

# EU R&D into port technologies

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## Summary

European Research Policy is included in Article 163 of the European Treaty, which describes how Member States will work together in Research and Development. It has been running since 1972 with the COST Programme (European COoperation in the field of Scientific and Technical Research) being the first as well as the widest European network for the coordination of nationally funded research activities. In late 1982, the European Commission launched the European Strategic Programme for Information Technology (ESPRIT), upon which the basic structure of the 1st Framework Programme (FP) 1984-1988 was modelled to this day, with the latest being FP7 2007-2013. Port and maritime transport subjects have been present since FP4, both as individual research as well as horizontal issues developed in Environment, Safety, Security, ICT, Space or Socio-economic areas.

The Port Authority of Gijon (Spain) has been participating in EU R&D activities since 1992 in the 3rd R&D Framework Programme. Presently, it has a record of more than 50 R&D projects, covering all areas related to port and maritime transport infrastructure and services.

## Background

Article 163 concerning R&D in the Treaty establishing the European Union says: "The Community shall have the objective of strengthening the scientific and technological bases of Community industry and encouraging it to become more competitive at international level, while promoting all research activities deemed necessary by virtue of other chapters of this Treaty."

Before discussing the key issues in EU R&D programmes, it is first necessary to understand the background to these programmes and the main players involved. The Member States of the European Union first come together in order to prepare a treaty. This describes the areas where they wish to cooperate. These topics include Energy, ICT, Security, Transport, etc. Article 163 of the Treaty describes how the Member States will work together in R&D. Following this, the European Commission of the European Union prepare common policies. The targeted areas include Maritime Policy, Port Policy, Space Policy, Enterprise Policy, Regional Policy and Social Policy. To implement these Policies, the European Union has two instruments: legislation, such as Decisions, Directives, Guidelines, White Books and Funding Programmes, such as Framework Programme, LIFE, GMES.



Part of the SHOAL project, the robotic fish are equipped with tiny chemical sensors capable of detecting pollutants in the water.

The catalytic events for the European Framework Programmes came in the early 1980s in response to widespread concern about the technological competitiveness of European industry, in particular high-tech industries (for excellent accounts of the history of EU research policy, see Peterson and Sharp 1998; Guzzetti 1995). In late 1982, the European Commission launched the European Strategic Programme for Information Technology (ESPRIT), upon which the basic structure of the later Framework Programmes was patterned.

In 1984, the various existing and proposed programmes were fused into the First Framework Programme (FP1), institutionalising the model established by ESPRIT. This represented an attempt by the European Commission to design a comprehensive science and technology policy that would give coherence to its Research and Technological Development (RTD) efforts and provide a means for selecting European scientific and technological objectives, co-ordinating Community and national policies, and ensuring the necessary funding.

COST – together with EUREKA and the EU framework programmes – is one of the three pillars of joint European research initiatives. These three complementary structures have differing areas of research. COST – European COoperation in the field of Scientific and Technical Research – was the first and

TABLE 1: FRAMEWORK PROGRAMMES BUDGET DEVELOPMENT

FP	Year	Mn □
1st	84-87	3.700
2nd	87-90	5.360
3rd	90-94	6.600
4th	94-98	13.215
5th	98-02	14.960
6th	02-06	17.500
7th	07-13	53.500






is the widest European network for the coordination of nationally funded research activities. It is based on an inter-governmental framework for cooperation agreed following a Ministerial Conference in 1971. As a precursor of advanced multidisciplinary research, COST plays a very important role in building a European Research Area (ERA).

## FP7 – 2007 – 2013

(<http://cordis.europa.eu/fp7/>)

After the termination of FP1 in 1987, the second (1987–1991) and third (1990–1994) remained ‘technology-push’ programmes in spirit. At about the same time, however, a new theoretical conceptualisation of the innovation process started to pervade policy advisory circles. It conceptualises innovation as a complex, interactive learning process that involves a multitude of actors from all societal spheres. The systemic model provides complementary and novel directions for STI (Science + Technology + Innovation) Policy, including additional rationales for supporting collaborative R&D. These include the need to foster interactive learning as a key mechanism for knowledge creation; to optimise linkages between the different (sets of) actors involved in innovation processes that rely on increasingly complex knowledge bases; to diffuse new knowledge and technology rapidly and widely; and to build innovative capacity through equipping workers with the requisite knowledge and skills to thrive in an increasingly dynamic, knowledge-based economy.

Over the past two decades, initiatives to foster collaborative R&D in precompetitive research have become a key instrument of science, technology and innovation (STI) policy at the regional, national and supranational levels. In Europe, the prime examples are the European Framework Programmes (FPs) on RTD. In these FPs, the European Union has (co-) funded thousands of transnational, collaborative R&D projects; projects aimed at supporting transnational collaboration and coordination in research; and projects supporting transnational mobility for training purposes. Since their inception in 1984, six FPs have been launched and the seventh commenced in 2007. Table 1 describes the budget development.

