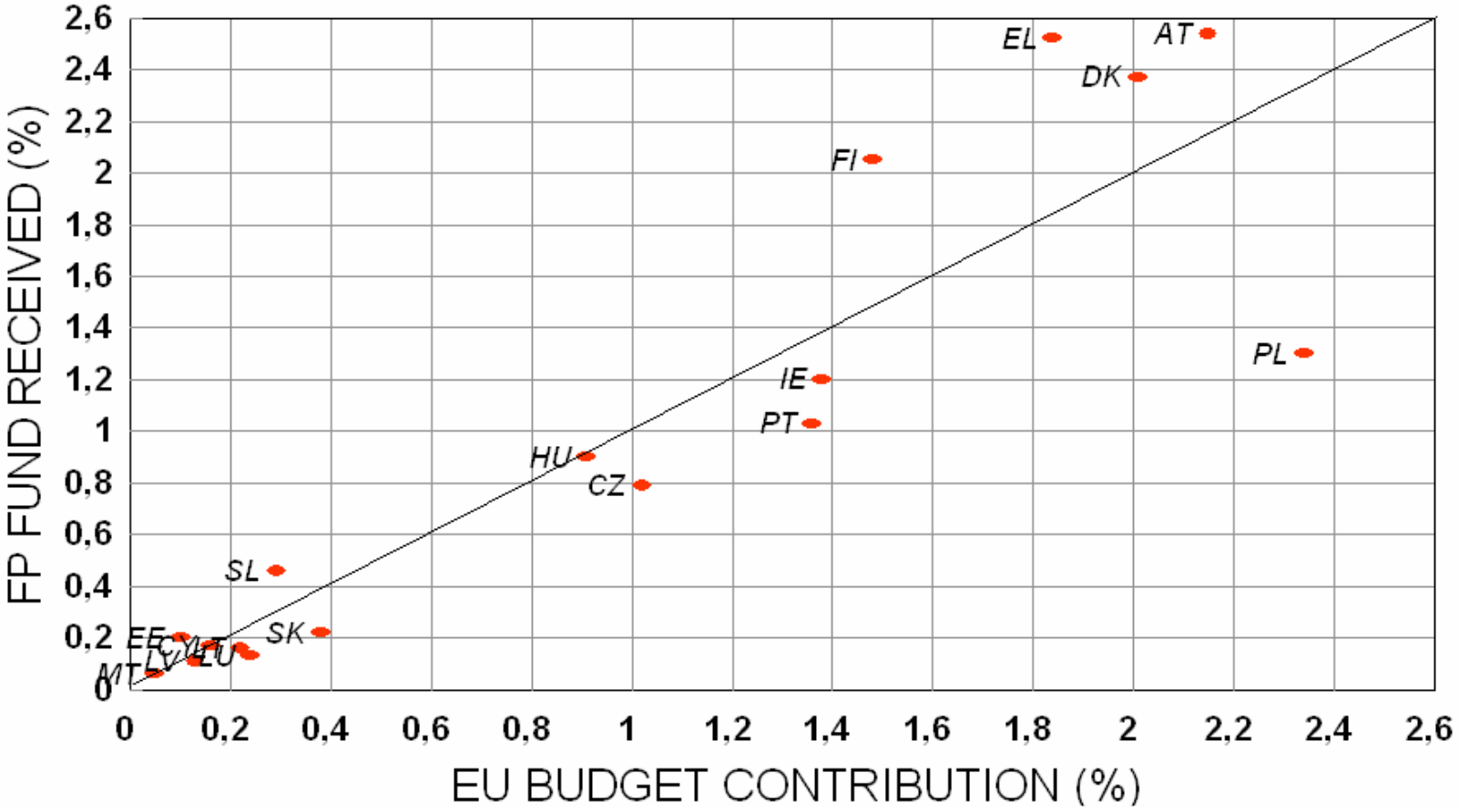
SHARES OF EU GDP AND RETOUR IN FP6

Larger Member States

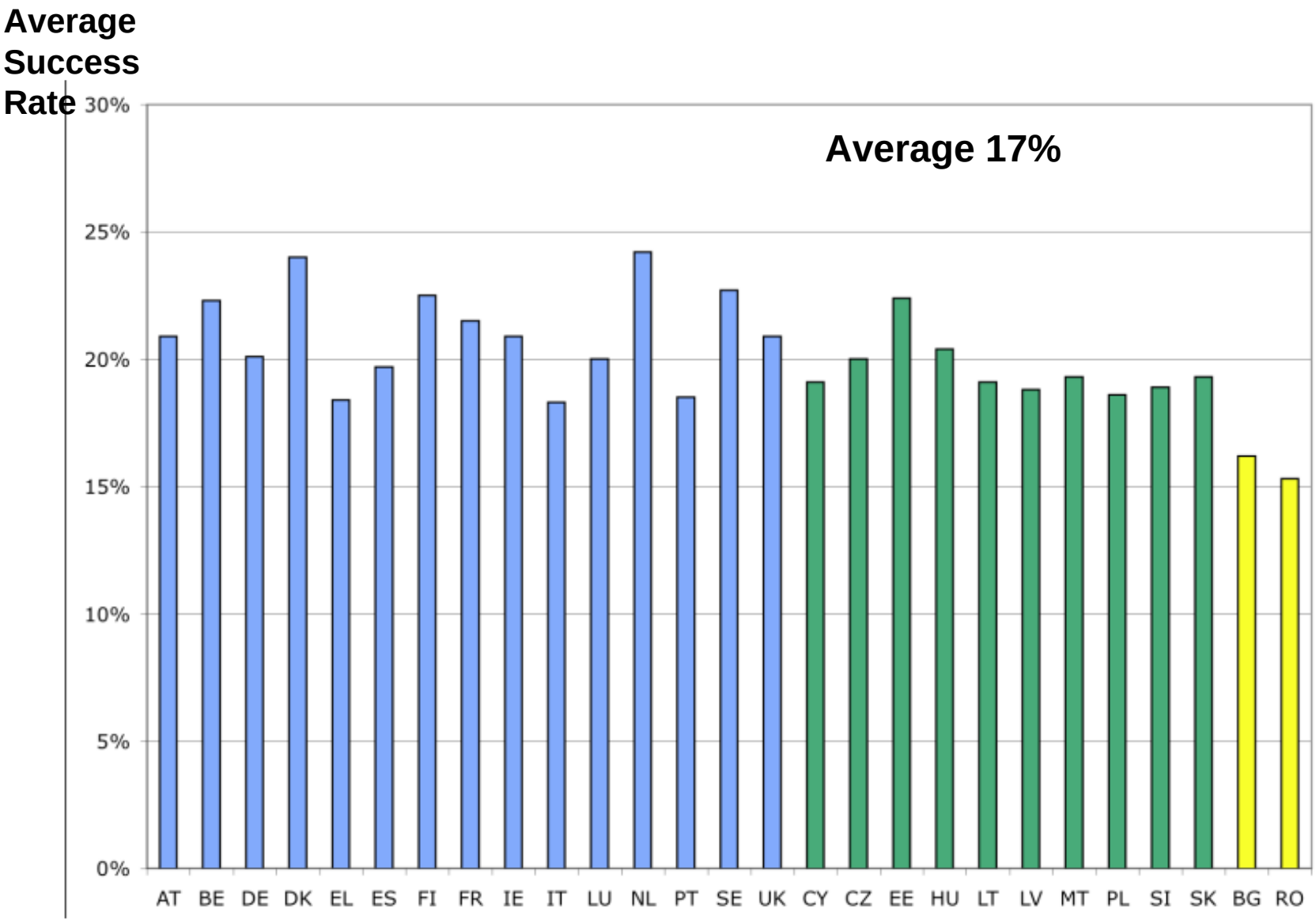


SHARES OF EU GDP AND RETOUR IN FP6

Smaller and Medium Member States

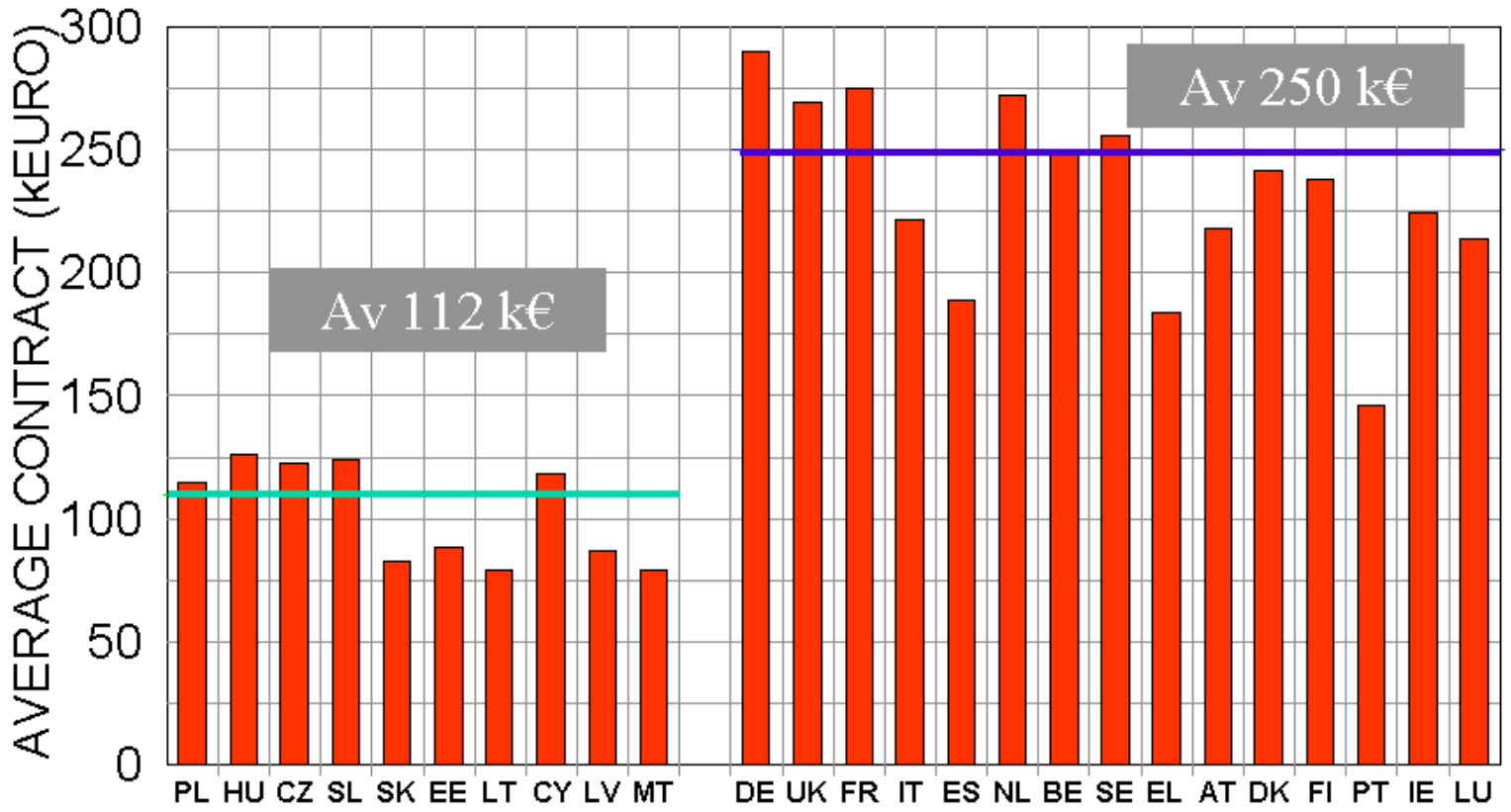


SUCCESS RATES FOR PROPOSALS BY COUNTRY



