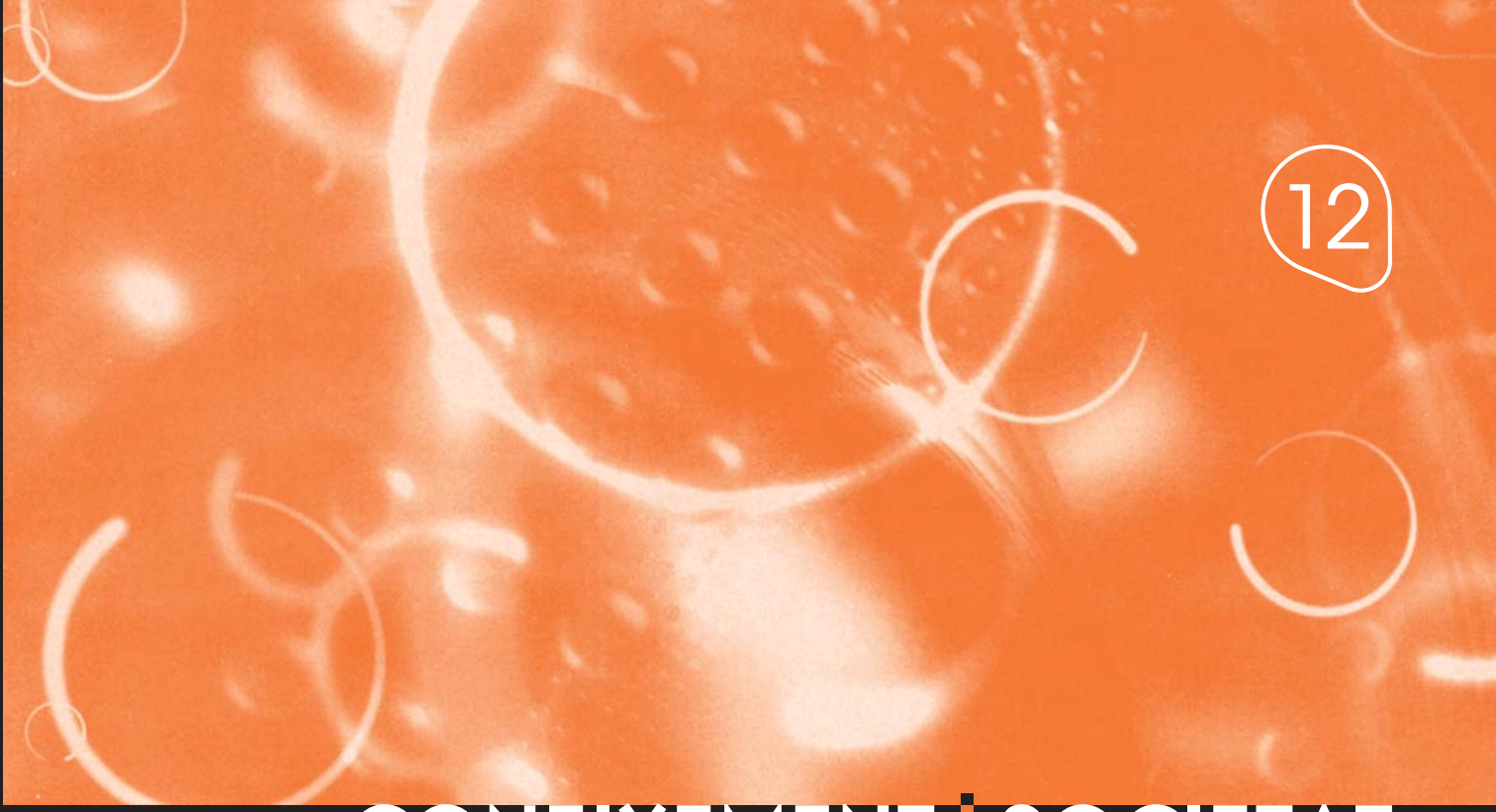

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Pere Torra and Pla

# PROFESSIONAL RESEARCH CAREERS IN CATALONIA. POLICIES AND PROJECTS OF THE CATALAN AUTONOMOUS GOVERNMENT

**Blanca Ciurana*, Joan Cadefau**, Olga Alay*** and Josep Maria Vilalta******

**We make a detailed analysis of the set of policies and projects developed by the Catalan Autonomous Government in respect of researchers over the past five years. We specifically examine the initiatives undertaken through the former government's Department of Universities, Research and the Information Society, now the Commission for Universities and Research. From that standpoint, we analyse various programmes for grants and funding that co-exist in Catalonia and are promoted by the Catalan, Spanish and European governments, the policy on creation of reseach centres, and the Jaume Serra-Hunter University Lecturers Plan. Lastly, we look closely in particular at the status of research careers in business and the initiatives that have been taken in that connection.**

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   2.2. Catalonia and Spain
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3. Policies and plans of the Catalan Autonomous Government for research careers in Catalonia
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## 1. Introduction

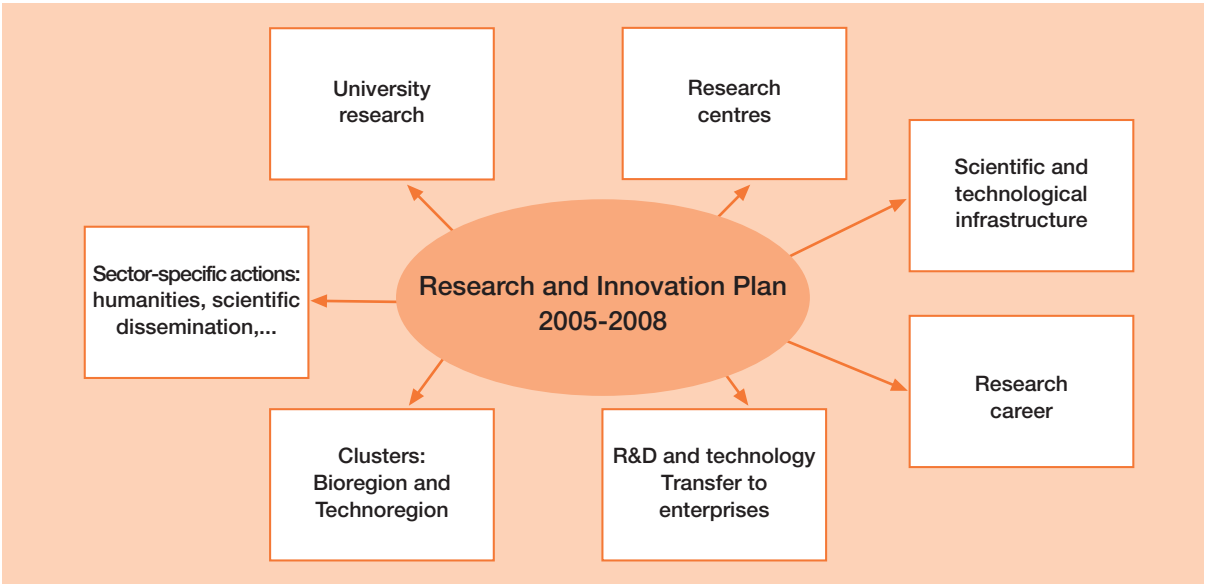
The main instrument through which the former Catalan Autonomous Government's Department of Universities, Research and the Information Society, now the Universities and Research Commission,[1] carried out initiatives in connection with professional careers in R&D was the Research Career Plan for Catalonia,[2] presented at the seat of the Catalan Autonomous Government on 18 March 2005. That Plan establishes the aims and major lines of strategic action for development of professional careers in R&D in Catalonia, the different stages of that development, the instruments that need to be implemented by the Catalan Autonomous Government, and financing.

The Research Career Plan for Catalonia forms a part of the set of policies relating to R&D of the Catalan Autonomous Government's Directorate-General for Research. Figure 1 shows the Directorate-General for Research's main lines of policy, within the framework of the Plan for Research and Innovation approved by the Catalan Autonomous Government in January 2005. Those lines of action, as shown in the diagram, are the following:

– Stimulation of R&D at Catalan universities.
– Promotion and consolidation of research centres of excellence.
– Stimulation of research careers in Catalonia.
– Promotion of R&D in enterprises and stimulation of technology transfer and cooperation beween enterprises and universities.
– Development of scientific and technological infrastructures.
– Promotion of scientific-technological clusters.
– Development of sectorial R&D plans: stimulation of research in humanities and social sciences and stimulation of scientific communication and dissemination.

[1] Decree 571/2006 regarding the organisation of the Ministry of Innovation, Universities and Enterprise of the Generalitat de Catalunya (Catalan Autonomous Government) (Catalan Official Journal, DOGC 4785 of 21.12.2006, in Catalan)
[2] See the presentation by the minister Carles Solà: http://www10.gencat.net/dursi/ca/re/investigadors_carrera.htm.

**Figure 1**
**Main policies of the Directorate-General for Research**




The lack of definition of a genuine research career, i.e. the absence of a consistent career path made up of consecutive and progressive stages established for young people who wish to become involved in research, has been an obstacle to research careers in science and technology in Catalonia. As a result, this area has been historically marked by a series of structural deficiencies that have often made those who eventually decide to take this route into "heroes" who are subjected to rapidly changeable and uncertain working conditions. Furthermore, those deficiencies have given rise to the phenomenon known as brain drain, i.e. the frequently definitive departure of our professionals and our most highly qualified individuals to other countries with greater resources for R&D and innnovation that, in this way, are able to enhance their potential for growth at the expense of the scientific values of other countries.

In order to increase the number of researchers, to offer attractive careers and professional prospects in Catalonia and to avoid or correct the existing structural deficiencies, a policy had to be defined for the research career in both the public and private spheres. The aims of the definition of a research career are to facilitate the return of emigrant researchers, attract researchers from other countries to Catalonia and make the hiring of such individuals a common practice in all areas of society, so that the figure of the R&D professional attains the social recognition that it deserves. In that connection, the Catalan Autonomous Government must take steps favouring co-ordination between all the public and private players forming part of Catalonia's science and technology system, namely universities, research centres, enterprises, public organisations and other institutions operating in the territory.

The definition of a scientific career was one of the major shortcomings of the science and technology system in Catalonia and in all of Spain, and it was a necessary preliminary to setting Catalan society on a course for progress and wellbeing. That career which has been defined, in relation to the resources dedicated to it and the number of new positions for researchers being offered, is a limited but nonetheless realistic initiative. The scientific policy instruments created and administered by the Spanish and European governments co-exist in Catalonia with those defined by the Catalan Autonomous Government and they are not to be disdained. The definition of a research career for Catalonia by its Autonomous Government should be seen as a complementary tool, albeit strategic, necessary and legitimate, and it cannot lead us to reject the different initiatives and convocations promoted by other governments. In this connection, it is important to note that the Catalan Autonomous Government has exclusive authority in respect of technological research and development. Nevertheless, since the Spanish state has exclusive authority in respect of economic development and general co-ordination, the central government has continued to promote specific instruments and offers, in this case relating to researchers, and it has not transferred the corresponding resources.[3] Thus, the resources provided by the Catalan Autonomous Government for development of the Research Career Plan for Catalonia are from its own coffers, since, as we have mentioned, the corresponding resources have not been transferred from the central government.

Another of the essential characteristics that have been established for the Research Career Plan for Catalonia is to facilitate permeability between the public and private sectors and between the instruments defined by the Spanish government, the European Union and the Catalan Autonomous Government itself at all times. The research career is conceived as a unit that, over the course of a professional career, can be carried out in either the public and/or the private sector and mobility between one sector and the other is not only foreseen but also considered to be desirable.

## 2. Context

### 2.1. Europe

"Europe must become the most important knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion." With this declaration in Lisbon in 2000 and later in Barcelona in 2002, the European Union stated the importance and the need for all the member states of the Europe of Fifteen and now of Twenty-seven to make efforts to increase research and technological innovation to attain a level similar to that of the US and Japan, two leading countries in R&D and innovation. One of the main targets that have been established was for average spending on investment in R&D to reach 3% of the GDP of the EU member states by 2010. In order attain those targets, the EU recognised that the pertinent efforts would have to be made both by government and the private sector.

This increase in the funding of R&D must be accompanied by other measures. One very important

[3] As specified below in this article, in 2005 and 2006 the Ministry of Science and Education transferred the Generalitat (Catalan Autonomous Government) €18,920,000 for management of the Programme of incentives for the incorporation and intensification of research activities ("I3") at universities and centres in Catalonia, not including the centres of the Spanish High Council for Scientific Research (CSIC).

step will be to boost the number of researchers throughout Europe. In that connection, a target was set for the addition of 750,000 new researchers to the European Union's system of science and technology by 2010, as stated by the European Commission in its communication "Investing in Research: An Action Plan for Europe".[4] In that respect, the Communication from the European Commission: "Researchers in the European Research Area: One Profession, Multiple Careers" [5] points out that researchers are crucial for research and innovation.

**In Europe, the increase in funding of R&D must be accompanied by other measures, such as a boost in the number of researchers**

According to the European Union's calculations, the number of people dedicated to R&D that will have to be added to those already working in the field by 2010 will be on the order of 1.2 million (approximately 750,000 new researchers plus technicians and support staff). In that respect and in keeping with the target of attaining investment of 3% of GDP as mentioned above, the European Union aims to increase the proportion of researchers to 8 per thousand of the working population.[6] In 2003, while Europe had 5.4 researchers (full-time equivalents[7]) per thousand of the working population, Japan had 10.1 and the US had 9.0, in 1999.[8]

If we examine the European Union figures for 2003 appearing in the same source, we note that there are countries where that number (FTE researchers per thousand inhabitants) is very high, such as the Nordic countries (Sweden with 10.1 or Finland with 16.2). However, the average decreases in countries with larger populations, e.g Germany and France, with 6.3 and 6.9, respectively, or Italy with 2.8. As for Spain, the number was 4.9[9] in 2003. That difference between countries means that some will have to make greater efforts, while others have already surpassed the targets set by the European Union.

Given the scarcity of scientific vocations among young people and the brain drain, particularly towards the US, the EU has set in motion a number of proposals, some of them as improvements to already existing programmes and some of them as new programmes. In fact, in the 6th Framework Programme (2002–2006) and the 7th Framework Programme planned for 2007–2013, actions aimed at dissemination of science and technology have a key role for raising society's awareness of their importance, with the goal, in short, of creating scientific vocations.[10] In addition, the EU has expanded and improved conditions of mobility as well as the number of incentives for hiring researchers through the Marie Curie Programme.

Another of the EU's initiatives, and perhaps the most important, has been the publication of recommendations for the European Charter for Re-

[4] European Commission, 2003a
[5] European Commission, 2003b
[6] European Commission, 2004
[7] A full-time equivalent (FTE) corresponds to the work of one person in one year. Thus, someone who normally dedicates 40% of their time to R&D and the rest to other activities (teaching, consultancy, university management) only counts as 0.4 FTE.
[8] European Commission. Key Figures 2005.
[9] For 2004, the National Statistical Institute gives a figure of 5.6.
[10] These may be found in the article by Xavier Goenaga and Marta Truco on the 7th FP, published in this same journal.

searchers and the Code of Conduct for Recruitment of Doctors, setting out guidelines for the rights and duties of researchers and specifying minimum conditions that must be met throughout the EU.[11]

### 2.2. Catalonia and Spain

In line with the commitments undertaken by the European Council at Lisbon in March 2000 and at Barcelona in March 2002, the Catalan Autonomous Government resolved to increase spending on R&D in Catalonia to attain the rate of 2.1% of GDP by 2008. Along those same lines, the Catalonia Plan for Research and Innovation (PRI)[12] calls for an increase in the number of researchers in Catalonia over the four years of its term (2005–2008). There were 18,387 researchers in Catalonia when the PRI came into effect[13] and the target set in that Plan for 2008 is 24,000. Consequently, the Catalan Autonomous Government had urgently to design expectations of job stability and career prospects similar to those of other professions.

In the year 2004, the average number of researchers per thousand working inhabitants in Catalonia was 6.7. Although that number is slightly higher than the average for Europe, the percentage of researchers in the private sector is low in comparison with the average for Europe or for other countries. One factor that differentiates the system of research and innovation in Catalonia from that of other countries of the European Union is the number people with doctorates working for enterprises.

**Table 1**

**Distribution of FTE (full-time equivalent) researchers by sectors**

| | Private sector | Hihger education | Governments |
|---|---|---|---|
| Catalonia* | 42.6% | 43.5% | 13.9% |
| Spain* | 31.9 | 51.1 | 17.0 |
| UE-25* | 50.3% | 36.6% | 13.1% |
| USA** | 79.9% | 16.5% | 3.6% |
| Japan* | 69.5% | 25.5% | 5.0% |

* Figures for Catalonia, Spain and EU-25 for 2004 calculated on the basis of Eurostat.
** Figures for Japan for 2003 calculated on the basis of Eurostat.
*** Figures for USA for 2002 calculated on the basis of OECD Main Science and Technology Indicators Vol 2005/2.
Note: The private sector includes private non-profit enterprises and institutions.

**Table 2**

**Number of FTE (full-time equivalent) researchers per 1000 working inhabitants (totals and by employment sectors)**

| | Total | Privat sector | Higher education | Governments |
|---|---|---|---|---|
| Catalonia* | 6.7 | 2.9 | 2.9 | 0.9 |
| Spain* | 5.6 | 1.8 | 2.9 | 0.9 |
| UE-25* | 6.3 | 3.2 | 2.3 | 0.8 |
| USA** | 9.6 | 4.8 | 3.5 | 1.3 |
| Japan** | 10.4 | 7.2 | 2.7 | 0.5 |

* Figures for Catalonia, Spain and EU-25 for 2004 calculated on the basis of Eurostat.
** Figures for Japan for 2003 calculated on the basis of Eurostat.
*** Figures for USA for 2002 calculated on the basis of OECD Main Science and Technology Indicators Vol 2005/2.
Note: The private sector includes private non-profit enterprises and institutions.

In respect of investment in research and development, the ratio in Catalonia between the public and private sectors is 1:3, which is higher than for

[11] Recommendation of the Commission of 11 March 2005 relating to the European Charter for Researchers and the Code of Conduct for Recruitment of Researchers OJEU (2005/251/EC), 22/3/2005.
[12] Catalonia Plan for Research and Innovation 2005–2008 (*http://www.gencat.net/pricatalunya/eng/index.htm*).
[13] Figures for 2003. National Statistical Institute 2004.

EU-25 and close to the ratio for the US, although the investment in R&D/GDP ratio remains well below the average for Europe.

**Table 3**
**Investment in R&D by sectors**

| 2004 | Governments | Hihger education superior | Private sector | R&D investment/ GDP |
|---|---|---|---|---|
| Catalonia | 9.3 | 24.3 | 66.4 | 1.34 |
| Spain | 16.0 | 29.5 | 54.5 | 1.07 |
| UE-25 | 12.8 | 21.9 | 65.3 | 1.86 |
| Japan* | 9.3 | 13.7 | 77.0 | 3.15 |
| USA | 12.2 | 13.6 | 74.2 | 2.66 |

Figures for Catalonia and Spain 2004 (National Statistical Institute 2006). Figures for EU-25 and USA for 2004. Eurostat.
* Figures for Japan for 2003. Eurostat.

Consequently, in contrast with the rest of Spain, the investment per reseearcher in Catalonia is higher in the private sector than in the public sector.

**Brain drain has substantial implications for the loss of highly qualified human capital, debilitation of research teams, waste of resources and reduction of the country's capacity for research**

### 2.3. Brain drain and historical and structural deficiencies

In fact, what we find in Catalonia and, by extension in Spain as a whole, is the phenomenon known as "brain drain", i.e. the departure of professionals or highly qualified individuals from one country or economic sector to another that offers better conditions (in terms of career opportunities, salaries, scientific and technological environment, and so on). As a rule, this departure of researchers to other countries can be explained mainly by the fact that they have better opportunities for research in those countries, since more resources are available for R&D and innovation, although the move also involves substantially better prospects for acquiring knowledge and experience.

In addition to brain drain, several other types of phenomena and circumstances can be discerned. The OECD has also identified phenomena known as "brain exchange" and "brain waste": the former involves countries with the capacity both to provide and receive qualified individuals, whereas the latter implies that qualified individuals are occupied in professional activities that are below their levels of qualification.

In Catalonia, and throughout Spain, brain drain has substantial implications for the loss of highly qualified human capital, debilitation of research groups, waste of resources and reduction of the country's capacity for research. Brain drain is a problem affecting the EU as a whole, where the main flow is towards the US, although in Catalonia the flow, in addition to being directed towards the US, is also directed at other EU countries. Thus, the countries of destination receive trained researchers, frequently when they are at the most productive stage of their careers.

All these factors lead to the need to set up a scientific career that is attractive to young researchers and facilitates the return of scientists who have moved abroad, and that can also attract researchers from other countries.

## 3. Policies and plans of the Catalan Autonomous Government for research careers in Catalonia

### 3.1. Career stages

The path defined in the Research Career Plan for Catalonia comprises four stages, which are same stages as found in any research career defined in any country in the world. Those stages are the following:

– Pre-doctoral education (four years).
– Post-doctoral training (two years).
– Research pre-consolidation (five years).
– Research stablisation or consolidation (ongoing).

A graduate who wishes to become a researcher begins with the pre-doctoral education stage and then progresses to the stage of stabilisation or consolidation. Before undertaking a higher stage, they need to meet all the requirements for selection and evaluation in the preceding stage. The path to be followed has been defined and each stage has been provided with the necessary instruments in the form of funding, so that the individuals reaching each stage can dedicate themselves to research on a professional basis.

The **pre-doctoral education stage** is the stage reached by someone holding a bachelor's degree or engineering degree who wishes to go into research professionally upon completion of their university studies. This is the gateway to the research career. At this stage the future researcher has one main goal, namely the completion of a doctoral thesis to obtain a doctor's degree, which is the highest university qualification. This stage is considered to last four years.

The approximate and advisable age that a person should have at this stage is 23 to 26. That age span, as well as the others that have been determined for each stage, does not mean an older person cannot start off on a research career path, but instead indicates the intention that researchers should stabilise their employment situation at a younger age than is the case at present, in line with the situation in other similar professional groups.

**There is the intention that researchers should stablilise their employment situation at a younger age than is the case at present, in line with the situation in other similar professional groups**

For this stage, in Catalonia there are programmes for training of researchers that are operated by the Catalan Autonomous Government (such as the programme of pre-doctoral grants for training of researchers, "FI"), by the Spanish government (such as the programme for training of researchers, "FPI"), and by the European Union (such as the different Marie Curie actions). All those programmes are examined in greater detail later in this article. In short, this stage of the career is quite well covered, particularly in comparison with others, and it has been an active concern of the Catalan Autonomous Government for over fifteen years.

The **post-doctoral training stage** is entered by those who have obtained a doctor's degree and who wish to pursue the profession of researcher after submitting their thesis. At this stage, doctors are expected to join a university, research centre, government or enterprise as members of already existing research groups to obtain training as researchers by carrying out research, taking greater

initiative than when they were working on their theses and completing the activities called for in their study plan. When a doctor is hired as a researcher, they should find that their centre or organisation provides them with the support, means and equipment that they need to carry out their normal activities so that during this post-doctoral stage they can acquire further knowledge, skills and abilities to advance in their professional careers. This training is best obtained somewhere other than the place where the researcher submitted their thesis, since mobility is one of the main factors of a researcher's career, and although this stage can be completed as part of a group in the same country, it is preferably achieved as part of a foreign group.

**For the definition of the career, the need was seen for a researcher pre-consolidation stage to follow the two-year post-doctoral stage and preceding the final stablisation or senior stage**

The duration of this stage should be two years and it is important to ensure that there is no break in the researcher's activities between completion of the preceding stage and the beginning of this one. Ideally, a person at the post-doctoral training stage should be 27–28 years of age. For this stage, in 2005 the Catalan Autonomous Government announced its first offer of grants/contracts,[14] which was repeated this year.[15] The programme is named after Beatriu de Pinós, a 15th-century noblewoman who dedicated the fortune that she inherited from her husband to the dissemination of the works of the scientist and humanist Ramon Llull. There are also other programmes in Catalonia operated by the central government (Juan de la Cierva, Torres Quevedo, scholarships for study abroad, etc.) and by the EU (as part of the Marie Curie actions). The Beatriu de Pinós programme of contracts is examined in detail in a later section of his article, along with the other programmes mentioned.

For the definition of the career, the need was seen for a **researcher pre-consolidation stage** to follow the two-year post-doctoral stage and preceding the final stablisation or senior stage, during which the researcher would have the opportunity of forming their own research group and line of research under the auspices of a public or private institution or of joining an already existing research group. That stage is associated with a five-year employment contract that, upon completion and with positive evaluation and recruitment, can lead to a permanent employment contract at the senior level. For the pre-consolidation stage, then, the first 30 five-year ICREA Junior contracts were offered in 2005 to young researchers to allow them to prepare to assume leading positions in science and technology while carrying out cutting-edge research in Catalonia as active members of the Catalan research system in both the public and private sectors. There are also Spanish programmes operated at this stage, such as the Ramón y Cajal programme. All those programmes are discussed later in this article.

Upon completion of the pre-consolidation stage, the researcher attains **the consolidation or sta-**

[14] Announcement of Beatriu de Pinós postdoctoral grants. Resolution UNI/2429/2005 (Catalan Official Journal, DOGC no. 4458, of 30/8/2005, in Catalan).
[15] Announcement of postdoctoral grants and assistance under the Beatriu de Pinós programme 2006. EDU/2714/2006, (Catalan Official Journal, DOGC no. 4705, of 25/8/2006, in Catalan).

**bilisation stage**, where they can take up permanent or indefinite employment. At this stabilisation stage, it is assumed that all those who have been working on their research over the preceding stages in the private sector and those who wish to join the private sector will be stablised at the enterprises where they are employed. For the public sector, the Catalan Institute of Research and Advanced Studies (ICREA) has provided Catalan universities and research centres since 2001 with researchers whom it recruits and hires on the basis of criteria of excellence. Further discussion is found below of this programme and others, including the I3 programme and the Jaume Serra Hunter university lecturer recruitment programme, which fall within this stage. Researchers at this stage of their careers are expected to be active members of the Catalan research system and to make important contributions to that system.

### 3.2. Programmes for predoctoral training of researchers in Catalonia

For the pre-doctoral stage, since 1989 the Autonomous Government of Catalonia has had a specific instrument in the form of pre-doctoral education grants for researchers (FI)[16] and at the same time has or has had other programmes with similar characteristics, such as grants and aid for the training of doctoral candidates and university lecturers in areas with deficiencies (AD), CIRIT pre-doctoral grants for training of researchers in fine chemistry (QF) or priority areas of the research plan (FIAP), pre-doctoral grants for completion of theses relating to important areas of industrial, social or business interest (TDOC), and FI-IQUC pre-doctoral grants for education of international students associated with consolidated doctoral programmes and doctoral programmes of international quality recognised by the Catalan Autonomous Government. A detailed summary of the training programmes for researchers operated by the Catalan Autonomous Government from 1989 to 2003 can be found in the article by Fina Villar[17] in edition number 7 of this journal.

Nevertheless, anyone who wishes to take a doctorate in Catalonia also has other options for funding. By volume, the leading instrument in Catalonia is the FPI (researcher education) grant offered by the Spanish government's Ministry of Education and Science.[18] In 2004, an average of 27%[19] of the grants provided throughout Spain went to Catalan universities and centres.

[16] The researcher education programme or "FI" has been announced yearly since 1989. The individuals who obtain a grant/contract through this programme are assured (on the condition that they fulfil the establishment requirements) a grant/salary for four years. The number of FI grants distributed has increased progressively over the years to 934 doctoral candidates who benefitted from the programme in 2005, of which 270 were new entries that year. The FI programme has undergone substantial changes in recent years and in addition to the increase in the number of pre-doctoral grants provided, in 2004 and 2005 the conditions were gradually changed from the offer of four years of grants to two years of grants plus two years of contracts (2004) and lastly to one year of grant plus three years of contracts (2005 and 2006), the possibility was added of applying for a researcher education grant/contract (FI) to prepare a thesis at an enterprise, and this form was added to the conditions for the programme. Consequently, there has been a development towards a contractual model, indicating the intention of doing away with the job insecurity faced as a rule in the past by individuals dedicated to research. The FI enterprise format of the programme is the other major change that has been made, to be discussed in another section of this article. Salaries for doctoral candidates with an FI grant or contract increase over the course of the four years and at present are between €10,000 and €12,000 yearly. In addition, these contracts also provide for the possibility of a bonus of a further €3,000 for efficiency in completion of the thesis if it is finished within four years.

[17] Villar, 2005.

[18] At present, people receiving grants through this programme are treated as salaried employees under the general Social Security regime. Since with the 2006 edition of this programme (Resolution of 27 March 2006; Spanish Official Bulletin, BOE number 85 of 10/4/2006, in Spanish) and with the appoval of the Researcher Trainee Charter (Royal Decree 63/2006; Spanish Official Bulletin, BOE number 29 of 3/2/2006, in Spanish), they follow the 2+2 model, i.e. they are structured into two periods: 24 months of grant (until attainment of the advanced studies diploma or DEA) and 24 months of trainee contracts. This grant programme is linked to the national R&D&I Plan, in the sense that each grantholder must be signed up with one of the projects funded through its programmes.

[19] Figures for 2004 according to the PRI: success of researchers in state-wide programmes. Source: Ministry of Education and Science of the Spanish Government. Data processed by the Department of Universities, Research and the Information Society of the Catalan Government.

**Table 4**
**Yearly additions to the number of beneficiaries of pre-doctoral grants/contracts**

| Year | Programmes* | | | | | |
|---|---|---|---|---|---|---|
| | FI | AD | QF | FIAP | TDOC | FI-IQUC |
| 1989 | 80 | - | - | - | - | |
| 1990 | 155 | - | - | - | - | |
| 1991 | 281 | 156 | - | - | - | |
| 1992 | 402 | 151 | 25 | - | - | |
| 1993 | 455 | 135 | 47 | - | - | |
| 1994 | 522 | 122 | 46 | - | - | |
| 1995 | 529 | 89 | 45 | 40 | - | |
| 1996 | 518 | - | 19 | 151 | - | |
| 1997 | 495 | - | 20 | 201 | - | |
| 1998 | 424 | - | - | 314 | 25 | |
| 1999 | 362 | - | - | 240 | 39 | |
| 2000 | 449 | - | - | 277 | 60 | |
| 2001 | 415 | - | - | 317 | 70 | |
| 2002 | 749 | - | - | - | 28 | |
| 2003 | 794 | - | - | - | - | |
| 2004 | 798 | - | - | - | - | 122 |
| 2005 | 866 | - | - | - | - | 128 |
| 2006 | 934 | - | - | - | - | 107 |

* Figures include renewals and new grants.
FI: pre-doctoral grants for training of researchers.
AD: grants and aid for training of doctoral candidates and university lecturers in areas with deficiencies.
QF: CIRIT pre-doctoral grants for training of researchers in fine chemistry.
FIAP: CIRIT pre-doctoral grants for training of researchers in priority areas of the research plan.
TDOC: pre-doctoral grants for completion of theses relating to important areas of industrial, social or business interest.
FI-IQUC: pre-doctoral grants for education of international students associated with consolidated doctoral programmes and doctoral programmes of international quality recognised by the Catalan Autonomous Government.

There are also other less extensive alternatives, such as the pre-doctoral grants offered by different universities and research centres, inlcuding those offered by the CSIC[20] and the programme of pre-doctoral FPU grants for training of university lecturers offered by the State Secretariate for Universities and Research itself.[21]

With its 6th Framework Programme (2003–2006), the European Union also offered pre-doctoral grants as part of the Marie Curie actions. Among those grants were the so-called "host-driven actions", which included a type of grant (Marie Curie Host Fellowships for Early Stage Research Training) covering this stage. Those grants are used to provide funding to research centres, organisations and enterprises to offer training opportunities to researchers of any age or nationality at the beginnning of their careers. The 7th Framework Programme (2007–2013) provides for similar actions within the People programme.

[20] IP3 pre-doctoral grants. Resolution of 27 July 2005 (Spanish Official Bulletin, BOE number 202 of 24/8/2005, in Spanish).
[21] Grants for training of university lecturers. Resolution of 31 August 2006 (Spanish Official Bulletin, BOE number 222 of 16/9/2006, in Spanish).

**Table 5**

**Figures for the FI programme 2005**

| 2005 | Applications | Grants* |
|---|---|---|
| New grants (first year) | 1,481 | 270 |
| Extensions (2nd, 3rd i 4th any) | 643 | 641 |
| Enterprise grants (1st year) | 27 | 23 |
| **TOTAL** | **2, 151** | **934** |

* Resolution UNI/2464/2005, (Official Journal, DOGC of 2/9/2005).

**Table 6**

**FI programme. Withdrawal from programmes in 2003, 2004 and 2005**

| Initial year of programme | New grants | Extended for 2006 | Withdrawn | Withdrawal rate |
|---|---|---|---|---|
| 2003 | 234 | 178 | 56 | 24 % |
| 2004 | 234 | 197 | 37 | 15.8 % |
| 2005 | 284 | 266 | 18 | 6.4 % |
| **TOTAL** | **752** | **641** | **11** | **17.31 %** |

### 3.3. Programmes for post-doctoral training of researchers in Catalonia

This is a stage of the research career that had never been given priority by the Catalan Autonomous Government, although it was already reasonably well covered. That coverage existed, on the one hand, in the form of small grant programmes forming part of the Directorate-General for Research's international co-operation programme, some of which remain in operation, such as the Autonomous Government of Catalonia-Fullbright (BFUL) post-doctoral grants offered yearly since 1998 by the Autonomous Government of Catalonia with the Fullbright Foundation for post-doctoral training in the United States, the Balsells post-doctoral grants (BBI), the Gaspar de Portolà programme with California (BGP) and the programme with Quebec, created on the basis of agreements between the Catalan Autonomous Government and that province. Likewise, there are a number of Spanish state programmes that allow researchers to apply for grants for post-doctoral training.

In keeping with the objectives of the Research Career Plan for Catalonia promoted by DURSI, specific offers have been made since 2005 to cover the post-doctoral researcher training stage in both the public and private sectors, and the Beatriu de Pinós programme was launched, which provided 105 grants for post-doctoral training in 2005, with a hundred more foreseen for 2006.

In line with the foregoing, the Beatriu de Pinós post-doctoral programme provides for the following three formats:

- Format A, accounting for one half of the grants offered (50), is aimed at allowing Catalans who have recently obtained a doctorate to augment their training abroad by working for two years at internationally prestigious universities, research centres or enterprises.
- Format B1, accounting for one quarter of the grants offered (25), is aimed at bringing doctors into the public sector in Catalonia.
- Format B2, accounting for one quarter of the grants offered (25), is aimed at bringing doctors into the private sector in Catalonia.

