

**VIIPQ: struttura, obiettivi e opportunità.
ERC e la strategia europea per la
ricerca e l'innovazione**

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EUROPEAN
COMMISSION

Community research

Towards the
Seventh
Framework
Programme
2007-2013

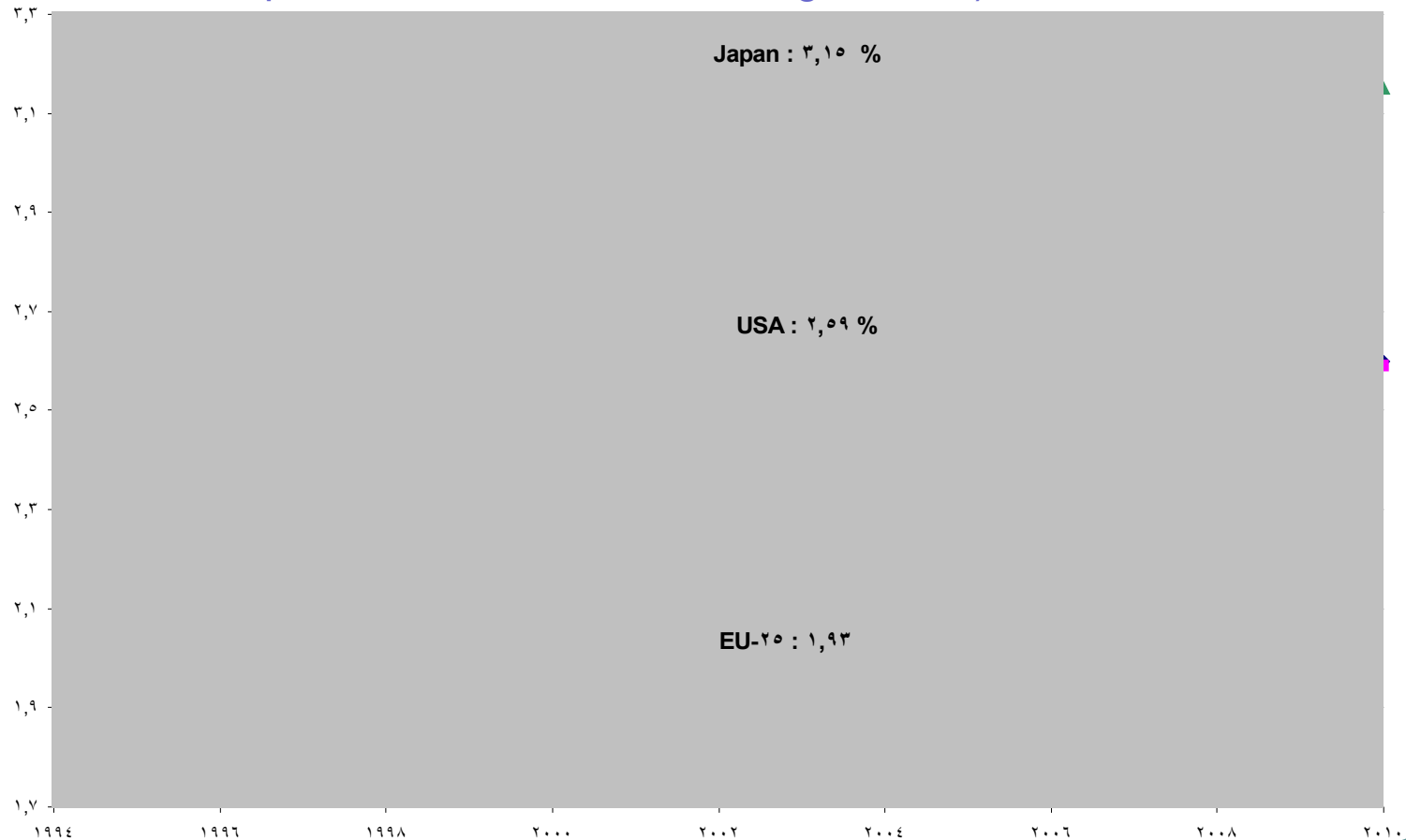
Towards the Seventh Framework Programme (2007-2013): Summary