AVERAGE PARTICIPATION CONTRACT

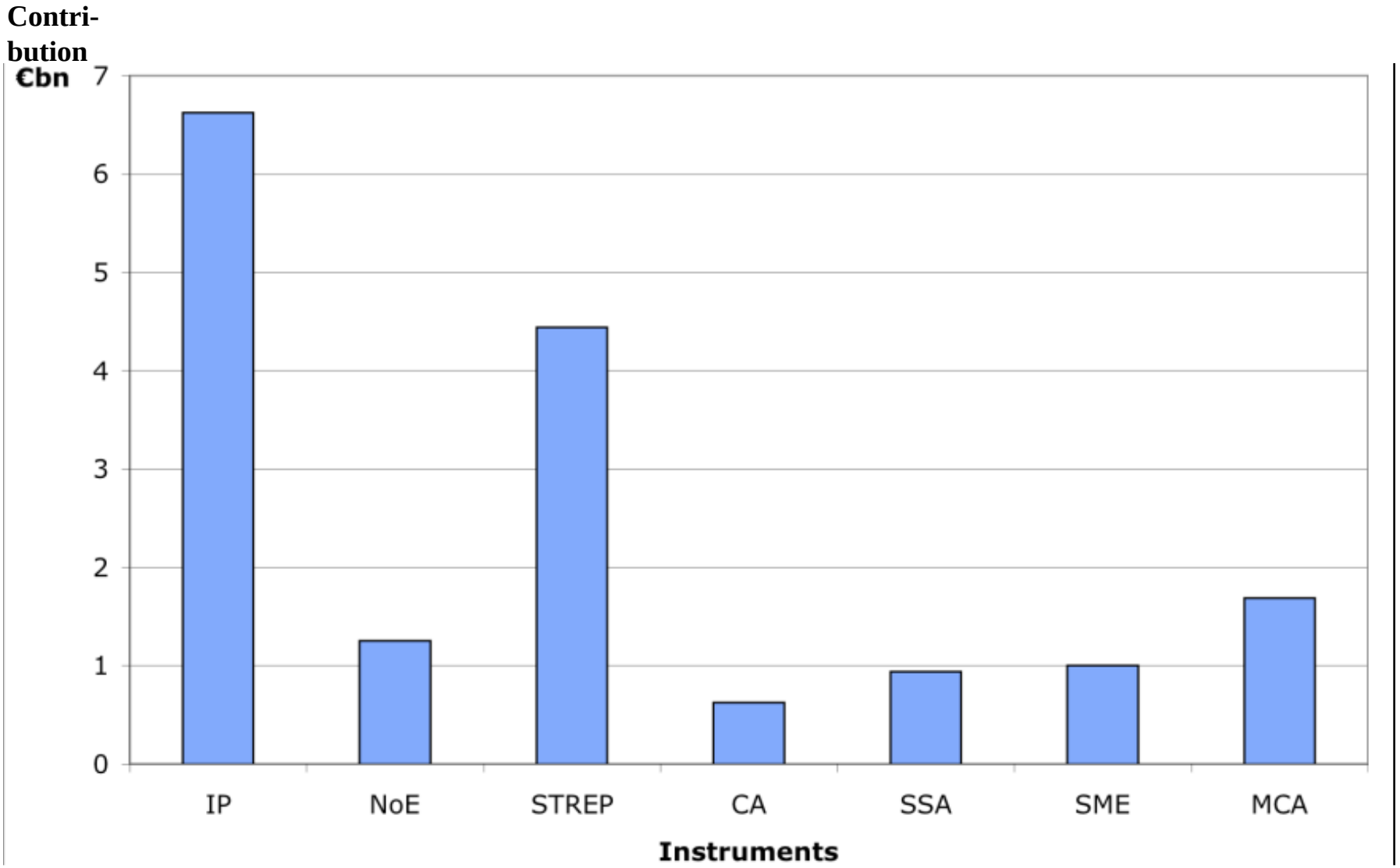
NMS vs. EU-15



FP6 FUNDING OF "THIRD COUNTRIES"

	Euro		Euro
RU - Russian Federation	49,843,528	CA - Canada	2,621,349
CN - China	35,192,191	SG - Singapore	2,225,707
YU - Serbia and Montenegro	14,887,074	JP - Japan	1,005,287
ZA - South Africa	14,435,614	NZ - New Zealand	901,626
BR - Brazil	14,397,318	KR - Korea (Republic of)	477,975
US - United States	12,526,867	TW - Taiwan	123,700
IN - India	11,877,892	Other developing countries	147,111,046
MA - Morocco	11,479,920	Other developed economies	532,184
AU - Australia	3,774,741	Total	323,414,019