With the B formats, aid is provided to organisations or enterprises for R&D projects or activities so that they can employee researchers who have recently obtained doctorates to work on such projects for two years. As mentioned, one half of the grants for employment of post-doctoral researchers in Catalonia (25 of 50) are meant for the public sector (universities, research centres, non-profit organisations, government organisations, preferably at the

**Table 7**
**Yearly additions to the number of beneficiaries of post-doctoral grants/contracts.**

| Programme in Catalonia | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BPOST/RED** | 14 | 23 | - | - | 20 | 40 | 40 | 10 | 11 | 20 | 31 | 29 | 17 | - |
| **PIEC** | 20 | 29 | - | - | - | - | - | - | - | - | - | - | - | - |
| **BCC** | - | - | - | - | - | - | - | - | 1 | 1 | - | 1 | 1 | 1 |
| **SINCROTRÓ** | 4 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| **RI** | 3 | 4 | 1 | 8 | 1 | 1 | 5 | - | - | - | - | - | - | - |
| **ADQUA** | - | - | - | - | - | - | - | - | - | - | 5 | 24 | 12 | - |
| **IGSOC** | - | - | - | - | - | - | - | - | - | - | 2 | - | - | - |
| **NANOTEC** | - | - | - | - | - | - | - | - | - | 6 | 7 | 7 | 6 | - |
| Abroad | | | | | | | | | | | | | | |
| **BE-AIRE** | 153 | 170 | 154 | 148 | 73 | 73 | 70 | 51 | 67 | 52 | 58 | 100 | 98 | 57* |
| **BBR** | 6 | 5 | 5 | 1 | 7 | 5 | 6 | 7 | 5 | 6 | 9 | - | - | - |
| **CTP-AIRE** | - | - | - | 4 | 2 | 4 | 2 | 5 | 3 | 2 | 5 | - | 2 | (p.r.) |
| **PR-INSERM** | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **QUEBEC** | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 2 | - | - | - |
| **MIT** | - | 6 | 6 | 6 | 6 | - | - | - | - | - | - | - | - | - |
| **BBI** | - | - | - | - | - | - | - | - | - | 1 | 1 | - | - | - |
| **BGP** | 10 | 4 | 5 | 8 | - | - | 9 | 5 | 9 | 7 | 7 | - | - | - |
| **BFUL** | - | - | - | - | - | - | 5 | 5 | 6 | 6 | 9 | 6 | 6 | - |
| **BP** | - | - | - | - | - | - | - | - | - | - | - | - | 105 | (p.r.) |
| **TOTAL** | **211** | **247** | **173** | **177** | **111** | **125** | **139** | **84** | **102** | **102** | **137** | | | |

Figures include renewals and new grants.
* Figures for 1st term; 2nd term pending resolution (p.r.).
BPOST/RED: aid for hiring and rehiring of doctors (later CRED).
PIEC: Postdoctoral stages for foreing researchers in Catalonia.
BCC: grants for young members of Catalan communities overseas.
SINCROTRÓ: Grants for the specialisation and trainning in fields related to the light laboratory of Sincrotron.
RI: Grants for projects of interest of enterprises.
ADQUA: grants for doctoral programmes at Catalan universities in areas of social sciences and humanities.
IGSOC: pre-doctoral grants from the International Graduate School of Catalonia.
NANOTEC: research grants for training in the field of nanotechnologies (later NANOS).
BE-AIRE: grants for research visits outside Catalonia. International or interregional aid for research abroad.
BBR: Batista i Roca grants for funding of research projects in the field of social sciences and humanities.
CTP-AIRE: Mobility aid for researchers within the Framework of the Pyrenees Work Community.
PR-INSERM: research projects with Institut National de la Santé et la Recherche Medical.
QUEBEC: Catalonia-Quebec co-operation programme.
MIT: grants for work at the Massachussetts Institute of Technology.
BBI: Balsells – Autonomous Government of Catalonia grants in the fields of engineering.
BGP: Gaspar de Portolà grants.
BFUL: Autonomous Government of Catalonia - Fulbright grants.
BP: Beatriu de Pinós programme of post-doctoral grants and aid.

local level; the programme reserves 5 of the 25), while the other half (25 of 50) goes to the private sector (enterprises or businesses operating in Catalonia). Given the extraordinary success that this programme has achieved with Catalan enterprises, it was possible to increase slightly the number of grants provided to the private sector in 2005 and in fact 29 grants were made. Those grants have the final approval of the European Union, which, since the funds are made available to private enterprise,

must be obtained.[22] As is evident, the proportions of the Beatriu de Pinós grants/contracts offered are meant to favour primarily the mobility of of researchers and secondarily the entry of researchers into government enterprises and entities and not just universities or research centres.

The aim is to allow people who have recently obtained a doctorate and wish to pursue a professional career in research to "practice" for two years as doctors or researchers. The footnote here sets out a detailed summary of the main characteristics of this programme (salaries received by beneficiaries of these grants, conditions in respect of nationality, teaching obligations, etc.).[23]

The amounts finally granted for the different formats in 2005 were as follows:

Format A: €2,726,872.20
Format B1: €1,535,000.00
Format B2: €1,135,900.00

The Spanish government also has a a number of different grant and aid instruments and programmes for this stage. First of all, there is the Ministry of Education and Science-Fulbright programme of post-doctoral grants[24] for working abroad, many of which have been obtained by Catalans holding doctorates, who are, of course, eligible even though the Catalan Autonomous Governement operates its own programme.

In addition, since 2004 the Ministry of Education and Science has operated the Juan de la Cierva programme,[25] which is aimed at the public sector and allows hiring of individuals who have recently obtained a doctorate for three years,[26] and, since 2001 it has operated the Torres Quevedo programme, in this case aimed at the private sector and also meant to finance the hiring of individuals with doctorates by enterprises. These programmes must also be taken into account as resources available to researchers in Catalonia to cover the post-doctoral stage. In fact, Catalonia is one of the autononous communities with the largest number of individuals hired through these programmes, accounting for 30% of the total for the the Juan de la Cierva programme in 2004 and 23% of the total overall (2001–2004) for the Torres Quevedo programme.[27]

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[22] State aid 4/2006, Beatriu de Pinós programme. Brussels 24/5/2006 C (2006) 2173.

[23] With the A format, given that the subsidised activity is carried out abroad, where the Catalan Autonomous Government has no opportunity or authority to have researchers hired by the centres where they are to work, the salary received by those researchers is provided as a grant. The grant is accompanied by aid to cover travel expenses and researchers can apply for travel insurance coverage if they do not carry their own. Eligible candidates include anyone with a doctorate who has obtained their bachelor's degree or engineering degree from a Catalan university, regardless of their nationality and even if they have obtained their doctorate abroad. In contrast with the A format, for the B formats the researchers who are hired in Catalonia do not need to have obtained their undergraduate degree or doctorate in Catalonia and they may be of any nationality.
Researchers eligible for hiring in Catalonia by means of a Beatriu de Pinós grant cannot be hired by the same institution or enterprise where they obtained their doctorate, except in the case that when they join the organisation they have already completed a post-doctoral stay of at least two years abroad.
In respect of the salary received by these post-doctoral researchers under the A format, the full gross amount of the grant in 2006 was between 19,440 and 28,000 yearly, depending on the country of destination. With the B formats, the aid granted to public or private entities may only be used to finance the employment contracts of researchers, and the minimum salary to be paid to researchers must, as provided in the conditions for the offer of aid under both formats, be 23,900 gross yearly. In the case of universities, research centres or other public sector enterprises (B1), the granted provided ( 31,900 gross yearly) covers 100% of the total cost of the contracts. Where the hiring entity is an enterprise, the aid will partially finance the total cost of contracts, depending on the activities for which application is made and the characteristics in terms of dimension and location of the enterprise, in accordance with current European Union regulations. Where the activities of the hiring entity include teaching, the conditions for the offer establish a teaching collaboration programme that can be given by post-docts.

[24] Programme of post-doctoral grants, including the Ministry of Education and Science-Fulbright. programme. Resolution of 13 september 2005 (Spanish Official Bulletin, BOE of 29/9/2005, in Spanish).

[25] Juan de la Cierva programme. Available from: www.mec.es/ciencia/delacierva.

[26] Torres Quevedo programme. Available from: www.mec.es/ciencia/torresq.

[27] Figures from the Spanish Ministries of Science and Technology and Education and Science, processed by the Catalan Department of University, Research and Information Society (DURSI).

**Table 8**
**Figures for the Beatriu de Pinós programme 2005**

| | Applications | Grants* | Proportion |
|---|---|---|---|
| Format A (two-year grants abroad) | 139 | 51 | 36.36 % |
| Format B1 (two-year contracts at universities and research centres in Catalonia) | 279 | 25 | 8.96 % |
| Format B2 (two-year contracts in the private sector in Catalonia) | 39 | 29 | 74.36 % |
| **TOTAL** | **457** | **105** | **22.97 %** |

*Resolution UNI/2429/2005, (Official Journal DOGC 30/9/2005).

The European Union's 6th Framework Programme offers individual Marie Curie actions. This type of action is aimed at researchers of any age with a minimum of four years' experience or holding a doctorate.[28] The People Programme of the 7th Framework Programme (2007-2010) also provides for those actions, in the form of individual grants and also through joint funding of regional, national and institutional programmes.

### 3.4. Programmes for professional consolidation and development

One of the problems that have come to light so far in Catalonia has been the lack of continuity in the professional development of researchers. Without taking into account the employment of individuals holding doctorates in private enterprise, effectively the only possibility for employment stability[29] in the recent past was to be hired as a university lecturer or as a researcher with the CSIC.

One of the consequences of that circumstance can be noted in job insecurity and in the make-up of many research groups. As a rule, they are led by a lecturer and all the other researchers in the group are at the training stage (with pre-doctoral grants) or at the post-doctoral stage with short-term contracts (associate lecturers, assistant lecturers, re-entry contracts, and so on) with little likelihood in most cases of any possibility of working on research projects as the lead researcher.

In recent years, the existence of the Spanish Ministry of Education and Science's Ramón y

[28] The individual Marie Curie actions provide a good opportunity for researchers who wish to work with research groups in other countries. Funding can be obtained for visits to other European Union member states or outside countries. This format includes three types of actions that can be of interest to Catalan researchers or for Catalan enterprises that wish to bring in post-doctoral researchers from other countries in Europe or third-party countries. There are Intra-European Fellowships, available to European researchers of any age with at least four years' professional experience or a doctorate. Applicants must find a European research group that wishes to admit them before applying. The aim here is to provide funding for ongoing advanced training in research or acquisition of supplementary skills at a European organisation over one or two years.The Marie Curie Outgoing International Fellowships allow European Researchers at this stage in their careers to work at centres outside Europe for up to two years, with a reintegration phase of up to one year upon return to their original institution. Applicants must find a centre willing to admit them. Lastly, there are the Marie Curie Incoming Internacional Fellowships aimed at researchers from outside the European Union who wish to do research in Europe. They must have at least four years' experience or a doctorate and establish a working programme with a European organisation (in this case, Catalan) before applying.

[29] Employment stability does not necessarily equate with holding a civil service position, but rather with a long-term contract allowing completion of R&D and innovation projects with future prospects.

Cajal, Torres Quevedo and I3 contract programmes, the Catalan Autonomous Government's Beatriu de Pinós, ICREA and Serra Hunter university lecturer recruitment programmes, and alternative education at universities (the Spanish Universities Organic Act and the Catalan Universities Act), the prospects for recruiting and stabilising researchers have greatly improved. In addition, it is important to bear in mind that the number of research centres promoted by the Catalan Autonomous Government has mushroomed over the past six years, with the resulting increase in the potential for hiring researchers. Let us now look at the current possibilities for stabilisation of researchers in Catalonia.

**Serra Hunter plan**

Within the academic sector in Catalonia, and more specifically, at universities, the Catalan Universities Act allows for the possibility of stabilising the employment of lecturers and researchers by means of contracts, in addition to the recruitment of teaching staff through the conventional means of competitions for civil service jobs in the different categories, as provided in the Spanish Universities Organic Act, and in the context of the teaching-research nature of those jobs. It is also worth noting that although the Catalan Universities Act provides for the possibility of hiring researchers, at present most universities do not make use that possibility, but it is nevertheless an option that could be considered in future.

In that connection, in 2003 DURSI implemented the Serra Hunter Plan for recruitment of university lecturers in collaboration with the Catalan public universities and the Catalan University System Quality Agency, calling for the permanent hiring of 1,200 lecturers over the period 2003–2015 at a rate of 100 lecturers per year, to ensure the same levels of stability and remuneration as in the civil service.

First of all, the Catalan Universities Act allows for the possibility of contracts of up to four years as lecturers with full teaching and research capacity for individuals holding doctorates who wish to undertake an academic career, with a rank similar to that of tenure track in English-speaking countries. The Catalan Universities Act then establishes two categories of professors, both with permanent employment contracts and also with full teaching and research capacity, namely associate professor and full professor. Through the Serra Hunter Plan, the Catalan Autonomous Government and the universities jointly fund the recruitment of associate professors and full professors, on a fifty-fifty basis, at the rate mentioned above.

**The Serra Hunter Plan calls for the permanent hiring of 1,200 lecturers over the period 2003-2015**

During the first two years of implementation of the Serra Hunter Plan (2004–2005), 198 new professorial positions were agreed in accordance with the types and scopes detailed in the specific agreements in effect between DURSI and the public universities, of which 148 were filled in the course of those two academic years. In 2006, agreements were made with the public universities for a further 119 teaching and research staff positions to be filled under contract.

**Table 9**
**Serra Hunter Plan. Positions assigned under agreements, Teaching and Research Staff (TRS) recruited in 2004-2005 and positions forecast for 2006.**

| | 2004 | | 2005 | | Forecast 2006 (as of october) |
|---|---|---|---|---|---|
| | Positions assigned for agreement | TRS hired for university | Positions assigned for agreement | TRS hired for university | Positions assigned for agreement |
| UB | 15 | 14 | 39 | 36 | 31 |
| UAB | 21 | 14 | 28 | 27 | 22 |
| UPC | 14 | 9 | 18 | 13 | 24 |
| UPF | 6 | 6 | 8 | 6 | 8 |
| UdG | 3 | 1 | 9 | 4 | 9 |
| UdL | 6 | 3 | 10 | 7 | 10 |
| URV | 8 | | 8 | 7 | 15 |
| **TOTAL** | **73** | **48** | **120** | **100** | **119** |

### Catalan Institute of Research and Advanced Studies (ICREA)

ICREA is a pioneering institution that has been promoted since 2001 jointly by DURSI and the Catalan Research Foundation. ICREA aspires to be an effective instrument for fostering and developing research in Catalonia that will facilitate the draw of talent and consolidate the career of researcher in Catalonia. The only requirement for recruitment of a researcher by ICREA is selection by an independent and qualified jury and a commitment by any research institution in Catalonia to accept the researcher and provide them with the means to carry out their research. Consequently, the principle aim of ICREA has been, and remains, to make it possible for a greater number of researchers who are not yet permanent members of the Catalan reseach system to work on a stable basis in Catalonia. To do so, ICREA enters into long-term agreements with universities and other research centres for the researchers that it recruits and hires to enter the different research groups and projects maintained by those entities. In its five years of existence, ICREA[30] has added 137 research lecturers and junior researchers with a range of specialities to the Catalan R&D system. The recruitment of those researchers has contributed to the fact that Catalonia's universities and research centres that have taken them on have intensified their research activities, enhanced their research capacities and increased the number of publications that they generate along with other quality indicators. The contracts offered by ICREA are the object of a substantial number of applications, even though one of the prerequisites for application is ample international experience. Over

**In its five years of existence, ICREA has added 137 research lecturers and junior researchers with a range of specialities to the Catalan R&D system**

[30] For further information, visit the ICREA website at www.icrea.es.

300 applications are submitted each year for the 20 to 30 contracts that are signed. Researchers have been hired by ICREA from around the world and this initiative has facilitated the return of Catalan and Spanish researchers who had accomplished a part of their research careers abroad. In its five-year existence to date, ICREA, in the words of Salvador Barberà, its first director, published in this journal,[31] has succeeded in "providing certainities that allow plans to be made" for the return to Catalonia or the stabilisation here of researchers who were working abroad, and that circumstance "has given rise to expectations among important groups of expatriate scientists, who know that in Catalonia there is a competitive mechanism for return".

Although the average age of the individuals hired by ICREA in 2005 was 43, the ages of the researchers applying successfully to ICREA varies widely. Anyone holding a doctorate who fulfils the requirements established for the offers of positions can apply. Since 2005, the stages of consolidation and stabilisation in the research career have given rise to more offers by ICREA.

For the preconsolidation stage, DURSI commissioned ICREA to launch a new offer known as ICREA Junior. That offer is aimed at top-quality young post-doctoral researchers, with the objective of lowering the age at which researchers enter stable employment in Catalonia. It has been designed to provide ongoing employment to researchers who have completed the post-doctoral stage, whether they are Catalan or not, and have taken part in the Beatriu de Pinós programme or other similar programmes. Among the 30 positions offered by ICREA last year, researchers also had the opportunity of carrying out their research activities at enterprises. This format is called ICREA Enterprise. In 2006, ICREA Junior researcher positions were once again offered, and differentiation was made between the offers for Junior Academic positions – of which there were fifteen – and the ICREA Enterprise offers, with the same number of positions. Beginning in 2008, when the first beneficiaries of the Beatriu de Pinós post-doctoral programme complete their contracts, the offer of ICREA Junior contracts[32] will be increased.

Upon completion of the pre-consolidation stage, researchers arrive at the stabilisation stage, where they can obtain permanent positions. Researchers with ICREA Junior contracts undergo evaluation after the fourth year of the contract and if they pass that evaluation they can enter a permanent position with an ICREA Senior contract at the end of their five-year contract. In the public sector, ICREA provides and will continue to provide Catalan universities and research centres, as they have done since 2001, with researchers who are recruited and hired on the basis of criteria of excellence. In 2006, 25 positions were offered once again for the hiring of senior researchers on the same basis of entry of talent as in the preceding years. Offers are aimed at individuals holding doctorates with at least four

[31] BARBERÀ, 2004.

[32] For the ICREA Junior positions offered, the candidate must contact the institution or enterprise in Catalonia where they wish to work and be accepted. That institution or enterprise must then inform ICREA of its interest in the candidate and complete a form to that effect for submission along with the application. The salaries paid to successful ICREA Junior applicants are in line with those paid to university lecturers, i.e. some €30,000.00 gross yearly. The ICREA Foundation assumes the cost of that hiring for five years if the contracting entity is in the public sector. In contrast, an enterprise that submits an interest form to hire a junior researcher and receive this funding must assume a part of the cost of the contract. The contribution by each enterprise to the cost of the researcher's employment contract is negotiated on a case-by-case basis once selection has been completed, in accordance with the guidelines established by the European Union.

**Table 10**
**ICREA Junior offers 2005**

| Position offered | Positions granted to public sector | Positions granted to private sector | Contracts executed as of 31 December 2005 | Additions planned to university staffs | Additions planned to research centre | Additions planned to private sector |
|---|---|---|---|---|---|---|
| 30 | 18 | 1 | 12 | 9 | 9 | 1 |

**Table 11**
**Summary of scientists applying successfully for ICREA Senior contracts**

| Year | Grants | Contracts signed as of 31 Desember 2005 | Contracts pending |
|---|---|---|---|
| 2001 | 32 | 32 | - |
| 2002 | 30 | 30 | - |
| 2003 | 27 | 25 | 2 |
| 2004 | 29 | 26 | 3 |
| 2005 | 30 | 19 | 11 |
| **TOTALS** | **148** | **132** | **16** |

years' international experience, who have leadership skills and a very strong background in research. Those individuals enter Catalan universities and research centres as researchers and they are expected to be active members of the Catalan research system and to make important contributions to that system.[33] ICREA Senior contracts are of a permanent nature with the ICREA Foundation, although research lecturers, as those with ICREA Senior contracts are known, undergo evaluation of their research achievements after their first three years in that position and subsequently every five years. There are different categories of research lecturers with the corresponding pay scales, in all cases according to the results of evaluations.

Beginning in 2010, when the first ICREA Junior contracts are set to expire, it is foreseen that 80% of the researchers with ICREA Junior contracts in the public sector will be able to advance to an ICREA Senior contract, after having undergone evaluation and selection as mentioned above. In that connection, from 2010 onwards, plans call for 40 ICREA Senior contracts to be offered, twenty of them to provide continuity for ICREA Junior researchers, and the other twenty to incorporate new talent, under conditions analogous to those in place at present.

### Ramón y Cajal Programme

In addition, there are at present some 500 researchers at a stage of their career equivalent to

[33] As mentioned in connection with the Junior offers, candidates for the Senior offers must contact the institution in Catalonia where they wish to work and be accepted. That institution or entity must then inform ICREA of its interest in the candidate and complete a form to that effect for submission along with the application. The salaries paid to successful ICREA Senior are defrayed in full by ICREA, which is funded almost exclusively by the Catalan Autonomous Government's Directorate-General for Research, and are in line with those paid to full professors, i.e. starting at approximately €40,000.00 gross yearly. The optimum age for a researcher to enter permanent employment, and therefore to be eligible for an ICREA Senior contract, should be not much more than 30.

the one covered by ICREA Junior contracts who have entered employment in Catalonia by way of the Ramón y Cajal programme operated[34] by the Spanish Ministry of Education and Science and are still under contract this year. Those researchers represent 80% of the 640 researchers who obtained a contract within the framework of the Ramón y Cajal programme at any time during its first five years (2001 to 2005).

This programme offers five-year contracts to researchers with doctorates who have been actively involved in research for at least 24 months at different host institutions. Public aid for the universities and centres that hire these researchers consists of the full cost of the first year of the contract, with that contribution decreasing by 10% progressively and cumulatively per year over the course of the next four years. In the case of universities and certain research centres, the cumulative co-funding of 10% yearly of the contracts in Catalonia is covered on a fifty-fifty basis by the host institution and the Directorate-General for Research.[35] An article by Josep Maria Camarasa in number 6 of this journal[36] provides a comprehensive analysis of the results of the first three editions of this programme in Catalonia.

Autumn 2006 saw the expiry of the first contracts with researchers selected in the initial edition of this programme. For the most part, the beneficiaries are highly competent individuals with a very good education in research who should be stabilised with universities and research centres in Catalonia. The Catalan Autonomous Government has undertaken to procure the means that will allow this to be accomplished.

On the one hand, in May 2005 the Spanish Ministry of Education and Science, concerned mainly with continuity for Ramón y Cajal researchers finishing their five-year contracts, set up the I3 Programme of incentives for incorporation and intensification of research activities, which we will look at in the following section. On the other hand, in 2003 the Catalan Autonomous Government, jointly with universities and the Quality Assurance Agency for the University System in Catalonia (AQU), had implemented the Serra Hunter Plan for recruitment of research lecturers, and for some years has been promoting the creation of research centres needing highly qualified researchers. Both those initiatives are funded by the Directorate-General for Universities and the Directorate-General for Research, among others, and they provide possible avenues of continuity for those researchers.

**Since last year the Catalan Autonomous Government has co-ordinated the necessary actions with the Spanish Ministry, universities and research centres to make it possible for all researchers with Ramón y Cajal contracts and good evaluations to be stablised by any of the institutions involved by any means possible**

Since last year the Catalan Autonomous Government, mainly through the Directorate-General for Research, co-ordinates the necessary actions

[34] Ramon y Cajal programme. Available from: www.mec.es/ciencia/cajal.
[35] In addition, this programme provides researchers with a minimum sum (up to €15,000 in the most recent edition) to allow them to start up their own research programme.
[36] CAMARASA, 2004.

**Table 12**
**Individuals hired under the Ramón y Cajal Programme in Catalonia (2001-2005)**

| | 2001 | 2002 | 2003 | 2004 | 2005 | Total |
|---|---|---|---|---|---|---|
| Universities | 124 | 101 | 101 | 37 | 23 | 386 |
| Research centres | 32 | 27 | 50 | 16 | 29 | 154 |
| CSIC | 41 | 24 | 27 | 8 | ? | 100 |
| **Totals** | **197** | **152** | **178** | **61** | **52** | **640** |

with the Ministry, universities and research centres to make it possible for all researchers with Ramón y Cajal contracts and good evaluations to be stablised by any of the institutions involved by any means possible, in keeping with the commitments undertaken.

## I3 programme

In May 2005 the Spanish Ministry of Education and Science published a ministerial order[37] setting up the programme of incentives for incorporation and intensification of research activities (I3). The aim of that programme is to provide incentives, in the first place, for the offer of permanent positions at universities and research centres to foster the stable incorporation of research lecturers with outstanding backgrounds in research, recruitment of foreign researchers and return from abroad of Spanish researchers with recognised experience, and the entry of young researchers into consolidated and emerging research groups. Secondly, the I3 programme aims to favour the intensification of research activities by researcher lecturers at their universities or other research centres.

With those goals in mind, two lines of action were established: the stabilisation line, which receives the bulk of the available funding, and the intensification line. Through the stabilisation line, the Ministry of Education and Science plans to finance newly created positions with two modules: €130,000 over three years for positions of equivalent rank to professor, which are the majority, and €150,000 over three years for positions equivalent to full professor, on an exceptional basis.

This programme is open to all working researchers and to university lecturers with sufficient experience who, while holding a contract or permanent position with a university, research centre or other R&D entity, pass an evaluation by the National Evaluation and Prospecting Agency (ANEP).

The programme is funded by the Spanish Ministry of Education and Science, although it is managed in Catalonia by the current Commission for Universities and Research of the Department of Innovation, Universities and Enterprise, with the exception of application to CSIC centres, under a general protocol signed in June 2005. The two governments agree yearly on financing, the proportion between the stabilisation and intensification lines and the corresponding number of positions. In 2005 the I3 programme was defined here only for the stabilisation line, while actions in the intensification line were established for 2006 in agreement with universities.

[37] I3 Programme. Available from: www.mec.es/ciencia/programai3.

The major problem taken into account by the former Department of Universities, Research and the Information Society (DURSI) when setting priorities for the resources provided to Catalonia through the I3 programme was the stabilisation of Ramón y Cajal researchers, with no provision for continuity at the end of their five-year contracts. It is important to bear in mind that as of 1 January 2005 their were 500 researchers with Ramon y Cajal contracts in Catalonia, obtained through the various yearly offers. Of that total number of researchers, there were 120 from the first offer whose contracts were going to expire in November and December 2006, of whom 102 were at universities and research centres not belonging to CSIC. DURSI saw the need to stabilise those researchers before their contracts expired and for that reason it gave priority and continues to give priority to funding of universities and research centres on the basis of the number permanent positions that have been filled by researchers who had previously been working under Ramón y Cajal contracts.

In 2005 and 2006, Catalonia will benefit from funding from the I3 programme for a total of 144 positions in the amount of 18,920,000, in addition to a small amount of funding for the intensification line. Of those positions, just over half are

**Table 13**

**Permanent positions for beneficiaries of the I3 programme in Catalonia**

| | Permanent teaching staff under contract | ICREA Senior researchers | Other types of contracts | Total |
|---|---|---|---|---|
| 2005 | 35 | 12 | 5 | 52 |
| 2006 (forecast) | 44 | 13 | 35 | 92 |
| **Total** | **79** | **25** | **40** | **144** |

**When setting priorities for the resources provided to Catalonia through the programme of incentives for incorporation and intensification of research activities (I3), the Directorate-General for Research took into account mainly the stabilisation of Ramón y Cajal researchers**

associate professor positions financed through the Serra Hunter Plan. Another 25 are for ICREA Senior researchers, fifteen of whom previously had Ramón y Cajal contracts and are now working at universities or research centres, while the other ten are from other countries and are currently working at research centres. Lastly, another 25 positions correspond to permanent contracts offered by research centres to researchers who were previously working under Ramon y Cajal contracts.

### Marie Curie funding for reintegration

Catalan researchers outside Catalonia who are working in their profession outside Europe and who have consolidated their careers there and do not rule out returning to work in Catalonia should bear in mind that the European Union's Marie Curie actions include a category of aid for "reintegration and return" that provides for two types of funding, namely European Reintegration Grants, consisting of offers to researchers who have taken part in the Marie Curie programme for at least two years for funding of their research project in a member state, and International Reintegration Grants, aimed at researchers who have been working outside Europe

for five years or more and wish to return. Those grants are available for funding clearly defined research projects to be carried out in a member state over one or two years.

### 3.5. Research careers in professional context. Organisations hiring researchers

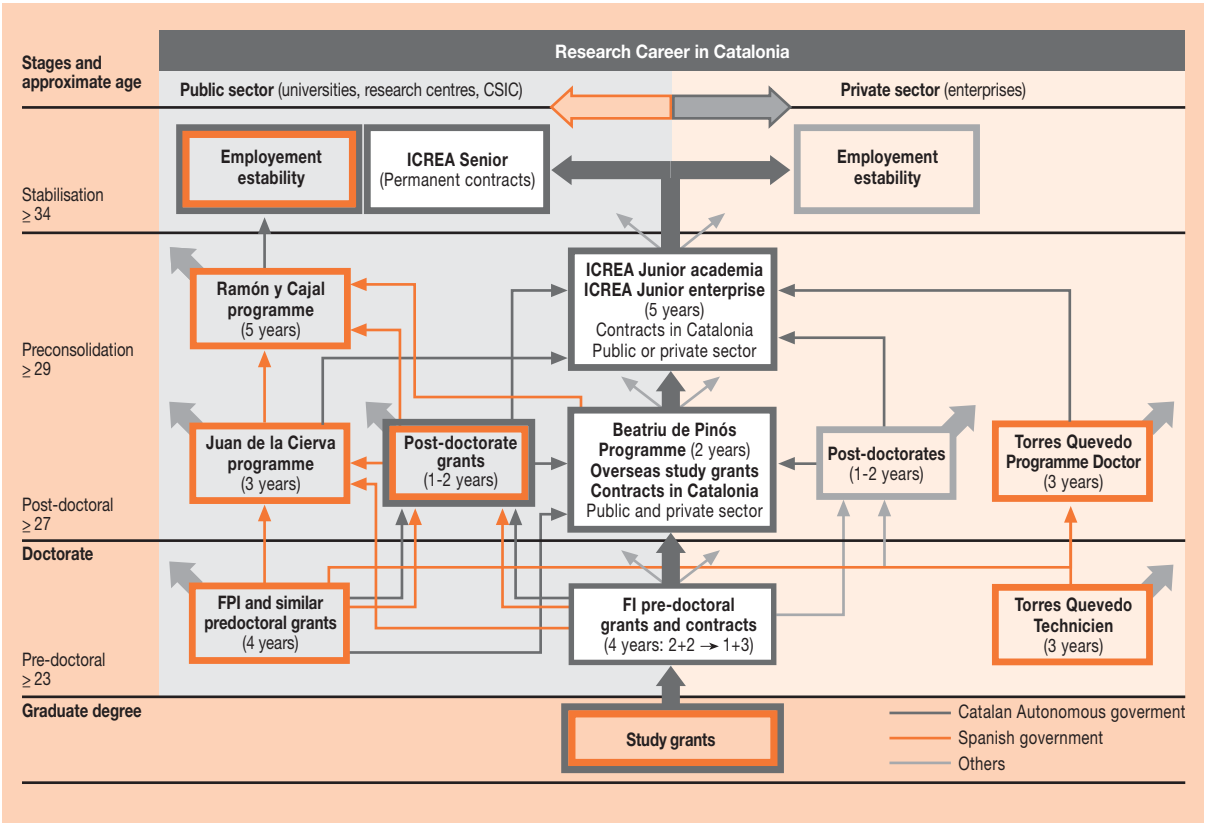
According to the Frascati Manual,[38] a researcher is a professional who works on the conception or creation of new knowledge, products, processes, methods or systems and on management of the corresponding projects. That is a very broad definition and in fact it is evident that the organisations that host researchers cover a very wide range, as does researchers' degree of training, which will depend on the sector concerned. In theory, as we have already mentioned, the gateway to a research career is a doctorate, although, since there is a very direct and absolute relationship in the academic world between the fact of being a researcher and having a doctorate and teaching (all university R&D is carried out mainly by people who have a doctorate or by graduates who are working on obtaining one), the number of people with doctorates working in the private sector is low, with a higher proportion there of graduates, engineers and technicians.

The specific career defined by the Catalan Autonomous Government for those who wish to become researchers must be understood in the particular scientific and professional context of Catalonia, where it co-exists with other possible career paths. In the public sector alone, the stages defined for the research career must be complementary and equivalent to the careers and stages defined for other fields. First of all, at universities, where we also find civil service research and teaching staff regulated by the Spanish Universities Organic Act, namely assistants, professors and full professors, and contract research and teaching staff regulated by the Catalan Universities Act, namely associates, lecturers, associate professors and full professors. The categories established for researchers working at hospitals and other medical research foundations and institutions must be equivalent to the employment categories established at those units and in addition the researchers working there must be able to combine, as in the case of teaching at universities, their research tasks with their medical duties. Of course, the stages defined for the research career must also be compatible with the different categories of researchers found at research centres and other research entities in Catalonia, with the research career stages defined by other autonomous government ministries, such as the Catalan Ministry of Health, which is also working on definition of the research career in the field of healthcare, as they must also be compatible – and allow mobility – with the career defined by Spanish research institutions, such as the CSIC and the Spanish Ministries of Educaction and Health.

Consequently, we find researchers, both in training and stabilised, in a variety of host organisations. At each host organisation, there are researchers at different stages in their careers, with differing employment circumstances (different types of grants and contracts for a variety of purposes) for

[38] FRASCATI 2002.

**Figura 2**
**Research career in professional context. Career paths in research in Catalonia.**

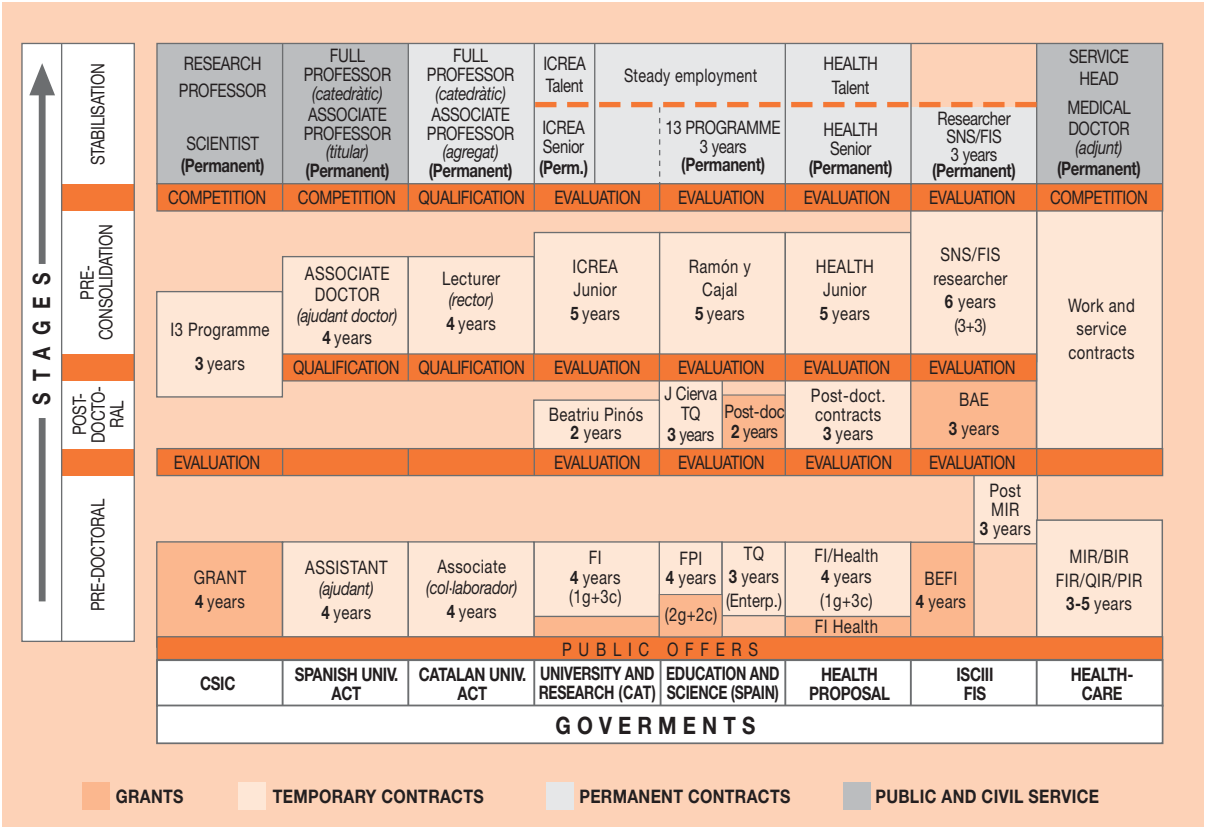



## Universities

Universities are and have been traditionally the organisations that host researchers. On the one hand, it is important to bear in mind the dual nature of academe that comprises teaching and research. Furthermore we must take into account that most of the researchers who benefit from the programmes mentioned so far in this article, whether at the stage of training or the stage of stabilisation, pursue their careers at universities. A teaching career at universities must, by definition, always run inseparably parallel to a career in research. At present, there are two parallel career paths via which a researcher can become a univesity lecturer in Catalonia, namely as a civil servant or under contract. The Spanish Universities Organic Act[39, 40] and the Catalan Universities Act provide for different categories of lecturers

[39] LOU: Organic Act of universities 6/2001 (Spanish Official Bulletin, BOE nº 307, of 24/12/2001, in Spanish).
[40] LUC: Act 1/2003 on Catalan Universities (Catalan Official Journal nº 3828 of 20/2/2003 in Catalan, Spanish Official Bulletin, BOE nº 60 of 11/3/2003, in Spanish).

