

# Joint Programming and Research Infrastructures

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GOBIERNO  
DE ESPAÑA

MINISTERIO  
DE CIENCIA  
E INNOVACIÓN

***Prague - 25/03/2009***

# Summary

- *The Spanish priorities for RIs*
- *Joint Programming in Research*
- *World-class Research Infrastructures*

# The Spanish priorities for RIs

# The Spanish Roadmap for RIs

- The case for Spain: ambitious policy and design of a roadmap of RIs (approved in January 2007).
- These RIs were not only born to cover Spanish interests: there is also a clear need to match the ESFRI Roadmap.
- They serve the European Research community, but also, as an integral part of such community, they benefit from it. In fact, many of them take part in the integrating activities financed by the EC (FP7).
- Design of new Spanish RIs also has a transnational component.

# The Spanish Roadmap for RIs



# The Spanish Roadmap for RIs



- GALICIA**
- BIO Cornide de Saavedra
  - BIO Sarmiento de Gamboa
  - Supercomputador Finis Terrae
  - Unidad Tecnológica

- ASTURIAS**
- Sistema Observación Costero MAREAS
- CANTABRIA**
- Gran Tanque de Ingeniería Marítima
  - Nodo RES

- PAÍS VASCO**
- Fuente de neutrones por Espalación\*
  - Unidad de Imagen Molecular

- NAVARRA**
- CENER
  - Instalación de Imagen Médica y Diagnóstica
  - Instalación de Inv. en Biocombustible

- MADRID**
- Stellarator TJ-II
  - Instalación de alta seguridad del CISA
  - Instalaciones de ingeniería civil del CEDEX
  - Central de Tecnología del ISOM
  - Red IRIS (1)
  - CEHIPAR
  - Instalación Singular de Fusión
  - Instalación de Tratamiento de Imagen Médica
  - Microscopía Avanzada
  - Nodo RES

- ARAGÓN**
- Laboratorio Subterráneo de Canfranc
  - Laboratorio Microscopías Avanzadas
- CATALUÑA**
- Sala Blanca del CNM
  - Laboratorio de RMN
  - CESCO
  - BSC- Mare Nostrum 2
  - Canal CIEM
  - Síncrotron ALBA
  - CIMNE
  - Instalación de Biología Estructural y Proteómica
  - Plataforma Mouse Clín

- CASTILLA LA MANCHA**
- Centro Astronómico de Yebes
  - Instalación de Tecnologías del Hidrógeno y Pilas de Combustible

- BALEARES**
- Sistema Observación Costero SOCIB

- EXTREMADURA**
- Grid CETA-CIEMAT

- VALENCIA**
- Física Médica IFIMED
  - Eficiencia Medios Transporte CIMET

- CANARIAS**
- Observatorio del Teide
  - Observatorio del Roque de los Muchachos
  - GranTeCan
  - Plataforma de Observación Oceánica
  - Nodo RES

- MURCIA**
- BIO Hespérides
  - Instalación Oceanográfica y de Acuicultura
  - Plataforma de Investigación en Recursos Hídricos

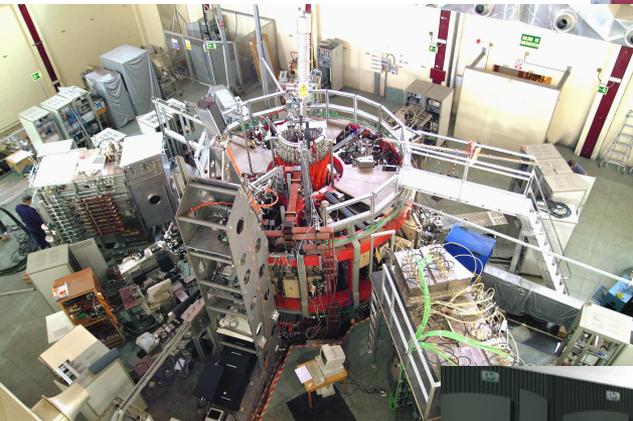
- ANDALUCÍA**
- Centro Astronómico de Calar Alto
  - Plataforma Solar de Almería
  - IRAM
  - Reserva Científica de Doñana
  - Centro Nacional Aceleradores
  - Instalación Energías Renovables
  - Instalación de Datos y Servicios para las Ciencias Sociales
  - Nodo RES

- **Operational**
- **In project**
- **In design as ICT**

\* Designed as an european project

• Antarctic Spanish Bases Juan Carlos I y Gabriel de Castilla

# Experience on international projects



# ESFRI roadmap priorities



**ESS-BILBAO INITIATIVE**  
An international knowledge community at the service of Europe

**ESS**

The logo features a stylized network of white nodes and connecting lines on a blue background. A circular emblem in the top left corner contains the text "ANALYSIS OF EUROPEAN CONTRIBUTION TO EUROPEAN RESEARCH INFRASTRUCTURES" and "1994-2013".