FINANCIAL CONTRIBUTION BY INSTRUMENT IN FP6



NEW INSTRUMENTS OF FP6: INTEGRATED PROJECTS (IPs)

Goals

Assemble major players from industry and academia in a specific area to build critical mass
→ ERA structuring effect

Observations

- **Average 25 participants, 9.5 €m (4 y)**
- **Established industry dominating**
- **Successful example: Aerospace (industrial consensus)**
- **Germany, France, UK, Netherlands dominating: 68%**
- **NMS only 13%**
- **Patent question unsolved**
- **Adminstrative burden excessive**

Conclusion

Difficult instrument

Results

- **Network size should match needs**
- **Fused with STREPs in FP7**

NEW INSTRUMENTS OF FP6: NETWORKS OF EXCELLENCE (NoEs)

Goals

To overcome fragmentation of European research in specific fields in order to strengthen scientific and technological excellence

→ ERA structuring and strengthening effect

→ become world force

Observations

- Average 30 participants, 7.5 €m (4 y)
- France, Italy coordinated 48%
- Industry participation only 7.6 % (4% of funding)
- Concept changing several times
- Little sustainability achieved

Conclusion

Most NoEs missed the target (sustainable structuring)

Results

- Only few NoE continued in FP7
- New follow-up instrument: Joint Research Initiatives (JRI)

NEW INSTRUMENTS OF FP6: ERA-NETs

Goals

- Structuring ERA
- Crossborder self-organisation
- MS joint research funding in variable geometry

Observations

- ERA-NETs synchronized national research programmes
- Helpful for small and large MS

Conclusion

- Visionary and very successful instrument

Result

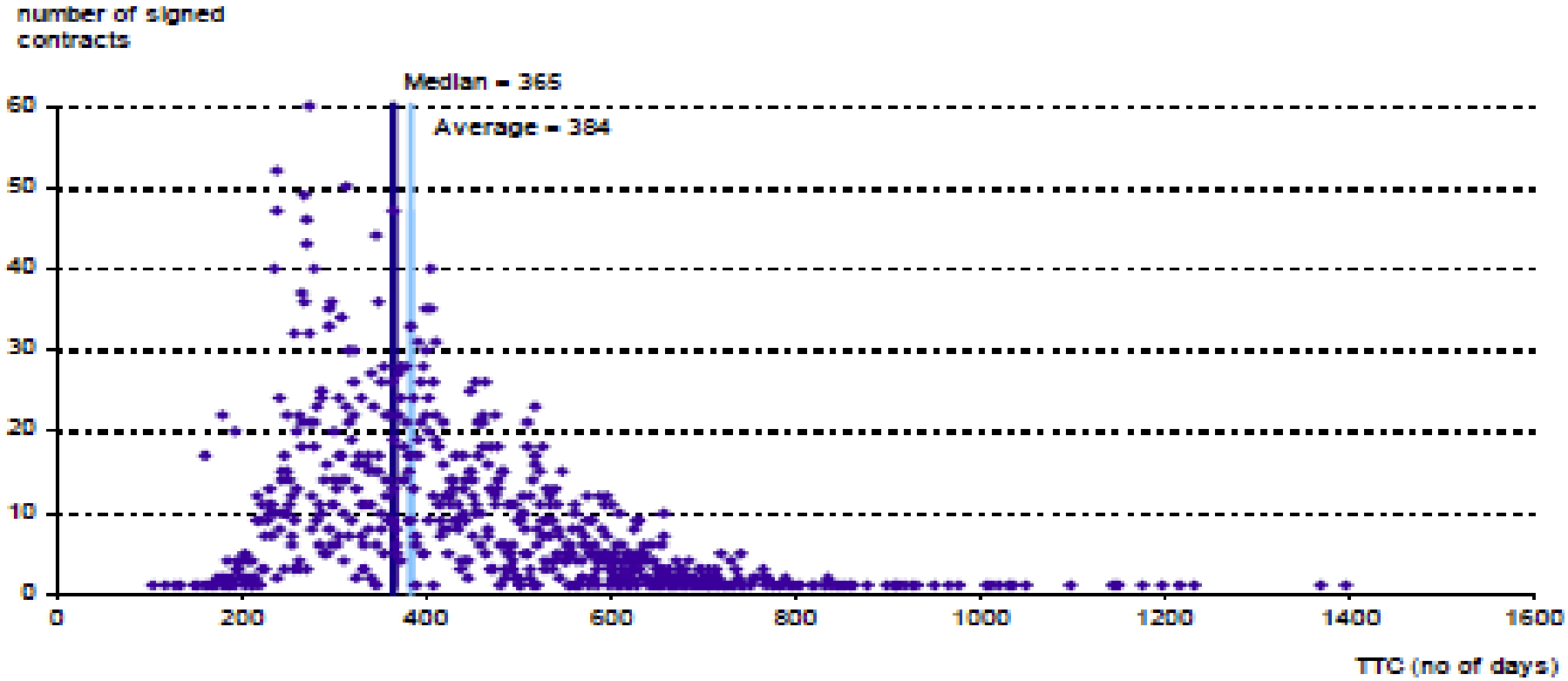
- Precursor for true common pot (ERA-Chemistry)

COMPLEXITY OF ADMINISTRATION (I)

- **Most cited disincentive to participate (together with low success rates)**
- **Burden to New Member States**
- **Tends to exclude industry**
- **Auditing criteria problematic**
- **Commission staff rotation disrupts funding process**