**Figura 3**
**Equivalence of profesional categories in research career stages.**




that are evquivalent to those that have been established for the various stages of the research career. Thus, for example, under the Catalan Universities Act the individuals with doctorates that a university hires to perform teaching and research tasks at the beginning their careers are lecturers (a category equivalent to a post-doctorate). The category of full professor involves a consolidated career in teaching and research, equivalent to an ICREA Senior professor, while the category of associate professor implying a proved capacity for teaching and research would be equivalent to a junior researcher.

According to the Catalan Universities Act, public universities can hire their own researchers from among individuals having a doctorate not older than two years from other universities, for a term of up to five years. These are people under contract with the university and working within the

scope of the university although either mainly or exclusively in research. It is true that not all the academic staff of universities dedicate the same proportions of their time to research and to teaching, as is only right. At the same university we will find lecturers who concentrate mainly on teaching, while others concentrate mainly on research. That same sort of specialisation may also be found (and there are, in fact programmes that foster specialisation, such as the "Honours for promotion of university reseach")[41] in the same person at different stages of their career. Thus, a researcher working at a university must be aware that one of the main functions of such an institution is teaching and that they will have to dedicate a portion of their time to teaching, although that dedication need not be the same in all cases and can be varied over time depending on personal factors and the workload and academic requirements of the department where the researcher is working.

**Research centres**

Over the past five years, the Department of Universities, Research and the Information Society, now the Commission for Universities and Research, has followed a determined policy for creation and development of research centres of excellence in certain lines of research and scientific-technical areas considered to be top priority. Those research centres are set up as foundations or consortiums presided by the Catalan Autonomous Government with the participation of Catalan universities. The aim is to make those centres into European reference points for the competitive edge of Catalan research in international circles. Insofar as concerns the subject of this article, those research centres, many of which are still in the phases of growth and consolidation, make it possible to recruit and stabilise researchers at the different stages defined in the plan and to attract talent. In that respect, in the past four years over 1,000 researchers have been added to the staffs of research centres, a truly significant fact that has contributed to the advances achieved in the development of the research career in Catalonia.

By way of example, of the 137 researchers hired by ICREA under permanent contracts, 51% carry out their work at universities and the other 49% at research centres. Among researchers with Ramón y Cajal contracts, 56% of the contracts in effect in 2006 are at universities, 18% are at CSIC centres and the remaining 26% are at research centres linked to the Catalan Autonomous Government. It is also worth noting, for example, that under the resolution for the 2005 offer through the Ramón y Cajal programme, without counting the individuals entering CSIC centres in Catalonia, 45% of the successful researcher candidates joined universities while the other 55% joined research centres, indicating that research centres are in practice a much more viable option for the entry of researchers.

[41] In 1999 the Catalan Autonomous Government established the distinction of "Honours for promotion of university reseach" with the aim of encouraging high-level research actitvities by research teaching staff in the Catalan universities system. That distinction is based upon the model of Institut Universitaire de France. Members of teaching staff who attain that distinction can intensify their dedication to research activities for a period of four years. The host university received a specific amount of yearly funding to be applied as agreed by the university and the person attaining the distinction, with the intention of the research group to which that person belonged being the main beneficiary. The distinction was awarded for the fifth and final time in 2004. (Catalan Official Journal, DOGC núm. 4110, of 13/4/2004, in Catalan).

**Table 14**
**Research centres owned in part and promoted by the Catalan Autonomous Government (Departament of Innovation, Universities and Enterprise, October 2006)**

| Centre | Year created | Legal nature | Participant institutions |
|---|---|---|---|
| Mathematics Research Centre, CRM | 1984 | Consortium | Institute of Catalan Studies and Ministry of Innovation, Universities and Enterprise |
| Demographic Studies Centre, CED | 1985 | Consortium | UAB, Ministry of Innovation, Universities and Enterprise, Ministry of Economics and Finance and Ministry of Presidency |
| Institute of Agrifood Research and Technology, IRTA | 1985 | Public enterprise | Ministry of Agriculture, Ranching and Fisheries |
| International Centre for Numerical Methods in Engineering, CIMNE | 1987 | Consortium | Ministry of Employment, Ministry of Innovation, Universities and Enterprise, Ministry of Regional Policy and Public Works and UPC, with collaboration of the Spanish UNESCO Commission |
| Centre for Ecological Research and Forestry Applications, CREAF | 1987 | Consortium | Catalan Autonomous Government, UB and Institute of Catalan Studies |
| Physics Institute for Alternative Energy Sources, IFAE | 1991 | Consortium | UAB, UB, Ministry of Innovation, Universities and Enterprise |
| International Economics Research Centre, CREI | 1993 | Consortium | UPF, Ministry of Innovation, Universities and Enterprise and Ministry of Presidency |
| Computer Display Centre, CVC | 1994 | | Ministry of Innovation, Universities and Enterprise, CIRIT (Catalan Autonomous Government) and UAB |
| Catalan Space Studies Institute, IEEC | 1996 | Foundation | FCRI, UB, UAB, UPC, CSIC and Ministry of Innovation, Universities and Enterprise |
| August Pi i Sunyer Institute for Biomedical Research, IDIBAPS | 1996 | Consortium | UB, CSIC, Ministry of Innovation, Universities and Enterprise, Ministry of Health and Hospital Clínic |
| Catalonia Forestry Technology Centre, CTFC | 1996 | Consortium | Solsonès Local Council, UdL, Lleida Provincial Council, Catalan Foundation for Research and Innovation, Catalonia Integrated Rural Development Centre (CEDRICAT), and Catalan Autonomous Government |
| Institute of Geomatics, IG | 1997 | Consortium | UPC, Ministry of Innovation, Universities and Enterprise and Ministry of Regional Policy and Public Works |
| Catalan Institute of Classical Archaeology, ICAC | 2000 | Consortium | Ministry of Innovation, Universities and Enterprise, URV and CSIC |
| Genomic Regulation Centre, CRG | 2000 | Foundation | UPF, Ministry of Innovation, Universities and Enterprise, and Ministry of Health |
| Catalan Institute of Cardiovascular Science ICCC | 2000 | Consortium | Ministry of Innovation, Universities and Enterprise, Ministry of Health, Hospital de la Santa Creu i Sant Pau Healthcare Management Foundation and UAB |
| Catalan Institute of Chemical Research | 2000 | Foundation | Ministry of Innovation, Universities and Enterprise and URV |
| Catalonia Telecommunications Technology Centre, CTTC | 2001 | Foundation | Ministry of Innovation, Universities and Enterprise, UPC and URL |
| Institut of Photonic Sciences, ICFO | 2002 | Foundation | Ministry of Innovation, Universities and Enterprise and UPC |
| Catalan Institute of Nanotechnology, ICN | 2003 | Foundation | Ministry of Innovation, Universities and Enterprise and UAB |
| Barcelona Regenerative Medicine Centre, CMRB | 2004 | Joint foundation | Ministry of Health, Ministry of Innovation, Universities and Enterprise, Spanish Ministry of Health and Consumer Affairs, CSIC, Barcelona Town Council, UB, UAB and UPC |
| Institute of Human Palaeocology and Social Evolution, IPHES | 2004 | Foundation | Ministry of Innovation, Universities and Enterprise, Tarragona Town Council and URV |

| Centre | Year created | Legal nature | Participant institutions |
|---|---|---|---|
| Barcelona Institute of Biomedical Research, IBI | 2005 | Foundation | Ministry of Innovation, Universities and Enterprise, Ministry of Health, UB and Barcelona Science Park (PCB) |
| Environmental Epideniology Research Centre, CREAL | 2005 | Foundation | Ministry of Health, Ministry of Innovation, Universities and Enterprise, Municipal Institute of Medical Research (IMIM) and UPF |
| Catalan Institute of Bioengineering, IBEC | 2005 | Foundation | Ministry of Innovation, Universities and Enterprise, Ministry of Health, UPC and UB |
| Barcelona International Health Research Centre, CRESIB | 2006 | Foundation | Ministry of Health, Ministry of Innovation, Universities and Enterprise, UB, Hospital Clínic i Provincial de Barcelona and August Pi i Sunyer Institute of Biomedical Research (IDIBAPS) |
| Catalan Institute of Water Research, ICRA | 2006 | Foundation | Ministry of Innovation, Universities and Enterprise, UdG, University of Girona Science and Techonology Park and Catalan Water Agency (ACA) |
| Institute of Predictive and Personalised Cancer Medicine, IMPPC | 2006 | Foundation | Ministry of Health, Ministry of Innovation, Universities and Enterprise, Badalona Town Council, UAB, Catalan Institut of Health (Hospital Germans Trias i Pujol) and Germans Trias i Pujol Institute of Scientific Research (IICSGTiP) |
| Catalan Institute of Cultural Heritage Research, ICRPC | 2006 | Foundation | Ministry of Innovation, Universities and Enterprise and UdG |
| Catalan Institute of Palaeontology, ICP | 2006 | Foundation | Ministry of Innovation, Universities and Enterprise and UAB |
| Catalan Institute of Climate Science, IC3 | 2006 | Foundation | Ministry of Innovation, Universities and Enterprise and UB |
| Vall-Hebron Institute of Oncology Research (VHIO) | 2006 | Foundation | Ministry of Health, Catalan Institute of Health and Vall-Hebron University Hospital |

**Governments and hospitals**

There are many government organisations that are not research centres in the strict sense of the term but nonetheless are entities where, given their nature and concerns, R&D plays a signficant role and as such have the potential for hosting researchers. We are referring, for example, to oenological stations, public health laboratories, technical and study agencies, meteorological observatories and other similar entities. Unfortunately, in Catalonia the presence of researchers at those types of organisations is sparse and one of the main challenges facing us at present is to increase that presence, if we wish to make R&D a driving force in our society.

Hospitals are a special case. Many hospitals have set up research foundations to carry out their research. Those foundations are normally able to recruit their own researchers, although most of their staff members, while dedicated exclusively to research, hold positions in the different categories of the health care system. Researchers working at those foundations are often hired as technicians under contracts for positions with lower categories than their medical equivalents. Although all beneficiaries of all the programmes operated at the different career stages that we have set out above are eligible to enter such foundations, those organisations are

heavily populated by grant-holders and individuals with contracts originating with the Health Research Funds managed by the Social Security system (FIS) and offered by the Spanish Ministry of Health and Consumer Affairs.[42]

**Technological centres and enterprises**

Enterprises should be the organisations that host the majority of researchers. That is in fact the case in the countries with the most advanced and competitive economies. Table 1 shows the proportion of researchers (FTE) by occupational sectors in different countries. We note that in Catalonia, and even more so in Spain, the percentage of researchers in the private sector is low in comparison with other countries. At the majority of Catalan enterprises, most of which are small and medium-sized, the role played by research remains negligible. The only exceptions to this general rule are technology-based enterprises and university spin-off companies located at university science parks. At such enterprises, the percentage of employees with university degrees, and even doctorates, is very high.

Entrepreneurial initiatives are another option open to researchers. Most technology-based enterprises have been created by research groups linked to universities or by entrepreneurs with post-graduate studies.

Some of the researchers working in this sector are employed at technical centres, whether private or public. Such centres are highly specialised organisations that are often supported by several enterprises in the same industry and formed by research groups and units with the aim of converting research into business innovation and providing technological innovation services to Catalan enterprises.

### 3.6. Contractual relations at different stages of the research career

A person pursuing a research career is initially a student who has obtained an undergraduate degree and enters the first phase of pre-doctoral education for a period of up to four years, and then moves on to post-doctoral training for two years, and upon completion of that training enters a stage of research consolidation for a period of five years, then finally being stabilised as a researcher. The types and contractual regimes of reseach careers can vary and they have been adapted to each stage.

In legal terms, the regime of contracts in the research career is regulated generically by the Spanish Universities Organic Act, the Catalan Universities Act, Act 13/1986, on promotion and general co-ordination of technical and scientific research[43] (Article 17) and the Workers Charter[44] (Article 15) and the royal decrees implementing the Workers Charter[45] or amending it, particularly recently.[46]

It is also important to bear in mind that the Catalan Autonomous Government is not responsible for establishing or regulating types of contracts, as that is an authority that is clearly reserved for the Spanish government.

There are two types of contracts that can be applied to the research career, namely the training

[42] For further information: http://www.isciii.es/jsps/organizacion/evaluacion_fomento/convocatorias/Fondo_convocatorias_plantillable.jsp.
[43] Act 13/1985 on promotion and general co-ordination of technical and scientific research (Spanish Official Bulletin, BOE 93, of 18/4/1986, in Spanish).
[44] Workers Statute, Royal Decree 1/1995.
[45] Royal Decree 2720/1998 on implementation of Article 15 of the Workers Charter.
[46] Royal Decree 5/2006.

contract and the contract for work or services. A training contract can have a term of up to five years (as an exception to the provisions of Article 11 of the Workers Charter, which establishes a maximum term of two years for such contracts). A contract for a specific service or work (Article 15.1.a of the Workers Charter) allows the researcher to pursue their career on an autonomous basis within the framework of a remunerated employment relation, subject to no time limit. Although the law does not provide for any specific time limit, when this type of contract is applied it must normally be for a specific term.

At the third stage of the career, i.e. consolidation, the established time limit is five years.

The offers for 2006, at the commencement of the career (pre-doctoral stage) combine a period of aid, though a system of grants (one year), with a contractual period under a contract for work and services (three years). For the post-doctoral stage, a training contract was proposed (2005) for all formats, although the offer for 2006 allowed beneficiary entities of the B2 format the freedom to enter into full-time employment contracts with candidates under current applicable law for a minimum term of two years, and the conditions for that offer establish a minimum salary for successful candidates. The host enterprise or institution where the researcher is to carry out their work enters into a contract of that type with the researcher, while the government covers the portion of the cost of the contract allowed by law. That portion is one hundred per cent of the cost of the contract if it involves a public entity (university or research centre). For aid in the B2 format (to the private sector), the aid funds a part of the total cost of the contract depending on the activities for which funding is requested and as allowed by current applicable law. In the later stages of the career, it is the Catalan Institute of Research and Advanced Studies (ICREA) that contracts researchers and the corresponding research activities can be carried out in either the public or the private sector. The Catalan Institute of Research and Advanced Studies hires its researchers on the basis of employment contracts, whether permanent (ICREA Senior) or temporary (ICREA Junior Academic), except in connection with calls for entry of individuals with doctorates into enterprises, technological centres or industry associations (ICREA Junior Enterprise), where variable aid is offered (depending on the type of project to be carried out jointly) with the aim of fostering the entry of young people with doctorates into research or technological development departments.

**It is important to bear in mind that the Catalan Autonomous Government is not responsible for establishing or regulating types of contracts, as that is an authority that is clearly reserved for the Spanish government**

Application of any type of grant or contract is always subject to revision, with the aim of finding, at each stage of the researcher's career, the most satisfactory formula for all concerned that will be compatible with the following stages.

Consequently, it has been necessary to apply existing employment law, with the specific aspects for which the aforementioned Act 13/1986 on the promotion and general co-ordination of technical and scientific research provides, having mainly to do with the following factors:

– Research activity must be evaluated on a regular basis by government organisations, whether or not they are parties to the employment relation.
– Training contracts may be extended to five years.
– Where they are parties to the employment relation, universities must be the beneficiaries of government grants or aid for the temporary hiring of researchers.

**We must do away with the idea that, on the one hand, enterprises are not receptive to new ideas and projects originating at universities, and, on the other hand, that researchers, trained in the academic world, have difficulty fitting into the private sector**

## 4. Research careers with enterprises

### 4.1. Background and needs

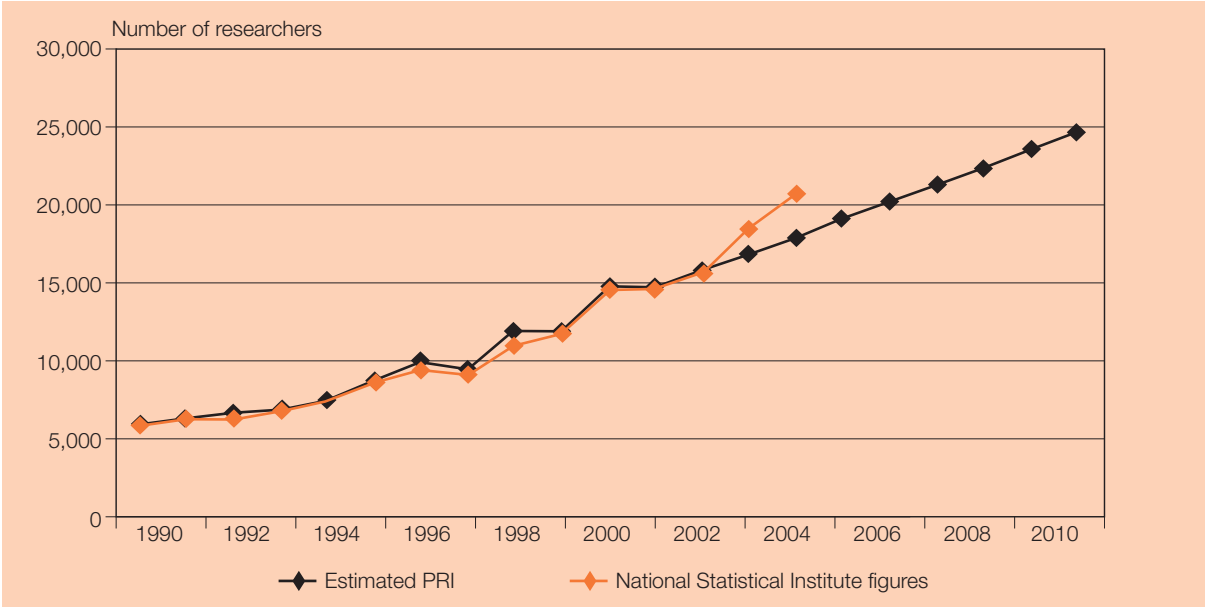
At present, no one would argue that knowledge is not the basis of innovation and that innovation is not the only way for Catalan enterprise to be competitive. Knowledge is obtained through research, which is carried out by researchers. Countries that provide incentives for innovation train professionals, mainly at universities, who are highly qualified for research and who are hired by enterprises to work for them. Mobility of researchers between universities and enterprises, collaboration and teamwork are what allow those enterprises to be competitive and have prospects for sustainability. We must do away with the idea that, on the one hand, enterprises are not receptive to new ideas and projects originating at universities, and, on the other hand, that researchers, trained in the academic world, have difficulty fitting into the private sector.

Along the lines already mentioned above, the research career is conceived from the outset as a professional career that can be pursued in both the public and private sectors. To date, a substantial portion of research efforts have been directed mainly at the public sector (universities and research centres), a circumstance that has contributed to the impressive growth of that sector. Now, however, we need to concentrate mostly on the private sector. If Catalonia wishes to strengthen competitive enterprises, the only way of accomplishing that aim is for such enterprises to pursue research, technological development and innovation intensively to produce high value added goods and services. In order to be able to do so, they need to hire staff members who have the skills and abilities of researchers.

Consequently, in order to increase the number of researchers by facilitating their training and employment, as already mentioned, one of the basic goals of the career defined for Catalonia is to boost the percentage of researchers working in the private sector and to correct the current distribution. If we wish to attain the European Union's targets for 2010, we need not only to increase total number of the researchers, but also to develop a model for distribution of researchers that is similar to the European model.

Taking into account the trend to growth over the past few years and the total number of researchers that must be added in Catalonia to reach the EU target for 2010 (approximately 11,000 to reach a proportion of 8 researchers per thousand working inhabitants), if we use the figures of the National Statistical Institute for 2001 as our starting point,

**Graphic 1**
**Development and estimate of the number of researchers in Catalonia**



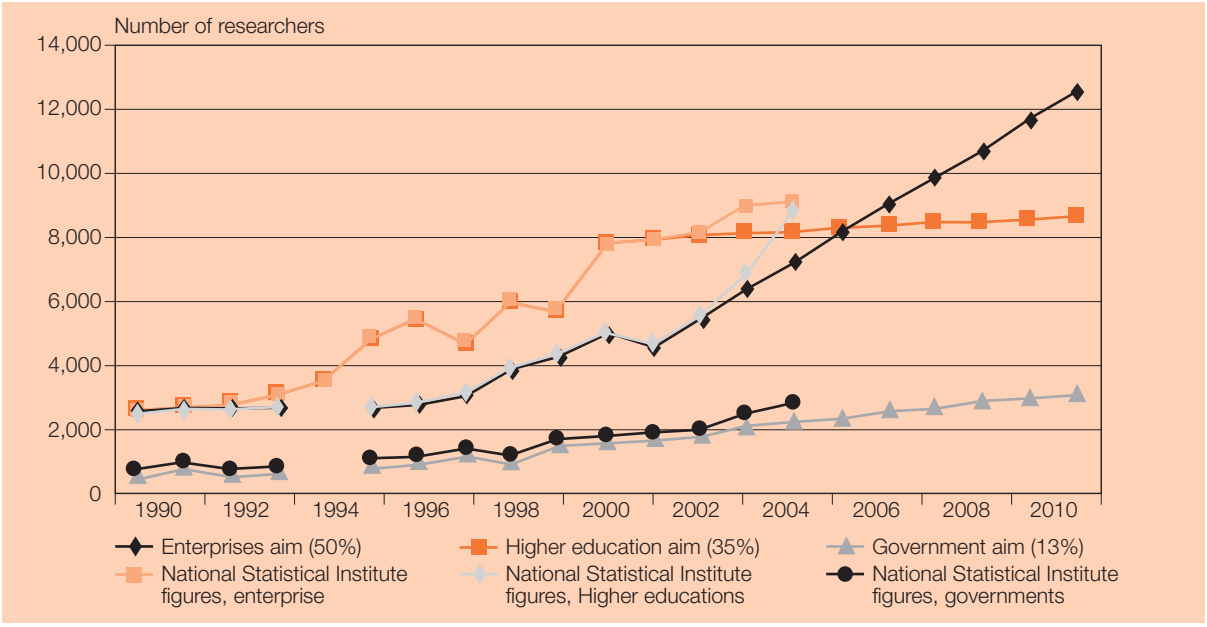

we can estimate the number of researchers that will need to be added each year until 2010 and we note that if the efforts made in recent years in the public and private sectors in that respect are maintained, we will be able to achieve the targets that we have set. In fact, the most recent figures published by the National Statistical Institute (2005) show that the efforts made have given rise to an increase that surpassed the estimate for 2004 (see Graphic 1).

With the estimate for growth set out above, and taking as our objective the distribution of researchers in the different sectors according to the European model or as applied in the US and Japan (50% in enterprises, 13% in governments and 35% in higher education), we note that the number of researchers working in enterprises must be increased considerably, while that same increase in higher and education and governments will not need to be so pronounced.

**One of the basic goals of the career defined for Catalonia is to boost the percentage of researchers working in the private sector and to correct the current distribution**

In order to achieve both the targets established in the Plan for Research and Innovation, the number of researchers per year that need to enter each sector will be what we can see in table 15 and graphic 2.

**Graphic 2**
**Development and estimate of the number of researchers by sectors in Catalonia**




When the Plan for Research and Innovation was implemented, the target of attaining a proportion of 50% of researchers working in the private sector by 2010 meant that over the period of 2002–2008 the number of researchers in that sector would have to be increased by some 5,300. Taking into account that during the immediately preceding six-year period only some 2,000 researchers entered the private sector, it is clear that actions had to be taken to facilitate the entry of researchers into the private sector with the explicit commitment of business and industry. Graphic 2, which includes figures on researchers in enterprises up until 2004 (taken from the survey performed by the National Statistical Institute and published in 2005), shows that the actual increase of researchers in the enterprise sector was higher than forecast.

**Table 15**
**Yearly increase and distribution of researchers to be added by 2010***

| Sector | Yearly increase | Total 2010 | Percentage |
|---|---|---|---|
| Enterprise | 871 | 12,513 | 51 |
| Hihger education | 73 | 8,594 | 35 |
| Governments | 146 | 3,190 | 13 |
| **Total** | **1,090** | **24,302** | |

* Own estimate.

### 4.2. Main initiatives on the part of the Catalan Autonomous Government

#### Offers for enterprises (FI, BP, ICREA-E)

It is held that the best way to transfer knowledge is through human resources. Consequently, at the different stages that have been defined, aid has been implemented to provide incentives that

will allow researchers to pursue their careers in the private sector and thereby transfer their acquired knowledge in the most immediate and effective way. That aid is meant to contribute to development and enhancement of competitive edge through the recruitment of employees who are qualified in areas of strategic interest to enterprises. These people are expected to be able to act in enterprises as agents to stimulate research and innovation plans in direct contact with research groups at universities, research centres and technological centres. However, in addition to the integration of researchers into enterprises, these plans are intended to foster the acquisition of skills by researchers in the area of business. Another aim is to facilitate contact and communication between universities and enterprises.

From the standpoint of enterprises and other private non-profit entities with experience in or potential for R&D, the career that has been defined offers them the tools and incentives that they will need to avoid wasting the potential of researchers and to take advantage of and increase that potential by favouring work and their recruitment for the enterprise at a very low cost.

At the pre-doctoral stage, the offer for training of researchers (FI) in 2005, as mentioned earlier, included for the first time the possibility of applying for a grant for preparing a thesis at an enterprise. As a result, 23 FI enterprise grants were made. This year saw the introduction of aid for pre-doctoral contracts with enterprises (FIE)[47] with a term of three years, with enterprises headquartered in Catalonia that carry out R&D activities to perform industrial research or technological development projects and wish to hire pre-doctoral researchers. The candidates hired by such enterprises must have an undergraduate, engineering or architecture degree and they must be involved in a doctorate programme at a Catalan university in addition to having a tutor or director in the enterprise where they take part in the performance of the R&D project, thereby facilitating technology transfer from universities to enterprises. Those candidates will be individuals who, after receiving their undergraduate degrees, have decided to continue their education with the aim of pursuing a career in research. The grants are provided for one year and can be renewed for a further year, and although the gross yearly remuneration under such contracts is €20,000, including the employer's Social Security contributions, the minimum gross remuneration to be received by the trainee researcher is €15,000. Enterprises or entities that take part in the programme must co-finance the cost of the contract on the basis of percentages that depend on the type of R&D activity to be carried out by the researcher and the dimensions and situation of the beneficiary enterprise.

**The offer for training of researchers (FI) in 2005 included for the first time the possibility of applying for a grant for preparing a thesis at an enterprise**

[47] Aid for enterprises with research projects that wish to hire pre-doctoral researchers: «Resolution EDU/2892/2006 approving the conditions and establishing the offer of pre-doctoral aid under the FIE 2006 programme». (Catalan Official Journal, DOGC 4717, of 13.9.2006, in Catalan).

In 2006, as in 2005, post-doctoral aid has been offered through the Beatriu de Pinós programme,[48] which, in the B2 format, is meant to facilitate the hiring of post-doctoral researchers by enterprises and entities in the business sector with their headquarters in Catalonia and carrying out R&D activities to perform industrial research or technological development projects or technical feasibility studies as a preliminary to industrial research or technological development projects. The individuals hired by the beneficiary enterprises must have a doctorate and cannot have been hired recently by the same enterprise, except in the case of researchers involved in the FI Enterprise programme. Aid is provided for two years. The gross yearly remuneration under such contracts, including Social Security contributions, is €31,900 and the minimum remuneration to be received by the hired researcher is €23,900 gross yearly. The aid provided finances a part of the cost of the contracts, as in the preceding case, on the basis of percentages that depend on the type of R&D activity to be carried out by the researcher and the dimensions and situation of the beneficiary enterprise.

**The aim of doctoral seminars is to lead individuals who are completing a doctorate in Catalonia to discover the world of innovation and enterprise and make them aware of the skills and abilities that they need to acquire in the course of their doctoral studies in addition to theoretical knowledge in a specific field**

Lastly, 2005 also saw the start-up of the ICREA Junior Enterprise contracts with a term of five years and with an approximate cost per contract of €41,000, which is subsidised by ICREA at rates of between 25% and 75%, depending on the type of R&D activity performed by the researcher and the dimension and situation of the beneficiary enterprise. The conditions of the ICREA Junior offer in 2005 allowed for positions in both the private and public sectors. Only one grant was made to the private sector, since the quality of the rest of the applications did not meet the expected standards for this stage of the career. In 2006, the ICREA Junior Enterprise offer (for junior researchers in the private sector) was differentiated from the ICREA Junior Academic offer (for the public sector). Fifteen positions were offered. At the time this article was written, the applications were being assessed.

### Doctoral seminars

In parallel to the research career, for this stage doctoral seminars have been fostered and generalised.[49] These are organised jointly by the Catalan Autonomous Government's Directorate-General for Research and the Catalan universities, with the collaboration of other entities such as AGAUR, FCRI and CIDEM. The aim of these seminars is to lead individuals who are completing a doctorate in Catalonia to reflect on professional futures, prompting them to discover the world of innovation and enterprise and making them aware of the skills and abilities that they need to acquire in the course of their doctoral studies in addition to theoretical knowledge in a specific field. These seminars are open to all doctoral candidates and the Catalan Autonomous government and the Catalan public universities have organised them for the past five

[48] Offer of post-doctoral grants and aid through the Beatriu de Pinós programme 2006: EDU/2714/2006; (Catalan Official Journal, DOGC 4705, of 25/8/2006, in Catalan).
[49] www.doctorials.net.

years, although since 2005 they have been compulsory for all predoctoral personnel hired by the Catalan Autonomous Government. In 2005, a total of 240 trainee researchers took part and in 2006 a total of 270. Over the course of one week the doctoral candidates take part in a variety of activities, lectures, round table discussions and exchange of experience in connection with their entry into employment, addressing the following issues:

- Making individuals with doctorates more competive on the employment market.
- Learning to take advantage of the skills acquired during doctoral studies.
- Knowing the needs and demands of the business world and the role of individuals with doctorates.
- Developing management skills.
- Understanding the variables involved in R&D and enterprise.

**Doctorate programmes with participation by enterprises**

Another initiative taken by DURSI in 2005 was the first offer of support for doctorate programmes created jointly by universities and enterprises and programmes in which enterprises play an important role.[50] The aim of that offer was to foster doctorate programmes that, in addition to the basic contents, include other knowledge and skills relating more directly to the employment market. The offer for 2005 led to the concession of a total of sixteen grants. That offer provided for two formats: one for existing programmes that could involve participation by enterprises (ten grants provided) and another for new programmes calling for collaboration with enterprises (six grants provided). The areas of knowledge concerned in the beneficiary programmes are highly varied, including engineering and architecture, social sciences, science, life sciences, medical and health sciences and humanities. There were also a number of different universities in creating programmes (two from UPC, one from URL, three from URV, two from UdG, four from UB and four from UAB), as well as a variety of enterprises.

## 5. Final remarks and future prospects

Policy in respect of researchers is a key factor in the area of research, technological development and innovation. Backing R&D and innovation in Catalonia necessarily implies taking a series of innovative measures for the training and professional development of researchers and technologists in this country.

As we have pointed out in this article, over the course of the past five years the research career has been strongly promoted in Catalonia, mainly by means and initiatives taken by the Catalan Autonomous Government. Nevertheless, the greatest challenge that must be faced in the next few years will be to attain a substantial increase in the number of researchers and technologists working in enterprises of all types in all industries. Attaining that end will require greater involvement on the part of the private sector and the clear and radical assumption of the fact that competitive edge depends upon decisive pursuit of R&D and innovation by enterprises and, consequently, upon the entry of highly qualified employees, researchers and technologists who can lead the transformation of Catalan enterprises.

[50] Aid in support of doctorate programmes with the participation of the business sector (SPDE): Resolution UNI/2317/2005; (Catalan Official Journal, DOGC 4439, of 2/8/2005 in Catalan).

In that context, one of the priorities that has started to be implemented is the ability to draw top-level international talent and researchers, whether through the return of Catalans and Spaniards to Catalonia or through the incorporation of foreign researchers who see Catalonia as a preferred destination to carry out their R&D and innovation activities in a competitive international context. The ICREA programme has provided one of the most successful experiences in that regard, with the incorporation to date of over 137 top-level researchers at Catalan universities and research centres.

**The actions of political decentralisation and application of the principle of subsidiarity to R&D remain to be accomplished and they cannot be ignored when research, technological development and innovation are the most critical factors for the economic, social and cultural progress of our society**

The improvement of real and effective co-ordination between governments is also clearly needed. As we have seen throughout this article, the programmes and initiatives carried out by the Spanish government have not been agreed or co-ordinated[51] with the autonomous communities, in our case with the Catalan Autonomous Government, which has exclusive authority in respect of technological research and development. This has all too often made the actions taken by governments to be excessively reactive, unco-ordinated and with little room for medium- and long-term planning. In that connection, we will need to wait and see how new statute of autonomy regulating that matter is implemented. The actions of political decentralisation and pplication of the principle of subsidiarity to R&D remain to be accomplished and they cannot be ignored when research, technological development and innovation are the most critical factors for the economic, social and cultural progress of our society.

The plans and policies of the Catalan Autonomous Government in respect of the research career have been positive and clearly at the leading edge in the context of Spain. We must also admit that it is probably still too early to make a more comprehensive assessment of those plans and policies, which have only been in place for the past two, three and four years. Nevertheless, we note that the Catalan Autonomous Government has applied a policy in respect of researchers in Catalonia that has been recognised by different international forums and institutions.

Thus, the aspects of that policy followed by the Catalan Autonomous Government that we consider the most positive are the following:

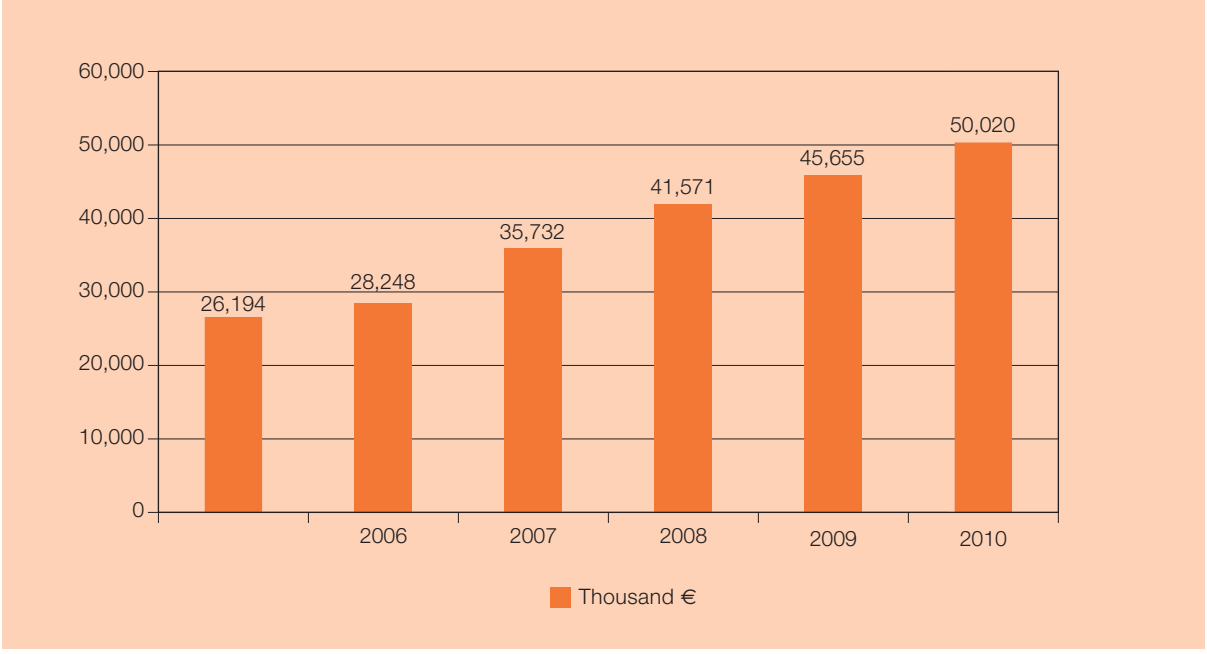
– Substantial increase in the amount of public resources dedicated to offers and aid for the research career in recent years.
– Recognition and progressive dignification of trainee researchers (widespread use of contracts, increased contributions to grants and contracts, social benefits, dedication to projects, etc.)
– Promotion over the past two years of incentives

[51] With the exception of the I3 programme, insofar as concerns its performance, although not its conception.

to increase hiring of researchers by all types of enterprises in different industries (pre-doctoral programme for enterprises, post-doctoral programme for enterprises, ICREA Enterprise programme, reduction of Social Security costs, extension of doctoral seminars, promotion of science and technololgy parks).
– Creation and development of a number of research centres of excellence by the Catalan Autonomous Government and universities. The consolidation of those centres has involved the capacity to recruit and stabilise a large number of researchers in certain areas and lines of technological research and development.
– Recruitment, stabilisation and attraction of talent through the ICREA programme.
– New initiatives for completion of the research career in the post-doctoral and pre-consolidation stages in Catalonia.
– Relative success in participation in and obtaining funds in the competitive offers operated by the Spanish government (FPI grants, Juan de la Cierva programme, Torres Quevedo programme, Ramón y Cajal programme).
– Enhanced professionalisation of management by the Catalan Autonomous Government (Directorate-General for Research, University and the Agency for Management of University and Research Grants (AGAUR), universities, etc.).