**PRACE**

A map of Europe with a grid overlay, showing the locations of PRACE (Practical Research in Action) nodes across various countries including Norway, Finland, Sweden, Poland, Germany, Austria, Switzerland, Serbia, Turkey, Cyprus, Greece, Italy, Spain, Portugal, France, Netherlands, and the United Kingdom.



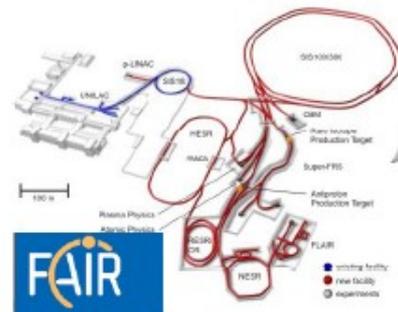
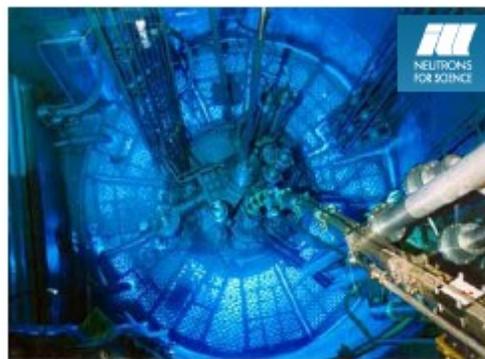
**TERE Solar**

A photograph of a solar tower (CSP) with a heliostats reflecting sunlight onto a central receiver. The text "TERE Solar" is overlaid in yellow.

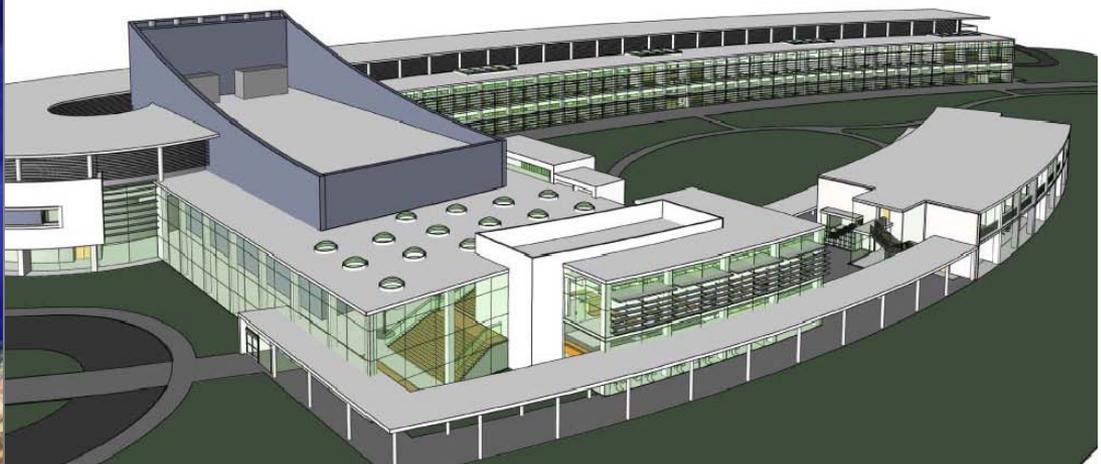


# Others ESFRI Projects

- Participating or ready to participate in projects such as XFEL, FAIR, ESRF Upgrade, ILL 20/20.
- Revision of the prioritization of ESFRI projects is underway / inclusion of new projects.



# Non-ESFRI Projects



International Iberian Nanotechnology Laboratory

**Under construction**



Joint Programming and Research Infrastructures

# Joint Programming in Research

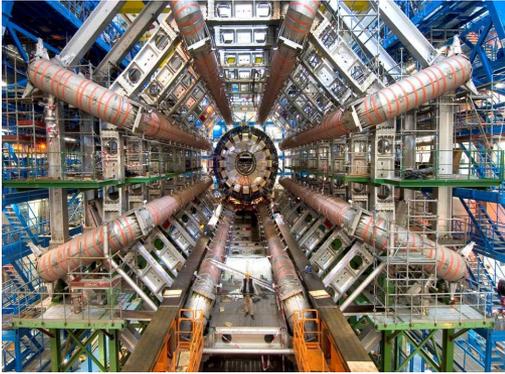
# Joint Programming in Research

- Joint Programming (JP) involves Member States engaging **voluntarily** the definition, development and implementation of common strategic research agendas and high-impact joint initiatives in specific research areas.
  