- Lisbon Strategy
- European weaknesses
- Research: filling the gap
- Why research at European level?
- FPs: significant impacts on S&T and the economy
- Why increase the FP7 budget?
- What's new?
- Specific Programmes
- Dissemination and use of EU R&D results
- Funding Schemes
- Budget
- FP7 timetable

Research: filling the gap

Total expenditure on R&D, % of GDP

(EU-25 extrapolation based on R&D intensity targets put forward by Member States in their respective National Reform Programmes)



Why research at European level?

- **Pooling and leveraging resources**
 - Resources are pooled to achieve critical mass
 - Leverage effect on private investments
 - Interoperability and complementarity of big science
- **Fostering human capacity and excellence in S&T**
 - Stimulate training, mobility and career development of researchers
 - Improve S&T capabilities
 - Stimulate competition in research
- **Better integration of European R&D**
 - Create scientific base for pan-European policy challenges
 - Encourage coordination of national policies
 - Effective comparative research at EU-level
 - Efficient dissemination of research results

FPs: strong impact on the integration of the ERA

- Concentration of research efforts through larger projects with critical mass
 - Average number of participants per project:
4.7 (FP2) → 14 (FP6)
 - Average EU funding per project:
€1.2 million (FP2) → €4.6 million (FP6)
- Top-level scientists: e.g. six Nobel prize-winners involved in FP6 fundamental genomics projects
- ERA more attractive to researchers **worldwide.**
 - Number of participating countries from across the world:
30 (FP2) → 140 (FP5)

What's new?

Main new elements compared to FP6:

- Duration increased from five to seven years
 - except for Euratom FP
- Annual budget increased significantly
- Basic research (~ €1 billion per year)
- New structure: cooperation, ideas, people, capacities
- Flexible funding schemes
- Joint Technology Initiatives
- Simpler procedures
- Logistical and administrative tasks → external structures

FP7 2007–2013 | Specific Programmes

Cooperation – Collaborative research

Ideas – Frontier Research

People – Marie Curie Actions

Capacities – Research Capacity



JRC non-nuclear research

Euratom direct actions – JRC nuclear research

Euratom indirect actions – nuclear fusion and fission research

Cooperation – Collaborative Research

Nine themes

1. Health
2. Food, agriculture and biotechnology
3. Information and communication technologies
4. Nanosciences, nanotechnologies, materials and new production technologies
5. Energy
6. Environment (including climate change)
7. Transport (including aeronautics)
8. Socio-economic sciences and the humanities
9. Security and space

1. Health

- Biotechnology, generic tools and technologies for human health
- Translating research for human health
- Optimising the delivery of healthcare to European citizens

2. Food, Agriculture and Biotechnology

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

3. Information and Communication Technologies

- ICT Technology Pillars
- Integration of Technologies
- Applications Research
- Future and Emerging Technologies

4. Nanosciences, Nanotechnologies, Materials and new Production Technologies

- Nanosciences and nanotechnologies
- Materials
- New production
- Integration of technologies for industrial applications

5. Energy

- Renewables, clean energy, CO₂ emissions, efficiency, etc.
- Nuclear fission and radiation protection (under Euratom FP)
- Fusion energy research (under Euratom FP)

6. Environment (inc. climate change)

- Climate change, pollution and risks
- Sustainable management of resources
- Environmental technologies
- Earth observation and assessment tools

7. Transport (inc. aeronautics)

- Aeronautics and air transport
- Surface transport (rail, road and waterborne)
- Support to the European global satellite navigation system (Galileo)

