



# HOW IT ALL BEGAN.....

**The Forward Look “Mathematics and Industry”**

# THE FIRST STEPS

- April 2008: Ari Laptev presents to the PESC Council of ESF a first draft of an application for a Forward Look on “Mathematics and Industry”.
- September 2008: the Applied Mathematics Committee of EMS endorses a revised version of the application
- October 2008: ESF suggests the organization of a “scoping workshop” to finalize the project.
- December 2008: Scoping workshop in Pisa
- January 2009: Meeting in Paris for a final version to be submitted to the ESF
- April 2009 : the project is approved





**FORWARD LOOK**

## Mathematics and Industry

**Mathematics provides a universal framework for innovation, which is vital for society and industry. However, the interaction between mathematics and industry is far from optimal. Consequently, a strong inter-connected community and a vision for Europe are needed more than ever.**



## **SOME PREVIOUS STUDIES ON "MATHEMATICS IN INDUSTRY"**

OECD - Global Science Forum : Report on "Mathematics in Industry", July 2008

OECD Global Science Forum. Proposal for a "Follow-on Activity on Mathematics in Industry"

"Mechanisms for Promoting Mathematics in Industry" report, April 2009

WTEC Panel Report on "INTERNATIONAL ASSESSMENT OF RESEARCH AND DEVELOPMENT IN SIMULATION-BASED ENGINEERING AND SCIENCE" - 2009

Final Report of the NEST SUPPORT project NETIAM : "Maths is the common denominator"

NSF report : "Revolutionizing Engineering Science through Simulation", May 2006.

Pharmaceutical industry research program

The "David" Report - Renewing U.S. Mathematics : A Plan for the 1990s - National Academy Press, Washington (DC), 1990

A Roadmap For Mathematics in European Industry (MACSI-Net Mathematics, Computing and Simulation for Industry A European funded network of Excellence (2000-2004))

PITAC Report 2005 Computational Science : Ensuring America's Competitiveness

SIAM (Society for Industrial and Applied Mathematics) - Report on Mathematics in Industry (1998)

National Science Foundation (NSF), United States: Report of the Senior Assessment Panel for the International Assessment of the U.S. Mathematical - Sciences (1998)

Report: Mathematics and Science (1999)

Opportunities for the Mathematical Sciences (2000)

The Industrial Roadmap for mathematics : giving industry the edge

Mathematics at the Interface of Computer Science and Industry

Annual Reports of the KTN

EU commissioned project: “Tuning educational structures in Europe” in “Towards a Common Framework for Mathematics Degrees in Europe”; EMS Newsletter, Sept. 2002