- It is a concept which
  - Recognises the importance of existing activities and initiatives;
  - Recognises the increasing need for a new and more strategic approach;
  - Calls for the implementation of a Member States-led process to step up their R&D cooperation;
  - Fully recognises the competence of member States and regions over the choice of R&D policies and the related allocation of resources.
  - Requires a realistic and flexible approach and a step-by-step process.

# Joint Programming in Research

- Why should we tackle JP in research?
  - To **increase coherence**, synergy, effectiveness and impact when European partners address a common result – an output or an outcome; reduce duplication;
  - To **optimise benefits** and reduce costs when distributing public research funding in the EU by using common programming, coordination, operational and reporting processes and tools; i.e. efficiency gains;
  - Because **national research programmes** have their place... but are **not equipped** to tackle major European societal problems by themselves.

# Joint Programming in Research



LHC detectors at CERN



Research at EMBL



ESA's orbiting X-ray observatory

- Some success stories involving JP:
  - Various inter-governmental research organisations have emerged over the last 50 years: CERN, EMBL, ESA, ...
  - Inter-governmental schemes (like COST and EUREKA) and FP for Research were launched in the 1970s and 1980s.
  - Since 2005, some promising new instruments of coordination and collaboration have been launched (ERA-NET Scheme and Article 169) .

# Joint Programming in Research

- Three stages to implement JP:
  - Development of a **common vision** for an agreed area;
  - Translation of the vision established into a **Strategic Research Agenda (SRA)**, entailing achievable and realistic objectives;
  - **Implementation of the SRA** by all participating authorities in a coherent manner, which may or may not include EU funding. Regular monitoring and evaluation of progress should be ensured.
  
- Criteria for the identification of specific areas for JP:
  - The area addresses a pan-European/global socio-economic or environmental challenge;
  - Publicly funded research is central to addressing the challenge;
  - There is a clear added value in JP in the area;
  - The area is sufficiently focused so that clear and realistic objectives can be set.

# Joint Programming in Research

Europe and its Member States need to develop a stronger and more coordinated and coherent response to major societal challenges.

# World-class Research Infrastructures

# World-class RIs

- Pillars of an ambitious ERA-vision:
  - Adequate RIs are vital for promoting innovation and offer conditions required for cutting-edge research and high-level human capital development.
  - High quality RIs serve as magnets for talented researchers. Critical mass of scientific research skills needed.
  - RIS play a clear societal and economic role too, by generating opportunities for new industrial applications, high-tech companies, research centres and educational institutions.

# World-class RIs

- A unified Europe was a key issue in the past:
  - **Commitment to closer ties between the countries of Europe was a key issue in the past and figures prominently in the agreements of scientific infrastructure during the first phase of building a unified Europe.**
  - **Examples: CERN 1954, ESO 1962, ILL 1967, EMBL 1969, ESA 1975, JET 1978.**
- ***The third and most important consideration is the political will of the Government (..) to join a common European enterprise in the field of particle physics. (Report by A. Abragam , 84th CERN Council Meeting, December 1987)***
  - **This political determination became more muted as a unified Europe became more and more a reality, e.g. ESRF 1988. The political argument was replaced by cost-saving arguments.**

# World-class RIs

- European Research Area is a key issue for the present:

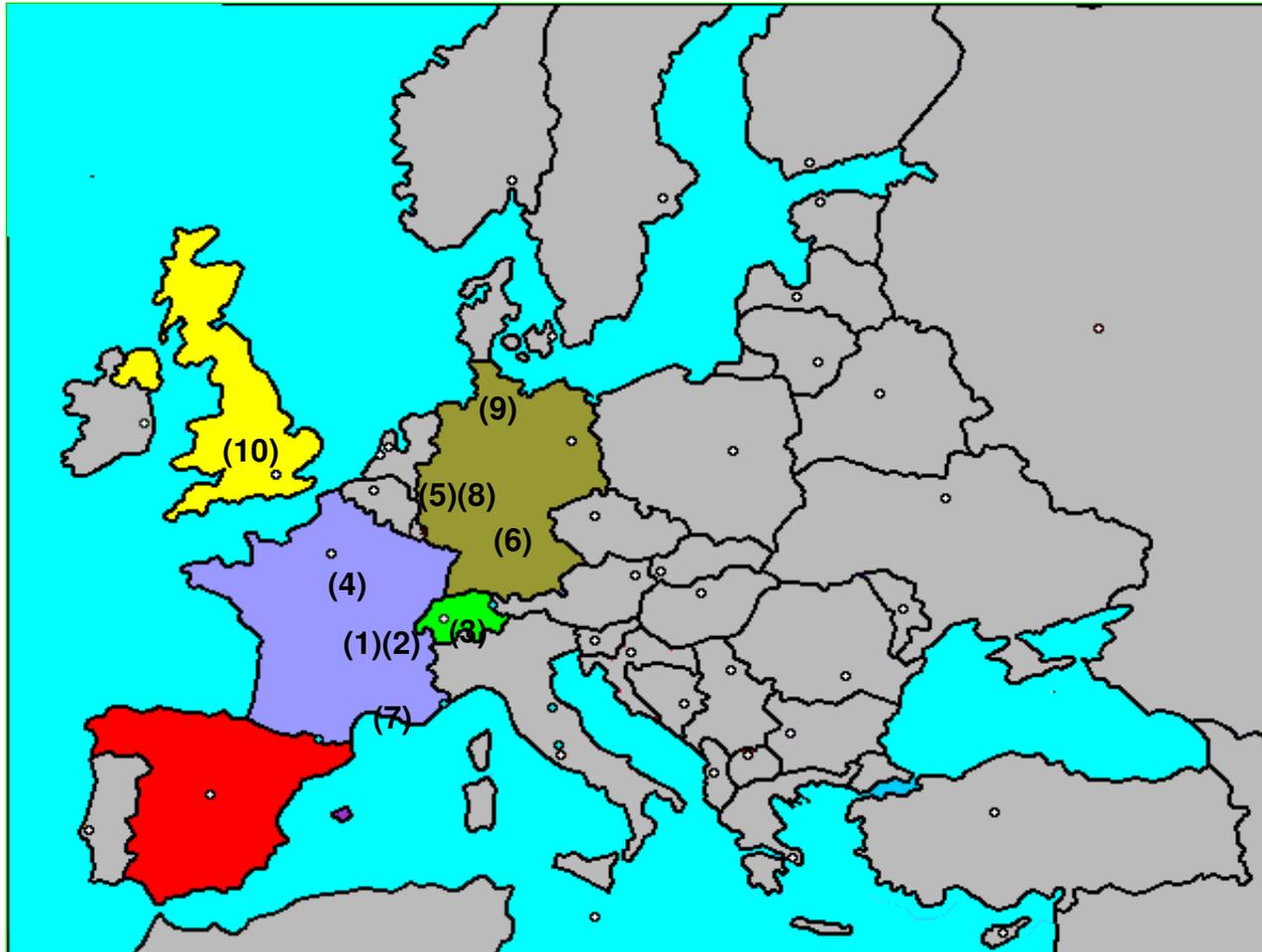
***Research Infrastructures are a critical element of building research excellence in Europe (..) ESFRI has been extremely important in providing a common European approach. This is the ERA in action (Science and Research Commissioner Janez Potocnik.)***

- This political will to promote the ERA is included in the preamble of the new conventions for research Infrastructure e.g. European-XFEL.

# World-class RIs

- Europe needs to invest effectively, efficiently and as quickly as possible.
  - Europe needs to compete with USA and JP. The *American Recovery and Reinvestment Plan* will invest \$15 Billion for science facilities, research and instrumentation.
  - The National Recovery Plans are an excellent opportunity to create jobs in cutting-edge technology and invest in pan-European infrastructure through in-kind contributions. This infrastructure is needed to improve the economic competitiveness of Europe.
  - Europe needs to implement the ESFRI Roadmap and this only can be achieved through national budgets. Competition for site of the facility improves the economic conditions.
  - BUT it should not be the only factor, e.g. ERA needs an homogeneous distribution of the facilities. Nowadays some parts of Europe lack of pan-European infrastructure.

# World-class RIs distribution



- ESRF (1)
- ILL (2)
- CERN (3)
- ESA (4)
- EMBL (5)
- ESO (6)
- ITER (7)
- XFEL (8)
- FAIR (9)
- JET (10)

# World-class RIs

- Today's challenges in world-class RIs:
  - To reach an efficient coordination in the field of RIs.
  - To set up a process that allows to turn ideas (ESFRI, regional plans, etc.) into practice.
  - To further discuss prioritization and homogeneous distribution of RIS.
  - To cope with the increasing needs for funding and the growing complexity of RIs.
  - To improve the management and access to ERIs.
  - To further develop and exploit the potential of e-infrastructures.

# Joint Programming in Research

In the past, a political commitment to building a unified Europe was key to establish Large Scientific Facilities. Nowadays, the cost-saving argument is also of paramount importance but, as in the past, a political commitment it is needed for achieving a real European Research Area.