8. Socio-Economic Sciences and the Humanities

- Growth, employment and competitiveness in a knowledge society
- Combining economic, social and environmental objectives in a European perspective
- Major trends in society and their implications
- Europe in the world
- The citizen in the European Union
- Socio-economic and scientific indicators
- Foresight activities



9. Security and Space

- **Protection against terrorism and crime**
- **Security of infrastructures and utilities**
- **Border security**
- **Restoring security in case of crisis**
- **Security systems integration and interoperability**
- **Security and society**
- **Security research
Coordination and structuring**
- **Space-based applications at the service of the European society**
- **Exploration of space**
- **RTD for strengthening space foundations**

Cooperation – Collaborative Research (1)

- Under each theme there will be sufficient flexibility to address both **Emerging needs** and **Unforeseen policy needs**
- Dissemination of knowledge and transfer of results will be supported in all thematic areas
- Support will be implemented across all themes through...

Cooperation – Collaborative Research (2)

- Collaborative research
(Collaborative projects; Networks of Excellence; Coordination/support actions)
- Joint Technology Initiatives
- Coordination of non-Community research programmes
(ERA-NET; ERA-NET+; Article 169)
- International Cooperation

Potential Joint Technology Initiatives

**Hydrogen
and Fuel Cells**

**Aeronautics and
Air Transport**

**Global Monitoring
for Environment
and Security**

Innovative Medicines

**Embedded Computing
Systems**

Nanoelectronics

*Other possible themes
to be identified later...*

FP7 2007-2013 'Cooperation' budget

I. Cooperation	Budget (€ million, current prices)
1. Health	6,1
2. Food, agriculture and biotechnology	1.9
3. Information and communication technologies	9.1
4. Nanotechnologies, materials and production	3.5
5. Energy	2,3
6. Environment	1,9
7. Transport	4,2
8. Socio-economic research	0,6
9. Security and space	2,8
Total	32,4 *

* Not including non - nuclear activities of the Joint Research Centre: €1,8 million

Ideas – Frontier Research (1)

- Frontier Research is a key driver to innovation and economic performance
- Establish European Research Council (ERC) – the first pan-European funding agency for Frontier Research
- Support investigator-driven frontier research over all areas of research
- European added-value through competition at European level

People – Marie Curie Actions

- Initial training of researchers
 - Marie Curie Networks*
- Life-long training and career development
 - Individual Fellowships
 - Co-financing of regional/national/international programmes
- Industry-academia pathways and partnerships
 - Industry-Academia Knowledge-sharing Scheme*
- International dimension
 - Outgoing & Incoming International Fellowships
 - International Cooperation Scheme
 - Reintegration grants;
 - Support to researcher 'diasporas'
- Specific actions
 - Mobility and career enhancement actions
 - Excellence awards

* Open to third-country nationals

Capacities – Research Capacity

1. Research infrastructures
2. Research for the benefit of SMEs
3. Regions of Knowledge
4. Research Potential
5. Science in Society
6. Coherent development of policies
7. Activities of International Cooperation