The main objective of these activities has been to strengthen Europe's science and technology capabilities and to promote European international competitiveness through coordinating national policies, integrating national research communities, improving the integration of marginal actors, and bringing together actors with the most advanced resources and capabilities. This has created a pan-European network of actors performing joint R&D.

The core of FP7, representing two thirds of the overall budget, is the Cooperation programme. It fosters collaborative research across Europe and other partner countries through projects by transnational consortia of industry and academia. Research will be carried out in ten key thematic areas:

- Health
- Food, agriculture and fisheries, and biotechnology
- Information and communication technologies
- Nanosciences, nanotechnologies, materials and new production technologies
- Energy
- Environment (including climate change)
- Transport (including aeronautics)
- Socio-economic sciences and the humanities
- Space
- Security



The main objective of these activities has been to strengthen Europe's science and technology capabilities and to promote European international competitiveness.

### Case of Port of Gijón (Spain)

The Port Authority of Gijón (PAG) is one of the European port entities with more activity related to R&D. It started in 1992 with the project Musel-8/24, funded by the FP3. Since then, it has participated in more than 50 R&D projects in the Framework Programme, as well as in other programmes, such as GMES from the European Space Agency, INTERREG or TEN-Transport. During FP6, 2002–2006, PAG joined the following projects:

- **MARNIS** – Maritime Navigation and Information Services
- **EFFORTS** – Effective operations in Ports
- **FREIGHTWISE** – Intelligent Framework for Freight Transport
- **MOSES** – Motorway of the Sea European Style
- **SAFETOW** – Safe towing of Vessels in Distress
- **MTCP** – Maritime Transport Coordination Platform

In FP7 2007–2013, PAG is participating in the following projects, which all started in 2008 or will begin in 2009:

- **PROPS** – Promotion of Short Sea Shipping and Intermodality
- **SERSCIS** – Semantically Enhanced Resilient and Secure Critical Infrastructure Services
- **SHOAL** – Search and monitoring of Harmful contaminants, Other pollutants And Leaks in vessels in ports using a swarm of robotic fish
- **EU-CARGOXPRESS** – Greening of surface transport through an innovative and competitive CARGO-VESSEL concept connecting maritime and fluvial intermodal ports

The main port entities in Europe are participating in EU R&D as part of their strategic policies. Public entities such as Port Authorities, and Port Administrations are included among this list, as are private bodies such as Port Companies and Port

Societies, who realised many years ago the advantages of R&D 'Coopetition'. It is a new acronym describing Cooperation & Competition: technical cooperation with commercial competitors, a situation that the ports need to perform, due to the high complexity and cost of the subjects solved through collaborative R&D projects. Typical R&D cases are related to intermodal transport chains and networks, safety and security, dangerous goods tracing and tracking, motorway of the sea, Short sea shipping, intermodal services and space technologies supporting maritime transport applications and services.

Ports of Rotterdam, Antwerp, Hamburg, Genoa, Le Havre, Dublin, Cork, Nantes, Gothenburg, Leixoes, Lisbon, Taranto, Barcelona, Algeciras, Valencia, and Waterford, are but a few of the R&D partners of the Port Authority of Gijón. There are several arguments to justify the participation of Port Entities

in R&D activities at different levels: international, European, national or regional:

- **Technology:** To learn about the latest technologies developed for ports and maritime transport
- **Commerce:** To establish relationships that may improve the commercial scope of the port
- **Image:** The Port-City relationship can be enhanced and improved through R&D projects
- **Policy:** There are several policies hitting the ports: Maritime, Logistic, Environment, Safety, Security and Port policies, the participation in R&D activities, not only in R&D projects, but also workshops, conferences, public consultations and others, giving the ports the opportunity to meet policymakers and to know what are the key issues and main trends.

#### ABOUT THE AUTHOR

**Humberto Moyano**, a qualified Industrial Engineer, is the Director of the Port R&D Department at the Port Authority of Gijón. He has worked in the port and maritime sector since 1992, in more than 30 EU R&D projects within Transport, Space, Environment, Safety & Security and Socio-Economy of transport.

#### ABOUT THE PORT

The **Port of Gijón** is the main bulk port of the Spanish port system and maintains an annual traffic of 20 million tonnes, of which 16 million are unloaded via the solid bulk terminal EBHISA. The terminal, designed in the year 1992, to unload a maximum of 12 million tonnes, has been improving its facilities and its docks to meet up to 17 million tonnes per year.

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