TIME TO CONTRACT

Sample of 5377 FP6 Projects



COMPLEXITY OF ADMINISTRATION (II)

CONCLUSIONS:

- **Radical overhaul and a new basis of thinking is required**
- **Radical simplification of administrative performance**
- **Highest political priority (MS Council, European Parliament, Commission)**

COMPLEXITY OF ADMINISTRATION (III)

Main Recommendations

- **Scientific projects in general:**
  change from contract to grant system
- **Industrial projects in general:**
  change from a cost to a price system

Additional Recommendations

- **More operational autonomy for consortia**
- **Time to contract: reduce to half**
- **Apply unitary IT tools across DGs in implementing FPs**
- **Use empowered agency for implementation of programmes**
- **Learn from Member States**

EX-ANTE ASSESSMENT OF PROPOSALS

- **Improved considerably from FP5 to FP6**
- **Further amelioration possible by using e.g.**

- **Two-step application system (30 – 50% success rate at step two) for larger instruments**
- **New scientific council (peer reviewers selection, research qualities, relevance, impact)**
- **Peer panels over a longer time period (5 years)**
- **Overarching committee of panel chairs**
- **More nuanced criteria in bottom-up (quality and originality) and top- down (quality and originality plus relevance) approaches**
- **Learning from MS organisations‘ expertise and database**

EX-POST EVALUATION OF FPs

- **Evaluation procedures improved in recent years**
- **Further amelioration possible by e.g.**

- **Introduction of an evaluation culture reaching beyond most recent programmes.**
- **Better and more timely availability of evidence base (e.g. improved statistics on PIs: gender, age, institution, country)**
- **Definition of adequate evaluation budget and timetable (1 year)**
- **Definition of common core questions for each FP evaluation**
- **Learning from good Member State practices**
- **Choosing panel members by the Chairperson (Commission designates Chairperson)**

ACHIEVEMENTS OF FP6

RTD Quality: **of 24 Commission research areas, independent evidence says:**

33% are of international standard

29% are at least to 2/3 of international standard

Based on Self-assessments:

25%: their area had significantly moved forward the research frontier

42%: their area had moved the research frontier in most areas

33%: their area had moved the research frontier in some areas

Some of the best researchers in Europe have been attracted to participate in FP6

THEMATIC PRIORITIES – NUGGETS

1. **Life sciences, genomics and biotechnology for health** EuroHear
2. **Information Society Technologies (NanoCMOS, IP)**
3. **Nanotechnologies, materials, new production processes and products**

   Network of Excellence
   KMM
   Knowledge-based Multicomponent
   Materials for Durable and Safe Performance
4. **Aerospace (FANTASIA)**
5. **Food quality and safety** theheatoxproject
6. **Sustainable development (RENEW, IP)**
7. **Citizens and governance in a knowledge based society (European Social Survey, ESS)**

A PROJECT BUILT ON THE LEADER POSITION OF THE EUROPEAN TEAM FORMED IN FP5

10 countries

22 laboratories and 3 SMEs

250 scientists

Excerpts from the talk by Professor Cristine Petit

CONTEXT OF THE PROJECT

More than 40 millions of people are hearing impaired, in the EU (10%)

Deafness is the most frequent sensory defect.
It may occur at any age with any degree of severity.

- More than 1 child out of 1000 is severely or profoundly deaf at birth. In these children, speech acquisition and learning to read are considerably hindered

- Over 65, a third of the population is suffering from hearing loss impeding conversation. This results in major impediment to daily life and threatens personal autonomy and finally in social isolation and often in depression

HEARING IS THE SENSE OF THE COMMUNICATION

- There is no treatment (only protheses)
- Costs are over 90 billion € annually in EU

OBJECTIVES AND RESULTS

EuroHear has three closely related objectives:

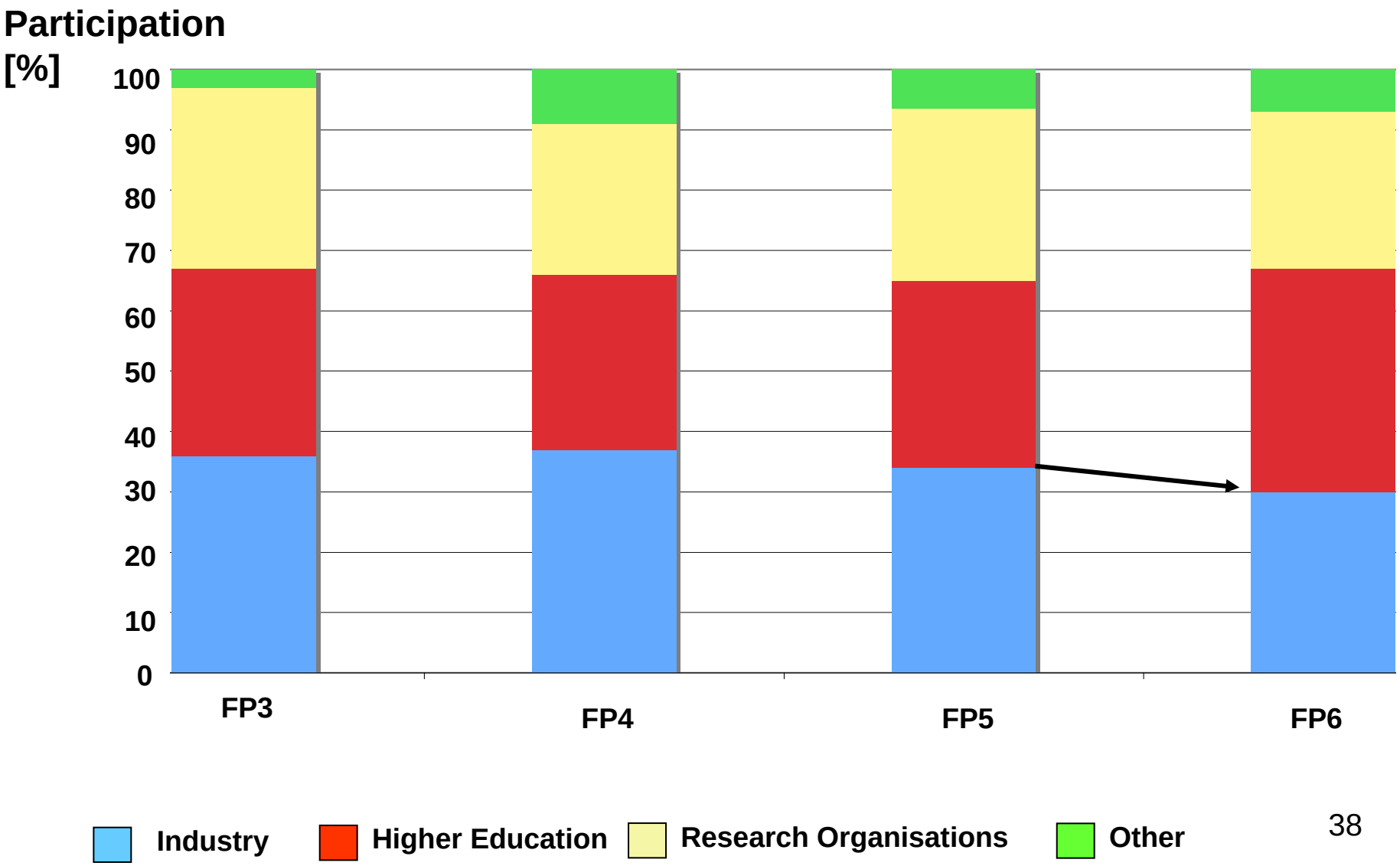
-To identify the genes causative for sensorineural hearing impairment: early and late onset forms

- To understand the mechanisms underlying normal and impaired hearing

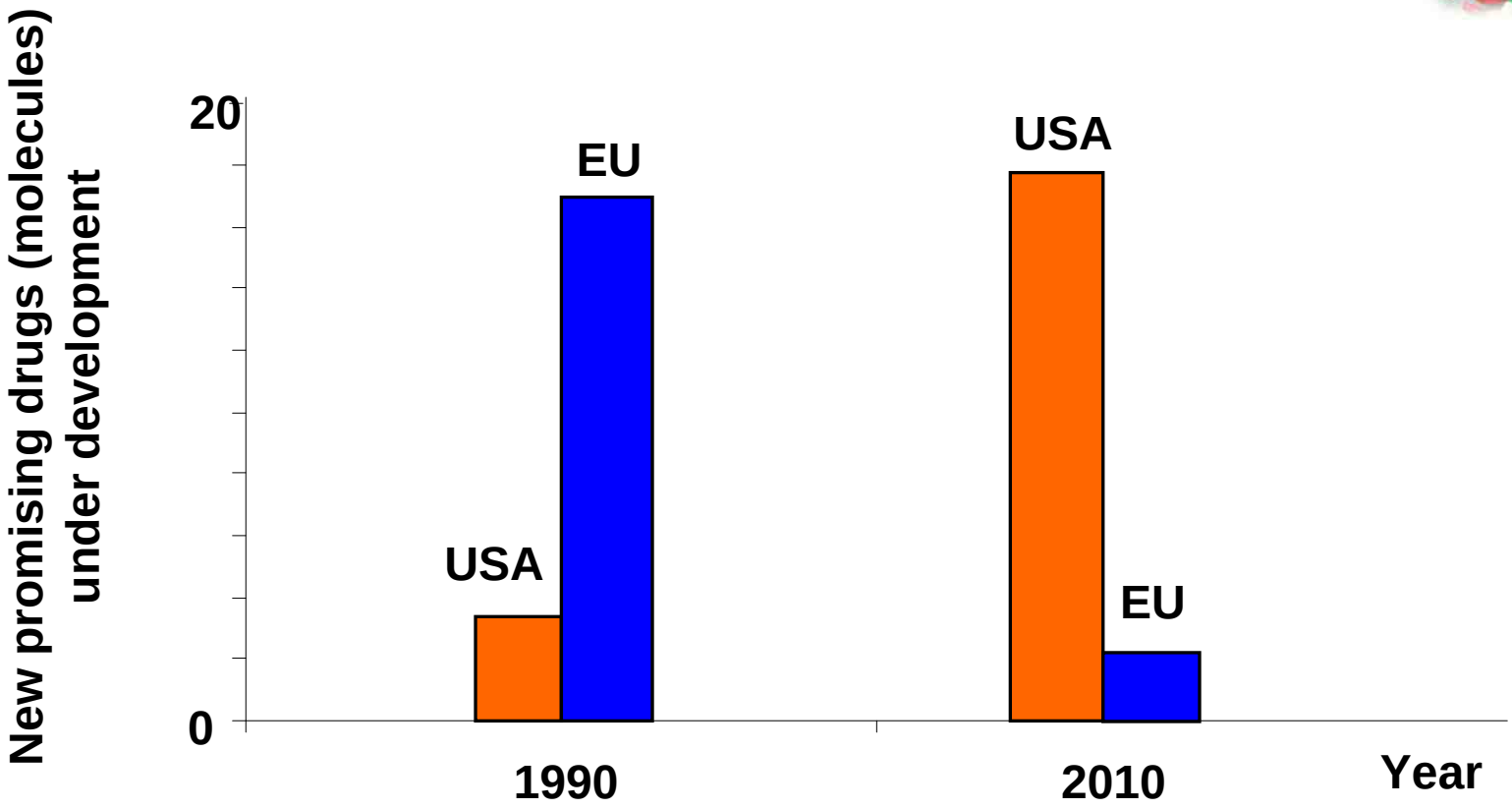
- To develop tools to prevent and to cure of hearing impairment