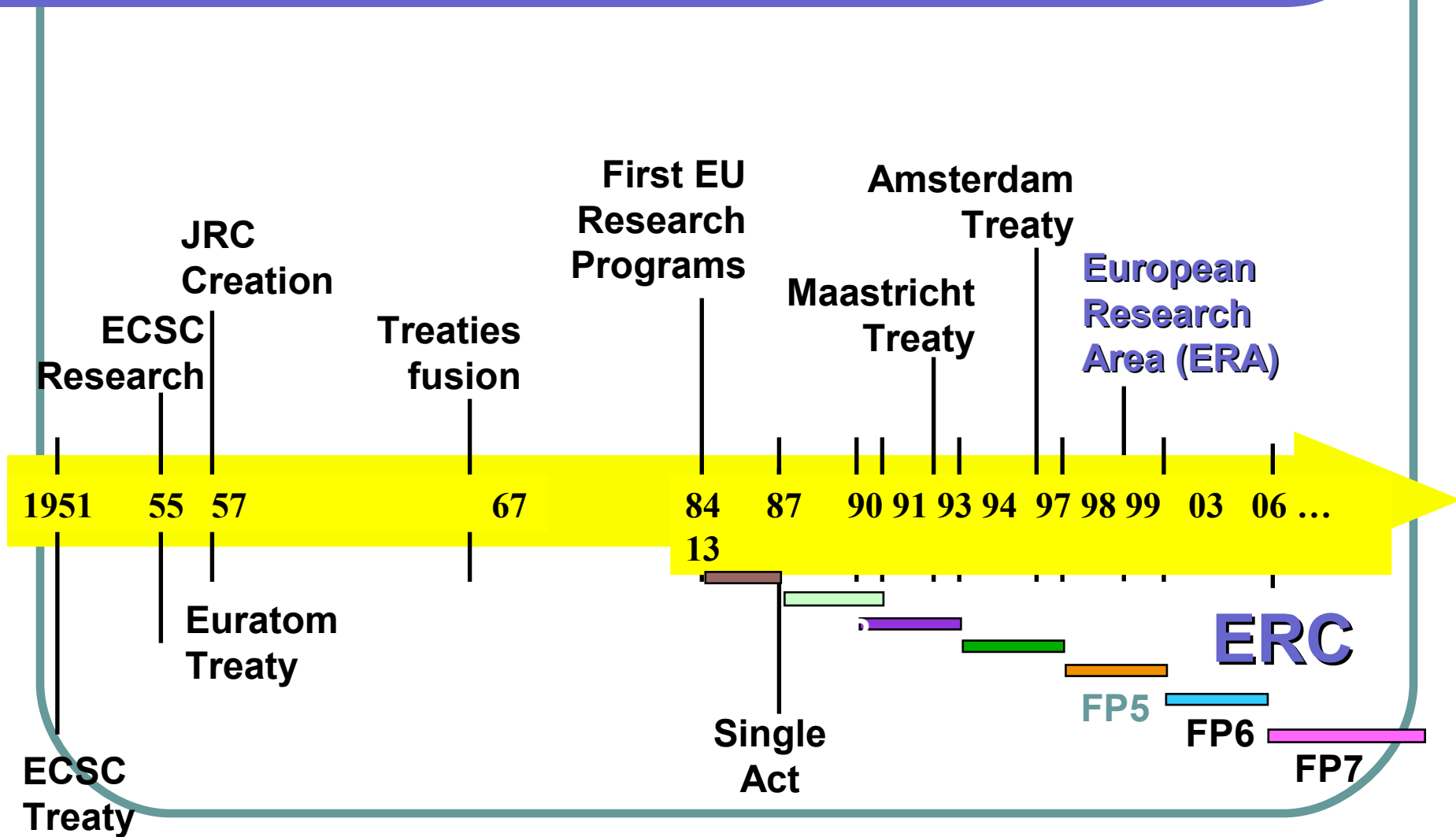
The European Research Council



Basic / Frontier research in the Europe

- **National activities:**
 - Research councils (DFG-1920, CNR-1923, CNRS-1939, SNF-1952), academies, etc.
- **Intergovernmental activities:**
 - CERN (1953), ESO (1962), ESA (1962/1975), EMBO (1963), ILL (1967), COST (1971), ESF (1974), EMBL (1978), Eureka (1985), ITER (1988), ESRF (1988), INTAS (1993)
- **EU activities** (“supranational”):
 - ECSC – Euratom – EC (1957), JRC (1959), JET (1973), FP1 (1984) ... FP7 (2006-2013)
 - European Research Area – ERA (2000)
 - **FP7 (2006-2013): Ideas/ERC, Marie Curie fellowships, research infrastructures, thematic priority areas**

Research in the European Integration Process



ERC, “Ideas” and FP7

- A new “institution”
- Which is also part of the “family” of FP7:
 - Co-operation
 - **Ideas**
 - People
 - Capacities
- Complementary to other FP7 support to targeted research (bottom-up vs. targeted research)