In that respect, it is important to point out the need for all those policies and plans to remain in effect in

**Graphic 3**
**Budget forecast of the research career programme 2005-2010**



the long term. The most effective science and technology policy must not only be well directed and planned, but also stable and ongoing, above and beyond events and changes in politics and governments. In graphic 3 are set out the budget forecasts by the Catalan Autonomous Government's Directorate-General for research for the Research Career Plan for Catalonia, calling for sustained increase and medium-term application of all those initiatives and projects. The figures for 2005 correspond to the actual budget applied while figures for other years are forecasts on the basis of the budgets of the Directorate-General for Research for the FI, Beatriu de Pinós and ICREA programmes.

**The most effective science and technology policy must not only be well directed and planned, but also stable and ongoing, above and beyond events and changes in politics and governments**

We must also mention a series of actions that need to be carried out to correct certain negative factors over the next few years, namely:

– Substantial improvement of co-ordination between governments, applying the principles of political decentralisation and subsidiarity on the basis of the agreement between the Spanish government and the Catalan Autonomous Government, in this case in respect of the research career in Catalonia; likewise improvement of co-ordination with Catalan universities and research centres.
– Attain a greater degree of involvement by the business and industrial sector in the promotion of R&D and innovation and in effective support for recruitment of researchers and technologists in the private sector.
– Improve aspects relating to the management of researchers and personnel policies common to the Catalan science and technology system: working conditions, remuneration systems, incentive and scientific and social recognition policies, recruitment, selection and hiring policies, etc.
– Clearer specification of what is expected of trainee researchers (groups, lines of research, related projects) and better tracking and ongoing guidance by group leaders, thesis directors and department directors.
– Supplement training of researchers with skills, attitudes and aptitudes in line with the current demands of the employment market in both the public and private sectors, on the basis of generalised implementation of doctoral seminars and other more specific instruments aimed at fostering entrepreneurship, creation of technology-based enterprises and entry of researchers into employment in the private sector.
– Incentivise scientific vocations beginning at younger ages (primary and secondary schools) through curricula and more effective initiatives.
– Continued pursuit of the policy of capture of international talent to facilitate integration into Catalan groups, centres and enterprises.
– Continue promotion of research centres of excellence by the Catalan Autonomous Government in close co-operation with Catalan universities and fostering of specialisation by universities in priority areas and fields to attain an international competitive edge for science and technology produced in Catalonia.

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# THE SEVENTH FRAMEWORK PROGRAMME FOR RESEARCH AND TECHNOLOGICAL DEVELOPMENT (2007-2013): AN INSTRUMENT FOR DEVELOPING THE EUROPE OF KNOWLEDGE

**Xabier Goenaga Beldarrain* and Marta Truco Calbet****

**At the heart of the Lisbon Strategy, research forms part of the "knowledge triangle" that, together with education and innovation, is needed to promote growth and employment in the European Union (EU) within the globalised economy. The Seventh Framework Programme for Research and Technological Development, which covers the 2007-2013 period, has a total budget of 50.5 billion euros, which represents an average annual increase of 40% in relation to the sixth Framework Programme.**

**The article first briefly reviews the new developments of the Seventh Framework Programme for Research and Technological Development (2007-2013) and how it will contribute to the renewed Lisbon Strategy. It also presents some of the complementary initiatives in the field of research.**

**Despite the fact that many elements from the preceding programme have been continued, the seventh framework Programme does bring in a number of significant new developments. It puts more emphasis on research that responds to the needs of European industry by way of joint technology initiatives, for example. It gives support for the first time to the best European research through the setting up of the European Research Council (ERC), and it also offers new opportunities for the regions to play a leading role in implementing the Lisbon Strategy. Participation in the seventh framework Programme will for the majority and in general be much easier and simpler.**

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**Abstract:**

1. Research at the heart of the renewed Lisbon Strategy
2. General features of the Seventh Framework Programme for Research and Technological Development (2007-2013): adoption, structure and aims
3. Main new developments of the Seventh Framework Programme for Research and Technological Development (2007-2013)
4. The necessity for greater policy coordination
5. The regions and the Framework Programme for Research and Technological Development (2007-2013)
6. Complementary initiatives to the Framework Programme for Research and Technological Development (2007-2013)

## 1. Research at the heart of the renewed Lisbon Strategy

There is consensus between European leaders on the urgent need to invest more in education, research and innovation, with the aim of putting knowledge at the service of growth and employment in Europe. The European Commission fully exercises its role as the driving force to coordinate this.

The Lisbon Strategy was designed six years ago with the aim of making Europe "the most competitive and dynamic knowledge-based economy in the world". In the spring European Council in March 2005, the Member States of the European Union decided to reconsider and relaunch the Lisbon Strategy by concentrating efforts and goals on growth and employment, with social cohesion and sustainable development as permanent points of reference.

To achieve these goals, the need was recognised to establish a solid association between the European Union, the Member States and other participants, including private enterprise. The most significant aspect is that knowledge forms the basis of the revised Lisbon Strategy.

Some of Europe's trade partners currently compete by using their primary resources (which Europe no longer has). Others compete by using cheap labour (which Europe does not allow) or at the expense of the environment (which Europe seeks to protect). Europe can only compete by increasing the knowledge capability of its society and enterprise to provide the rest of the world with the best products, services and processes.

Private enterprise, the universities and other players in Europe must lead what is known as the "knowledge triangle", or the generating of new knowledge through research, its exploitation

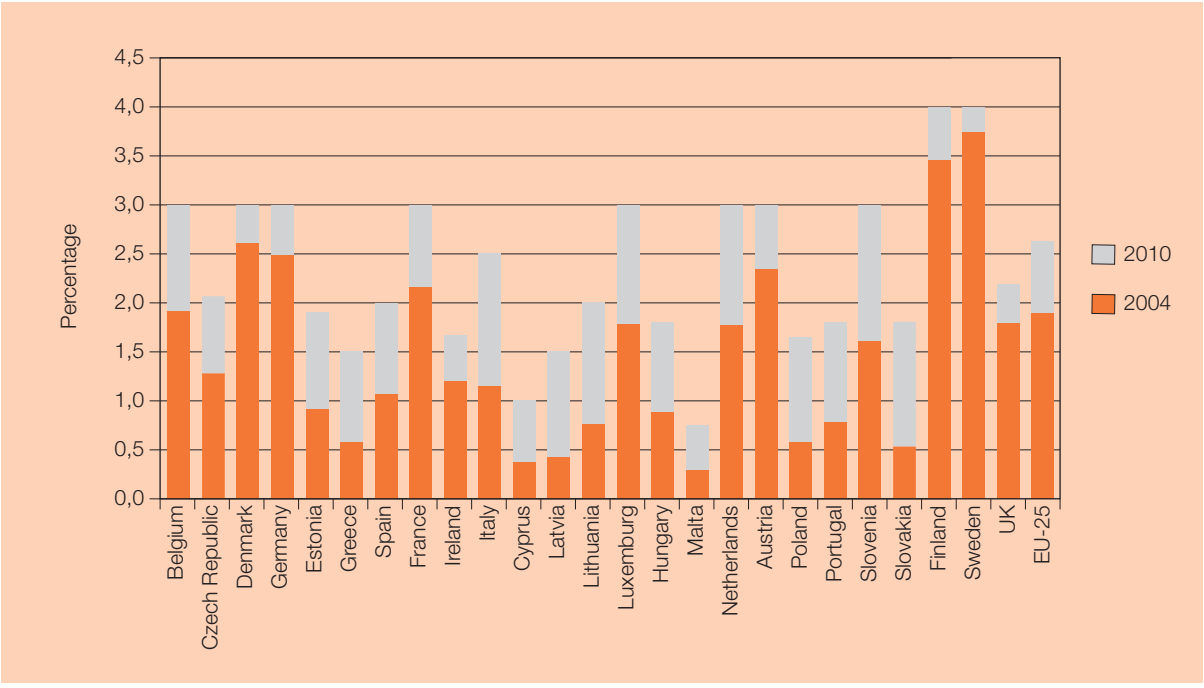
**Research has a fundamental role to play in consolidating the knowledge society, and the budgetary target of 3% of GDP in R&D is the emblematic proof of this priority.**

through innovation and technology, and its dissemination through education.

Research therefore has a fundamental role to play in consolidating the knowledge society, and the budgetary target of 3% of GDP in R&D is the emblematic proof of this priority. The European Council in Barcelona in 2002 recognised the importance of research in its proposed aim to increase the overall level of investment in Europe in R&D from 1.95% to 3% of GDP prior to 2010. Two thirds of this investment would need to come from private sources. In this context, the goal of 3% should not be seen as being a mere goal but a source of inspiration for creating an attractive business environment and as an incentive to invest more and in a more effective way in research.

Up until now, all the Member States have set R&D expenditure goals that have generally been too ambitious (see graphic 1), either within the framework of national reform programmes (NRPs) that the Member States submitted to the European

**Graphic 1**
**Expenditure in R&D as a percentage of GDP, by country, in 2004 and goals set for 2010**



Commission in October 2005 or shortly after they were submitted.[1] NRP documents detail how the Member States are carrying out general economic policy approaches and how they are focusing policy on growth and employment.

Evaluation of these national reform programmes shows that research is considered to be a foremost priority for all Member States. Spain, for example, has made considerable progress and implemented new measures to promote R&D and mobilised public investment at the Community, national and regional levels in order to achieve the goal set for investment in research (2% of GDP by 2010).

Nevertheless, even though the Member States were to achieve the goals that have been set, expenditure in R&D for Europe as a whole would only account for 2.6% of GDP in 2010, and it would therefore still be below the 3% of GDP agreed by the European Council. The Member States would therefore need to continue to maintain their efforts to increase investment in R&D and, even more important, would need to improve the effectiveness and consistency of their national research policies. This will be one of the determining factors for achieving greater mobilisation of corporate investment in R&D.

National and regional endeavours aimed at consolidating the knowledge society will only fully develop if they are completed in a coherent and coordinated way with actions at the European scale. This is the reason why the Framework Programme for research has played and will continue to play a crucial role in promoting transnational cooperation and structuring the European Research Area.

**National and regional endeavours aimed at consolidating the knowledge society will only fully develop if they are completed in a coherent and coordinated way with actions at the European scale.**

## 2. General features of the Seventh Framework Programme for Research and Technological Development (2007-2013): adoption, structure and aims

The Framework Programme, which is the main instrument used by the European Union to fund research in Europe, was conceived to bring about impacts that Member States, acting individually, cannot achieve: to bring together the critical mass of knowledge and resources; to facilitate the flow of ideas, knowledge and researchers everywhere in Europe; to counter the fragmentation of R&D policies and activities in Europe; to increase excellence through pan-European competitiveness; to improve the mobility, training and career development of researchers; and provide support for a European strategy in research infrastructure and international scientific cooperation. The Framework Programme also makes an additional contribution to the leverage effect of national, regional and private expenditure in R&D to enable the research effort in Europe to reach 3% of GDP.

Efforts by the European Union to carry out the renewed Lisbon Strategy have consolidated in

[1] In the spring of 2005, the European Council agreed that each member state of the EU would submit a national reform programme to the European Commission, structured around twenty-four integrated guidelines for growth and employment 2005-2008.

the clear determination to increase the budget of the seventh Framework Programme and to make it a more effective programme.

The seventh Framework Programme has come into effect in December 2006 and will be in operation until the end of 2013. Its main ambition is to bring about an increase in knowledge, which provides growth and employment, through a series of instruments and procedures that are more flexible and simpler than in previous programmes, with the focus on consolidating the strong points, tackling the weaknesses, and responding to the needs of industry.

The budget of the seventh Framework Programme was established in May 2006, following agreement on the European Union's financial prospects for 2007 to 2013. A total budget of 50.2 billion euros was allocated, which represents an average annual increase of 40% in relation to the preceding Framework Programme.

**The Cooperation programme focuses on stimulating co-operation and reinforcing the links between industry, the universities, research centres and public authorities in a transnational context.**

The adoption of the seventh Framework Programme (FP7), together with the budget project, had followed the co-decision procedure, which means that the European Commission's proposal regarding FP7 must be approved by both the European Council and the European Parliament. The Commission submitted its proposal in April 2005. This proposal was prepared after a wide-scale public consultation that took into account the opinions expressed by the Member States, the European institutions, industry and the scientific community, amongst others. After the European Parliament adopted its first report on 24 July 2006, the Council came to a political agreement on FP7. The Framework Programme was finally adopted by the Council following a second reading by the Parliament.

The Seventh Framework Programme identifies four main aims, which correspond with the four main specific programmes that structure the Seventh Framework Programme for Research and Technological Development (2007-2013). FP7 has a simple structure:

– Cooperation
– Ideas
– People
– Capacities

### 2.1. Cooperation

The Cooperation programme represents the core of the Seventh Framework Programme for Research and Technological Development (2007-2013) and it is the largest in budgetary terms (60%). It focuses on stimulating co-operation and reinforcing the links between industry, the universities, research centres and public authorities in a transnational context. Its aim is to build and consolidate European leadership in scientific and technological fields that are key to research. International cooperation between the European Union and third countries is also included.

With a budget of 32.2 billion euros, it will provide support to cooperation in research in new thematic fields that are autonomous in the way they are

managed but complementary in their application: 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 humanities, and 9) the security and space.

In addition to these themes, the seventh Framework Programme will also fund the direct actions of the Joint Research Centre (JRC).

The nine thematic areas are a significant element in the continuity of the preceding programme. They establish the most important fields of knowledge that will allow Europe to deal with the social, economic, public health, environmental and industrial challenges and issues that it faces. Industry will benefit greatly from this and its role will be important in terms of the definition of themes that will require funding within the various thematic areas.

Reinforcement will be given in all areas of the Cooperation programme to the coordination of national research programmes through continuation of the ERA-NET programme. Coordination of non-Community research will also continue to be improved through Community participation in jointly applied national programmes (initiatives provided for under article 169 of the Treaty). The aim is to increase the complementarity and synergies of research programmes across Europe. Examples include the European Metrology Research Programme (EMRP), the Baltic sea science joint research programme (BONUS-169), etc.

The Seventh Framework Programme for Research and Technological Development (2007-2013) will focus more on international cooperation within each theme and by way of a cross-thematic approach. Measures will also be taken to assure the optimum participation of SMEs throughout the nine areas.

### 2.2. The Ideas programme

The Ideas programme, which accounts for 14% of the total budget (7.4 billion euros), will reinforce exploratory research in Europe, which deals with the discovery of new knowledge in fields that may fundamentally change our vision of the world and the way in which we live.

Exploratory research, which is the core of the Ideas programme, represents a new approach as regards basic research. The new European Research Council (ERC) will provide support to more ambitious and innovative European research projects, evaluated exclusively according to their scientific excellence.

**The Ideas programme, which accounts for 14% of the total budget (7.4 billion euros), will reinforce exploratory research in Europe, which deals with the discovery of new knowledge in fields that may fundamentally change our vision of the world and the way in which we live.**

### 2.3. The People programme

Highly trained researchers are needed to advance science and underpin innovation, and to attract and sustain public and private investment in research. The People programme mobilises an important amount of financial resources (4.7 billion euros) to

improve the career prospects of researchers in Europe and to attract young, quality-level researchers.

Based on the success of the Marie Curie action in the sixth Framework Programme (which for various years has offered the possibilities of mobility, training and the development of career prospects to European researchers), this programme in turn offers a better approach in certain areas. This includes improvements in the coordination of regional, national and international (non-Community) programmes that provide postdoctoral grants, actions to develop capabilities to better understand research by private enterprise, and closer cooperation with researchers from third countries.

**The People programme mobilises an important amount of financial resources (4.7 billion euros) to improve the career prospects of researchers in Europe and to attract young, quality-level researchers.**

### 2.4. The Capacities programme

The Capacities programme, with a budget of 4.2 billion euros, offers researchers powerful tools to reinforce the quality and competitiveness of

**Table 1**
**Structure and breakdown of the budget for the Seventh Framework Programme for Research and Technological Development (2007-2013) (in milions of euros)**

| | |
|---|---|
| **Cooperation*** | **32,292** |
| Health | 5,984 |
| Food, agriculture and biotechnology | 1,935 |
| Information and communication technologies | 9,110 |
| Nanosciences and nanotecnologies, materials and new production technologies the production | 3,467 |
| Energy | 2,265 |
| Environment (including climate change) | 1,886 |
| Transport (including aeronautics) | 4,180 |
| Socio-economic sciences and the humanities | 607 |
| Security and space | 2,858 |
| **Ideas** | **7,460** |
| **People** | **4,727** |
| **Capacities** | **4,291** |
| Research infrastructure** | 2,008 |
| Research for SMEs | 1,266 |
| Regions of knowledge | 126 |
| Research potential | 350 |
| Science and society | 359 |
| Internacional cooperation activities | 182 |
| **Non-nuclear actions by the Joint Research Centre** | **1,751** |
| **TOTAL** | **50,521** |

*Including joint technology platforms and the part of the international cooperation activities funded within each thematic area.
**Including the contribution of one billion euros to the European Investment Bank to set up the joint venture funding mechanism.

European research. Its priorities are to invest more in research infrastructure in less prosperous regions, to set up development foci for regional research, and research in support of SMEs. This programme also reflects the importance of international cooperation in research and the function of science in society. Of equal importance is the support that it offers in stimulating the coherent development and effectiveness of research policies by the regions and Member States.

## 3. Main new developments of the Seventh Framework Programme for Research and Technological Development (2007-2013)

The Framework Programme has been in existence for almost twenty-five years. It was begun in 1984 with an annual budget of 800 million euros, with the emphasis on transnational collaboration and the development of very small industrial projects. The first main change occurred in the sixth Framework Programme, which gave support to more long-term cooperation and on a wider scale through networks of excellence and integrated projects. Funding bodies were also encouraged to cooperate at the national or regional scale through the ERA-NET programme, and the Member States to coordinate their research policies using the Open Method of Coordination (OMC). This was also the beginning of article 169 of the Treaty, whereby the Member States may take the initiative to jointly apply national research programmes.

At the same time that it conserves the best aspects of the previous programmes, the Seventh Framework Programme for Research and Technological Development (2007-2013) introduces new measures to improve the coherence and effectiveness of the EU's research policy. The most significant new developments in the programme are described below.

**Priorities of the Capacities programme are to invest more in research infrastructure in less prosperous regions, to set up development foci for regional research, and research in support of SMEs.**

### 3.1. Extended duration of the Framework Programme and an increase in the budget

It is envisaged that the seventh Framework Programme will be applied between the end of 2006 until the end of 2013, and a budget of 50.5 billion euros has been set aside. The extended duration of the programme, from four to seven years, and the significant increase in the budget (an average annual increase of approximately 40% in relation to the sixth Framework Programme), symbolise the will to act in the long term with the purpose of giving impetus to the Europe of research within the framework of the Lisbon Strategy. It is anticipated that the first calls for proposals will be published either at the end of 2006 or at the beginning of 2007.

### 3.2. Reinforced cooperation with industry through technology platforms and new joint technology initiatives in the Cooperation programme

The programme will put more emphasis on the development of research that responds to the needs

of European industry, through the work of technology platforms and new joint technology initiatives.

Technology platforms have been created in various areas where competitiveness, economic growth and well-being in Europe depend on the development of strategic research and technological progress in the medium to long term. Under the leadership of industry, the technology platforms bring together the research community, financiers, regulators, end users and the broadest of social interests, with the aim of defining a strategic research plan. The technology platforms have already played a valuable role in that, when their strategic plans are of a truly European scope and of great industrial importance, they must now be given consideration in the priorities of the Framework Programme.

**The programme will put more emphasis on the development of research that responds to the needs of European industry, through the work of technology platforms and new joint technology initiatives.**

In limited cases, some of the strategic research plans may reach a scale and scope in which the existing funding schemes (integrated projects, specific focus projects, etc.) are insufficient. In these cases, the Seventh Framework Programme for Research and Technological Development (2007-2013) envisages the possibility of setting up public/private associations in the long term, in the form of joint technology initiatives.

These initiatives, which cover an aspect or limited number of aspects of research in their field, will combine private sector investment and national and European public investment, including grants under FP7 and loans from the European Investment Bank. Joint technology initiatives will be decided on the basis of article 171 of the Treaty and decisions concerning the specific programme, in accordance with article 166 of the Treaty. Aeronautics and medicine are two of the areas considered for these initiatives.

### 3.3. Setting up of the European Research Council (ERC) within the framework of the Ideas programme to provide support to exploratory research

The European Research Council (ERC) is one of the important new developments of the Seventh Framework Programme for Research and Technological Development (2007-2013). It will offer a pan-European funding mechanism to support exploratory research. It seeks to provide support to the highest quality research in all disciplines by funding individual teams that will be selected solely on the grounds of excellence.

The European Research Council (ERC) is based on two essential elements, an independent Scientific Council and a dedicated implementation structure. The Scientific Council is the body that will supervise the ERC and it will be made up of twenty-two top-level scientists from different institutions and disciplines. The implementation structure will be responsible for the practical carrying out of the scientific programme and all operational management. The European Commission will be responsible for guaranteeing the ERC's total autonomy and integrity.

The basis for all of the ERC's operations will be two funding programmes:

– Grants for starting independent research: in the first stage of the ERC, priority will be given to the most talented researchers who are in the stage of setting up their first research team or carrying out their own independent research. This programme will represent approximately one third of the ERC's annual budget (300-350 million euros per year). It is anticipated that around two hundred grants will be awarded annually, each one for a maximum period of five years.
– Grants for advanced research: in a second stage, these grants will be established to fund projects directed by researchers in all stages of their careers.

**The European Research Council (ERC) seeks to provide support to the highest quality research in all disciplines by funding individual teams that will be selected solely on the grounds of excellence.**

### 3.4. Setting up of a joint venture funding mechanism to provide access to loans from the European Investment Bank

Financial markets and institutions are not often inclined to invest in research projects. This is due to the fact that, in comparison with conventional corporate projects, research projects entail a higher risk. In order to deal with this market weakness and improve access to loans, the Commission has proposed to set up a joint venture funding mechanism.

The joint venture funding mechanism consists of a contribution from the seventh Framework Programme to the European Investment Bank (EIB). It seeks to improve access to EIB loans for participants in large-scale European research projects. This mechanism will make a larger volume of loans available to research projects and also allow for the funding of high-risk projects that the EIB would otherwise not be able to carry out.

EIB loans will benefit research projects that are clearly strategic (including infrastructure projects) with a European dimension. The participants will be able to address the EIB either individually or through joint legal entities. Beneficiaries will thereby be able to include large companies, SMEs, public and private research organisations, etc. Partners in large projects that receive support from the seventh Framework Programme (such as joint technology initiatives, collaboration projects and research infrastructure) will be automatically eligible. The EIB will examine eligible requests according to customary banking practices.

In addition to benefiting higher risk projects, the mechanism will have a demonstration effect: research developers and financial institutions will learn to work together, making way for other loans to R&D in Europe.

### 3.5. More support for infrastructure research

The generation of knowledge and, by implication, innovation depends directly on the quality and availability of research infrastructure. Infrastructure however is costly, it requires broad experience to be developed, and it must be used by a large community of scientists and industries at the European scale.

The proposal of the Capacities programme within the Seventh Framework Programme for Research and Technological Development (2007-2013) seeks to optimise the use and development of the best

**Partners in large projects that receive support from the seventh Framework Programme will be automatically eligible for the EIB loans.**

research infrastructures that exists in Europe. Various areas where support will be provided include important equipment and groups of instruments used in research, data management systems, etc.

The seventh Framework Programme will also go beyond this and help set up new pan-European research infrastructures in all fields of science and technology, based on the European Strategy Forum on Research Infrastructures (ESFRI). This action will be coordinated closely with other Community funding instruments, especially from the Framework Programme and structural funds.

Support for the projects will be divided in two stages: a) support during the preparatory stage, and b) support during the construction stage. Respective decisions will be adopted on the basis of article 171 of the Treaty and specific decisions for the programme, in accordance with article 166 of the Treaty.

The Capacities programme will also support new needs: bearing in mind the primordial importance of the coordination of policy regarding research infrastructure, support measures will be made available for this coordination (including the development of international cooperation).

### 3.6. Improvement and simplification of the procedures to participate in the Framework Programme

The number of administrative and financial procedures that form part of EU action with regard to research have progressively increased in the different framework programmes since 1984. The Commission wishes to maintain efforts aimed at simplification launched in the sixth Framework Programme to improve the effectiveness of funding and research project management. Specific measures to simplify the application of the seventh Framework Programme imply:

- The rationalisation of funding systems, with a reduced choice of instruments;
- The use of language that is simpler, less bureaucratic and closer to the public;
- The reduction in the number and size of official documents;
- The simplification of formalities called for by the participants;
- The reduction in controls prior to approval of a project, and
- The simplification of the selection process of projects.

In terms of the system of funding, the principle agreed in the seventh Framework Programme is that of co-funding. The success of this principle in previous programmes has lead not only to the pooling of resources at the European, national, regional and public scales, but has also motivated and increased funding for research.

In the previous Framework Programmes, there were three cost models: that of additional costs, whereby 100% marginal expenditure on the project could be recovered plus 20% as indirect costs (many non-profit universities and institutes used this model); total costs, where up to 50% of actual direct and indirect expenditure was recovered; and set rate total costs, where up to 50% of actual direct expenditure could be recovered plus 20% of spending as indirect costs.

The new rules of the Framework Programme eliminate these cost models. The funding rules of FP7 will allow all public bodies, universities and research organisations to recover up to 75% of eligible costs in research and development activities. In order to encourage and promote the participation of SMEs in the Framework Programme, these will also be able to apply for 75% of eligible costs.

Guidelines regulating participation in the Framework Programme were adopted towards the end of 2006. These represent an important part of the Commission's efforts to simplify the implementation of the Seventh Framework Programme for Research and Technological Development (2007-2013).

**The seventh Framework Programme will go beyond the optimisation of the use and development of the best research infrastructures that exists in Europe and will help set up new pan-European research infrastructures in all fields of science and technology, based on the European Strategy Forum on Research Infrastructures (ESFRI).**

## 4. The necessity for greater policy coordination

Approximately 94% of all public investment in R&D is currently made by the Member States. Even though there has been a substantial increase in the Framework Programme's budget, the Member States will need to continue to increase their investment in R&D in the future. The framework programmes have played and will continue to play an important role in giving incentive to transnational cooperation and structuring the European Research Area. The balance between Community investment and national investment in research however clearly makes it necessary to improve the effectiveness and consistency of research policies by the Member States.

With this aim in mind, the European Council in March 2003 decided to apply the Open Method of Coordination (OMC) in support of the 3% objective of GDP investment in R&D.

The Open Method of Coordination is a method designed to help Member States jointly make progress in the reforms necessary to achieve the aims of Lisbon. In the case of research, it offers Member States the possibility of learning from each other and of sharing their experience, so they can improve their policies and encourage better and more investment in R&D. In its "Investing in Research" Action Plan in April 2003,[2] the European Commission identified twenty-five actions of which the main competence falls on the Member States and where the Open Method of Coordination can be applied. The Scientific and Technical Research Committee (CREST), whose role it is to advise the Council and the Commission in research matters, took on the task of supervising its application. The Commission has given and continues to give its support to the CREST in carrying out this work.

[2] COMMISSION OF THE EUROPEAN COMMUNITIES (COM) 2003

**The Open Method of Coordination is a method designed to help Member States jointly make progress in the reforms necessary to achieve the aims of Lisbon.**

The OMC helps the Member States to improve the effectiveness of their policies. First, it encourages mutual learning by the Member States, peer reviews and the identification of good practices. Second, it helps Member States to develop more coherent and concerted policies as well as joint initiatives on issues of common interest. Thirdly, it helps to identify areas where Community initiatives could reinforce actions at Member State level.

Following its application in two cycles, various objectives have been achieved. The two reports[3] on "Application of the OMC 3% of GDP in research" adopted by the CREST provide guidance to the Member States so they can improve their R&D policies. Policy recommendations have been agreed, good practices identified, and mutual learning intense. Various examples are given below.

Some countries considering reform of public research organisations have benefited from the experience of countries that have recently undertaken such reforms. Some countries are introducing new fiscal measures for research enterprises or modifying the old ones to increase their effectiveness. Work on improving the design of policy mixes has also been of great use. Four countries have had peer reviews of their research policy mix and six countries have notified an interest to be peer reviewed in the next cycle.

As a complement to the CREST's application of the OMC, the Commission launched a pilot call for proposals (OMC-NET) in September 2005, in order to support bottom-up initiatives by groups of Member States to develop and coordinate their policies in areas of common interest This scheme allows regional authorities and other stakeholders to be involved in policy co-ordination initiatives. The number and quality of the proposals confirms the need and interest for this initiative, which will be continued in FP7 (2007-2013) within the context of the Capacities programme.

The national reform programmes (NRPs), which were presented in the autumn of 2005 in the context of the revised Lisbon strategy, and their progress reports presented in autumn 2006, are an extremely valuable complement to the OMC process. While the OMC focuses on very specific R&D policies, the NRPs provide information on broad policy developments concerning R&D. In November 2006, CREST has used the NRPs and its progress reports as the basis for mutual learning and has also drawn up a report for the Council and the Commission on the progress towards the objective of 3%.

## 5. The regions and the Framework Programme for Research and Technological Development (2007-2013)

### 5.1. The regions, the driving force of European development

The regions play a key role in carrying out the aims of Lisbon, especially in maximising the potential of the European Research Area and consolidating a common market for knowledge. The statistics show

[3] Scientific and Technical Research Committee (Crest) 2004

that regional investment in research gives results: the regions that have maintained high investment in R&D from one year to the next are at the forefront of national and European economic growth. For example, the eight European regions with an R&D intensity of more than 3% of GDP in 2002 were as follows: Braunschweig in Germany (7.1%), Pohjois-Suomi in Finland (4.2%), Eastern England (3.9%), Stredni Cechy in the Czech Republic (3.5%), Vienna and Île de France (both approximately 3.4%). All of these regions are the driving force of European development.

Regions with high R&D intensities (over 2.9% of GDP) are mainly situated in Germany (11 regions), although it is not Germany but Finland that has the highest average level of national investment in R&D in Europe (with three regions over 2.9%). France, Austria and the United Kingdom each have two regions where investment in R&D is over 2.9% of GDP. Almost 33% of all European investment in research takes place in ten European regions.

In the case of Member States like Spain, Greece, Portugal, Poland and Hungary, investment in R&D in all of the regions is below the EU average of 2%. In Catalonia, the objective of the Plan for Research and Innovation for 2005-2008, which governs policy for research and innovation, is for investment in research and development to reach 2% of the Catalan GDP by 2008.

### 5.2. The contribution of the Seventh Framework Programme to less favoured regions

Before dealing with this section, it is important to remember a basic principle: the aim of research policy is to reward excellence; it therefore can and must not be a cohesion policy. European research funding goes to the applicants who submit the best projects and are committed to giving excellent scientific results. The FP7 does not work on the basis of a distributive principle, but according to competitive criteria.

**The regions play a key role in carrying out the aims of Lisbon, especially in maximising the potential of the European Research Area and consolidating a common market for knowledge.**

It is said that the less developed regions, due to economic and institutional difficulties and infrastructure, are at a disadvantage in a competitive environment like the Framework Programme. It is true that regions in Germany, United Kingdom and France are more active in the Framework Programme, but the statistics also show that objective 1 regions, for example, account for approximately 14% of the participants in the sixth Framework Programme, and that Cyprus is the Member State that receives the most money per capita from the Framework Programme.

As a result of European research projects, various innovative enterprises in convergence regions have established links with important technology networks and regenerated their profile and capacity. Several remote universities have experimented with innovative ways to adapt their research models and become actual conductors of development in their regions. Framework Programme projects have helped to combat regional insularity and technological provincialism.

**The FP7 does not work on the basis of a distributive principle, but according to competitive criteria.**

In addition to the Regions of Knowledge call for project proposals, the sixth Framework Programme contributed to R&D in less favoured regions in different ways:

- SME networks participating in the Framework Programme have improved their technological competence. A total of 129 companies from Spain, Italy, Portugal, Greece and Ireland have benefited from these schemes.
- Marie Curie fellowships have contributed to the development of R&D human resources in convergence regions.
- The Framework Programme has strongly supported regional innovation policy, allocating more than 120 million euro in the fifth Framework Programme to regional innovation strategy projects (RIS) (plus some 200 million for joint SME/Innovation activities). This money has translated into a number of thematic networks and specific projects, including the setting up of the Innovating Regions in Europe Network, a platform for European regions to exchange best practices in innovation policy
- The OMC-NET call for proposals has provided the regions an opportunity to become involved in activities to coordinate research policies with the Member States.

### 5.3. New opportunities for the regions

The regions have been a central element in the development of European research during recent decades. For this reason, the Seventh Framework Programme for Research and Technological Development (2007-2013) clearly intends to provide the regions with new tools so they can also be main figures in implementing the Lisbon Strategy.

The Regions of Knowledge call for proposals is one of the results. It was started in 2003 as a pilot action funded by the European Parliament, with a budget of 2.5 million euros and aimed specifically at regional actors in research. Its aim is not to fund scientific research as such, but transnational cooperation in research policy between regions. Following its success, a second pilot action was funded under the sixth Framework Programme with the Regions of Knowledge call for proposals 2, with an increased budget of 8.95 million euros. The primary aim was to stimulate investment in R&D at the regional scale and increase the contribution of the regions in compliance with the objective of Barcelona of 3% of GDP.

In the Seventh Framework Programme for Research and Technological Development (2007-2013), the Regions of Knowledge (with a budget of 126 million euros) has gone from being a pilot action to become an action in itself. It is based on three mainstays:

- Analysis: prospective studies and exercises using forecasting, comparative assessment and other approaches to identify working plans for cluster development.
- Tutoring: setting up of associations between regions that are more or less technologically advanced, with the aim of identifying good practices that lead to cluster development.
- Integration: transnational associations of public and private research centres in search of strategies to maximise R&D investment at the regional scale.

The Seventh Framework Programme for Research and Technological Development (2007-2013) also aspires to develop the research potential of convergence regions in the EU by supporting the temporary transfer of research staff, equipment acquisition and organising conferences for technology transfer. This will be done through the new Research Potential initiative in the convergence regions, and 350 million euros are to be set aside for this.

Both of these initiatives seek to stimulate technology parks, regional competence centres, to open doors to national/regional teams of scientists and provide access to research infrastructure; in short, to improve the performance of R&D in Europe and support all the regions on their way towards the Europe of knowledge.

The OMC-NET call for proposals will also support group initiatives by Member States, regions and others actors to develop and coordinate their research policies in areas of joint interest. Around 40 million euros are to be set aside for this call.