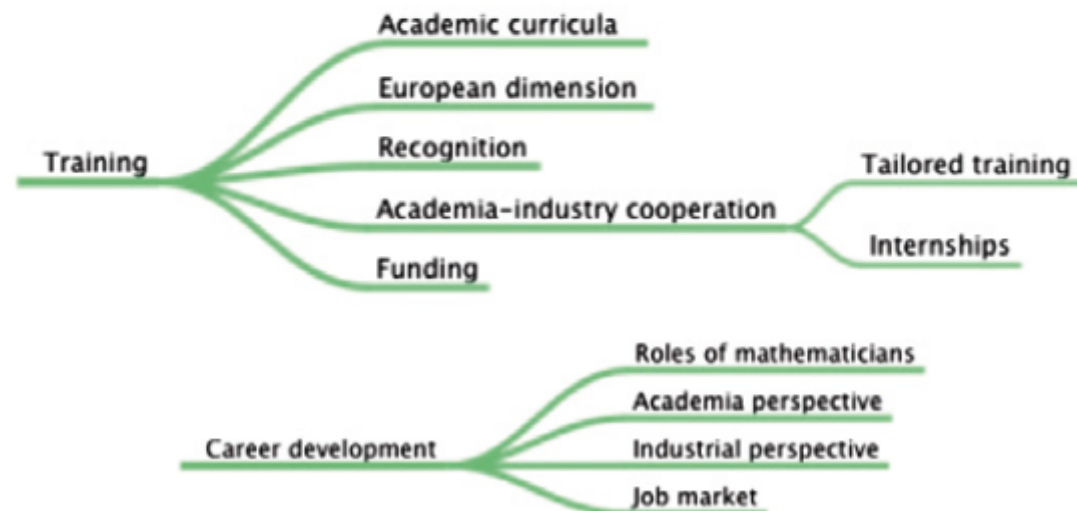


## Working Group 1: Training, Jobs and Careers

*Coordinator:* Magnus Fontes (Member of the ECMI Council and chairman of its Educational Committee)

### Deliverables:

- Recommendations for stronger European connections in national educational systems
- Best practices in Education in Industrial Mathematics
- Increasing its awareness as a discipline
- Best practices in Academia-Industry collaborations in Education

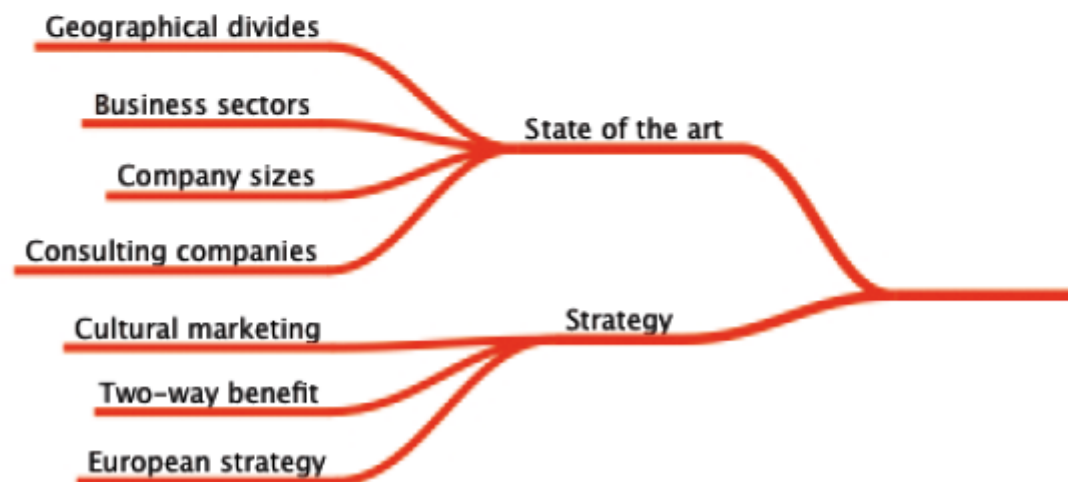


## **Working Group 2: Academia-Industry Interface**

*Coordinator:* Volker Mehrmann (Vice-chair of the EMS Applied Mathematics Committee, Chair of Matheon)

### **Deliverables:**

- Recommendations for stronger Academia-Industry interface
- Survey of existing collaborations and needs
- Interviews with consulting companies
- Development of national strategies and a European Strategy



### Working Group 3: Opportunities and Challenges

*Coordinator:* Yvon Maday (President of the scientific council of SMAI and manager of the industrial relations of the Fondation Sciences Mathématiques de Paris)