FP7 Ideas Programme

- **Creates ERC**
- **Provides funding**
 - **Budget (2007-2013) : € 7.51 bn** (around 15% of FP7 budget)
 - **Average budget: € ~1 bn per year**
- **Sets overall objectives for research and operating principles**

Strategic Aims Overview

Boost European excellence in frontier research

- by investing in the best researchers and ideas
- through competition at European level
- on the basis of excellence as the sole criterion
- raising incentives towards quality and aspirations of individual researchers
- providing benchmarks and leverage towards broader (structural) improvements in European research

Strategy & Activities

ERC Scientific Council

- **Retain – Repatriate – Recruit**
- **Keep (young) researchers in Europe**
 - improve **career opportunities and independence** - especially for young researchers
 - **ERC Starting Grant**: attract & retain the next generation of independent research leaders
- Favour “**brain gain**” and “**reverse brain drain**”
 - increase **competition, recognition and international visibility** for excellent individual scientists and scholars in Europe
 - **ERC Advanced Grant**: attract & reward established independent research leaders

Guiding Principles

- **All fields of science and scholarship are eligible**
 - ☞ investigator-driven, bottom-up
- **Excellence is the only valid criterion**
 - ☞ individual team + research project
- **Independent individual teams in Europe**
 - ☞ nationality of researchers is not relevant
 - ☞ host organisation to be located in EU or AS
- **Investment in research talent**
 - ☞ flexible Grants, under the control of the Principal Investigator

ERC Grant Schemes

Two grant schemes are available:

→ **ERC Starting Independent Researcher Grant scheme (ERC Starting Grant)**

→ 1st call for proposals published, deadline 25 April 2007

→ **ERC Advanced Investigator Researcher Grant scheme (ERC Advanced Grant)**

→ 1st call for proposals published later in 2007

ERC Starting Grant (ERC Starting Independent Researcher Grant)

- support researchers at the start of their independent research career and **establishment of their first independent research team or first research programme**
- provide a structure for transition from working under a supervisor to an independent research leader
- **~100'000 – 400'000 Euro per grant per year**
- **for up to 5 years, i.e. ~500'000-2'000'000 Euro per Grant**
- ~ €300M per call (~ 1/3 of ERC annual budget, annual calls)
- **~200 Starting Grants per year, ~1400 Starting Grants over 7 years of FP7 (2007-2013)**

ERC Starting Grant Requirements

→ **PI**

- 2-9 years since completion of PhD: Special circumstances will be taken into account, such as maternity/paternity leave, military/civil service (+3 years max.)

→ **PI and team members**

- Any nationality
- One ERC Grant per investigator only may be active at any one time

→ **Hosting institution**

- Located in a EU member state or associated country
- Intra-European grant portability allowed

ERC Advanced Grant (ERC Advanced Investigator Researcher Grant)

- Designed to support excellent investigator-initiated research projects by **established independent research leaders**
- Complement the ERC Starting Grant scheme by targeting researchers who have already established their independence as team leaders
- **~100'000-500'000 Euro per grant per year**
- **for up to 5 years, i.e. ~500'000-2'500'000 Euro per grant**
- ~ € 600M per call (~ $\frac{2}{3}$ of ERC annual budget, annual calls)
- ~ 300 Advanced Grants per year

Submission of Proposals

- **Two-step application procedure** (risk of oversubscription)
 - 1st stage - Outline Proposal: max 8 Pages
 - 2nd stage – Full Proposal: max 16 Pages
- **Proposal Components**
 - a) CV + self-evaluation + funding ID (3 / 4 pages)
 - b) Description of research project (4 / 10 pages)
 - c) Description of scientific environment + resources (1 / 2 pages)
- **Electronic Submission** only (via EPSS)
- **Pre-registration** (via EPSS)
 - indication of number /area of proposals