- **15 new loci identified and 12 new genes discovered**
- **Mechanism of impaired hearing better understood**
- **New targets for drugs against deafness defined**

SHARES OF PARTICIPATIONS: FP3 TO FP6



COMPETITIVENESS OF EUROPEAN PHARMACOLOGICAL INDUSTRY



CONCLUSIONS

- **FP6 had positive influence on industrial competitiveness of established actors**

- **Participation must become more attractive for industry**

FP6 AND THE KNOWLEDGE INFRASTRUCTURE

- **Universities (37%) and Research Institutes (31%) dominate participation**

Universities

- FP have little effect on strategies
- Research groups in thematic priorities
- FP funds are regarded as additional

- **But FP funding is considered prestigous and helps internationalisation**
- **Prestige is the main incentive to apply**

Research Institutes

- **FPs have a more pronounced effect on strategies of**
- **Demand driven (Fraunhofer Institutes), serve as key nodes**
- **Little internationalisation, since main incentives are national**

CONCLUSIONS

- **FP6 catalysed networking but had little physical influence on research capacities in Europe**

- **Participation of knowledge infrastructure must better advance innovation**

ACHIEVEMENTS OF FP6 (I)

- **FP6 included first rate**
  - **projects**
  - **researchers**
  - **consortia**
- **Contributed to improved mobility and internationalisation**
- **Helped Europe to perform internationally competitve research at the frontier of science**

ACHIEVEMENTS OF FP6 (II)

- **FP6 was a powerful mechanism catalysing RTD in Europe**
- **Key instrument in tackling subcriticality**
- **Increased industrial competitiveness**
- **Generated networks**
- **Strengthened Knowledge Infrastructure**

ACHIEVEMENTS OF FP6 (III)

- **Overall achievements of FP6 were substantial**
- **No evidence that plausible alternative approaches would have been more successful**
- **FPs are also needed in the future to integrate the European research ecology and innovation systems**

TEN RECOMMENDATIONS: A LOOK TO FUTURE FPs

1. **Develop programme logic, define SMART goals, design FP accordingly in a transparent and documented way**

2. **Define essence of FP in synchrony with MS. EC must avoid monopoly position, MS must present their own concepts**

3. **Eliminate „Third Country“ terminology. Budget for major developed and emerging economies should be dramatically increased. Collaboration with developing countries should concentrate on topics and methodologies where EU is globally leading.**

TEN RECOMMENDATIONS: A LOOK TO FUTURE FPs

4. **Strengthen Industry and SME participation**, however, not by %-targets but rather by measures in line with industrial dynamics.

5. **Install new bottom up NEST-like format (cooperation) and strengthen ERC (individual)**

6. **Continue the ESFRI (roadmap) process**

7. **Increase substantially the participation of female researchers** by proactive approaches and specific gender actions (e.g. heterogenicity as a quality criterium)

TEN RECOMMENDATIONS: A LOOK TO FUTURE FPs

8. **Enhance visibility and attractiveness of science and technology for young people. Promote their mobility, invite young researchers and students from other countries to Europe.**