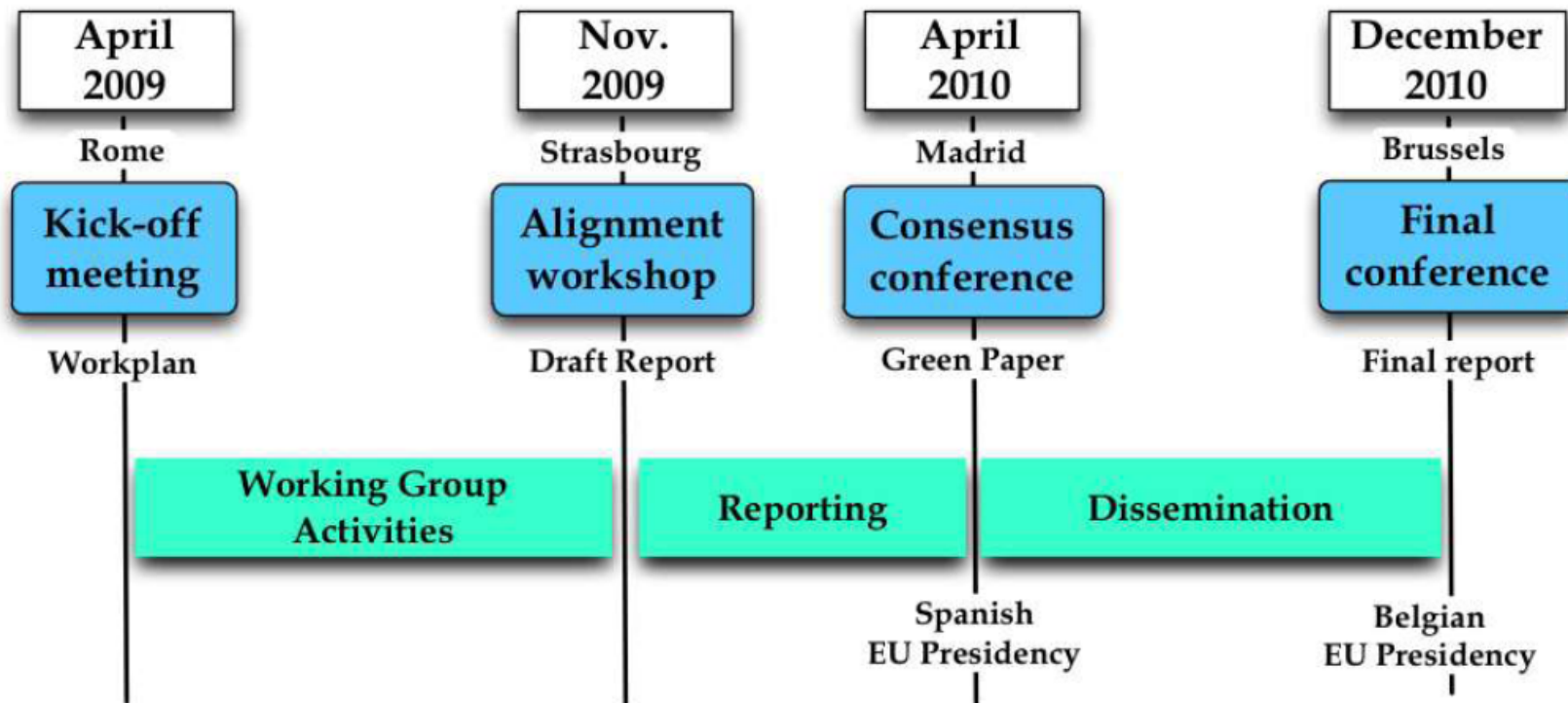
#### Deliverables:

- Recommendations on new opportunities for Europe
- Report on challenges for SMEs and large companies and opportunities to build a European Community in this field
- Identification of strategic opportunities





## Forward Look Timeline



BUT THE MEETINGS WERE MANY MORE  
..... FOR INSTANCE: ACTIVITIES IN 2009



- Kick-off Meeting, CNR, Rome, 16 - 17 April 2009
- Workshop of WG1, Lund, 30 May 2009
- Workshop of WG2, Berlin, 10 June 2009
- Workshop of WG 1 and WG3, Berlin , 15 June 2009
- Workshop of WG1, Wroclaw, 27 - 30 August 2009
- Workshop of WG1, Dresden, 10 September 2009
- Alignment Workshop, ESF, Strasbourg, 16 - 17  
November 2009