### 5.4. Structural funds to Spain and synergies with the Seventh Framework Programme for Research and Technological Development (2007-2013)

The structural funds, and particularly the European Regional Development Fund, have contributed throughout their course of development to investment in research. During the 2000-2006 period, the quantity of funding allocated to research, technological development and innovation infrastructure in the eligible regions of the EU amounted to 8% of the total budget of the European Regional Development Fund. In Spain, funding attributed to research during the same period (including cohesion funds) amounted to approximately 4.9 billion euros, or 7.7% of the total funds. Ensuring synergies between the structural funds and the Framework Programme has thus been a clear priority for the EU. For example, the BONUS action allowed applicants in the sixth Framework Programme established in an objective 1 region to ask for additional grants to fund research through the structural funds.

**The Regions of Knowledge call for proposals aim is not to fund scientific research as such, but transnational cooperation in research policy between regions.**

This aspect of the structural funds will now be promoted even more: the Regulation which establishes the general rules for structural and cohesion funds, adopted in July 2006, identified research, innovation and the transition to the knowledge economy as a main priority in the three new objectives (convergence, regional competitiveness and territorial cooperation).

The structural funds will put more emphasis on stimulating research capacity, supporting research infrastructure, human resources in research, innovation enterprises, technology parks, incubators and specific research projects in the beneficiary regions. They will also stimulate the involvement of the private sector in investing in R&D, and they will improve the access to funding of innovative SMEs.

In the case of Spain, there are still no official figures on the quantity of structural funds allocated for the 2007-2013 period. They can be estimated to be around 25 billion euros (excluding

R&D funds). In view of the importance given to the Lisbon objectives, investment in research and innovation may well amount to more or less 20% of the total, that is, 5 billion euros for Spain.

**General rules for structural and cohesion funds, identifie research, innovation and the transition to the knowledge economy as a main priority in the three new objectives of these funds (convergence, regional competitiveness and territorial cooperation).**

Spain will benefit from an additional allocation of 2 billion euros from the European Regional Development Fund to increase research and development in benefit of enterprise (as stipulated in articles 4.1 and 5.1 of the FEDER Regulation). In principle, 75% of this amount will be for regions under the convergence objective and 25% for the regions under the regional competitiveness objective. This amount comes close to the figure Spanish entities expect to receive from the seventh Framework Programme (6% of the total, that is, around 3 billion euros). The structural funds and R&D funds therefore represent a great opportunity to give impetus to R&D capabilities and reinforce the efforts that Spain is making to become a modern, knowledge-based society.

Although it is impossible to combine funding from two Community sources for a project funded by structural funds, it will always be possible for funding to be complemented. For example, structural funds and funds from the seventh Framework Programme can fund different stages of a research project, on the condition that the funding specifications are respected.

Moreover, the National Strategic Reference Frameworks, which establish the funding priorities for structural funds to each country, emphasise the importance of research for increasing the competitiveness of the regions.

The Seventh Framework Programme for Research and Technological Development (2007-2013) and the structural funds will ensure synergies with the Competitiveness and Innovation programme, which will also provide support and funding for research and innovation.

## 6. Complementary initiatives to the Framework Programme for Research and Technological Development (2006-2013)

The Seventh Framework Programme for Research and Technological Development (2007-2013) not only formulates a new approach to research funding at the European scale, but at the same time offers a complement to initiatives –that have been announced or that are being prepared– in the restructuring of the European Research Area and realisation of a Europe that is more attractive to researchers and investment. Two important examples are the recently adopted communications of the European Commission: "Delivering on the Modernisation agenda for Universities: Education, Research and Innovation"[4] and "The European Institute of Technology: further steps towards its creation".[5]

[4] COMMISSION OF THE EUROPEAN COMMUNITIES (COM) 2006a
[5] COMMISSION OF THE EUROPEAN COMMUNITIES (COM) 2006b

### 6.1. Communication of the European Commission on the modernisation agenda for the universities

The European Council, at the Hampton Court meeting in October 2005, identified the universities and research as key issues that will form the future of the EU. The Communication, adopted on 10 May 2006, highlighted the need for the reform of the universities in Europe in order for it to successfully turn into a knowledge-based economy and society.

The Communication covers all the activities of European universities, from their mission of developing educational and research activities to their potential as innovation conductors. It calls for the modernisation of the universities and research carried out there. European universities have an enormous potential, many of which unfortunately are not used to the full because of various restrictions, excessive regulation and the imposition of a certain degree of uniformity.

While research must continue to be a key task of university systems as a whole, this does not mean that all European universities need the same balance between education and research, the same approach to research and research training, or the same combination of services and academic disciplines. What is required is differentiation and concentration.

The communication therefore suggests new priority areas for action, essentially at the Member State and university scale. These action areas include: eliminating the barriers surrounding the universities in Europe, ensuring university autonomy and responsibility, offering incentives for associations structured with the corporate community, rewarding excellence at the highest level, etc. The EU's role is to complement national actions and reinforce them at the European scale, on the basis of the principle of subsidiariety and joint responsibility.

**European universities have an enormous potential, many of which unfortunately are not used to the full because of various restrictions, excessive regulation and the imposition of a certain degree of uniformity.**

### 6.2. Communication of the European Commission on the European Institute of Technology

The proposal to set up the European Institute of Technology (EIT) was first presented in 2005 as part of the mid-term review of the Lisbon Strategy. In a communication to the European Council on the 22 February 2006, titled "Implementation of the renewed association for growth and employment. Establishment of a new flagship for knowledge: the European Institute of Technology", the European Commission defined the general features of the EIT, for consideration by Heads of State and government. In the new Communication, "The European Institute of Technology: further steps towards its creation", the Commission provided

**The European Institute of Technology does not aspire to be a university or a mere network, but an organisation funded to carry out the three elements of the knowledge triangle: education, research and innovation.**

more information on its proposal and suggestions regarding the setting up of the EIT.

The European Institute of Technology does not aspire to be a university or a mere network, but an organisation funded to carry out the three elements of the knowledge triangle: education, research and innovation.

The EIT responds to the need to promote an innovation and entrepreneurial culture in research and education, as well as new organisational models that are suited to today's needs. It will bring together the best teams and university departments in Europe that work in strategic fields of research. These will work in parallel with leaders in the corporate sector to develop and exploit knowledge and research, and to increase the management capabilities of research and innovation. The new EIT model will also act as a catalyst for reform by inspiring change in existing institutions.

The EIT structure will have two levels: a Governing Board (which will identify strategic social and economic challenges) and a group of Knowledge Communities (associations made up of universities, research organisations and industry distributed all over Europe). These will carry out activities in strategic transdisciplinary areas in the medium and long term (10-15 years).

It is anticipated that the EIT will receive funding from the EU, the Member States and the corporate community. The EIT will therefore offer the private sector a new relationship integrated with education and research, with new opportunities for commercialising research and closer exchange. The Commission will submit a proposal formal to the Council before the end of 2006.

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# VALORISATION OF UNIVERSITY RESEARCH. IS RESEARCH WORTHWHILE FOR MORE THAN JUST PUBLICATION BY RESEARCHERS?

**Francesc Solé Parellada* Mireia de la Rubia** and Raquel Egea*****

**Over the past two centuries, universities and government-sponsored research laboratories have become institutions for the creation of knowledge and built a space for support for the production system. However, the transfer of that prior knowledge to society has not always been assured. At this crucial point in history, the production system cannot compete without the contribution made by the scientific and technological system as a whole and we therefore need to foster a new culture of creation of prior knowledge that includes its valorisation.**

**What are the conditions for transfer from research to competitive edge via innovation? Does our science and technology system fulfill those conditions? If not, what do we need to do and what resources do we need to dedicate to the task?**

**In this article, we take a critical look at how research is organised here and we provide guidelines for how it can be valorised.**

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## 1. Introduction

Our surroundings are changing. The economic organisation of the world has changed. Different regions of the planet with different resources and capacities are competing in existing products and processes and in the flow of innovation. The globalised world has placed the different functions of production into contact. Different cost structures oblige the more complex economies to expend their efforts on focussing their industrial fabric on products with higher value and therefore invest in knowledge. Globality, technological evolution and in general the economics of knowledge have called the parameters of competitive edge into question.

Over the past two centuries the economies of what we call the first world have created, even if not always intentionally, a set of institutions that generate knowledge, such as universities and public research laboratories that, in practice, constitute a space for support for the production system. Those institutions have contributed a copious flow of information and knowledge thanks to research structures that tend to be highly sophisticated. In parallel, those agents of the support space have created their own organisation, a working culture and a specific system of incentives within a given legal framework. As a result of that effort, which has often been shared with enterprises, society has obtained a stock of scientific and technological knowledge with an importance that could hardly have been foreseen by the entrepereneurs who drove the industrial revolution. However, the transfer of that prior knowledge to society has not always been assured. The difficulty of directing the flow of prior information and knowledge[1] from academe to society can be attributed largely to a lack of effective systems for transmittal and a culture of isolation on the part of both sides.

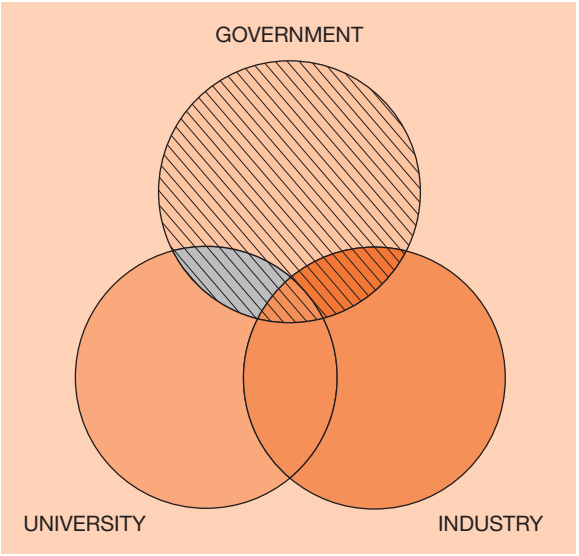
**We need to co-ordinate the systems for creation of prior knowledge with the production system and with public organisations and succeed in having those two worlds co-operate.**

The creation of codified information or prior knowledge has not always had a direct effect on the production system and it has therefore not reached the majority of citizens in the short-term. It is true that until only recently prior knowledge was not so necessary for the production system, whether in terms of amount or sophistication, and consequently the transfer of the prior knowledge created by academe to enterprises was not so urgent. At this crucial point in history, the production system cannot compete without the contribution made by the scientific and technological system as a whole and we therefore need to foster a new culture of creation of prior knowledge that includes its valorisation. In short, we need to co-ordinate the systems for creation of prior knowledge with the production system and with public organisations and succeed in having those two worlds co-operate.

[1] We will also refer to information generated through university research and transmitted through the conventional channels of journals, conferences, congresses and books as prior knowledge.

In middle-income countries, the most substantial element of the science and technology system of the support space is precisely the university system. For universities, the pursuit of creation and valorisation of knowledge has become a social obligation. Any country that wishes to prosper must construct a university system that clearly focusses on excellence and valorisation. That valorisation does not need to be immediate, only effective, whether in the short, medium or long term. Government has the duty of acting to ensure that that circumstance is possible and, where feasible, to facilitate matters. Government must create a legal framework and a system of incentives and permit organisation in such a way as to ensure that research and its valorisation can occur without unnecessary effort. As has been made evident[2], there is an increasing awareness of that challenge, and even economics literature has created new models that have met with success, such as that of the triple helix (figure 1)

**Figure 1**
**The triple helix (Henry Etzkowitz)**




**Research, knowledge and innovation are the keys to competitive edge and university is one of the vital agents in the system.**

Briefly and simply, we can sum up what we have been saying in the following line of reasoning: Knowledge is the basis for innovation. Innovation is the only way to compete with other countries. Research is the source of knowledge. In middle-income countries, most research is accomplished at universities. Therefore, university research is the answer for the future competitive edge of the production system. Research, knowledge and innovation are the keys to competitive edge and university is one of the vital agents in the system.

Unassailable logic, but it is actually true? And if it is true, what are the conditions for the transfer from research to competitive edge via innovation? Does our science and technology system fufill those conditions? If not, what do we need to do and what resources do we need to dedicate to the task?

The logic of that reasoning seems unquestionable, and consequently it would appear that we need to join forces to improve the creation of prior knowledge and its subsequent use. Nevertheless, although the challenge is clear, it is not so easy to

[2] Etzkowitz, Solé Parellada and Piqué, 2006.

say exactly what we need to do, nor is it frequently the case that our real tangible efforts, even if they are adventurous and resolute, are up to the challenge.

## 2. Research: fallacy of distinction between the aims of pure research and applied research. Research as prior knowledge

The first factor that we need to define if we wish to ensure that the knowledge created at universities is placed at the service of society is what an enterprise or an organisation considers to be knowledge. In simple terms, we can say that "useful knowledge in a production system is held to be all the elements that enable a person, a group or an organisation to act". That definition is of the sort that we might call a hinge definition. It is a useful definition for a complex concept that might in other contexts have more facets than can be explained by this definition, but on the other hand it is the perfect definition for the area of management of both private and public organisations.

However, when we speak of the knowledge produced by universities in connection with its use by the production system, we are referring to a different sort of knowledge. What the universities and research laboratories, which are not a part of the prodution system, actually do is to feed the stock of scientific and technological knowledge and that task does not fit snugly into our definition of knowledge as given above, at least not with respect to its immediate market dimension.[3] In respect of the knowledge that we have defined above, that prior scientific and technological knowledge is placed in a store from which it can later be retrieved to be provided to the production system, and is called by that name only when it incorporated into the organisation directly or into the production system indirectly via spin-offs or via patents and intellectual property in general and allows the organisation to do things that it was unable to previously or to do things that it already knew how to do better.

**Prior knowledge does not necessarily become useful information for organisations if there is not some sort transfer and transformation of that knowledge into something that can be transmitted to society in the broadest sense.**

Consequently, the creation of prior knowledge, even if it is highly sophisticated and even if a wide range of means has been used to obtain it, does not necessarily become useful information for organisations if there is not some sort transfer and transformation of that knowledge into something that can be transmitted to the processes, product organisation, production system or society in the broadest sense.

This leads to a debate that can be helpful to break down the prejudgments and simplifications that the discourse often obliges us to make. That debate deals with basic and applied research, the importance of the basic support sciences and the

[3] It might be argued whether or not the information or prior knowledge disseminated in articles is in fact knowledge that enables researchers themselves to act. In that sense, it is definitive knwoledge for them but not for the production system or the public institutions that need it to operate in the supply of new products or services.

need for science to reach the production system and finally society. That debate, when it is carried out rigorously, is very worthwhile because it provides parameters for decisions on science and technology policy, although it often becomes a smokescreen, and when it is slanted it can also be harmful, since it serves as an excuse for conduct that does not serve the public interest. We must therefore take time to examine the subject at length as an aside to our discourse and discuss, for example, the scientific and technical origin of technological innovation and the research practices of universities and public laboratories.

**Competition and the incentive of recognition favour the appearance and dissemination of research results in academic, fundamental or basic research.**

Scientific novelties are called discoveries. Changes to technological applications are called inventions, and changes to know-how that also give rise to changes in products and processes, if they are accepted by the market, are called innovation. When we speak of scientific and technological transformations that lead to technological information, we can distinguish between four levels:

a) The scientific level, which establishes the foundations of the technological domain or the activity concerned.
b) The level of generic technologies, which are the basic technologies required for a given activity.
c) The applicable technological concepts, which include, within the framework of a technology, the existence of certain "concepts" that may be applied, each of which requires specific skills.
d) The technical adaptations representing modifications that do not require recourse to a new technology, but instead are situated within the framework of a given technological concept.

It is therefore clear that we are not in an uncomplicated field where simplifications can be equivocal and intention may be disinterested or biased. Research is a complex activity. That complexity can be assessed from different standpoints and in different dimensions. According to CALLON,[4] its nature and outcome can be analysed in terms of six dimensions namely the following:

**Produce prior knowledge**

Research contributes the production of knowledge whose quality and worth are judged by the scientific community. This is what is known as academic, fundamental or basic research. The scientific community peforms the tasks of production of knowledge and recognition of certain results. Researchers compete amongst themselves. Competition and the incentive of recognition favour the appearance and dissemination of research results. The only results that survive are those that pass the test of group criticism. In general terms, this production is steered by competition betweent researchers.

**Address issues of general interest**

Research can be directed at resolving issues of general interest through public programmes. Such general interest can be more or less clearly

[4] CALLON, 1995. Michel Callon names five, namely the first five. However, his work dates from 1995 and perhaps at that time the last of dimensions listed below, namely the need for valorisation, was not so clear, or even though he does not mention it directly, he included it in the fourth or fifth dimension.

defined. An activity such as a weather satellite has clear objectives, while those of other activities may be less obvious, such as in the case of an epidemiological survey. Research activities of those types are carried out under the auspices of public organisations. The aim is not to create competitive edge or increase the stock of knowledge, but rather to contribute to certain aims of public welfare. From that standpoint, research activities are steered and guided by political judgement and the underlying debate as to what matters must be given priority for the public good.

**Connection between research and training**

One necessary aim of research activities is to contribute to training activities. This process allows the knowledge and know-how developed by researchers to be transformed into abilities on the part of students. The way in which knowledge is transmitted to the training system depends highly on the degree of competition existing between training institutions and their capacity for positioning themselves in respect of the employment market. This training dimension of research activities is steered by the characteristics of the teaching system.

**Conventional dissemination of research results**

Research cannot be carried out in a society that is hostile to science and technical progress. Researchers and engineers have always exerted themselves to present their activities in such a way as to be of interest to non-expert audiences, whether to satisfy their curiosity or to demonstrate the worth of certain results. That relationship can take a variety of forms, from the publication of books and articles to dissemination in the media, campaigns or ethics committees. The impact or success of this dimension can be assessed in many different ways, such as the sales of a book, the attention paid to expert advice in the final versions of laws, and so on. The degree of acceptance by the persons at whom it is aimed defines the importance of the matter.

**Research activities are steered and guided by political judgement and the underlying debate as to what matters must be given priority for the public good.**

**Financial dimension of research**

Research can be a component of the process that leads to the production of innovations, i.e. the marketing of new products and procedures. Such innovations form a part of strategies used by enterprises to create the competitive edge that gives them an advantage over their competitors. The participation of research in industrial and service activities is driven by financial competition between enterprises on the market. Regardless of the exact nature of those strategies, what counts is the ability to transfer the discoveries and developments of researchers into innnovations. It is therefore financial competition and the wish to obtain the benefits of the micro-monopoly held by the innovator that drives research linked to industrial activities.

**Valorisation of university research**

The function of valorisation is not new, although its extent and, as we mentioned in the first section, its necessity are both recent developments. It consists of the efforts made to transfer, patents and stimulate the appearance of spin-offs that transmit prior knowledge to the production system or society in general. In that function, the university

acts as consultant, engineer and manufacturer of opportunities. The entrepreneurial function follows upon performance of the function of creation of applicable knowledge. The task of transfer is of a variable nature and the knowledge can reach society after a lengthy research period financed with public or private funds in rather sophisticated areas of research. That research may not appear at the outset to be applicable and is often called "basic research". Where there is a more or less direct application of the knowledge of the research group and their experience, which additionally requires the creation of knowledge, it can also be referred to directly as "applied research".

In this "model" each dimension makes its contribution to the others. For example, the production of knowledge leads to the qualification of students who will enter the employment market, while experience can lead to the formulation of standards that can have a direct impact on the qualification products.

**In fact, the distinction between pure research and applied research has gradually blurred. That distinction is based upon a construct of two scientific and technical systems that operate more or less in parallel.**

On the basis of this model, we can examine the distinction between pure research and applied research more closely. In general terms, pure research is understood to be the activities carried out by researchers with the sole intent of increasing the stock of prior knowledge, while applied research comprises activities that are carried out with the aim of a specific use for an industry or public organisations. In fact, the distinction between the two has gradually blurred. That distinction is based upon a construct of two scientific and technical systems that operate more or less in parallel. One of them is funded by government and its research priorities are decided by the researchers themselves in a more or less organised manner. This set of researchers are driven by scientific curiosity and knowledge for the sake of knowledge. What is sought does not need to have any immediate or recognised practical use. The type of science practised in the public or institutional system is highly sophisticated and requires substantial investments. It is decided by a committee of experts taking into account scientific progress more than the practical usefulness of the planned discoveries. Such discoveries, if they are made, will be public. The other system is made up of a set of researchers and laboratories, whether in industry or in the public system and is financed largely by private funds. The scientific level is often low, techniques are specific and innovations are made to products or processes. The subjects being researched are decided on the basis of their immediate usefulness, i.e. on their translation. Discoveries are, preferably, private. In fact, that standpoint is based upon the intention behind the research. Nevertheless, it is understood that basic research is highly sophisticated science or that it operates in the area of those sciences that are ultimately a tool for the advancement of other sciences, thus removing it even further from the market.

A further argument, and one that serves to reinforce the distinction between pure research of a public nature and private research is the acknowledgement of the fact that certain research that is considered necessary requires sizeable investment in laboratories that is beyond

**Table 1**
**Conventional criteria for classification of research as pure or applied**

| | Level of scientific sophistication | Ultimate aim of research | Source of demand or initiative for research |
|---|---|---|---|
| Pure research | High | Increase store of knowledge | Public organisations or researchers themselves |
| Applied research | Medium–low | Develop new products and/or processes | Enterprises |

the capacity of industry due to the high risk involved. In that connection, government can justify its role as patron of science because private initiative would leave important fields of knowledge unexplored due to strictly practical reasons: the aim is to use research to obtain results that are appropriate to the production system. Likewise, it would be reasonable to attribute to pure research the value of training researchers that can work for the system.

Table 1 sets out the conventional scheme upon which the distinction bertween pure research and applied research is based. However, that scheme is no longer an accurate representation of reality. The number of researchers at industry laboratories has grown constantly, while the number of researchers funded by government has grown much more slowly. The two systems are permeable, although that permeability operates to varying degrees, depending on the sectors, development of the system and even on whether law favours or obstructs it. It would be difficult to argue today in favour of research that will not sooner or later reach society or knowledge that cannot be applied in one way or another. Nor is sophistication any longer the preserve of publicly-funded research, and consequently the boundaries are increasingly difficult to draw. We therefore need to examine in each case whether the classification as pure or applied research is appropriate or, in any event, the basis for that classification, depending on purpose, the distance in time and sophistication from its application, actual sophistication, the capacity for boosting the potential of research in an environment of costly facilities, its contribution to the production system in the short, medium or long term, and, lastly, the cost of opportunity.

This analsysis and the prospect of public intervention could lead us, with all the risks involved in a strategic view, to three levels of action relating to the six dimensions of usefulness of research set out above:

- Ensure that a certain balance is maintained between the different dimensions.
- Make relations and interconnections between the dimensions easier and more frequent (e.g. relations between universities and enterprises).
- Act on the mechanisms for stimulation and evaluation that are operational in each dimension.

## 3. How research is organised

There can be no transfer or valorisation of research where there is no research. It may seem obvious, but it often appears to be assumed unquestioningly that everyone at universities is involved in research, that research is carried out for a purpose, that research groups are well organised, that they have

the critical dimensions, that they are well governed and that their continuity is ensured by a system of replacement of the people who run them in accordance with the aims of the research. The only factor that may sometimes be questioned is whether or not they have the resources that they need to operate on the cutting edge of science or whether their salaries are appropriate to their important social function. Those assumptions are far from unassailable. Research at our universities is in fact optional. Its organisation is often non-existent, or at best improvised. Its dimensions are insufficient and the available resources are largely unsustainable and all too often erratic.

**It often appears to be assumed unquestioningly that everyone at universities is involved in research, that research is carried out for a purpose, that research groups are well organised, that they have the critical dimensions, that they are well governed and that their continuity is ensured.**

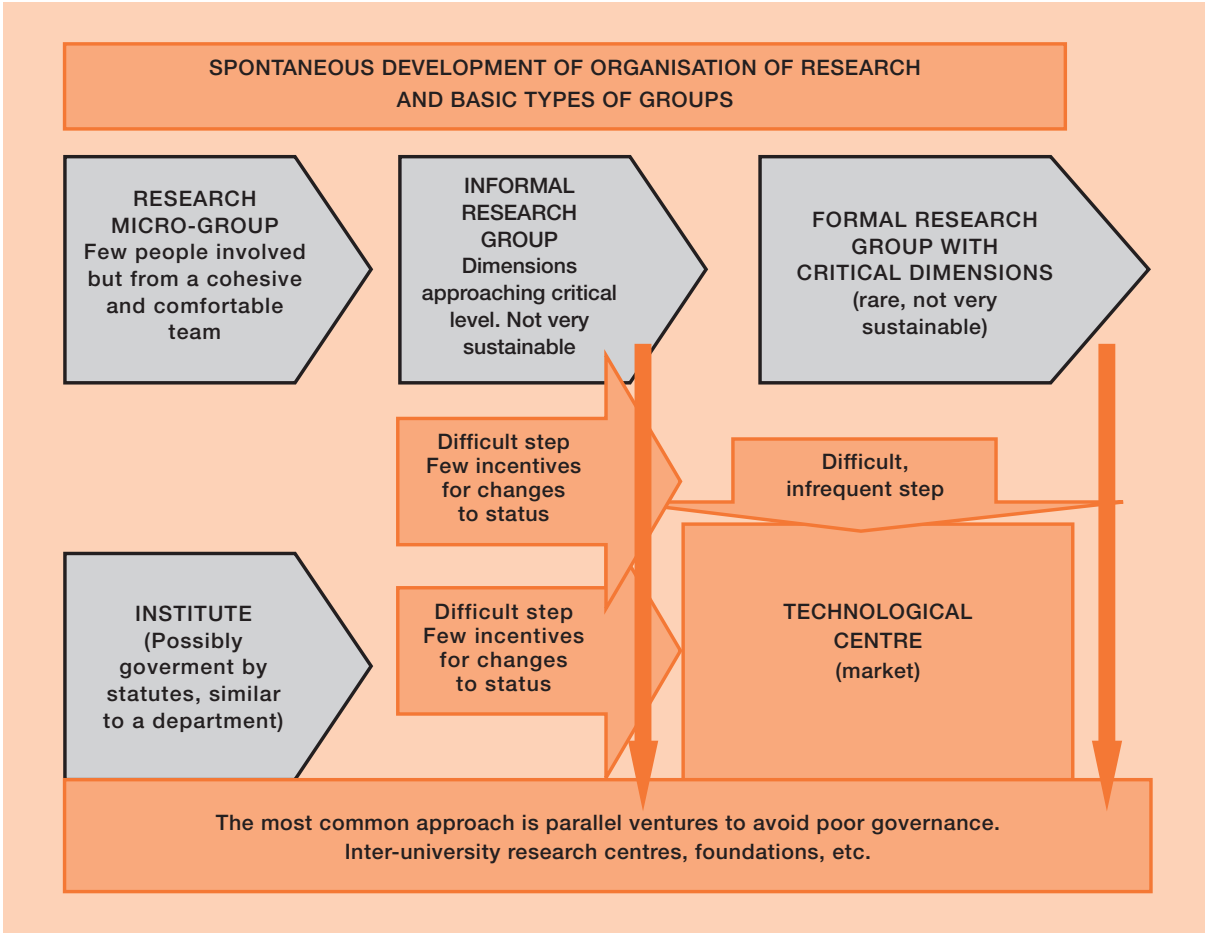
On occasion, an enterprising researcher, in addition to their academic standing and thanks to their capacity for leadership , is able to involve a large number of their colleagues. That leader seeks and obtains funding from here and there and builds up an effective research organisation that can generate more resources to make research easier, allowing attendance at congresses and making it possible for colleagues to visit and work at prestigious universities in other countries. The phenomenon is an interesting one and worthy of study in the context of the sociology of organisations, but it is spontaneous, unplanned and, in any event, neither called for in university standards and nor protected against the vagaries of regulation. It is also obvious that, given that situation, the subject of the critical dimensions of the research strategies of institutions and career plans resemble the literature more closely than they do reality.

Figure 2 shows how research occurs at our universities, given their system of government. That system imposes upon us the peculiar legal framework and the no less peculiar system of accountability and the employment status of lecturers, as “perfected” on the basis of the chain of statutes from those governing the university as a whole through those governing faculties, schools, departments and sections.

Research at universities and in their research environs is organised around six types of groups:

**The research micro-group**. The commonest type of group, made up of a senior lecturer who, thanks to their career, leads a small group of researchers, who are, as a rule, lecturers, doctoral candidates and grant-holders. The group is assembled through the endogenous recruitment of its members by the leader (from grant-holder to doctor, and from there to tenure-track lecturer and perhaps even to full professor). That leader, in addition to sustaining the group’s science, also sustains its funding, whether through agreements or application for grants. The group is further cemented by its confidence in the ability of the leader, who will, as a rule, be a full professor with a certain prestige in their area, to ensure the academic promotion of the group members. The group operates quite independently of department decisions and therefore of department regulations, with certain conflicts in connection with the hiring of grant-holders and with certain reporting obligations, which are increasingly

**Figure 2**
**Types of university research**




unlikely. Consequently, the group is sheltered from any more or less erratic decisions on the part of the university.

**The informal research group**. Where leadership is very powerful and when demand so requires, the micro-group will evolve into a more numerous informal group approaching the critical dimensions required to sustain the facilities and implement a certain hierarchy with division of tasks above and beyond performance of the basic chores to ensure production of the artices or papers required by agreement. Such a group needs to procure ongoing funding and the leader's work, in both academic and commercial terms, tends to increase. The group will come

under pressure from the department because its dimensions bring it up against the department's statutory restrictions and system of governance. The leader is obliged to maintain frequent contacts with the university government and they are therefore subject, for reasons of hiring of administrative staff and services and facilities, and even for reasons of organisation, to changes relating to replacements of rectors and vice-rectors and their different views of new governments. What is more, since their leadership position depends on such easily questionable or avoidable factors as their academic, commercial or promotional prestige, any dimension could result in the break-up of the group. Their leadership capacity, then, is limited and they are frequently involved in disputes between team members due to circumstances of university sociology, or the psychology of the group members.

**The main option for a formal or informal group with critical dimensions is to distance itself from the university organisation.**

**The formal research group**. The type of research group described above is highly unstable and its maintenance within the structure is difficult. Consquently, the leader and the central core of the group tend to solve that problem either by seeking a certain degree of formal recognition without losing their group status, which will, furthermore, ensure better prospects for funding or by seeking recognition in the form of a different legal status. Therefore, a formal research group is a third type of group that, nevertheless, is not essentially different from an informal group.

**The research institute**. The institute is a way in which a group can be consolidated that, in theory, will provide it with stability, reliable resources and a position in the university's governing bodies. On the other hand, however, it brings the group fully into the statutory framework. That circumstance is seen by many informal or formal groups as a problem in the medium term, since all statutes without exception provide that the director of the institute must be elected by all its members, a category that includes administrative and service staff and students. Thus, unless the group is exceptionally cohesive and small, the department's problems can be reproduced within the context of the institute.

**The composite research group outside the university**. The main option for a formal or informal group with critical dimensions that works in transfer or has academic interests and facilities that require substantial funding is to distance itself from the university organisation through the creation of different figures, as a rule of a composite nature, with groups from other universities, research institutes or entities operated by ministries or other administrative bodies of autonomous communities. There is a variety of legal forms for such groups and the form taken will depend on available opportunities. Such a move will allow groups to consolidate and attain a certain degree of liberty from the actions required by university statutes. These groups are somewhat more closely linked to the market than the informal and formal groups mentioned above. Of course, the financial risk of such groups for the universities and institutions that support them in their boards of trustees or co-ordinating entities is the same as when they were formal or informal groups with employees and large outlays.

**The research centre**. Lastly, some research groups can turn to research centres. This entails total independence from the university and the

financial risk for the university is then, in theory, non-existent. Public funding differs for the different groups but is estimated at 40%, and in any event research centres are considered to operate on the market, with all the corresponding consequences.

Of course, there are more or less ingenious variations on the situation as described above, but we believe that the six groups quite accurately represent the ways in which research is organised.

Might we say then that our country is a desert and research groups are oases? Who does research and why? It is not a desert, nor are there so few groups. In approximate terms, the percentage of university lecturers who perform research that is roughly on a level with international stardards is 30%,[5] and if we were to add a number of doctoral candidates, not necessarily all of them, and a number of grant-holders, the number of people involved is anything but negligible. In any event, the erratic and largely unorganised nature of that research can only produce an output that is also highly irregular, particularly insofar as concerns the functions of valorisation involved in transfer, patents and creation of technology based enterprises as the outcome of researchers' efforts.

The output of research achieved through the initiative of individuals or micro-groups often leads to articles of quality. However, it is clear the other deficiencies in respect of insufficient organisation of the group do not lead to reliable experiments or, of course, prototypes. These are individuals or small groups who, in view of the possibilities offered by the legal framework and the statutes of the universities, have chosen to work in contexts where articles, and even high-quality articles, are possible. Nevertheless, unless there is an effort to change the framework, the system cannot evolve towards laboratories where production follows a sequence that can easily be transmitted to society, whether through transfer, patents or spin-offs.

**Deficiencies in the organisation and governance of laboratories and research groups, as rule, are an insurmountable obstacle to specialisation, consideration of long-term planning, and sustainability of both human and material resources.**

In such cases, which are in the majority, transfer also occurs on a minor scale and is very closely based on the individual, and patents, which are scarce, for the most part need subsequent technical treatment involving substantial effort, and their eventual exploitation is highly complicated.

In the cases of research carried out by personal initiative, efforts at transfer, as well the other forms of valorisation, are small-scale. In short, the deficiencies in the organisation and governance of laboratories and research groups, as rule, are an insurmountable obstacle to specialisation, consideration of long-term planning, sustainability

[5] That figure of 30% is, of course, only approximate and it varies, although not greatly, from one university to another and particularly depending on qualifications and therefore faculties and schools. The figure is the result of a sociology that is imposed by the aforementioned framework. There are no rigorous studies on the subject but if we look at the data given by different information systems, the figure appears convincing. For example, that is the figure arrived at on the basis of the PAR points according to the system used to assess research at UPC, as well as at Jaume I University in Castelló and the universities of Andalusia. The figures for the University of Valencia do not vary greatly from that percentage, and we can therefore reasonably assume that the same is true in general for Spanish universities overall.

of both human and material resources, and ultimately the reliability of the process of the article, experiment consolidation, regularity in transfer, prototypes, patents and spin-offs.