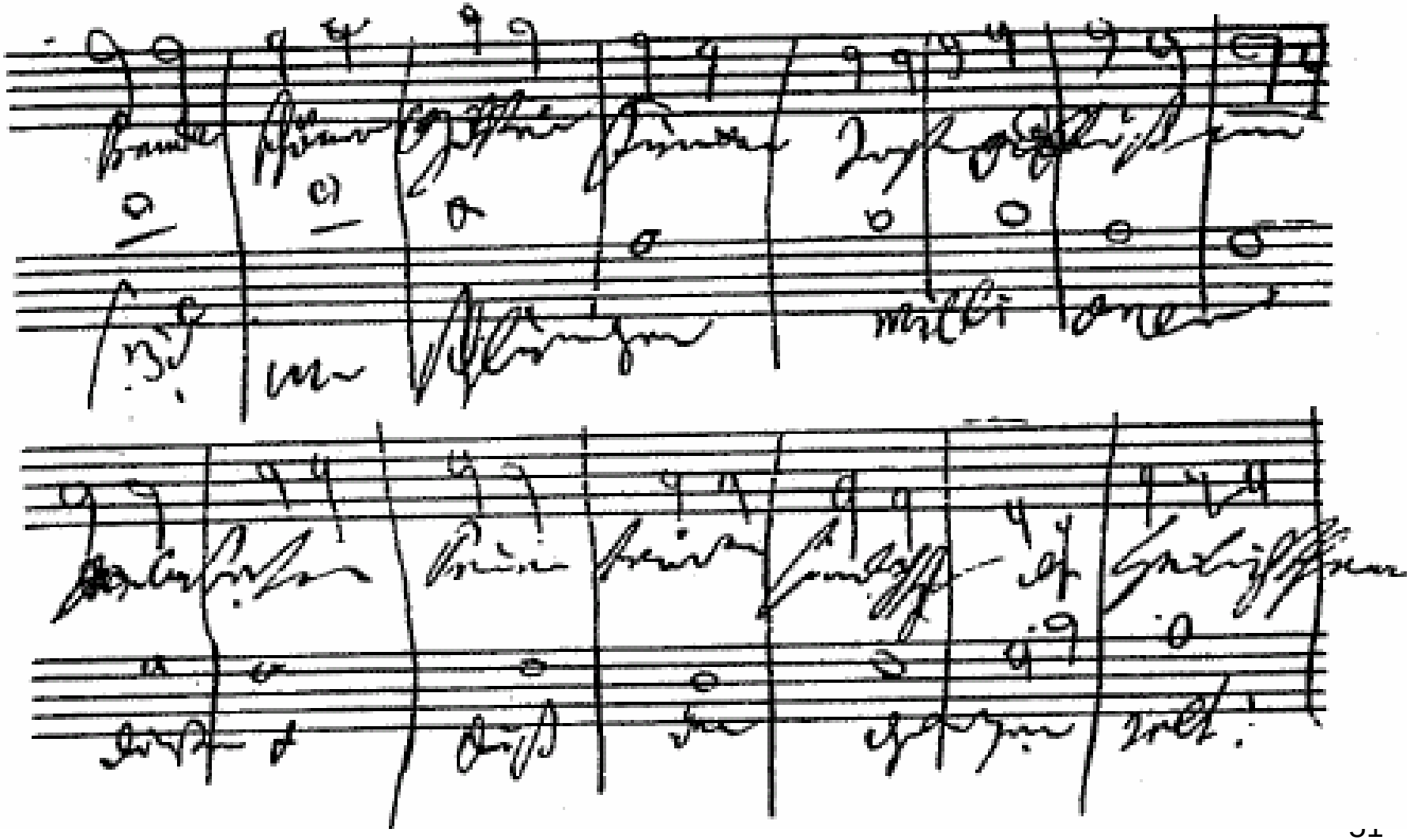
9. **Radically simplify FP administration, stop incremental tinkering. Move from contract to grant and from contract to price basis, respectively.**

10. **Introduce an evaluation culture aiming at a broad understanding of the outcome and long term effects of FPs.**

OPPORTUNITIES OF THE FINANCIAL CRISIS

- **Better understanding and acceptance of society and politics of RTD contributing to Europe´s economical, political and social well being**
- **Investments in education, science and technology as the best response**
- **Reshaping of the relationship: academia – industry –government**

THE FUTURE



TWO PILLARS OF EUROPE'S SCIENCE & TECHNOLOGY WITHIN ERA

- **Grand Challenges**
  - Large programmes
  - Problem-driven
  - Top-down approach
  - Quality and originality prominent, but relevance is an equally important criterium

- **Great Ideas**
  - Individual projects
  - Investigator-driven
  - Bottom-up approach
  - Quality and originality are the only criteria

GRAND CHALLENGES

- **European Commission topics**
- **Innovative approach involving academia and industry**
- **Single MS cannot tackle topic**

  - too expensive

  - too risky
- **Follow subsidarity principle**
- **Classical EAV (cooperation)**

GRAND CHALLENGES (EXAMPLES)

- **Societal Integrity**
- **Energy generation and conservation**
- **Global economy**
- **Climate change**
- **Biodiversity**
- **Health and Ageing**

TWO PILLARS OF EUROPE'S SCIENCE & TECHNOLOGY WITHIN ERA

- **Grand Challenges**
  - Large programmes
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- **Great Ideas**
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  - Investigator-driven
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GREAT IDEAS

- **Endogenous value of research**
- **Inventive approach**
- **Subsidiarity insignificant**
- **New EAV (competition, mobility)**
- **ERC: individual research**
- **NEST: cooperative research**

TWO PILLARS OF ERA

Grand Challenges

- Definition of Targets and Objectives is a central matter of Commission RTD-policy and decision making
- Persuing relevant goals through FP instruments is core business of the EC

Great Ideas

- Management through ERC and NEST-like formats by a Pan-European Agency not dependent on the Commission
- Agency needs strong political mandate, financial independence and organisational freedom

A VISION FOR EUROPE (I)

- **New thinking of MS**

  - Application of „true common pot“

  - Abandonment of „juste retour“

- **New meaning of subsidiarity**

  - European projects are „MS-projects“

  - ERA has overcome subsidiarity

- **New interpretation of EAV**

  - Each European project possesses EAV

  - Each European project, independent of its geographical origin, is fundable by Europe

A VISION FOR EUROPE (II)

- **It is time for a confident, scientifically capable, innovative European Knowledge Society to engage with the rest of the world**
- **Move FP from incremental addition of national resources to a Game Changing instrument**
- **Increase FP budget 2 – 3 times**

A VISION FOR EUROPE (III)

- **Stop navelgazing**
- **Seek global competition**
- **Act as a Union**
- **Be proud to be part of this Union**
- **Enjoy a bright future**

EUROPE´S MOTIVE FOR FP8 AND BEYOND

„EUROPEAN EXCELLENCE THROUGH GLOBAL COOPERATION AND COMPETITION“

THANKS TO THE FP6 EXPERT GROUP …..

Mili cesti kolegove,

My, 6FP skupina expertu vam prejeme hodne stesti a uspechu pri vedeni Evropy v pristich mesicich.

Dekujeme vam za prevzeti teto zodpovedne ulohy.