Area 1: Physical Sciences, Engineering Sciences, Universe and Earth Sciences (8 panels)

Area 2: Biological and Life Sciences (7 panels)

Area 3: Social and Human Sciences (5 panels)

Each panel consists of one Panel Chair and 10-12 panel members

Panel Chair oversees evaluation process for the proposals assigned to his/her panel in collaboration with the ERC staff

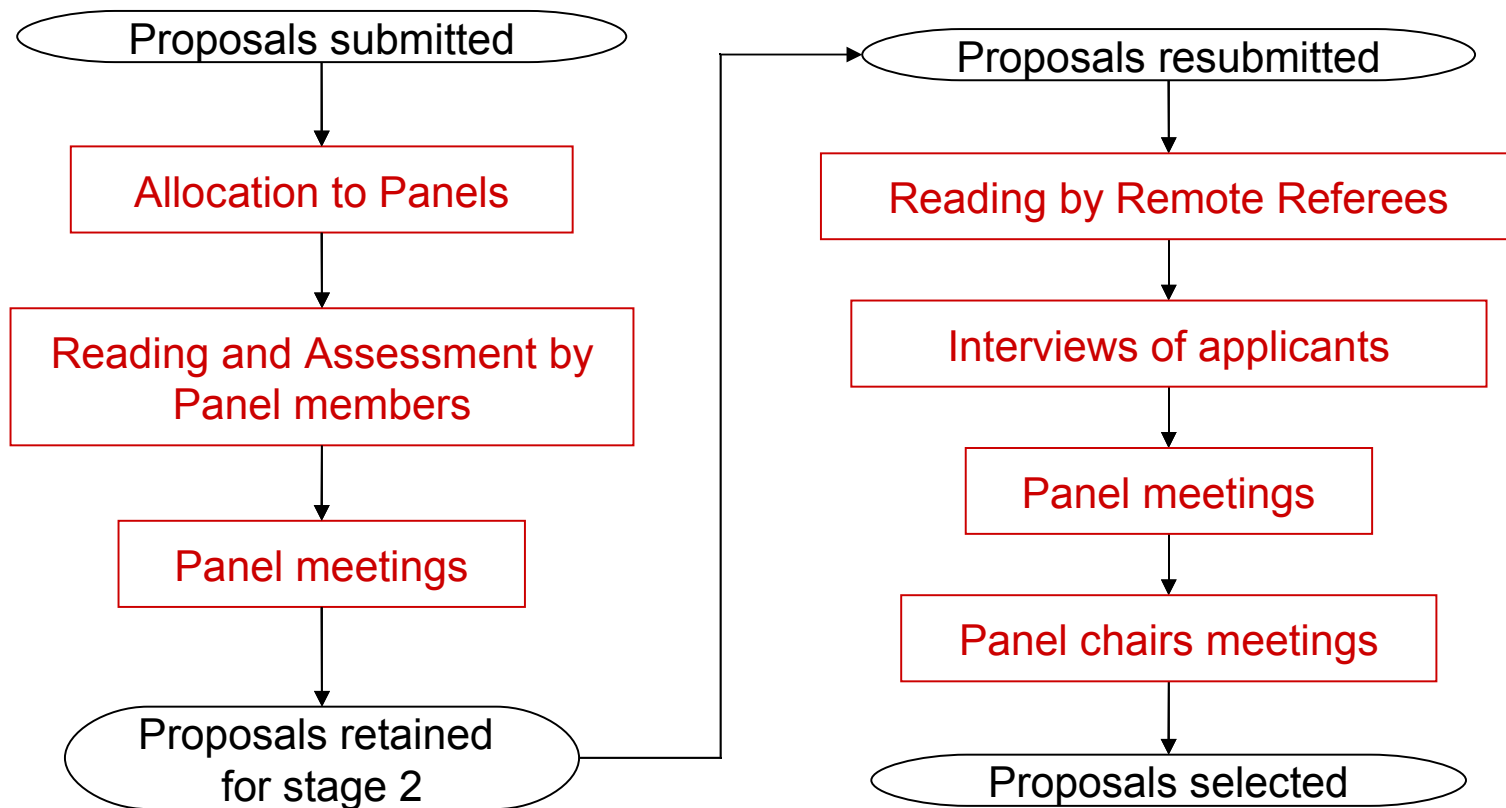
The Panel Chair gives high level stamp of credibility and visibility to the whole evaluation process