## 4. Valorisation

Valorisation must be understood as the set of actions required to ensure that research results can contribute to the country's economic and social development in the form of wealth and occupation in the most efficient way. This is an important component of the social commitment of research, especialy when it is publicly funded. Research, even the variety that, as we have seen,

**Figure 3**
**Standard programme for valorisation of research**

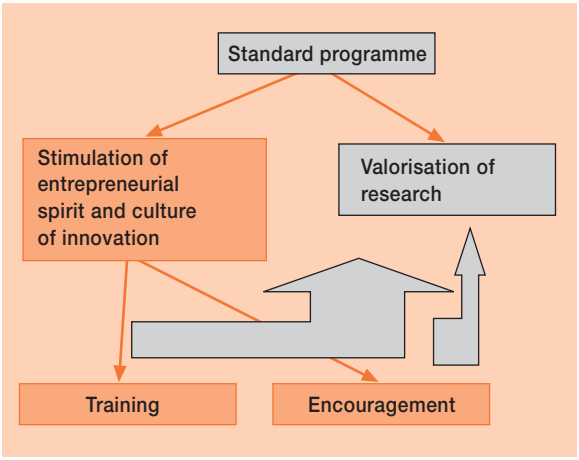
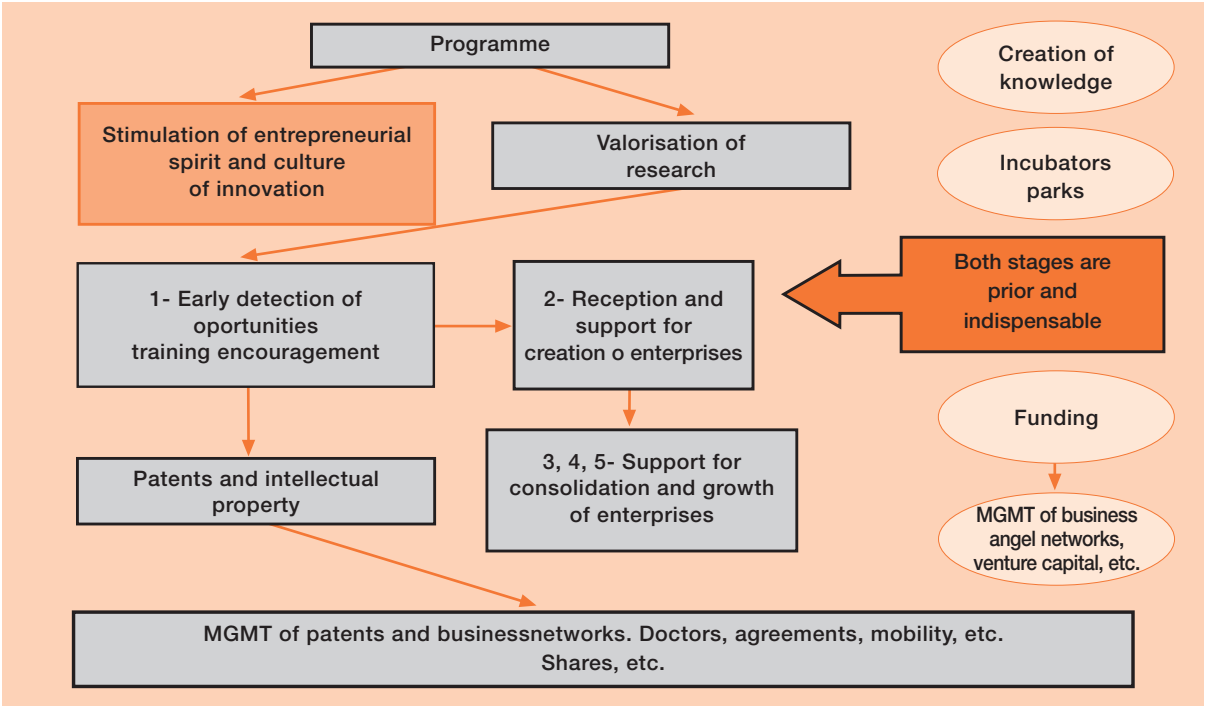



**Figure 4**
**Full programme for valorisation of research**



is often inaccurately referred to as "pure", must eventually reach society.

Thus awareness, the identification of opportunities on the basis of publications, their transformation into prototypes or valorisable objects, analysis of their value, protection of results and their valorisation, whether through grant of licenses for industrial property rights or creation of technology-based enterprises, will ensure that the transfer of the results of prior knowledge represented by articles or experiments has the greatest possible impact in terms of social and economic development.

This is a highly professional task that requires a specific unit. If laboratories were properly organised, that work would be much easier, but as long as research remains personal and research groups remain small, valorisation units will continue not only to have the task of gathering technological opportunities and assessing their suitability for patenting or for a spin-off, but also that of helping to transform ideas into objects that can go through the valorisation process. Thus, valorisation units and programmes have two tasks, the first of which is aimed internally at the university. Here, they need to seek out and identify opportunities and attain the commitment of researchers at the place where they are performaing their research and then work with the researchers to transform those proto-opportunities into valorisable objects. The second

**Figure 5**
**Sequence of processes in programmes for valorisation of research**

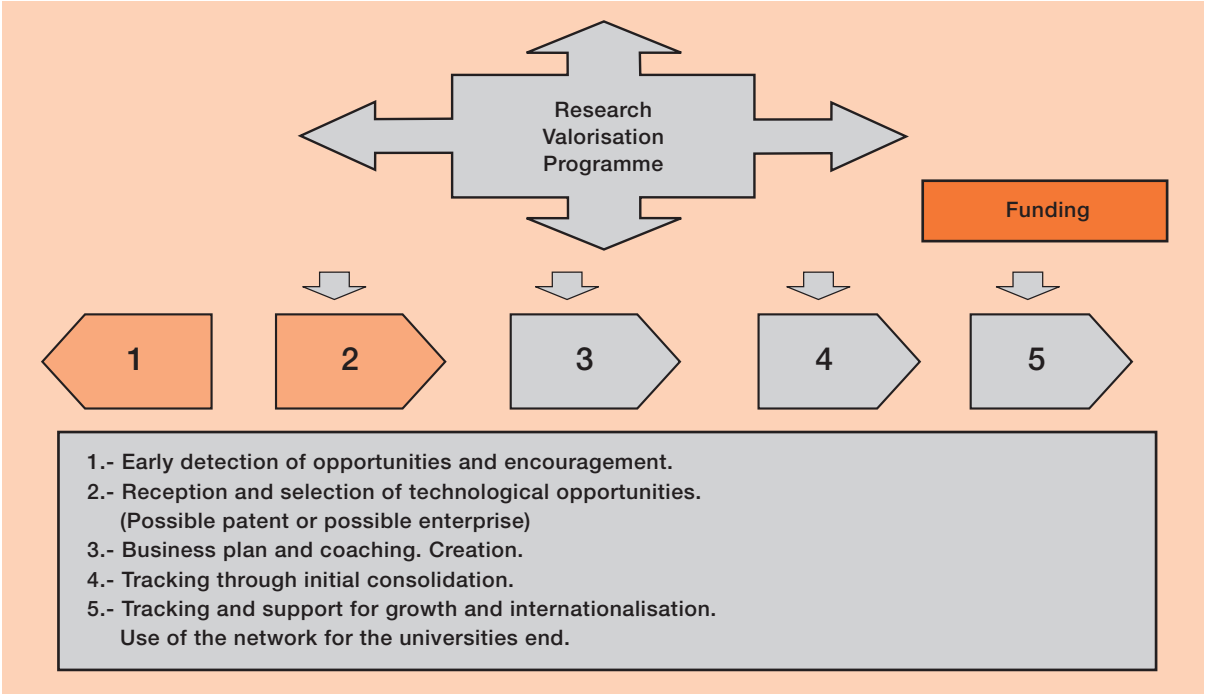
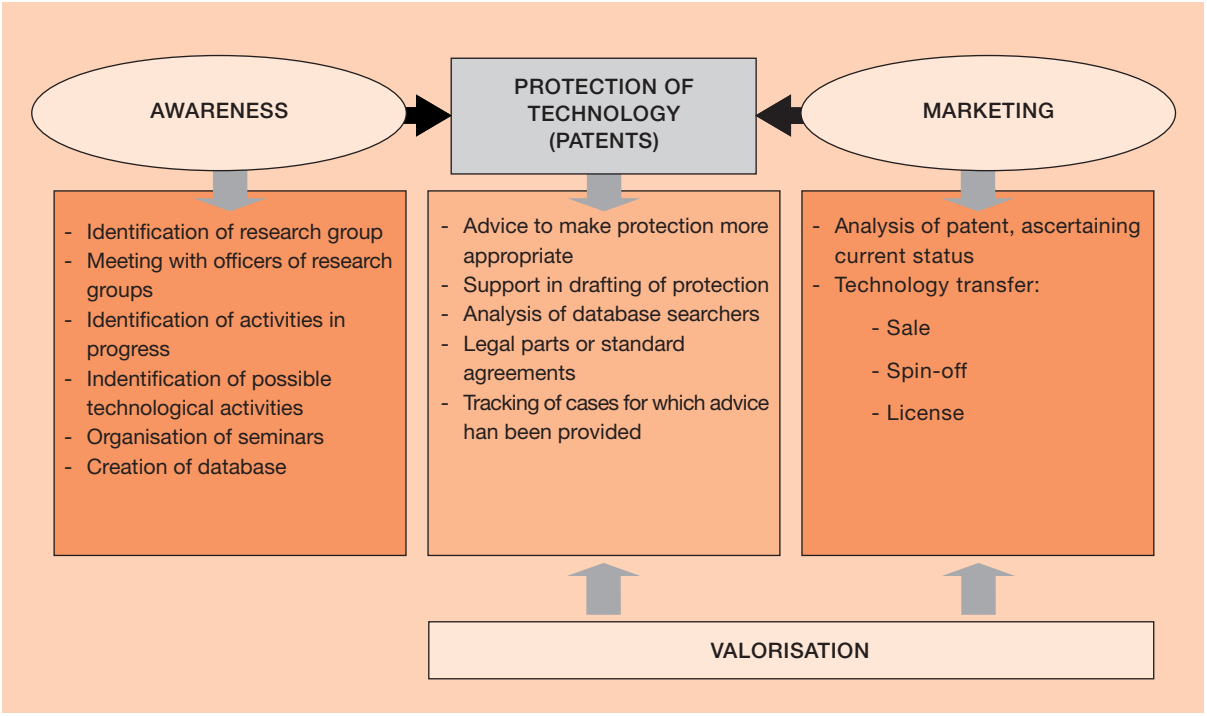


**Figure 6**
**Valorisation: cross-section of the protection and marketing process**




is aimed at the market. Once something valuable and tangible has been obtained, the process begins of realising value on the market through the design of a logical route for patenting, i.e. obtaining a patent and bringing it to the market, or advising and procuring financing for creation of a technology-based enterprise to make use of the technological opportunity once it has been prepared for valorisation.

That is evidently not easy work and it requires substantial human and financial resources, which is the only way to obtain the benefits that, as experience shows, will provide an economic and social return that is much greater than the investment of public funds and efforts.

## 5. Valorisation in Catalonia

It is important that a country can rely upon the ability of its agents to absorb information, transform it and convert it into knowledge. That ability will depend on the relations between the different players in the territory, namely universities, governments and enterprises, i.e. the triple helix mentioned in the first part of this article. The production system must gradually increase its

capacity for innovation at an ever more sophisticated level, in other words a system must be created based on intensive knowledge. In short, the aim is to become what is known as a "learning region".

For that purpose, research at universities must be connected to the production system in order to improve the quality of transfer and contribute to creation of a system of technology-based enterprises with global aspirations, but also to guide the different lines of research. It is not so much a question of the hierarchy deciding what is to be researched, if that were possible, but rather of connecting the two realities so that they can exchange their guiding information and knowledge.

Spain, and particularly Catalonia, occupy an increasingly strong position in the world of publications of proven quality, albeit one that is among the lowest ranked in Europe in terms of marketing of research. That circumstance is due to, among other factors, lack of investment in research activities by enterprises, lack of systematic searches for opportunities with commercial potential, and low investment in patents and creation of spin-offs.

Action has been taken in recent years, at the European level as well as in Spain and Catalonia, to improve the system. That action includes a budget increase for the 7th Framework Programme, larger budgets dedicated by Spain to investment in R&D and Innovation, as seen in the implementation of the National Research and Development Plans and the policy on technology parks, increased funding for implementation of the Catalonia Research and Innovation Plan, and so on.

Nevertheless valorisation requires direct resources and then professionals who, logically, given that this is relatively new field, will have to be created and trained. In recent years the units for creation of spin-offs at Catalan universities have been consolidated and lines of funding have been established to finance new technology-based enterprises. However, more work remains to be done on the subtler details of valorisation of knowledge obtained through university research and there has often been confusion as to what instruments are needed, and even though it may sound clichéd, insufficient resources have been dedicated to the matter.

**Catalonia occupies an increasingly strong position in the world of publications of proven quality, albeit one that is among the lowest ranked in Europe in terms of marketing of research**

## 6. Current views

In order to attain a valorisation of research that leads to an increase in competitive edge and in prosperity and the quality of life in Catalonia, we need to ensure the existence of an environment that is particularly favourable for creation of technological opportunities. We need to improve the organisation of research where it is carried out, consolidate research valorisation units and provide them with resources so that they can systematically identify opportunities early on, enhance the reception of those opportunities and stimulate market orientation and assumption of risk in their marketing.

In addition, the production system must improve its ability to formalise demand at universities and in order for that to be feasible there must be a sustained increase in R&D efforts.

In order to apply those reasonings, certain specific actions need to be taken, including the following:

– Strengthen the function of assessment of university research to facilitate creation of models for a share in the benefits of marketing by universities.
– Create units and networks specialising in knowledge for valorisation of research.
– Create technology prospecting structures based on close co-operation between universities and enterprises, setting up system for feedback between the production system and universities.
– Increase investment in patents and creation of spin-offs.

In short, we need to attain both the soft and hard competencies that universities need so that they can anticipate the necessities of a changing and globalised world. Nevertheless, without a joint effort on the part of governments, universities, enterprises and researchers themselves, we will not be able to achieve the genuine cultural change that must serve as the basis for the knowledge economy.

In other words, we need an extensive, complete and professional valorisation system that will contribute to peformance of the third function of universities, which is indispensable for an innovative and competitive production system, in which universities and enterprises share common ground.

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# THE EU DIPLOMA SUPPLEMENT AS AN INSTRUMENT FOR THE RECOGNITION OF QUALIFICATIONS AND THE MOBILITY OF UNIVERSITY GRADUATES

**Pere Torra i Pla***

**The EU diploma supplement is one of the mechanisms being used to resolve various issues currently being dealt with in higher education in Europe, such as, for example, the order of precedence amongst degree holders from educational systems in different countries. An analysis is made of the diploma's function as an instrument to facilitate the academic and professional recognition of qualifications and the competences acquired during the study period, irrespective of the country or system in which the educational process has taken place. The specific aims of the EU diploma supplement, which forms part of the portfolio of Europass documents, is described, together with its basic content, the role of language/s, and the diploma supplement's main formal characteristics. The situation regarding the recognition of higher degrees in Spain is also analysed, with special reference given to the latest regulations adopted and the Lisbon agreement on the recognition of foreign qualifications. The article also describes the prospects for the effective implementation of the EU diploma supplement in Catalonia and the main conclusions regarding the diploma supplement in general.**

## Abstract

1. Introduction: "So there was a German, a Frenchman and a Catalan…"
2. The EU diploma supplement within the framework of the Europass portfolio
   2.1. The Europass documents
   2.2. Specific aims of the EU diploma supplement
   2.3. Structure: the eight sections of the EU diploma supplement
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   2.5. Formal aspects of the EU diploma supplement

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3. The diploma supplement and the recognition of university degree qualifications
3.1. The Lisbon agreement on the recognition of foreign qualifications, 1997
3.2. The latest developments regarding the recognition of qualifications in Spain
4. Prospects for effective implementation in the university system in Catalonia
4.1. An EU diploma supplement for non-European degree programmes?
4.2. Operational difficulties
5. Conclusions

## 1. Introduction: "So there was a German, a Frenchman and a Catalan..."

"So there was this German, a Frenchman and a Catalan sitting on top of a plane...". This is one way of introducing a certain type of joke that plays with national idiosyncrasies. Not always really funny, they seek to exploit the humour in supposed stereotypes that characterise a particular country and normally end up ironically attributing the nationality/ies in question with some form of inherent ingenuity or stupidity.

Within the field of European higher education and education in general, the diversity of systems that are in force in different countries produces a great variety of idiosyncrasies that stand in the way of understanding and, in fact, lead to misunderstanding. Diversity is of course not negative in itself. Quite the opposite: it is a necessary factor that greatly enhances the whole. There is a wide consensus, however, about the advisability of promoting mechanisms that, while maintaining this diversity, make it compatible with comparability and reciprocal understanding. This means overcoming the type of misunderstandings alluded to in the joke referred to above without trying to homogenise different national characteristics and traditions or, more importantly, affecting the development of culture/s and language/s involved in the process of education.

**How can precedence be established between degree holders from educational systems in different countries?**

So, for example, if a particular institution wishes to offer scholarships to people who have studied in particular countries, how can it be sure that people with more and better academic merits are treated fairly? Or in the selection of students for a postgraduate or PhD study programme, for example, how can precedence be established between degree holders from educational systems in different countries? Or if a company interviews various university degree holders for a job, how can it distinguish the professional competences of

candidates of different nationality, such as Rumanian, Swedish or Catalan?

**The Europass document portfolio is a series of documents that citizens can use to present their qualifications and competences at important times in their careers.**

The article firstly characterises the EU diploma supplement as one of the mechanisms for resolving these issues and analyses its function as an instrument for facilitating the academic and professional recognition of qualifications and competences obtained by an individual, irrespective of the country or system in which the educational process has taken place. After establishing the context of the EU diploma supplement within the Europass document portfolio, a description is given of the specific aims of the European supplement, its basic content — with special emphasis on the most important section, which is on content and the results obtained by the holder—, the role of language in the European supplement and its main formal features. The situation regarding the recognition of higher degrees in Spain is then analysed, with special reference to the most recent regulations adopted, which have partially extended the authority of the universities, even though Spain is one of the few European countries that has still not endorsed the Lisbon agreement on the recognition of foreign qualifications. A description is then given of the prospects for the effective implementation of the EU diploma supplement in Catalonia, with special attention given to the difficulties arising during the initial stage. The last section gives the author's conclusions.

## 2. The EU diploma supplement within the framework of the Europass portfolio

### 2.1 The Europass documents

In recent years, and particularly following the impetus of the Bologna Declaration in 1999, numerous projects and actions have been carried out within the framework of the institutional proceedings of the European Union, as well as others dealing with Europe as a whole and at the international level, to increase the transparency of people's qualifications and skills (or competences, as they have become termed). It is believed that this increased transparency will facilitate mobility in Europe and all over the world, both for learning purposes and the practice of different professions in different countries and sectors. Needless to say, increased mobility is indissolubly linked to an improvement in the quality of training and the aptitudes acquired by people, which must in turn contribute to their competitiveness, in the terms of the so-called (and frequently referred to) Lisbon strategy.

One of the initiatives that seeks to develop this transparency is the Europass document portfolio,[1] which consists of a series of documents that citizens can use to use to present their qualifications and competences at important times in their

[1] See Decision no. 2241/2004/EC of the European Parliament and of the Council, of 15 December 2004, on a single Community framework for the transparency of qualifications and competences (Europass), Bulletin of the European Union, 31/12/2004.
Available from: http://europa.eu.int/eur-lex/lex/LexUriServ/site/eu/oj/2004/1_390/1_39020041234en00060020.pdf.

personal careers, such as making an application for a learning activity (from a short course to admission to a PhD study programme), or applying for a job. Pursuant to Decision no. 2241/2004/EC, the five Europass documents at the present time are:

– Europass CV.
– Europass mobility.
– Europass diploma supplement.
– Europass language passport.
– Europass certificate supplement.

This is not an exhaustive list and in fact the above-mentioned Decision envisages the appearance of other documents, provided that they fulfil certain requirements concerning their relevance, that is, that they actually represent an improvement in the transparency of competences and qualifications, the European and international dimension, and the viability and scope of language recognition. This article focuses on the description of one of these Europass documents, the Europass diploma supplement, also known as the EU diploma supplement, which is the form adopted according to Spanish legislation.[2] Nevertheless, it is of interest to summarise the basic information regarding the other four documents, details of which are given below.

The Europass curriculum vitae or Europass CV is undoubtedly the most far-reaching and ambitious document. It offers citizens a model for presenting their skills and qualifications in a systematic, chronological and flexible way. As the name indicates, the Europass CV enables a person to present an overview of his or her education, work experience, and personal abilities and skills acquired throughout the person's life, as well as skills acquired outside official educational institutions (language skills, technical, social, organisational and computer abilities and skills, artistic abilities, driving licence, etc.). The Europass Mobility document is a personal document that is used to record an organised period of time (a mobility experience) or learning itinerary that a person spends in another European country for the purpose of learning or training. It contains information regarding the education and training or work experience acquired during the training itinerary, irrespective of whether this leads to a certificate or formal qualification or not. The Europass Language Passport, which forms part of the European language portfolio, is a document in which individuals can record their language learning and relevant cultural experiences and skills. Designed to enhance the motivation of individuals so they can improve their ability to communicate in different languages and to pursue new learning and inter-cultural experiences, it shows the level of skill that the person has attained in foreign languages according to internationally comparable parameters. The Council of Europe definition of these parameters has been widely disseminated.[3] In addition to providing information, the document has also been designed to enhance the motivation of individuals to improve their ability to communicate in different languages and to pursue new learning and inter-cultural experiences. The

[2] Royal Decree 1044/2003, of 1 August, which establishes the procedure for universities to issue the EU diploma supplement (Official Bulletin of the Spanish State, BOE no. 218, of 11/9/2003, Catalan language version in the Catalan Supplement no. 19, of 1/10/2003, in Catalan).
Available from: http://www.boe.es/boe_catalan/dias/2003/10/01/pdfs/A03596-03601.pdf.

[3] This refers to the common European framework of reference for languages, the aims of which, in terms of language, are very similar to those of the EU diploma supplement regarding degree qualifications. The setting up of a framework for languages began before this, however, as this was based on the conclusions of a symposium held, at the initiative of the Swiss federal Government, in Rüschlikon in November 1991, the most outstanding features of which were:
"the desirability of introducing a common European framework of reference for language learning at all levels:
- to promote and facilitate co-operation among educational institutions in different countries.
- the mutual recognition of language qualifications.
- to assist learners, teachers, course designers, examining bodies and educational administrators to situate and co-ordinate their efforts". See Council of Europe (2000), p. 11-12.

Europass Certificate Supplement is delivered to people who hold a vocational education and training certificate; it provides additional information to that which is already included in the official certificate, making it more easily understood, especially by employers or institutions outside of the issuing country. This is a kind of EU diploma supplement that refers not to university education but to professional training. In addition to this information, the Certificate Supplement includes details of any skills and competences acquired and details of occupations the holder is qualified to perform.

**For documents that certify a person's academic qualifications, it is no longer sufficient to just translate the documents —sworn translations or not—, with, in certain cases, enclosed jurats and diplomatic legalisations.**

As is mentioned further on, the Europass documents are merely instrumental however and by no means do they ensure the comparability of the level of qualifications. Development of the Europass documents is therefore ultimately linked with the setting up of the European Qualifications Framework. In the words of the European Commission, in a proposal for a Recommendation of the European Parliament and of the Council on the establishment of the European Qualifications Framework for lifelong learning (EQF), dated 5 September 2006:

"The future development of Europass will need to reflect the establishment of the EQF (European Qualifications Framework). All relevant Europass documents, in particular the Europass diploma supplement and the Europass certificate supplement, should contain a clear reference to the appropriate EQF level".[4]

### 2.2 Specific aims of the EU diploma supplement

The questions posed in the introduction become highly important in a world where people's mobility and all types of exchange between countries are increasing at great speed. Available mechanisms for dealing with this up until now have been overtaken by events. It is no longer sufficient to just translate the documents —sworn translations or not—, accompanied in certain cases by jurats and diplomatic legalisations. Documents certifying a person's academic qualifications that are presented in this way only provide information on a study programme or curriculum normally understood to be a mere list of subjects in a certain disciplinary field and it can only assure the fact that a legally established institution in a particular country exists and, if one is lucky, the appropriateness of the formal competence and reliability of the academic authorities that endorse it. If, on the other hand, one is unaware of the structure of the country's educational system and the issuing institution, these documents do not reveal very much about the qualifications and competences of the holder of a particular academic qualification. When all is said and done, it is impossible to know exactly what the person has learned and, above all, is capable of doing in an academic or professional environment on obtaining the corresponding qualification, according to the terms in which Purser considers the results of learning to be a key element for the recognition of degrees:

[4] EUROPEAN COMMISSION, 2006 p.4.

"Learning outcomes are important for recognition, since the basis for recognition procedures is in the process of shifting from quantitative criteria such as the length and type of courses studied, to the outcomes reached and competencies obtained during these studies. The principle question asked of the student or graduate will therefore no longer be "what did you do to obtain your degree?" but rather "what can you do now that you have obtained your degree?". This approach is of more relevance to the labour market, and is certainly more flexible when taking into account issues of lifelong learning, non-traditional learning, and other forms of non-formal educational experiences".[5]

The aims of the EU diploma supplement consist in overcoming these doubts and to deal in a satisfactory way with the questions posed in the introduction and others not expressed here. In short, the diploma supplement seeks to help third parties understand the qualifications and skills accredited to the person issued with the supplement, without the need for extensive knowledge of the educational system in which it was acquired.[6] In essence, the EU diploma supplement, in relation to academic exchanges and the mobility of university graduates, can play the same role as the euro does for economic transactions between different countries. As with the European currency, the EU diploma supplement is a neutral phenomenon, i.e. it imposes no obligations regarding recognition of the qualifications that it describes. The recipient body or company presented with the European supplement can freely decide how it deals with the information on the person accrediting the qualifications, although in a more accurate way because it is more in a position to know full well. This will undoubtedly facilitate mobility because it eliminates a highly significant obstacle, namely, the relative opaqueness that characterises each system in relation to any another. For this reason, the term transparency appears frequently in the described aims of the supplement.

**If one is unaware of the structure of the country's educational system and the issuing institution, the documents that certify a person's academic qualifications do not reveal very much at all about the qualifications and skills of the holder.**

### 2.3 Structure: the eight sections of the EU diploma supplement[7]

The structure of the EU diploma supplement is relatively simple and is made up of eight sections, as in table 1:[8]

[5] PURSER, L. (2002) p.5

[6] This undoubtedly makes more sense when the countries in question have different educational systems, although it may also be useful for qualifications obtained in the same system and in neighbouring institutions, given the simplicity with which certificates and other informative documents are customarily issued in higher education.

[7] To analyse the sections, we took into account the conclusions of the document drawn up by the SETCAT working group formed on 16 June 2005, that consisted of representatives from the Catalan universities that participate in the decision-making process on university studies being offered in Catalonia (*Programació Universitària de Catalunya*) and the former Ministry for Universities, Research and the Information Society (DURSI), at the request of the CIC's (InterUniversity Council of Catalonia) committee for academic programming and planning (*Comissió de Programació i Ordenació Acadèmica*). The members of the working group were Paquita Blázquez (UB), Aurora Contreras (UAB), Paco Navallas (UPC), Pau Solà (UPF), Vicenç Segura (UdG), Danae Sarradell (UdL), Àngels Olivé (URV) Carles Ramírez and Carme Uroz (UOC), Anna Cervera (URL), Montserrat Vilalta (UVic), Manel Messeguer (UIC), Joan Bravo (DURSI), Montserrat Solé (DURSI) and Pere Torra (DURSI).

[8] See article 7 and annex IV of the above mentioned Decision no. 2241/2004/EC. For the Spanish regulation, see article 4 and annexes I and II of the abovementioned Royal Decree 1044/2003, of 1 August.

The key element of all these sections is without doubt section 4, on "Information on the content and results gained". This section is the most specific and presents the most valuable and interesting information for the recipient of the document. Special attention is thus given to this section. Information in the other sections, which can be consulted at the sources quoted, is not especially innovative although care has been taken to ensure that the information is contextual, thereby enabling it to be comprehensible to a third party —normally in a different country— who is unfamiliar with the system in question.

**The recipient body or company presented with the European supplement can freely decide how it deals with the information on the person accrediting the qualifications.**

**Table 1**
**Sections of the EU diploma supplement**

| |
|---|
| 1. Information regarding the holder |
| 2. Information identifying the qualification |
| 3. Information on the level of the qualification |
| 4. Information on the content and results gained |
| 5. Information on the function of the qualification |
| 6. Additional information |
| 7. Certification of the supplement |
| 8. Information on the national higher education system |

Aside from section 1, which gives the personal particulars (name and surname, date of birth, etc.), section 4 is the only one that contains personalised, individual information in that it records the information on the academic results obtained by the holder. Given the information systems available to universities and higher education institutions in Europe, the representation of the results obtained by a person at an institution throughout their period of study should not be that difficult. Nevertheless, one must bear in mind that the information on the holder asked for in section 4 includes (i.e. is not isolated from) the context in which it has been produced. The only way that the academic results obtained by a person can be correctly understood is obviously only in relative terms, and their interpretation by third parties should not require a complex exercise involving accounting or arithmetic.[9] In addition to each graduate's results, the EU diploma supplement also requires that the distribution of qualifications in the series of courses in the curriculum corresponding to the holder's student cohort and the previous one is included, as we shall see further on.

The subheadings in section 4 are given below in table 2 and, because of their importance, various brief comments are made.

With regard to section 4.1, "Mode of study", our opinion is that the Spanish Royal Decree does not succeed in dealing with this correctly, at least as far as what has been understood in other countries. In most countries, as far as we know, a distinction is made under Mode of study between full and part time studies.[10] Under this subheading, the distinc-

[9] As Guy Haug very accurately states (1997), p. 1: "The first function of grades is to convey a message, and the real challenge in interpreting foreign grades is to render that same message in a different language".
[10] See, for example, the supplements of Germany, Ireland, Portugal, Rumania and Slovenia at *http://europass.cedefop.eu.int/htm/index.htm*. In the Irish supplement under *mode of study*, the term *full-time* is given. In the Portuguese case, under the expression *regime de estudos* the equivalent Portuguese term *tempo inteiro* is given.

tion made by both the Spanish Decree Order and the form approved by the Coordinating Council of Spanish Universities is between classroom-based, distance learning or mixed. This distinction does not specify the values that correspond to the various types, given that many training programmes which are mainly classroom-based envisage distance learning activities and, vice versa, distance learning programmes may involve certain activities where the presence of the student is required (for example, assessment), although in neither case are they considered to be mixed programmes.[11]

**Table 2**
**Subheadings in section 4, "Information on the contents and results obtained"**

| |
|---|
| 4.1. Mode of study |
| 4.2. Programme requirements |
| 4.3. Programme details |
| 4.4. Grading scheme |
| 4.5. Overall classification of qualification |

Although the fact that the classroom-based nature of a programme is an interesting factor, we believe it advisable to also take into account the distinction between full and part time study for the very reason that, even though there are many part time students studying at Catalan universities, there is very little formal, express recognition of part-time studies. This would be highly appropriate and, in our opinion, the universities should make the effort to adapt study programmes to the different profiles of students that are admitted and not the reverse.

**In addition to each graduate's results, the EU diploma supplement also requires that the distribution of qualifications in the series of courses in the curriculum corresponding to the holder's student cohort is included.**

On the other hand, section 4.2 on "Programme requirements" incorporates the generic requirements of the programme, according to the curriculum approved by the university. One of the problems we find with this subheading and the following two in relation to the European supplements of other countries is the fact that, in the case of the Spanish regulation, it is a European supplement for degree qualifications that were applicable when the Royal Order was published in September 2003, and the information refers to degrees that are lacking both the structure and characteristics deriving from the principles of the Bologna Declaration.[12] They

[11] As a way of resolving this, a programme can be considered to mixed when there is a figure near to, but not more than, 30% for activities of a non-classroom based nature. In this case, as a way of ensuring that the adjective is understood, the term "Mixed: classroom-based and distance learning" is suggested. One must also bear in mind that Royal Decree 779/1998, of 30 April (Spanish Official Bulletin, BOE no. 104, of 1/5/1998), which modified the general guidelines for curricula, established a maximum percentage for guided academic activities that can be attributed to credits; in practice, 70 % of the ten hours that make up one credit would have to be dedicated to either class-based theoretical or practical work, apart from the distance learning universities. In accordance with article 2.7, subsection two, of the Royal Decree:
"With the exception of university distance learning courses, the credit percentage corresponding to guided distance learning academic activities must in no case exceed thirty percent. The credit equivalence of the remaining subjects may differ to that given in the previous paragraph".

[12] The first officially recognised degrees to be offered in Catalonia under the fully adapted European Higher Education Area (EHEA) structure are the recognised Masters programmes that began this academic year (2006-2007). See Order UNI/203/2006, of 18 April, concerning the implementation of officially recognised postgraduate programmes (Master's and PhD degrees) approved within the framework of university planning in Catalonia, for 2006-2007, at public and private universities, respectively (Official Bulletin of the Autonomous Government of Catalonia, DOGC no. 4623, of 28/4/2006). Nevertheless, one should remember that, since the 2004-2005 academic year, Catalan universities have offered different university-awarded (as to officially recognised) qualifications that fully comply with the European structure and are based on the structure currently in force within the framework of the Pilot Plan for adapting degrees to the European Area of Higher Education, two runs of which have already been programmed. The first agreement was signed on 14 May 2004 between the Ministry for Universities, Research and the Information Society (DURSI), the Agency for Quality Assurance in the Catalan University System (AQU Catalunya), and the Catalan universities.

therefore do not correspond with the undergraduate and postgraduate structure and do not use a comparable system of credits like the ECTS, etc.

**In the case of Spain, the information on the generic requirements of programmes refer to degrees that lack both the structure and characteristics deriving from the principles of the Bologna Declaration, that do not correspond with the undergraduate and postgraduate structure and do not use a known comparable system of credits like the ECTS.**

Section 4.3 on "Programme details" gives the list of courses that the holder has passed, together with the attributes that are usually given: teaching hours, which, as we have already said, is normally obtained from the number of credits multiplied by the set conversion factor (ten hours[13] unless another equivalency expressed in the curriculum or an EU directive is given), the qualification and academic year in which the course was passed. Lastly, there is also a box for observations on many different aspects regarding the subject, including how the subject has been passed (validated, taken in mobility programmes, recognised hours, etc.); if a language other than Catalan or Spanish was used on the course; under admissions to the second cycle, the specific character of complementary credits can be entered, which are compulsory credits for these students, etc. Information on other aspects relevant to the holder's record could also apparently be added under this subheading, such as the mode of study (class-based, distance learning, and mixed); specialisations; specific form of admission to the programme;[14] etc.

Section 4.4 on the "Grading scheme" contains information of great interest for contextualising the results obtained by the holder of the supplement in relation to the results obtained by graduates in the same subject from the same university over the two previous years. These details are logically obtained from the qualifications, weighted according to the credits passed, of all graduates of the same year and the year prior to when the holder graduated. The question of weighting is important for the very reason that a qualitative system (fail, pass, good, excellent and with distinction, *matricula de honor*) was replaced by a quantitative one (a numerical scale from 0 to 10, with one decimal point) in modifications made to the university qualifications system in 2003.[15] Although the new system is more refined and has an appropriate academic tradition even in non-university education, the universities may have difficulties with the weighting of qualifications and obtaining averages due to the coexistence of different systems, which could be resolved by way of a process of qualification conversion.

Section 4.5 on the "Overall classification of qualification" establishes an overall average for

[13] See article 2.7 of Royal Decree 1497/1987, of 27 November (Spanish Official Bulletin, BOE no. 298, of 14/12/1987), amended by Royal Decree 779/1998, of 30 April (Spanish Official Bulletin, BOE no. 104, of 1/5/1998).
[14] This information may be useful for helping the recipient body or enterprise to understand that it is possible in the Spanish system for one graduate to have 300 credits, and for another who has entered directly into the second cycle of the same study programme to have done so with only 150 credits from the curriculum.
[15] See Royal Decree 1125/2003, of 5 December, which establishes the European credit system and the system of qualifications for university degrees officially recognised at the national level in Spain (Spanish Official Bulletin, BOE no. 224, of 18/9/2003; Catalan language supplement no. 20, of 16/10/2003).
Available from: http://boe.es/boe_catalan/dias/2003/10/16/pdfs/A03679-03680.pdf (in Catalan).

the qualifications obtained by the holder weighted according to the number of credits per subject. The numerical scale used (pass: 1; good: 2; excellent: 3; and with distinction: 4) is, curiously enough, not the one adopted recently in the abovementioned Royal Decree on qualifications that was published one week later. Nevertheless, one can understand how this corresponds to the idea of using a temporary bridging system that provides for conversion between the qualitative and quantitative systems that currently coexist in Catalan universities.

### 2.4 Language and the EU diploma supplement

The inclusion of language in the EU diploma supplement involves two aspects. On the one hand, there are references to the language in which corresponding subjects are given, which also must be entered in the supplement, and, on the other, the language or languages in which the supplement itself, as a document that accredits certain specific academic qualifications, is issued.