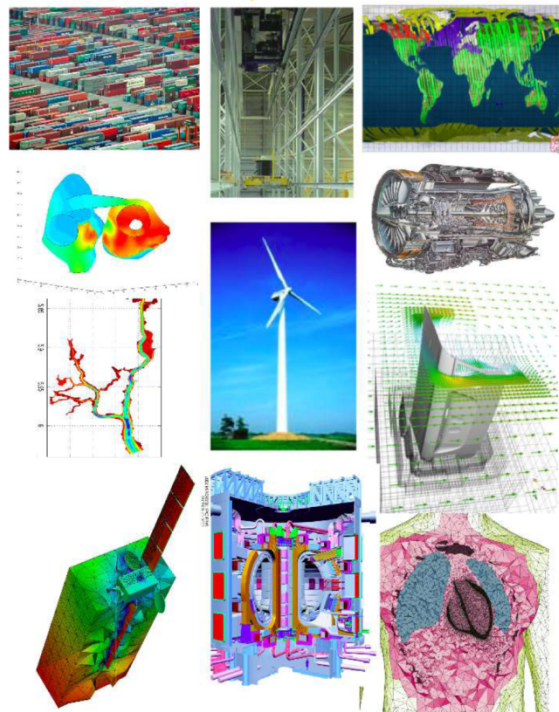


# THE FINAL REPORT

**EUROPEAN  
SCIENCE  
FOUNDATION**  
SETTING SCIENCE AGENDAS FOR EUROPE

## FORWARD LOOK

### Mathematics and Industry REPORT



European Mathematical Society

[www.esf.org](http://www.esf.org)



# THE RECOMMENDATIONS

**Recommendation 1:** Policy makers and funding organisations should join their efforts to fund mathematics activities through a **European Institute of Mathematics for Innovation**.

**Recommendation 2:** In order to overcome geographical and scientific fragmentation, academic institutions and industry must share and disseminate best practises across **Europe** and disciplines via networks and digital means.

**Recommendation 3:** **Mathematical Societies** and academic institutions should create common curricula and educational programmes in mathematics at **European level** taking into account local expertise and specificity.

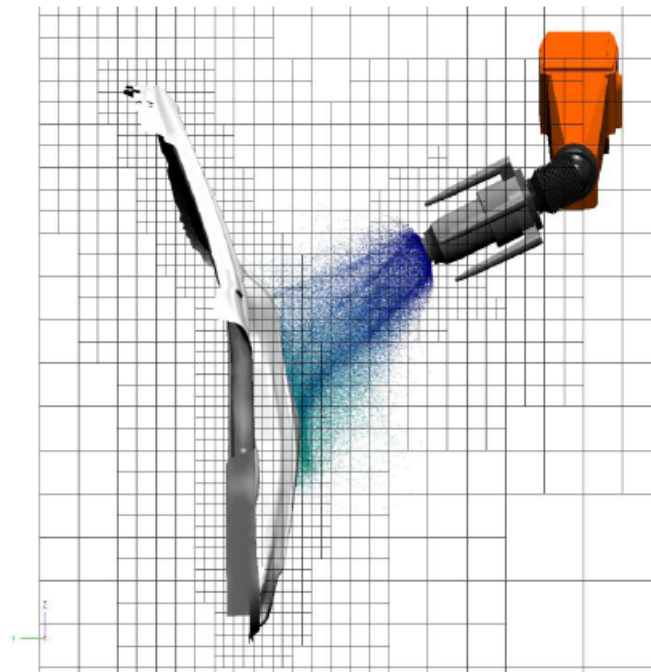


# THE SUCCESS STORIES

**EUROPEAN  
SCIENCE  
FOUNDATION**  
SETTING SCIENCE AGENDAS FOR EUROPE

**FORWARD LOOK**

Mathematics and Industry  
Success Stories - DRAFT



European Mathematical Society

[www.esf.org](http://www.esf.org)