Evaluation criteria

Scientific Excellence is the sole Criterion

- 1. Potential of Principal Investigator**
- 2. Quality of research project**
- 3. Research Environment and Resources**
 - Referees and panels evaluate and score criteria under Heading 1 and Heading 2 numerically which will result in the ranking of the projects
 - Criteria under Heading 3 will be considered as "pass/fail" and commented but not scored

ERC Submission, Evaluation and Selection Process



ERC budget 2007-2013

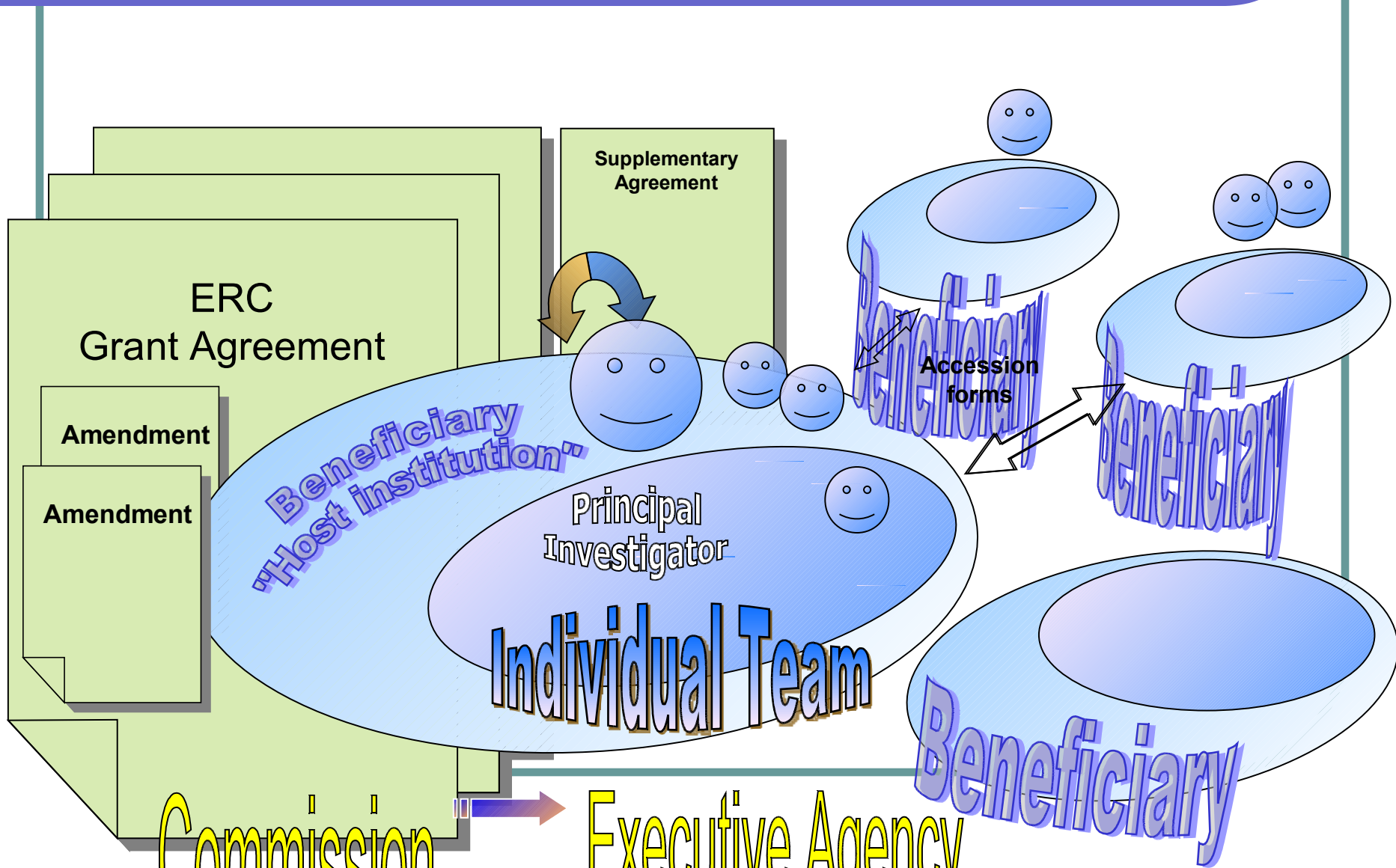
- **Total (FP7 Ideas budget): € 7.51 bn**
 - ≈1/3 Starting Grants, ≈ 2/3 Advanced Grants
 - Less than 5% for operational ERC management
- **1st Call**
 - StG only, Jan 2007, € 300 Mio.
 - Budget allocated to three areas (for operational reasons)
- **2nd Call**
 - AdG only, August 2007, € 550 Mio.
- **3rd call onwards:**
 - StG + AdG ≈ € 1.0 bn per year