With regard to the latter, and as to be expected in academic circles, English is predominant as far as the language used. According to the EUA report Trends IV :

"All HEIs (High Education Institutions) in the study planned to issue the Diploma Supplement in English, with some also in the national language(s) (in Austria, Finland, Italy, Lithuania, Poland, Slovenia, Spain and Sweden). One HEI plans to issue the Diploma Supplement in three languages and one, upon request, is willing to issue it in all official EU languages".[16]

The presence of English is in fact widespread and tends to be supported just with a version in one or more national language(s). In the case of Catalan, and in accordance with the regulatory framework mentioned various times above, three languages are used: Catalan, Spanish and English. These three languages all have to appear on an equal basis as in any multilingual documentation, in particular reference to Catalan, which is of lesser diffusion, and, according to the Coordinating Council of Spanish Universities's document on criteria, would otherwise be relegated to an annex:

**In the case of Catalan, a tri-lingual supplement (in Catalan, Spanish and English) is used, all of which must appear on an equal basis.**

"The form is compact and easy to use, and any information that does not fit on four pages may, —as in other official documents— be included in an annex with the supplementary information (for example, with the translation into the co-official languages)".[17]

Moreover, the language services in the Catalan universities, together with the former Catalan Ministry for Universities, Research and the Information Society (DURSI), have developed a joint project to translate officially recognised degrees into Catalan, in addition to the fields of study and corresponding professional qualifications. As for the names of the subjects in the curricula, it is logical for these to be determined by each university in all of the relevant

[16] See REICHERT, S. and TAUCH, C. (2005) p. 33.
[17] See CONSEJO DE COORDINACIÓN UNIVERSITARIA (2005), *Criterios*…, p. 1. Subsequent to this document, the Coordinating Council of Spanish Universities did produce a tri-lingual form, where the three languages appeared as we have described here.

languages, given that the names used in different universities do not always coincide, even for core subjects and also despite the fact that the degree programme is the same.

**The Spanish Royal Order accepts that universities located in the regional Autonomous Communities with their own co-official language may also issue diploma supplements in their own language.**

Despite the fact that English is predominant, neither the abovementioned Decision no. 2241/2004/EC nor Royal Decree 1044/2003 make the use of English compulsory. The European ruling just says that the form is available in the official languages of the European Union. The Spanish Royal Order, on the other hand, is much more restrictive[18] and in general envisages that the languages to be used are Spanish and "another official language of the European Union that the university shall determine", although a following clause in the same section restricts this even more by entrusting the Coordinating Council of Spanish Universities to approve "standard diploma supplement forms in the most commonly used official languages of the European Union". As the European supplement —and the entire Bologna process itself— is a pan-European, and even world-wide, project, it is inappropriate and unnecessary, from the conceptual point of view, to limit this to the languages of an organisation of reduced scope that is the European Union (in terms of Europe, it excludes, for example, the possibility of the use of a widely-used language like Russian, and outside of Europe, Arabic, Chinese and Japanese). Moreover, the idea of "most commonly used languages", in spite of it being due to the commendable intention of choosing the maximum diffusion and comprehensiveness, which is the ultimate purpose of the European supplement, introduces a non-specific legal concept that will always be an inconvenience. Leaving aside the meaning of the use of language, it is easy to agree on the fact that Maltese, Estonian or Luxemburgeois, for example, do not belong to the category of most commonly used languages, although it is more difficult to say the same in the case of Polish of Dutch.[19] On the other hand, an interpretation according to the use of language in relation to geographical scope could lead to the paradoxical exclusion of Portuguese, which is a relatively little used language in Europe but one that is used widely around the world. In short, the wording of this section of the Royal Decree is flagrantly inadequate and reveals the excess regulatory zest to which Spanish legislation frequently resorts. The problems do not stop here, however: three years have passed since the Royal Decree was passed yet the Coordinating Council of Spanish Universities has still not implemented the task assigned to it, nor has it approved any form for the supplement in other languages, other than English, which predetermines that even now it cannot be issued in other languages, even though the universities are capable of doing so.[20] The Spanish Royal Decree does finally

[18] See article 7.4 of Royal Decree 1044/2003, of 1 August, which is referred to on numerous occasions.
[19] The Polish language is spoken by 44 million people, a similar number to that of Spanish speakers in Europe; 21 million people speak Dutch.
[20] It is surprising that the Coordinating Council of Spanish Universities considers that it has completed the task of translating the supplement into different European languages with the translation just into English, as is expressed in section b of the abovementioned document on the standards. This diminishes the universities' autonomy because it is the universities themselves that determine the European language that they wish to use, although they are not authorised to produce their own version. In order to surmount the Council's inactivity, the Minister of Education and Science could make use of the second final provision of the Royal Order, which empowers the Minister to modify the format and forms of the EU diploma supplement that appear in the annexes.

accept however that universities located in the Autonomous Communities with their own co-official language may also issue diploma supplements in their own language.[21]

Up until this point, we have only dealt with the languages in which the supplement is issued. The other linguistic aspect involves the language or languages in which the academic activity, for which the European supplement is the documentary support, takes place. This aspect appears in section 2, which gives the information on the entire degree programme. In particular, section 2.5 is for the "language/s used in teaching and examinations", and the Royal Decree 1044/2003 of 1 August adds to this that, where applicable, the percentages must be given for teaching in Spanish or the corresponding co-official language and other languages, provided that at least one subject has been taught in the language. Precise indication of such a percentage is very difficult.[22] Moreover, given that it is information on the degree programme in general, it should be sufficient to give generic details that are common to all degree holders in each programme, irrespective of the training itinerary, which may lead to a certain linguistic diversity. On the other hand, the information on the language in which the holder has studied each subject is important for the holder as an individual, and this could be entered under "Observations" in section 4.3. This is also a way of recognising the effort of students who take more courses in third languages.

### 2.5 Formal aspects of the EU diploma supplement

In a document where so much information has to be filled out, the presentation and format are also very important. The supplements designed in the various countries which we have received information on use very different formats. For example, in regard to the way that language has been dealt with, there is a diversity of forms that extends from single language supplements to those that use more than one language, and different solutions are given as to the way of incorporating them. The design is also highly variable and some layouts are more schematic in their presentation of information whereas others are more text-based.

In addition to a printed edition, Decision no. 2241/2004/EC also envisages the possibility of the Europass documents in general being made available in digital format, although for computer use a distinction clearly needs to be made between documents to be filled out directly by the person concerned (above all the Europass CV, which should also be made available for completion on-line) and those to be filled out by an authorised body,[23] as in the case of the EU diploma supplement, which must be issued by the HEIs and, in Catalonia, the universities. No proposal is made regarding this aspect in Royal Decree 1044/2003 of 1 August and neither is there any mention of the term on-line.

[21] A broad and strict interpretation of the expression "located in the Autonomous Communities with their own co-official language" should also enable this possibility to spread to the UNED (national distance learning university), with regard to its centres in Spain, even though this institution depends directly on the State, is based in Madrid and does not form part of the university system in Catalonia.

[22] The lawmakers seem to be unfamiliar with Catalan universities in terms of both the partially flexible structure of curricula that —leaving elective credits to one side — include optional subjects in which all of the students in a programme may not necessarily coincide, and the variability of academic staff assigned to teaching activities, who have the free choice to select the language used in the classroom. There are also some universities that, with more than one group of students on the same degree programme, offer special itineraries in English. All of these factors may slightly alter the percentage figure that uses a language from one year to another or even in the differents groups of the same academic year.

[23] In this case, all it requires in Annex VII of the Decision, "Information system", is the use of an open system that ensures interoperability, as well as mentioning the need for the relevant legislation regarding personal data protection to be respected.

In the case of the printed version of the EU diploma supplement, on the other hand, the Spanish lawmakers do make certain specific requirements,[24] two being that the size of the paper must be UNE A4 and safety paper must be used. This requirement for safety paper has led to the Coordinating Council of Spanish Universities establishing certain technical characteristics that we qualify as being *immoderate*;[25] in addition to increasing the cost of production, they make the process of issuing the EU diploma supplement inflexible. In our opinion, these requirements reveal a certain idea of what the European supplement should be, and regarding which there are (at least) two opposing points of view. From the pragmatic point of view, the EU diploma supplement is conceived as being a document that is easy for the student to obtain at low cost, it provides much more information than other documents normally used on the student's learning in a clear and reliable way, and it also does away with the need for translations as it is issued at source in various languages. On the other hand, from what we could call the symbolic point of view, the EU diploma supplement is seen to be a kind of subspecies of degree qualification and, for this reason, should have many of the characteristics that are typical as such: covered with designs (with different coloured inks, watermarks, etc.), safety paper with characteristics that are applied in the manufacture of banknotes, etc., that can easily lead to the document ending up in a frame on the wall. Needless to say, we are of the opinion that the first of the two options is the more preferable, given that the EU diploma supplement must be a document that helps in the dynamic and flexible recognition of the skills, competences and qualifications acquired at different times throughout the professional and/or academic career of the person concerned and not one for merely static exhibition purposes. A metaphorical comparison is made above between the EU diploma supplement and the European currency, the euro, by referring to the possibilities of it facilitating academic exchange and the mobility of university graduates in a somewhat similar way to the effects of the euro on economic transactions between people in different European countries. We had absolutely no idea that the metaphor would become quite literal, to the point where, in order to issue an academic document like the EU diploma supplement, technology similar to that used for printing, for example, 50 and 200 euro banknotes, would be required.

**The EU diploma supplement can be conceived as a document that is easy for the student to obtain at low cost, which provides a lot of information on the student's learning and does away with the need for translations as it is issued at source in various languages.**

Another aspect that reveals the regulatory nature of the ruling in the Royal Decree is the matter of which coats of arms and logos should appear.

[24] See article 7.2 of Royal Decree 1044/2003, of 1 August.
[25] The technical characteristics stipulated by the Coordinating Council of Spanish Universities for the EU diploma supplement are expressed in the following way: "TECHNICAL CHARACTERISTICS OF THE SECURITY MEDIUM: A4 format (folded); 138 gr/m$^2$; highly resistant to wear, neutral pulp under UV light; invisible luminiscent yellow and blue fibrils, visible under UV light; technical gelatin finish on both sides; chemical reagents against the fraudulent modification of laser-printed wording; laminated with polyester for high resistance to wear and tear; high security demetallised hologram on the back (recommended)"

According to the Coordinating Council of Spanish Universities:

"Article 7.3 of the Royal Decree is very clear in pointing out the obligatory nature of the use of the coat of arms of Spain, and the optional nature of the logo of the European Union and the university's coat of arms. The use of the Europass logo does not contravene the article, and its inclusion was accepted at the request of the National Europass Centre on 8 April 2005".

This therefore establishes that at least four coats of arms and logos are to be included, namely, the coat of arms of Spain —which, aside from being compulsory, the Royal Decree also stipulates that it must be bigger than any other one—, the European Union logo, the Europass logo and that of the corresponding university. In our opinion, the only obligatory graphic element should be the university's coat of arms. On the other hand, it is surprising that the inclusion of the logo of the Autonomous Government of Catalonia (Generalitat de Catalunya) is not envisaged, especially if one takes into account that, in accordance with the Catalan Universities Act (LUC), the twelve Catalan universities that make up the Catalan university system[26] were either set up or recognised by legislation passed by the Parliament of Catalonia. At all events, the number of coats of arms and symbols needs to be kept to a minimum in order to avoid confusion.

## 3. The diploma supplement and the recognition of university degree qualifications

### 3.1 The Lisbon agreement on the recognition of foreign qualifications, 1997

As stated on various occasions above, the EU diploma supplement does not itself confer any recognition of qualifications and skills and it merely serves as a comprehensible and intelligible documentary medium that facilitates their comparison. The process of European integration, and international globalisation as well, generates the necessity for the understanding and recognition in one country of the qualifications obtained in another. For this purpose, the Council of Europe promoted a Convention on the Recognition of Qualifications endorsed in Lisbon on 11 April 1997.[27] The Lisbon Convention is highly relevant to the EU diploma supplement as one of the prescriptions of the agreement is the adoption of the EU diploma supplement or another comparable document.[28]

Unfortunately, on the threshold of the tenth anniversary of the Lisbon agreement, Spain has still not signed it. As can be seen in table 3, the only other countries that have not signed it are Andorra, Greece, Monaco and San Marino, states that, with the greatest of respect, can hardly be considered to be benchmarks for university competitiveness or excellence.[29]

[26] See article 2 of Act 1/2003 on Catalan Universities, of 19 February. (Catalan Official Journal, DOGC nº3826, of 20/02/2003, in Catalan). Available at: http://www10.gencat.net/dursi/generados/catala/universitats/recurs/doc/llei1_03_dogc.htm.

[27] The full name of the Lisbon agreement is "Convention on the Recognition of Qualifications concerning Higher Education in the European Region". Lisbon, therefore, lends its name not just to a strategy or agenda with the aim of making Europe into the most dynamic and competitive knowledge-based economy in the world but also to an agreement that forms the basis for the principles of transparency pursued through the EU diploma supplement.

[28] In accordance with article IX.3: "The Parties shall promote, through the national information centres or otherwise, the use of the UNESCO/Council of Europe Diploma Supplement or any other comparable document by the higher education institutions of the Parties".

[29] On 1 June 2005, María Jesús Sansegundo, the then Minister of Education and Science, on informing the Spanish Parliament (Congreso de Diputados) of the achievements that Spain had conveyed to the Bergen Summit, said the following: "It should be pointed out that the advances made since the last conference in Berlin in 2003 can be [clearly] appreciated. Spain has been able to make recent progress, as with the development of the diploma supplement, which graduates in Spain will be able to receive for the first time this year, 2005. Royal Decrees concerning undergraduate and postgraduate degrees were approved in January, as well as the formalities which are already well advanced for the forthcoming signing, finally, of the Lisbon Convention on the recognition of degrees". See: Diary of the sessions of the Spanish Parliament (Congreso de Diputados). Plenary and Standing Committee. VIII Legislature, no. 96. Plenary session no. 91 held on Wednesday, 1 June 2005, p. 4834. Despite the Minister's statement, the agreement has still not been signed although, according to representatives of the current Ministry of Education and Science who have been consulted, this could take place at the end of the year.

**Table 3**
**Situation regarding the endorsement, ratification and entry into force of the Lisbon agreement on the recognition of foreign qualifications by the member states of the Council of Europe and other non-membre states.**

**a) Member States of the Council of Europe**

| States[30] | Signature | Ratification | Entry into force |
|---|---|---|---|
| Germany | 11/4/1997 | | |
| Azerbaijan | 11/4/1997 | 10/3/1998 | 1/2/1999 |
| Bulgaria | 11/4/1997 | 19/5/2000 | 1/7/2000 |
| Croatia | 11/4/1997 | 17/10/2002 | 1/12/2002 |
| Denmark | 11/4/1997 | 20/3/2003 | 1/5/2003 |
| Slovakia | 11/4/1997 | 13/7/1999 | 1/9/1999 |
| Slovenia | 11/4/1997 | 21/7/1999 | 1/9/1999 |
| Estonia | 11/4/1997 | 1/4/1998 | 1/2/1999 |
| France | 11/4/1997 | 4/10/1999 | 1/12/1999 |
| Georgia | 11/4/1997 | 13/10/1999 | 1/12/1999 |
| Hungary | 11/4/1997 | 4/2/2000 | 1/4/2000 |
| Iceland | 11/4/1997 | 21/3/2001 | 1/5/2001 |
| Former Republic of Macedonia | 11/4/1997 | 29/11/2002 | 1/1/2003 |
| Latvia | 11/4/1997 | 20/7/1999 | 1/9/1999 |
| Lithuania | 11/4/1997 | 17/12/1998 | 1/2/1999 |
| Luxembourg | 11/4/1997 | 4/10/2000 | 1/12/2000 |
| Malta | 11/4/1997 | 16/11/2005 | 1/1/2006 |
| Norway | 11/4/1997 | 29/4/1999 | 1/6/1999 |
| Poland | 11/4/1997 | 17/3/2004 | 1/5/2004 |
| Portugal | 11/4/1997 | 15/10/2001 | 1/12/2001 |
| Czech Republic | 11/4/1997 | 15/12/1999 | 1/2/2000 |
| Rumania | 11/4/1997 | 12/1/1999 | 1/3/1999 |
| Sweden | 11/4/1997 | 28/9/2001 | 1/11/2001 |
| Ukraine | 11/4/1997 | 14/4/2000 | 1/6/2000 |
| Moldavia | 6/5/1997 | 23/9/1999 | 1/11/1999 |
| Austria | 7/7/1997 | 3/2/1999 | 1/4/1999 |
| Italy | 24/7/1997 | – | – |
| United Kingdom | 7/11/1997 | 23/5/2003 | 1/7/2003 |
| Finland | 22/1/1998 | 21/1/2004 | 1/3/2004 |
| Switzerland | 24/3/1998 | 24/3/1998 | 1/2/1999 |
| Cyprus | 25/3/1998 | 21/11/2001 | 1/1/2002 |
| Russia | 7/5/1999 | 25/5/2000 | 1/7/2000 |
| Albania | 4/11/1999 | 6/3/2002 | 1/5/2002 |
| Liechtenstein | – | 1/2/2000 | 1/4/2000 |
| Armenia | 26/5/2000 | 7/1/2005 | 1/3/2005 |
| Netherlands | 14/5/2002 | – | – |
| Bosnia and Herzegovina | 17/7/2003 | 9/1/2004 | 1/3/2004 |
| Servia* | 3/3/2004 | 3/3/2004 | 1/5/2004 |
| Ireland | 8/3/2004 | 8/3/2004 | 1/5/2004 |
| Turkey | 1/12/2004 | – | – |
| Belgium | 7/3/2005 | – | – |
| Andorra | – | – | – |
| Spain | – | – | – |
| Greece | – | – | – |
| Monaco | – | – | – |
| San Marino | – | – | – |

* The dates of signature and ratification correspond to the union of Serbia and Montenegro.
Source: Treatry Office of the European Council. See: «*http://conventions.coe.int*»

**b) Non-membre States of the Council of Europe**

| States[30] | Signature | Ratification | Entry into force |
|---|---|---|---|
| United States | 11/4/1997 | – | – |
| Kazakhstan | 11/4/1997 | 7/10/1998 | 1/2/1999 |
| Holy See | 11/4/1997 | 28/2/2001 | /4/2001 |
| Canada | 4/11/1997 | – | – |
| Israel | 24/11/1997 | – | – |
| Australia | 19/9/2000 | 22/11/2002 | 1/1/2003 |
| Belarus | – | 19/2/2002 | 1/4/2002 |
| Montenegro * | 3/3/2004 | 3/3/2004 | 6/6/2006 |
| Kyrghyz Republic | – | 9/3/2004 | 1/5/2004 |
| Tajikistan | – | – | – |

* The dates of signature and ratification correspond to the union of Serbia and Montenegro.
Source: Treatry Office of the European Council. See: «*http://conventions.coe.int*»

**Total number of signatures not followed by ratifications: 8**
**Total number of ratifications/accessions: 42**

The Lisbon agreement is based on the general principle of the reciprocal recognition of equivalent qualifications and is not overly demanding for countries where it is in force. In practice, the main effect that it produces is to transfer the burden of truth when a country where the agreement is applicable considers that a certain qualification invoked by the person concerned is not equivalent to any in its system. In other words, given an application for recognition, it is the public administration and not the applicant that must irrefutably demonstrate that the qualifications are in fact not equivalent due to substantial differences. The problem here clearly consists of determining precisely what is considered to be a "substantial difference" and when it is understood that these "substantial differences" occur. This is extremely difficult to put into objective terms and in the Catalan legal system there is no alternative other than to go to court.

In any case, the Lisbon agreement does not impose the automatic or indiscriminate recognition of qualifications, which —as many of us point out— is as it should be. On the other hand, it would be inappropriate for all regulation and supervision by the corresponding public administration to be removed from higher education, which in general is conceived as being a public good in the whole of Europe. As Moles critically states, in relation to the proposal for the so-called Bolkestein directive, assurance must be given to the specific treatment of higher education: "The proposal deals in the same way with all services, whether or not they are in the public interest or not. It does not take into account any particular requirements in terms of safety, health, the guarantee of admission or funding, diversity preservation or the non-appliance of the rules of competitiveness, which are essential in certain sectors. For example, it considers higher education to be an economic service that competes on the same level with other services".[31, 32]

[30] In order of the agreement being signed.
[31] See MOLES, R. J. (2006), p. 189.
[32] See also RODRIGUES DIAS, M.A. (2006).

### 3.2 The latest developments regarding the recognition of qualifications in Spain

Aside from the fact that the Lisbon Convention not been endorsed, it is appropriate to include here that, so far as the academic recognition of university degree programmes is concerned, several advances have been made, the most significant of which refer to foreign postgraduate degrees. The new regulatory scheme empowers the universities, through the figure of the Rector (Vice-Chancellor), to recognise a foreign postgraduate-level degree, namely, a Master's or PhD degree.[33]

**The new regulatory scheme in Spain empowers the universities, through the figure of the Rector (Vice-Chancellor), to recognise a foreign postgraduate-level degree, namely, a Master's or PhD degree.**

The granting of this authority, in the form of an amendment passed in March 2005, is more coherent with the principles that inspire the new regulation of officially recognised postgraduate studies that introduced recognised Master's degrees. This breaks with one principle of the Spanish university regulatory system, which reserved for the Spanish State the exclusive jurisdiction over the recognition of recognised university degrees, although, in exchange, it does admit the possibility of the partial validation of a study programme by the universities, which could become considerably more extensive (for example, a whole cycle of study programmes, although not a whole degree). From the Catalan point of view, in what is an academic issue like this, this is an appropriate option that, moreover, enhances the universities' autonomy. This new distribution of jurisdiction will also help to speed up the handling of the corresponding processes that have customarily undergone excessive delay. As for their effectiveness, one must bear in mind that the resolution adopted by a particular university is fully valid at the national level in Spain, which is a sign of trust in the universities' responsibility to exercise this authority. The progressive consolidation of the EU diploma supplement in different countries will undoubtedly provide more information for adopting resolutions by the vice-chancellors with maximum guarantees. Moreover, an exception is envisaged under the regulation for Master's degrees, as referred to in article 8.3 of Royal Decree 56/2005,[34] of 21 January, that is, in cases where, according to the prevailing regulations, the degree in question entitles the holder to undertake regulated professional activities.

## 4. Prospects for effective implementation in the university system in Catalonia

### 4.1 An EU diploma supplement for non-European degree programmes?

As is mentioned above in relation to the structure del EU diploma supplement, especially in section 4, the current regulations in Spain in relation to

[33] See articles 22b and 22c of Royal Decree 285/2004, of 20 February, modified by Royal Decree 309/2005, of 18 March.
[34] Royal Decree 56/2006, of January wich regulates the postgraduate university studies (Spanish Official Bulletin, BOE nº 21, of 251/1/2005. Available from (in Spanish) http://www.upf.edu/ari/doctorat/homologació/A09886-09891.pdf, modified by Royal Decree 1509/2005, of 16 december (BOE nº. 303, of 20/1/2005), available from: http://www.boe.es/boe/dias/2005/12/20/pdfs/A41455-41457.pdf.

the European supplement do not correspond to degree programmes adapted to the approaches agreed to in the Bologna Declaration. Spain had still not defined the structure for degree programmes adapted to the EHEA in 2003, let alone now. According to the working paper published in September 2006 by the Spanish Ministry of Education and Science, the first undergraduate degree programmes in Spanish universities will only get under way in the 2008-2009 academic year.[35] This means that the EU diploma supplement that Catalan universities could issue at the present time is not for European degree programmes; seen from a different perspective, it could be said to be an "EU non-European diploma supplement".

### 4.2 Operational difficulties

Implementation of the European diploma supplement is not without its difficulties in the initial stage, difficulties that are not exclusive to the Catalan system, given that the latest report from the EUA points to various different ones that are widespread in all countries:

"Frequent difficulties: the student record system doesn't contain the necessary information, the national student data software has not yet been adjusted to "Bologna", the diploma supplement requires a big IT effort because of the complexity of study itineraries, high costs - especially for translations".[36]

It is our view that the first difficulty mentioned is not especially relevant for Catalan universities, which do have the necessary student record systems. The others mentioned in the EUA report are however causing headaches to those in charge of Catalan university institutions. In the first place, and with regard to adapting to the Bologna requirements, only the supplement form has been adopted —as we have repeatedly stated— for current degree programmes that are still not adapted to the EHEA. Moreover, the European supplement will undoubtedly require the development of a highly complex computer back-up system to gather all the information on students' careers in an appropriate way: variable types of eligibility, which may determine different requirements (for example, according to the qualifying degree programme for admission to second cycle, it may be compulsory to take certain complementary courses or none at all); credit validation and recognition incorporating qualifications obtained at the university of origin, especially in the event of student records being transferred, which does not usually occur on-line; adequate and complete information on courses taken in international exchange programmes, etc. Furthermore, although the Spanish Royal Decree does not mention it, the Europass documents project, including the EU diploma supplement, raises the issue of the appropriateness of it being

**The European supplement will undoubtedly require the development of a highly complex computer back-up system to gather all the information on students' careers in an appropriate way.**

[35] See MINISTRY OF EDUACTION AND SCIENCE, MEC (2006) p.21 *La organización de las enseñanzas universitarias*… (2006), p. 21.
[36] See REICHERT, S. and TAUCH, C. (2005), p.33.

**The EU diploma supplement that Catalan universities could issue at the present time is not for European degree programmes; seen from a different perspective, it could be said to be an "EU non-European diploma supplement".**

available in computer format. In the medium term, therefore, it will need to be assured that all the corresponding information in the European supplement can be generated in computer format and on-line. As far as translation costs are concerned, all the information in the document must be in the three languages. It will therefore be unavoidable, for example, for all of the versions of the subject names to appear in each curriculum and, while some universities have already anticipated this when incorporating new curricula, not all have done so yet. The cost will undoubtedly be higher in the initial stage when the EU diploma supplement is being set up although the prospects of structural changes on the immediate horizon may act as a disincentive to this being carried.

One final point is that, in spite of the fact that it is not a difficulty for the issuing of the type of supplements that we are referring to here, there is an increasing urgency to adopt appropriate measures to make the corresponding European supplement available for new officially recognised postgraduate studies that are already under way in the 2006-2007 academic year. The proposal by the Spanish Ministry of Education and Science in the abovementioned working paper does include the proposal to issue the supplement although it makes no specific mention of it in the timetable of anticipated measures. The first group of postgraduates to complete their studies under the new structure will do so in just a few months time in June 2007, by which time the structure will already fully incorporate the characteristics of the European Higher Education Area.

## 5. Conclusions

As is explained in section 4, the EU diploma supplement may be a very effective way of contextualising a person's academic results in a university degree programme as a whole. What the European supplement does not do is place the university institution within the context of the institutions of the country in question. By means of the European supplement, a person's achievements can be put into context and assessed in relation to the whole group of graduates of a discipline at the same institution. But who will link the results obtained in one institution in relation to other institutions offering similar programmes with the same or similar systems? This leads us to the notion of the ranking of institutions and study programmes, one aspect that in Catalonia is not very developed due to different reasons, one of which is the great susceptibility that this generates. As far as the author is concerned, the reliable ranking of institutions and study programmes is a necessity, provided that it is a guarantee of the public service of higher education. Citizens and, above all, the potential users of university education have the right to know which institutions are the most efficient and reach closer to excellence. The EU diploma supplement does not require this information to be included although it does envisage the possibility of additional information being entered in section 6. It would be particularly

relevant for this information to include the recognition and accreditation of the academic quality obtained by the institution or centre giving the studies, the awards and distinctions received by participating teaching staff, etc.

In spite of the abovementioned difficulties and other critical considerations regarding the way in which it has been adopted in Spain, we are firmly convinced of the interest and usefulness of the EU diploma supplement as an instrument for recognising the studies of university graduates. The EU diploma supplement represents an indubitable step forward, and Catalan universities need to be encouraged so they can in effect be ready to issue it as soon as possible, bearing in mind that it was set up more than three years ago (September 2003) and that certain proposals pointed to 2005 as being the date from which it should be issued in all countries.

The Bologna Process seeks to focus higher education on the students and their part in the educational process, expressed in particular as the outcomes of learning. It is therefore also highly relevant to take into consideration what the students themselves think about the EU diploma supplement.

The ESIB, for example, the organisation that brings together around fifty European students union bodies from thirty-seven countries, considers the EU diploma supplement to be a decisive element in the transparency and recognition of qualifications and calls for more firmness in its' implementation:

"In order for the Diploma Supplement to answer to the need to create transparency and contribute to recognition of qualifications and better employability, the system needs to be implemented more vigorously, and its use expanded. Genuine institutional commitment and information campaigning, also towards the labour market, are crucial. Co-operation in between the various actors needs to be further promoted as well as on the national level. Tools are needed to record and recognise life long learning".[37]

So when all is said and done, it all comes down, not to something to laugh about, but to the German, the Frenchman and the Catalan that were mentioned at the beginning (let alone the Rumanian, the Swiss, the Spaniard, the Egyptian, the Argentinean, the Chinaman, etc.) finding the maximum facilities for studying and working in Europe and all around the world.

[37] See ESIB. p. 3.

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# POWERS OVER UNIVERSITIES AND OVER RESEARCH, DEVELOPMENT AND TECHNOLOGICAL INNOVATION IN THE 2006 STATUTE OF AUTONOMY OF CATALONIA

**Encarnació Grau i Corominas***

**This paper gives a brief account of the main novelties incorporated into the 2006 Statute of Autonomy of Catalonia (henceforth SAC) with regard to powers in the areas of universities (which the new Statute treats as a separate area from that of education) and research, development and technological innovation (RDI). In order to gain a proper understanding of the analysis of each of these sectors it is necessary to refer briefly to another new aspect of this Statute: the definition of the different types of powers. This definition, together with the technique known as shielding, is intended as a way of stopping central State legislators from regulating beyond the point specifically established for each sector in the SAC.**

**We will see that, with the exception of certain important novelties which we will discuss in due course in the text, a large part of the activities and functions set forth both in the area of universities and in that of RDI were already carried out in the framework of the 1979 SAC, or could have been carried out had it not been for interference from the central State, which has given rise to considerable conflict concerning powers. This is not surprising, considering that the ceiling of the current Statute with regard to powers continues to be set by the Spanish Constitution of 1978. Nevertheless, the new mechanisms and new techniques employed by the Statute undoubtedly make it more difficult for the central State to intervene in those areas that the Statute reserves for the Generalitat of Catalonia.**

## Contents

1. Types of powers and their shielding
2. Powers over universities
3. Powers over research, development and technological innovation (RDI)

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## 1. Types of powers and their shielding

No study of the sectoral powers of the Generalitat of Catalonia can be undertaken without mentioning the redefinition made in the 2006 Statute of Autonomy of Catalonia[1] (henceforth SAC) of the different types of powers and their functional dimension. This is one of the main novelties and is of paramount importance, as this is where the rules of the game between the central State and the Catalan government are laid down.

### 1.1. Exclusive powers

Article 110 of the SAC, defining **exclusive powers**, establishes that "legislative power, regulatory power and the executive function correspond **fully** to the Generalitat", and that "the exercise of these powers and functions, by means of which it may establish its own policies," is the exclusive right of the Generalitat.

The Statute reinforces the concept of exclusivity, which had lost practically all its weight as a result of intervention by the central State through other areas of power of a cross-sectional nature, although the term *excloent* incorporated in the proposal passed by the Catalan Parliament ("*de manera íntegra i excloent*": "fully and exclusively") does not figure in the final text.[2] The ultimate intention is to enable the Generalitat to effectively establish its own policies in those areas in which it has exclusive powers.

### 1.2. Shared powers

According to the provisions of Article 111 of the SAC, in matters in which **the Statute attributes powers to the Generalitat that are shared with the State**, "legislative power, regulatory power and the executive function are the responsibility of the Generalitat, within the framework of the basic conditions established by the State as principles or lowest common legislative denominators in rules of legal rank, with the exception of those circumstances determined by the Constitution and this Estatut. The Generalitat may establish its own policies in the exercise of these powers."

The definition of shared powers is related to the established constitutional doctrine on the formal and material concept of basic provisions, which has hitherto been interpreted expansively by the State legislator. Thus, according to this article, basic provisions are understood as a principle or lowest common legislative denominator to be fixed in the framework of a rule of legal rank, although it leaves the door open to exceptions. The Catalan government must be able to establish its own policies on matters that it shares with the State.

As regards the implementation and specification of the basic provisions, the text of the Statute presents an important novelty: it sets forth that this task corresponds to the Parliament by law.

[1] Organic Law 6/2006, of 19 July, on the Reform of the Statute of Autonomy of Catalonia (Spanish Official Bulletin, BOE, No. 172, of 20-7-06, in Spanish). By means of Decree 306/2006, of 20 July, it was published in Catalan Official Journal, DOGC No. 4680, of 20-07-06, in Catalan. The 2006 SAC came into force on 9 August 2006.
[2] The proposal for the reform of the SAC was passed by the Catalan Parliament on 30 September 2005 (Official Bulletin Parliament of Catalonia, BOPC 224, VII legislature, 3 October 2005, in Catalan).

### 1.3. Executive powers

According to the provisions of Article 112 of the SAC, in matters in which the Generalitat has **executive powers**, it has "regulatory power, which includes the power to approve provisions for execution of State rules, and also the executive function, which in all cases includes the power to organise its own administration and, in general, all the functions and activities that the system attributes to the Public Administration."

**If the Generalitat of Catalonia has full powers over decisions to create and recognise public and private universities based within its territory, the Spanish Organic Law on Universities should not maintain the possibility of the State also creating or recognising universities in the autonomous communities.**

In the sphere of executive powers, the recognition of regulatory power is significant, as it enables the Catalan government to approve provisions for the execution of State regulations, thus overcoming the constitutional doctrine contrary to that possibility.

### 1.4. Shielding of powers

Just as important as defining the types of powers is guaranteeing their integrity, through what is known as the shielding of powers. To this end, the 2006 SAC enumerates within each sector a series of submatters that comprise it. This is one of the substantial differences between this text and the 1979 SAC, which only defined powers generically and subordinated them, as far as their exercise and scope were concerned, to other constitutional titles or norms. Many of the conflicts over powers and the claims of unconstitutionality made between the State and the autonomous communities can be attributed to this fact.

Shielding is intended as a way of preventing the submatters included in a matter from being affected by State rule beyond the point specifically established for each of them by the SAC. For example, if the Generalitat of Catalonia has exclusive (i.e., full) powers over decisions to create and recognise public and private universities based within its territory, the Spanish Organic Law on Universities should not maintain the possibility of the State also creating or recognising universities in the autonomous communities. This is a fairly peaceful scenario from an interpretational point of view, but we should bear in mind that there will be others that might be more prone to conflict, such as that concerning exclusive powers over university coordination, which are to be exerted in the framework of general coordination. What the legislating State understands by general coordination, and the scope it gives it, will condition and limit the exclusive powers of the Generalitat.

The technique of shielding also presents difficulties, as there is the risk of fossilising some submatters and hindering the adaptability of the Statute to new needs arising out of social advances. We will take a look at an example of this presently.

## 2. Powers over universities

One of the main novelties of the text of the Statute is the configuration of powers over universities as a new category (Article 172 of the SAC) aside from that of education, to which they

have been assigned up to now (Article 15 of the 1979 SAC).[3]

This individualised treatment is, in our opinion, entirely appropriate, considering that power is tripartite in the university world: in addition to the powers held by the State and the autonomous communities, the power held by the universities themselves in virtue of their autonomy must also be borne in mind. Thus, Article 172 of the SAC divides the submatters that comprise the area of universities into three categories according to the powers and functions that belong to the Generalitat, without prejudice to university autonomy: exclusive powers, shared powers and executive powers.

### 2.1. Exclusive powers (Article 172.1)

In matters of university education, the Catalan government has exclusive power, without prejudice to university autonomy, over:

a) Planning and coordination of the Catalan university system, in the framework of general coordination.
b) The decision to create public universities and authorise private universities.
c) The approval of statutes of the public universities and of rules for organisation and functioning of the private universities.
d) Coordination of the procedures for access to the universities.
e) The legal framework governing the university own qualifications, in accordance with the principle of university autonomy.
f) Its own funding for universities and, where appropriate, management of State funds for university education.
g) Regulation and management of its own grants and subsidies system for university education and, where appropriate, regulation and management of State funds in this area.
h) The system of remuneration of teaching and research staff employed by the universities and the establishment of additional remuneration for teaching staff in permanent public employment.

