



Fitting the European Research Area: National Structures and EU Funding Instruments

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Frontiers of Mathematics and Applications III
UIMP, Santander, August 14, 2012

The European Research Area: ERA

What it is about?

Research and development **activities, programmes and policies in Europe** which involve a **transnational perspective**

Why?

To give researchers access to a **Europe-wide open space** for knowledge and technologies in which **transnational synergies** and complementarities are fully exploited

How?

By enabling researchers, research institutions and businesses to **increasingly circulate, compete and co-operate** across borders.

A couple of statements

- ▶ No single country offers sufficient resources to be competitive on **the world scale**
- ▶ Transnational co-operation helps make the **most efficient and effective use of national and regional resources**

A mandate

- ▶ Research activities and policies should be increasingly designed and operated from a **transnational perspective**, including cross-border co-operation

Graduate Training

A General Trend in Europe: Graduate and Doctoral Schools

Some examples

- ▶ *Berlin Mathematics School*
 - Joint initiative from TU, FU, and HU Berlin
 - Phase I: from bachelor to qualifying exams (2 years; 30 students)
 - Phase II: access to all math research groups in Berlin for a PhD
 - 2006-2012 funding: 5.8 MEuros
- ▶ *Doctoral School, EPFL, Switzerland*
 - Co-operation with Freiburg, Geneva, Neuchâtel
 - Phase I: master courses (at least 12 ECTS)
 - Phase II: Ph D, courses, seminars, some teaching
- ▶ *Ecole doctorale Mathématiques, Informatique, Télécommunications, Toulouse*

- ▶ *Ecole doctorale des sciences mathématiques de Paris Centre (Paris 6 and 7)*
- ▶ *In the UK: EPSRC Centres for Doctoral Training (CDT)*
 - New stream of funding from the EPSRC
 - Centres for PhD students are established in **areas of strategic importance** to the UK research base
 - **A university is chosen** to host a CDT after a competitive process

Example: Cambridge Centre for Analysis

Housed by Mathematics at the University of Cambridge

EU Funding Marie Curie Actions

Helping to fund all kinds of training and mobility opportunities for researchers throughout their careers

Funding instruments

Initial Training Networks (ITN) offer early-stage researchers the opportunity to **improve** their research skills, **join** established research teams and **enhance** their career prospects.

- At least **three** participants. Funds for up to **4 years**
- **Mobility** across national borders
- Emphasis on **interdisciplinary** and **newly emerging** supra disciplinary fields
- Recruitment of **young researchers** (PhD or initial post-doctoral)
- **Experienced** visiting researchers to strengthen knowledge transfer
- Networking activities, workshops or conferences

Projects in maths (out of 356)

- From mathematical logic to applications
- Multi-scale complex fluid flows and interfacial phenomena
- Sensitivity analysis for deterministic controller design
- Deterministic and stochastic controlled systems and applications
- Integrating numerical simulation and geometric design technology
- Shapes, geometry and algebra

COFUND

- ▶ Additional funding to **existing or new regional and national** fellowship programs for research training and career development
- ▶ Support and strengthen **existing and new international** programmes

Example

INdAM (Rome, Italy): Fellowships in Mathematics and/or applications for experienced researchers cofunded by Marie Curie Actions.

Industry-Academia partnerships and pathways (IAPP)

- ▶ Joint research projects aimed to boost skills **exchange between the commercial and non-commercial sectors**
- ▶ One or more **universities/research centers** and one or more **enterprises**
- ▶ 100% funding for labour costs
- ▶ Exchange of know-how and experience; recruitment of experienced researchers; networking, workshops and conferences

Individual grants for 12-24 months

- ▶ *Intra-European Fellowship for career development (IEF)*
 - For researchers from EU MS or AC
 - Aimed at helping experienced researchers to try something new for a while
- ▶ *International Incoming Fellowships (IIF). From the World to Europe*
 - For researchers from third countries to come and work on projects in Europe
 - Return phase
- ▶ *International outgoing Fellowships for career development (IOF). From Europe to the World*
 - To encourage European researchers to venture further afield
 - Researchers from EU MS or AC go to a third country
 - Return phase.

▶ *Career Integration Grants (CIG). Back to Europe*

For researchers from the world that have been working in a third country for at least three years

▶ *International staff exchange scheme (IRSES). Swapping Staff*

- To strengthen long-term cooperation, through a coordinated exchange programme for their staff
- For public organizations or private bodies
- At least two different EU MS or AC plus one or more organizations located “outside”
- Covers fixed monthly allowance

What next?
Opportunities for building an independent career

European Research Council: Starting Grants

- ▶ Curiosity-driven projects
- ▶ Bottom-up approach
- ▶ For researchers with 2 to 10 years experience
- ▶ Up to 1.5 MEuros for 5 years

Some figures for mathematics (2006-2011)

- ▶ 6.5% share
- ▶ Average size: 800.000 Euros
- ▶ Success rate 10%
- ▶ 87 StG and 71 AdG: 160 MEuros in total

For further discussion

- ▶ How to avoid brain-drain
- ▶ Would a tenure-track system help?
- ▶ Mathjobs?
- ▶ ...