ERC Starting Grant Budget Allocation

ERC covers all fields of science, engineering and scholarship

- **For operational reasons the ScC agreed on 3 main scientific domains:**
 - **Physical Sciences & Engineering**
 - **Biological & Life Sciences**
 - **Social Sciences and Humanities**
- **The first call budget for ERC Starting Grants has been pre-allocated to these areas as follows:**
 - **45% - 40% - 15%**

ERC Grant Agreement



The Scientific Council Organisation

- 22 Members of the Scientific Council elected the **Chair** and **Vice-Chairs**
- One Chair: **Prof. Fotis Kafatos**
- Two Vice-Chairs: **Prof. Helga Nowotny** and **Dr Daniel Estève**

- + Regular Plenary Meetings (every 1-2 months)
- + Secretariat of the ScC (Directorate S)



The ERC Board

Prof. Fotis Kafatos

ERC President
Chair of the ScC



Prof. Helga Nowotny

Dr Daniel Esteve

ERC Vice-Presidents
Vice-Chairs of ERC ScC



Prof. Ernst-Ludwig Winnacker

ERC Secretary-General



Jack Metthey

Director of ERC DIS
(EC RTD Directorate S)



1st Call in Brief

- **ERC Starting Grants only**
- **What? Any field of science, engineering and scholarship**
- **Who? Principal Investigator (Individual Team) + Hosting Organisation**
- **By when ? Deadline Stage 1 submission: April 25, 2007**
- **How? Consult « ERC Guide for Applicants »**
- **Note:**
 - Submission via EPSS only (no paper submission)
 - Respect page limits and format
 - Indicate keywords describing the subject area (panel assignment)
 - Stage 2 submission: on invitation only if stage 1 proposal evaluated positively

Documentation

- **Specific text of “Call for Proposal”**
- **ERC Work Programme 2007**
- **ERC Guide for Applicants**
- **ERC Grant agreement**

Other:

- ERC Guide for Grant Holders
- ERC Guide for Peer Reviewers
- ERC Rules on submission, evaluation, selection and award procedures

Applicants Services

- **ERC National Contact Points**
inform, raise awareness and provide advice on
ERC funding opportunities, application, follow-up
- **ERC helpdesk**
support to ERC NCPs
- **EPSS helpdesk**
technical support on electronic proposal
submission
- **ERC website:** <http://erc.europa.eu>
→ News Alert, Publicity Material