**One of the main novelties of the text of the Statute is the configuration of powers over universities as a new category aside from that of education, to which they have been assigned up to now.**

The SAC exists within the framework of the 1978 Constitution, and therefore practically the entirety of the functions we have just mentioned are already performed by the Catalan government. The most significant novelty is that of the **legal framework governing the university own qualifications, in accordance with the principle of university autonomy**, which recognises the Generalitat's right to a level of intervention in an area that the sectoral regulations have traditionally left exclusively in the hands of the universities concerned.

We would like to stress one issue which is always sensitive: that of **study grants and scholarships awarded from State funds**, which are still awaiting devolution to the Generalitat. The exact

[3] Article 15 of the 1979 SAC established that "the Government of Catalonia has full powers to regulate and administer education throughout its territory, at all levels and degrees and in all forms and specialities, within its powers, without prejudice to the provisions of article 27 of the Constitution and the Acts of Parliament developed in accordance with part 1 of article 81 of this document, with the powers attributed to the Spanish government in point 30 of part 1 of article 149 of the Constitution and with the higher level inspection needed to ensure compliance with these."

wording of Letter *g* of Article 172.1 of the SAC sets forth that the Catalan government has exclusive power over the "regulation and management of its **own** grants and subsidies system for university education and, where appropriate, regulation and management of State funds in this area". In the proposal passed by the Catalan Parliament, power over the regulation and management of grants was not limited to the Generalitat's own system, and therefore grants awarded from State funds were taken to be included. In the definitive version of the text, regulation of State funds in this area is subject to a "where appropriate".

**In matters of university education, the Catalan government has exclusive power over the regulation and management of its own grants and subsidies system for university education and, where appropriate, the regulation and management of State funds in this area.**

In order to ascertain the scope of the assignment to the Generalitat of the regulation and management of study grants and scholarships awarded from State funds, we have to complement the provisions of Letter g of Article 172.1 with those of Article 114.3 of the SAC, which deals with promotional activity in matters of a territorialisable nature where power is shared, as is the case with grants and scholarships for university study. The latter article tells us that the Catalan government has regulatory power enabling it to specify the purpose for which these subsidies are used, and also to complete the regulation of the conditions for their assignment, including administration and award.

It should be mentioned for information purposes that the regulation of grants and scholarships for **non-university education** is considered as a shared power in the Statute (Article 131.3 of the SAC). A *priori* we see no reason for the function of study promotion to be divided into different types of powers on the basis of the level of education for which it is intended, considering that the call for applications for study grants and scholarships which gave rise to Constitutional Court Judgement STC 188/2001, of 20 September,[4] affected both university and non-university grants. The reader should be aware of this discrepancy in the text of the Statute.

Lastly, we would like to close this section on exclusive powers with an example of a **possible fossilisation of functions**, which we mentioned earlier as one of the problems that may arise as a result of the technique of shielding. This might be the case with the exclusive powers enshrined in Letter *h* of Article 172.1 of the SAC over **additional remuneration for teaching and research staff in permanent public employment**. Additional remuneration is a remunerative concept introduced through the approval and entry into force of the Spanish Organic Law 6/2001, of 21 December, on Universities (LOU). We cannot help wondering whether, in this case, this degree of specification might in the future constitute a hindrance to the adaptation of the model for the remuneration of teaching and research staff in permanent public employment to new requirements of the university system.

[4] Constitutional Court Judgement, STC 188/2001, of 20 September, put an end to a long controversy between the Catalan government and the State on study grant and scholarship policy. In short, the judgement ruled that the Generalitat had authority to manage and assign calls for applications for study grants and scholarships, with the prior territorialisation to the autonomous community, according to objective criteria, of the necessary credits. With regard to the planning of grants, the Court found that the regulatory legislation must not impede the autonomous communities from adapting it to their territorial peculiarities.

### 2.2. Shared powers (Article 172.2)

In matters of university education, the Catalan government has shared power, without prejudice to university autonomy, over:

a) Regulation of the requirements for the creation and recognition of universities and university centres, and attachment of these centres to universities.
b) The legal system for organisation and functioning of the public universities, including the governing and representative bodies.
c) Appointment and withdrawal of the capacity of public or private teaching centres to issue official university qualifications, and creation, modification and abolition of university centres in public universities, and also recognition of these centres in private universities and the introduction and abolition of teaching subjects.
d) Regulation of the system of access to the universities.
e) Regulation of the system governing contracted and permanent teaching and research personnel.
f) Evaluating and ensuring the excellence and quality of university education, and also that of teaching and research personnel.

Most of the functions described in this section are already performed by the Generalitat, but some of them, either because of the breadth of the basic provisions or because of interference from the central State, have not been materialised to their full extent. This is the case with the function encompassed in Section d, on the regulation of the system of access to the universities, and that covered by Section *f*, on quality assessment and assurance.

**In the future, in the area of additional remuneration for teaching and research personnel, the degree of specification reached by the Statute might constitute a hindrance to the adaptation of the remuneration model to new requirements of the university system.**

With regard to the **system of access to the universities**, a conflict of powers was presented by the Catalan government against Royal Decree 1640/1999, of 22 October, regulating the university entrance examination, and is still pending resolution.[5] This conflict questions certain aspects relating to the determination of the contents of the examination, and also to how it is organised, since due to their exhaustive nature these aspects leave no margin for the Catalan government to implement them and adapt them to the needs of the Catalan university system.

On the issue of quality assessment, again there is a conflict of powers pending resolution by the Constitutional Court, presented by the Catalan government against certain articles of Royal Decree 1052/2002, of 11 October, regulating the procedure for obtaining evaluations from the National Quality Assessment and Accreditation Agency (ANECA) and certifying them, as regards the contracting of university teaching and research staff.[6] The conflict questions the ANECA's authority to perform evaluations of contracted teaching and research staff of universities based in autonomous

[5] The articles challenged by conflict of powers No. 1037/2000 are: 5, Section 1; 6, Sections 1 and 2; 7; 8, Sections 1, 4, 5, 6 and 7; 10; 11; 12; 14, Sections 2 to 4; 15; 16; and Final Provision 1.
[6] The articles challenged by conflict of powers No. 1130/2003 are: 1; 3; 5; and Final Provision 2.

communities that have their own external assessment body. With the new Statute, quality assessment, as an executive function, must correspond exclusively to the Catalan government, more specifically the Agency for the Quality of the University System of Catalonia (AQU), in compliance of the provisions of the Catalan Universities Law, 1/2003, of 19 February, (LUC). All the above is without prejudice to any collaboration agreements reached on this subject by AQU and ANECA regarding the recognition of each others' evaluations.

**According to the new Statute, quality assessment, as an executive function, must correspond exclusively to the Catalan government, more specifically the Agency for the Quality of the University System of Catalonia (AQU).**

Concerning contracted teaching and research staff, the legal status of the Catalan government is that of shared power (Article 172.2.d), with the exception of the system of remuneration, over which it has exclusive powers (Article 172.1.h).

We cannot close this section without placing special emphasis on the most important novelty in this area: the recognition of the Generalitat's shared power over the legal status of university teaching and research staff in permanent public employment. Until now, constitutional doctrine has been contrary to the possibility of the Catalan government having powers over university teaching personnel, who have been regarded as being in the employment of the State. The Constitutional Court concluded, in Judgement 235/1991, of 12 December, made in settlement of the conflict of powers presented against certain precepts of Royal Decree RD 898/1985, of 30 April, on University Academic Staff, that the relationship between the basic provisions and their implementation does not come into play in the regulation of the aspects affecting the statutory situation of university academic staff in permanent public employment, considering that the interuniversity nature of this type of employment justified exclusive State powers.[7]

Now that this restrictive doctrine of autonomous powers has been overcome by the SAC, the possibilities open to the Catalan legislator as a result of this new attribution remain to be explored, but if we consider the definition of shared powers given in the SAC, we can deduce that the Catalan government should be able to adopt, within the framework of the basic principles, its own policies in this matter (Article 111 of the SAC).

### 2.3. Executive powers (Article 172.3)

The Generalitat is recognised as having executive powers over **the issue of official university qualifications**, currently exerted by the rector on

[7] "(...) The Autonomous Community lacks powers over the regulatory development of the basic provisions of the permanent public employment status of university professors, because civil servants on university academic staffs, as we have already stated, are not civil servants of the Basque Country or its local administration, the only civil servants referred to by Art. 10.4 of the Statute of Autonomy of the Basque Country (...) in general, and Supplementary Provision 15.10 of Law 30/1984 regarding the educational civil service in particular. To this we must add, as we stated in our STC 26/1987, that in view of the establishment of the system governing university teaching staff in permanent public employment in Art. 33 of the University Reform Law (LRU), the existence of a uniform approach to certain aspects of civil service status is inherent in that system, which ultimately imposes certain restrictions on the autonomy of both the universities and the Autonomous Communities. (...)"

behalf of the king (Article 34.2 of Organic Law 6/2001, of 21 December, on Universities). It remains to be seen how this attribution will fit into the framework of the State's regulatory legislation on the conditions for issuing qualifications, in exercise of the exclusive powers invested in it by Article 149.1.30 of the Spanish Constitution in this matter.

The executive power over **the approval of official university qualifications** which figured in the proposal for the reform of the SAC passed by the Catalan Parliament was not included in the definitive version. However, this should prove no impediment for the sectoral regulations to attribute this clearly executive function to the autonomous communities,[8] as the list of submatters in the Statute should not be regarded as a closed list. Professor Enoch Albertí voices this view in his paper *El blindatge de les competències i la reforma estatutària* ("The shielding of powers and the reform of the Statute of Autonomy"),[9] from which we take the following paragraph:

"The specification of submatters comprising the subject matter of a particular area of power is not exhaustive but merely exemplificative. Its function is not to describe in detail all the various aspects that form part of the matter in question, but to ensure that at least certain elements must be regarded as an integral part of that matter."

### 2.4. The bill for the modification of the Organic Law on Universities

It is not the scope of this paper to discuss the bill for the modification of the Organic Law on Universities (LOU) currently pending before the Congress of Deputies (BOCG - Series A, 8 September 2006, No. 101-1), nor do we intend to do so, but we would like to take this opportunity to observe on the ground to what extent the provisions concerning universities of the new SAC have been taken into account by the State legislator.

**In the bill for the modification of the Organic Law on Universities currently pending before the Congress of Deputies, the State legislator has not taken into account the new framework of the Catalan Statute on the subject of universities.**

The conclusion we reach on an initial analysis could not be more discouraging. In its regulation, the State legislator ignores the new framework of the Catalan Statute on the subject of universities, to the extent that the bill includes aspects that, in our opinion, contradict it head-on. One example is the attribution to the State of the faculty to create and recognise universities in the autonomous communities. Let us trust that during the passage of the bill through the Congress of Deputies the necessary amendments will be passed to make the content of the LOU compatible with the new Statute.

[8] The Constitutional Court itself admitted, in Judgement STC 26/1987, made in settlement of the claim of unconstitutionality against the LRU, that official approval, insofar as it is an executive act attributable by Article 27.8 of the Spanish Constitution to public authorities, could be the responsibility of either the State or the autonomous communities.
[9] Albertí Enoch.

## 3. Powers over research, development and technological innovation

Article 9.7 of the 1979 SAC recognised the Catalan government's exclusive powers over research, without prejudice to the provisions of Point 15 of Part 1 of Article 149 of the Constitution, which states that the State shall have exclusive powers over the promotion and general coordination of scientific and technical research.

Article 158 of the 2006 SAC, entitled "Research, development and technological innovation" divides the submatters that comprise this area into two categories according to the powers and functions that belong to the Generalitat: exclusive powers and shared powers.

**In matters of scientific and technical research, in contrast to its provisions on this matter in the area of power over universities, the Statute limits the function of regulation and management of grants and financial assistance to those organised and funded by the Generalitat.**

First of all, the reader should note that the name of this matter as it stands in the title of Article 158, "Research, development and technological innovation", does not coincide with the wording of Section 1, describing the power, which mentions "scientific and technical research", yet does so with that of Section 3, concerning the collaboration criteria between the State and the Generalitat in RDI. On consulting the Catalan Parliament web site, specifically the section devoted to the Drafting Committee for the Statute, it transpires that the change of terminology occurred in the definitive document proposed by the Drafting Committee (at the first reading, in May 2005, the term was RDI). We have been unable to find out the reason for this, as the debates of the Committee were not recorded.

It seems very likely that it could be an error; if this is the case, the possibility of correcting it should be investigated, considering that, in the view of the Constitutional Court, innovation is not an activity that can be placed automatically within powers over scientific and technical research, which according to the Court must be conceived in its strict sense.[10]

### 3.1. Exclusive powers (Article 158.1)

**In matters concerning scientific and technical research**, the Generalitat has **exclusive power** over its own research centres and structures, and the projects it finances. This power includes, in all cases:

a) Establishment of research areas of its own, and monitoring, control and evaluation of projects.
b) Organisation, functioning system, control, monitoring and accreditation of centres and structures in Catalonia.

[10] This is the conclusion to be drawn from Judgements STC 242/1999, of 21 December; 98/2001, of 5 April, and 175/2003, of 30 September. Furthermore, the Frascati Manual, prepared by the OECD for the purpose of standardising definitions and procedures for collecting information on RDI activities, considers that R&D is one of the stages that make up technological innovation activities. (OECD. Frascati Manual. 2003).

c) Regulation and management of grants and financial assistance organised and funded by the Generalitat.
d) Regulation and professional training of research and research support personnel.
e) Dissemination of science and the transfer of results.

Exclusive power is held over **Generalitat centres and structures**, although the proposal passed by the Catalan Parliament covered all centres with Generalitat promotion or participation. It remains to be seen how "Generalitat centres and structures" will be interpreted in practice, when delimiting the exact scope of this exclusive power. Nevertheless, we understand that it should not be restricted to centres and structures owned by the Generalitat, but should include those centres in which the Catalan government is the majority promoter or participant.

With regard to **projects**, this article states that the Catalan government has exclusive power over the projects it finances, without further explanation. In order to determine the specific scope of these attributions, we have to complement this article with other provisions of the SAC, such as Article 114, regulating promotional activity, and Article 115, on the territorial scope of powers, to mention some of the more significant ones.

Lastly, we ought to mention the function of **regulation and management of grants and financial assistance**, which the Statute limits to those organised and funded by the Generalitat of Catalonia, without introducing any specific provision on grants and financial assistance funded by the State, in contrast to its provisions on this matter in the area of power over universities, as we discussed earlier. However, we understand that Article 114 of the SAC, regulating promotional activity, is applicable in the field of State-funded grants and financial assistance. This article would empower the Catalan government to complement normatively and manage State programmes of grants and subsidies when they are of a territorialisable nature. There is a precedent in this respect, albeit limited to a strictly management sphere: the Programme of Incentives for the Incorporation and Intensification of Research Activities (Programme I3).[11]

**When delimiting the exact scope of the exclusive power over research centres and structures it remains to be seen how "Generalitat centres and structures" will be interpreted in practice.**

In short, as we understand it, the attributions specified in Section 1 are covered by Article 9.7 of the 1979 SAC, and therefore do not in themselves amount to any gain as regards powers. However, the fact that they are specified and defined as exclusive is undoubtedly an improvement over the previous situation, as it makes it more difficult for the central State to interfere through what we call horizontal areas, such as basic provisions and the

[11] Programme I3 was approved by Order ECI/1520/2005, of 26 May (Spanish Official Bulletin, BOE No. 127 of 28 May 2005).

general coordination of economic policy, for example. Furthermore, it is important to stress the **function of the regulation and training of research and research support personnel**, which should enable the Generalitat to establish its own policy with regard to this personnel and shape a full research career.

### 3.2. Shared powers (Article 158.2)

The Generalitat has shared powers over the coordination of the research centres and structures of Catalonia, which means that responsibility over these centres is distributed according to their ownership. As a result, the Generalitat is in charge of coordinating the centres it owns, and the State is in charge of coordinating its centres that are located in Catalonia.

**The function of the regulation and training of research and research support personnel, should enable the Generalitat to establish its own policy with regard to this personnel and shape a full research career.**

### 3.3. Collaboration between the State and the Generalitat (Article 158.3)

The action of two public authorities within our territory, each with exclusive powers over RDI and implementing different policies in this field, advises collaboration between the actors involved in order to reach agreement on criteria that will lead to maximum effectiveness and efficiency in the management of the resources dedicated to it.

The SAC states that these criteria for collaboration between the State and the Generalitat in research, development and innovation policy shall be established within the framework of the provisions of Title V, on the institutional relations of the Generalitat. However, it does not specify the framework in which this collaboration should be implemented, whereas the proposal passed by the Catalan Parliament assigned this responsibility to the Generalitat-State Bilateral Commission, which constitutes the general and permanent framework for relations between the Catalan and Spanish governments.

Lastly, the article states that systems shall be established for the participation of the Generalitat in determining policies affecting these matters at European Union level, and in other international bodies and institutions.

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# STUDENT MOBILITY IN CATALONIA: THE ERASMUS PROGRAMME

**Montserrat Solé i San Millán* and Cristina Miràngels i García****

**The ERASMUS programme, introduced by the European Commission in 1987, will celebrate its twentieth anniversary in 2007. It is one of the best-known student exchange programmes in the European Union because it allows students to take part of their degrees at any of the participating universities.**

**At a time when European education systems are facing the challenge of consolidating the European Higher Education Area, student mobility should be promoted because of the fundamental role it can play as a system for improving learning. This article analyses the figures on student mobility in Catalonia from the start of the ERASMUS programme, and comments on the future prospects of student mobility.**

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## 1. Beginnings: the ERASMUS programme

From the outset, the aim of ERASMUS and the other mobility programmes has been to reinforce the academic and personal training of students. The opportunity to combine studies, travelling and relating with persons of other countries allows students to develop their skills and resources in the different areas of education and society. In general, the relation between academic performance and studying and living outside one's country of origin has shown good results. Student exchanges help to acquire skills that will facilitate studying at a higher level and integration in employment, and are an experience that will continue to be useful throughout the graduates' careers. They also involve adapting to new environments with other cultures and ways of living, and acquiring an international perspective on both an academic and a personal level. This should promote and facilitate a good understanding between citizens with different ideologies and beliefs, and help to consolidate a more progressive and democratic European society that fosters cultural, economic and social links with the other countries in the world.

2007 will be an important milestone in the development of the ERASMUS mobility programme: its twentieth anniversary. It is the best-known student exchange programme in the European Union, allowing students to take part of their degrees at any university participating in this programme for a period ranging from three months to a year. By the 2002-2003 academic year, a total of one million students had taken part in the ERASMUS programme since it was set up.

ERASMUS stands for the European Community Action Scheme for the Mobility of University Students, and is also the name of the distinguished philosopher, theologian and humanist Erasmus of Rotterdam (1465-1536), who lived and worked in several parts of Europe in search of the knowledge, experience and insights that he could only obtain through contact with other countries.

**2007 will be an important milestone in the development of the Erasmus mobility programme: its twentieth anniversary.**

The ERASMUS programme was introduced by the European Commission in 1987, with the aim of promoting student exchange within the European Union. On 14 March 1995, as a continuation of the ERASMUS programme the European Commission set up the Socrates programme, whose aim is to develop the Europe of knowledge, to promote language learning and to foster mobility and innovation. This programme currently consists of eight different actions aimed at promoting the European dimension in the different areas of education and improving education quality by fostering cooperation between the participating countries. All EU actions regarding higher education are placed within the framework of the ERASMUS programme.

From the outset, the aim of this programme has been to foster mobility of students and teaching

staff of universities in European Union countries, and now also in the candidate countries for accession to the EU in the near future. The new framework of relations within the EU involves establishing new strategies of action in the area of teaching, and one of the requirements for this is to promote and facilitate student mobility. Citizens educated in an open and dynamic space will be able to play an outstanding role in the further construction of Europe.

**Citizens educated in an open and dynamic space will be able to play an outstanding role in consolidating the construction of Europe.**

The ERASMUS programme is open to:

- The educational establishments and university students of the 25 member states of the EU.
- The educational establishments and university students of the three countries that belong to the European Economic Area: Iceland, Lichtenstein and Norway.
- The educational establishments and university students of the candidate countries for accession to the EU: Romania, Bulgaria and Turkey.

The ERASMUS programme is implemented through an institutional contract signed by the universities and the European Commission, in order to guarantee mobility between the European universities with which bilateral exchange programmes have been established. Its coordination and economic management are the responsibility of the international relations units of each of these universities.

In addition to being recognised by the national authorities as eligible for ERASMUS activities, the participating universities have to apply to the European Commission for an ERASMUS university charter, which is a certificate establishing the principles to be respected by the universities. Once a university has obtained the Charter, it is entitled to participate in the ERASMUS programme and to apply to its National Agency for funding for decentralised activities and to the Commission for funding for centralised activities.

## 2. New challenges for the development of the ERASMUS programme

The Bologna Declaration of 1999 laid the bases for the creation of the European Higher Education Area, whose aim is to strengthen the intellectual, cultural, social, scientific and technological dimensions in order to build a Europe that encourages the progress of persons and the integration of graduates in a far wider professional world. Law 1/2003, of 19 February governing the universities of Catalonia follows the lines laid down by the Bologna Declaration by promoting the construction of a universal and European-based system. The government of Catalonia (Generalitat) contributes to the funding of this programme through the Directorate-General of Universities, which has provided subsidies to supplement the grants of Catalan university students studying in other EU countries and to fund the cultural and linguistic induction activities for students from other countries visiting Catalan public universities.

In this new context, in order to increase the mobility of Catalan students, to improve the quality of their education and to contribute to the

internationalisation of the Catalan university system, the system of subsidies existing until the 2004-2005 academic year has been modified. The subsidies were previously awarded only to Catalan public universities to provide partial funding for grant supplements and for cultural and linguistic induction activities. The grant supplements are now awarded directly to the students of both public and private universities, and the total budget assignment has risen sharply from 450,000 euros in 2004-2005 to 1,000,000 euros in 2005-2006, and to 1,550,000 euros in 2006-2007.

The grant supplements are intended for students registered for official university courses at public and private universities in Catalonia who have been selected to participate in the Erasmus programme. They are added to any grant that the students receive from the European Union. The amount of the grants is 200 euros per month, with a maximum of 1,200 euros, though the study period may last for over six months. The grants are managed by the Agency for Management of University and Research Grants (AGAUR). In the 2005-2006 academic year 1,702 applications were received and 815 grants were awarded. In the 2006-2007 academic the figures were 2,705 and 1,434, respectively.

For the 2006-2007 academic year three types of grant have been established that will increase the number of beneficiaries. Grants will now be offered to students of the ERASMUS programme, to students participating in other international mobility programmes with similar characteristics to ERASMUS with regard to the requisites of exchange and academic recognition, and also to students of art schools offering higher education such as the Theatre Institute and the School of Music of Catalonia.

## 3. Chronological evolution of the ERASMUS programme

### 3.1. Figures for the universities belonging to the Catalan university system

Now that the ERASMUS programme has been in place for nineteen years, it is interesting to analyse some general figures on the students who have participated in the programme. Table 1 shows the chronological evolution by universities of the number of students who have participated in the programme in Catalonia, from its introduction in the 1988-89 academic year to the 2004-2005 academic year. There was a sharp growth in the number of participating students in the first few years, but the growth was sustained throughout the period. Apart from the first few years in the series and a short period in the late 1990s, the number of foreign students studying in Catalonia has always been higher than the number of Catalan students studying abroad. This imbalance increased sharply in the last four academic years of the period.

**In general, the number of European students who have come to study in Catalonia has been greater than the number of Catalan students who have studied in other European countries.**

This can be seen in Graphic 1. For example, in the 2004-2005 academic year the total number of students from other countries who studied at Catalan universities was 4,273, compared with

**Table 1**
**Chronological evolution of the ERASMUS programme in Catalonia: student mobility by universities**

| Year | 1988-1989 | | 1989-1990 | | 1990-1991 | | 1991-1992 | | 1992-1993 | | 1993-1994 | | 1994-1995 | | 1995-1996 | | 1996-1997 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | E | C | E | C | E | C | E | C | E | C | E | C | E | C | E | C | E | C |
| UB | 65 | 91 | 187 | 216 | 293 | 322 | 484 | 496 | 484 | 427 | 698 | 563 | 736 | 676 | 757 | 591 | 721 | 659 |
| UAB | 111 | 93 | 128 | 193 | 255 | 231 | 340 | 300 | 338 | 347 | 428 | 369 | 437 | 432 | 486 | 535 | 485 | 521 |
| UPC | - | 39 | - | 50 | 77 | 54 | 180 | 160 | 168 | 129 | 379 | 206 | 469 | 300 | 516 | 400 | 500 | 547 |
| UPF | - | - | - | - | - | - | - | - | - | 4 | 40 | 67 | 123 | 148 | 149 | 192 | 156 | 169 |
| UdG | - | - | - | - | - | - | - | - | 22 | 28 | 14 | 30 | 29 | 45 | 29 | 46 | 36 | 37 |
| UdL | - | - | - | - | - | - | - | - | 16 | 39 | 24 | 54 | 32 | 65 | 27 | 91 | 31 | 101 |
| URV | - | - | - | - | - | - | - | - | 0 | 12 | 1 | 20 | 10 | 19 | 16 | 31 | 16 | 33 |
| URL | - | - | - | - | - | - | 3 | 5 | 9 | 19 | 7 | 20 | 14 | 26 | 104 | 115 | 100 | 97 |
| UVic | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| UIC* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Total** | **176** | **223** | **315** | **459** | **625** | **607** | **1,007** | **961** | **1,037** | **1,005** | **1,591** | **1,329** | **1,850** | **1,711** | **2,084** | **2,001** | **2,045** | **2,164** |

| Year | 1997-1998 | | 1998-1999 | | 1999-2000 | | 2000-2001 | | 2001-2002 | | 2002-2003 | | 2003-2004 | | 2004-2005 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | E | C | E | C | E | C | E | C | E | C | E | C | E | C | E | C |
| UB | 806 | 677 | 829 | 695 | 943 | 726 | 939 | 732 | 1,152 | 652 | 1,071 | 742 | 1,242 | 804 | 1,211 | 775 |
| UAB | 608 | 608 | 726 | 640 | 841 | 705 | 899 | 726 | 933 | 699 | 1,084 | 803 | 1,140 | 789 | 1,279 | 909 |
| UPC | 535 | 633 | 530 | 683 | 509 | 608 | 442 | 688 | 559 | 640 | 651 | 652 | 636 | 733 | 645 | 700 |
| UPF | 234 | 219 | 225 | 272 | 251 | 306 | 269 | 279 | 276 | 329 | 301 | 376 | 363 | 392 | 401 | 401 |
| UdG | 27 | 46 | 36 | 75 | 47 | 90 | 63 | 101 | 89 | 101 | 115 | 128 | 125 | 142 | 118 | 167 |
| UdL | 42 | 118 | 74 | 144 | 96 | 142 | 95 | 140 | 89 | 127 | 83 | 156 | 133 | 128 | 110 | 118 |
| URV | 29 | 63 | 49 | 70 | 52 | 78 | 52 | 110 | 78 | 108 | 78 | 124 | 122 | 125 | 150 | 129 |
| URL | 133 | 115 | 165 | 126 | 164 | 133 | 174 | 158 | 202 | 172 | 228 | 195 | 239 | 188 | 229 | 163 |
| UVic | 27 | 49 | 30 | 51 | 37 | 52 | 30 | 56 | 39 | 43 | 37 | 31 | 47 | 46 | 55 | 50 |
| UIC* | - | - | - | - | 9 | 3 | 16 | 13 | 33 | 13 | 37 | 7 | 65 | 15 | 75 | 17 |
| **Total** | **2,441** | **2,528** | **2,664** | **2,756** | **2,949** | **2,843** | **2,979** | **3,003** | **3,450** | **2,884** | **3,685** | **3,214** | **4,112** | **3,362** | **4,273** | **3,429** |

E: students from other countries who have studied at Catalan universities.
C: students from Catalan universities who have studied at universities of other EU countries.
Figures provided by UB, UAB, UPC, UPF, UdG, UdL, URV, URL, UVic and UIC.
* The International University of Catalonia (UIC) was created in the 1998-1999 academic year.
The Abat Oliba University (UAO) was created in the 2003-2004 academic year.

3,429 Catalan students visiting universities of other European countries.

According to the figures for the 2004-2005 academic year, which can be seen in Table 2 and Graphic 2, the countries from which the highest number of students have visited Catalonia are Italy, France, Germany, Portugal and the United Kingdom. The most popular countries for Catalan exchange students are also Italy, France, the United Kingdom and Germany, in addition to the Netherlands (Table 3, Graphic 3).

By gender (Graphic 4), considerably more than half (63%) the students from other countries visiting Catalan universities were women. Women were also the majority (60%) among Catalan students visiting other countries (Graphic 5).

According to the figures for the 2004-2005 academic year, the areas of study with the greatest number of exchanges in the two directions are Social Sciences, Humanities and Technical Sciences.

### 3.2. Figures for Spain

According to figures provided by the ERASMUS National Agency for the 2004-2005 academic year (Table 5), the number of students from other

**Graphic 1**
**Chronological evolution of the ERASMUS programme: general mobility of students in Catalonia**

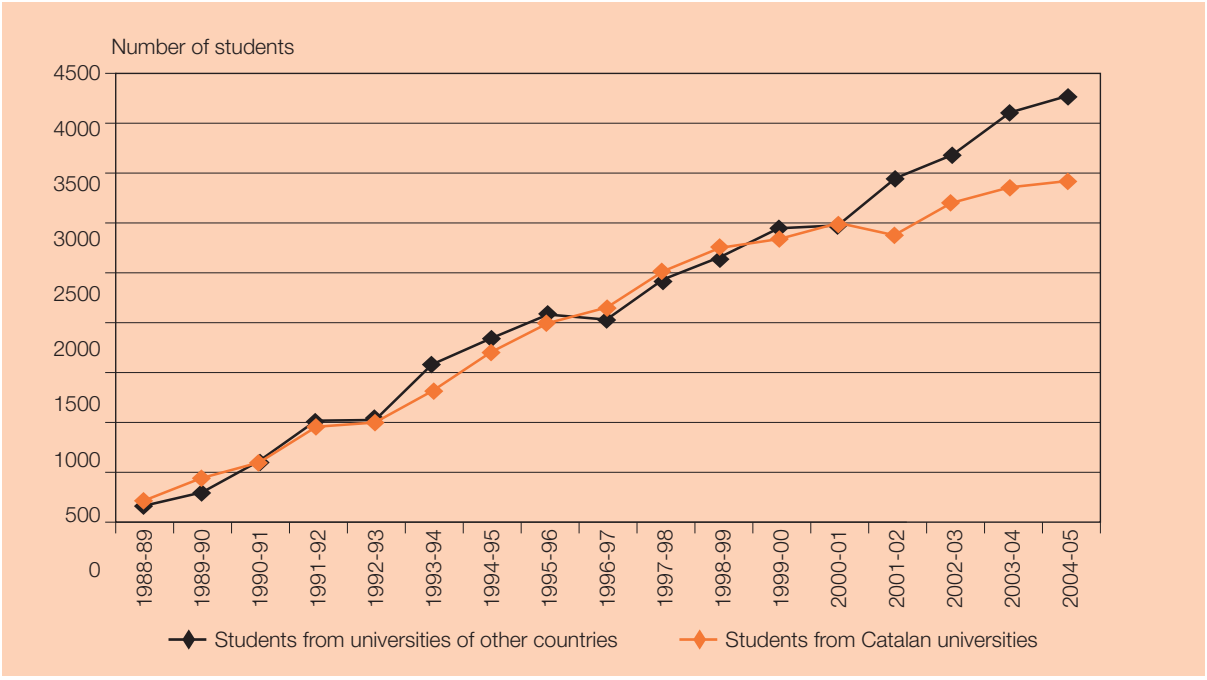


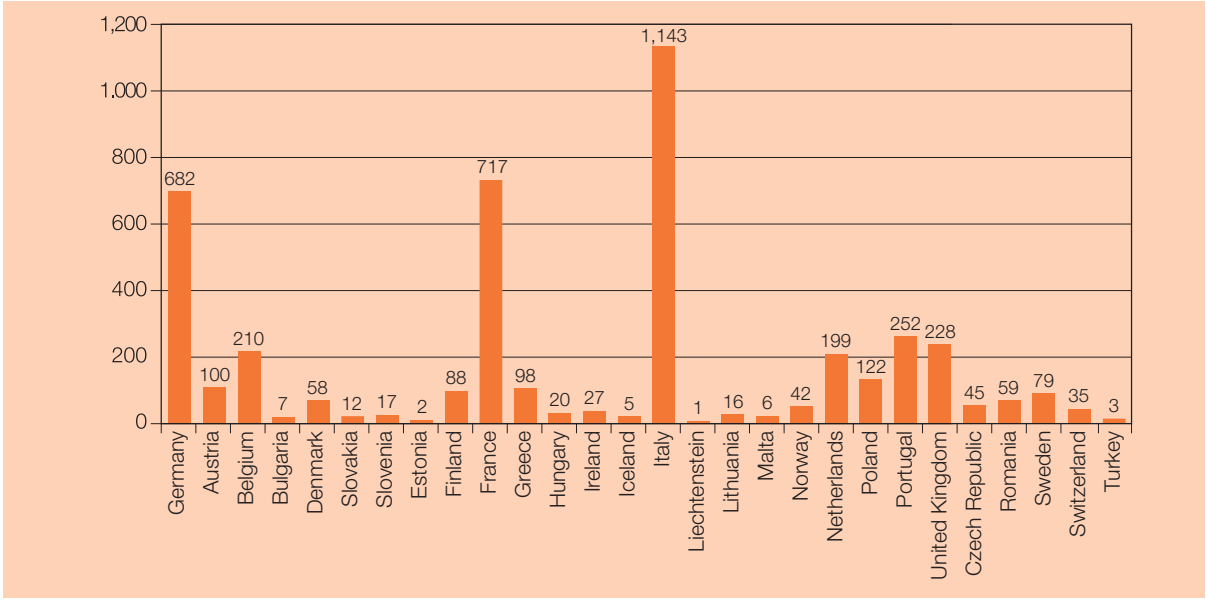
**Table 2**
**ERASMUS programme: student mobility from other countries to Catalan universities, by country of origin. 2004-2005 academic year**

| Country | UB | UAB | UPC | UPF | UdG | UdL | URV | URL | UVic | UIC | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Germany | 230 | 197 | 86 | 86 | 7 | 11 | 18 | 24 | 6 | 17 | **682** |
| Austria | 32 | 34 | 16 | 7 | - | 1 | 5 | 5 | - | - | **100** |
| Belgium | 51 | 51 | 30 | 20 | 20 | - | 3 | 31 | - | 4 | **210** |
| Bulgaria | - | 1 | 4 | - | 2 | - | - | - | - | - | **7** |
| Denmark | 15 | 24 | 2 | 4 | - | - | - | 12 | 1 | - | **58** |
| Slovakia | 1 | 3 | 5 | - | 3 | - | - | - | - | - | **12** |
| Slovenia | 6 | 4 | 7 | - | - | - | - | - | - | - | **17** |
| Estonia | 1 | - | 1 | - | - | - | - | - | - | - | **2** |
| Finland | 19 | 31 | 16 | 1 | 2 | 6 | 1 | 10 | 2 | - | **88** |
| France | 176 | 226 | 136 | 71 | 20 | 18 | 26 | 31 | 10 | 3 | **717** |
| Greece | 36 | 37 | 14 | 3 | 6 | 2 | - | - | - | - | **98** |
| Hungary | 6 | 2 | 2 | - | 4 | 1 | - | 4 | 1 | - | **20** |
| Ireland | 8 | 8 | - | 2 | 4 | - | 5 | - | - | - | **27** |
| Iceland | - | 2 | - | - | - | - | 1 | 2 | - | - | **5** |
| Italy | 356 | 337 | 163 | 78 | 29 | 39 | 50 | 43 | 13 | 35 | **1,143** |
| Liechtenstein | - | - | 1 | - | - | - | - | - | - | - | **1** |
| Lithuania | 4 | - | 5 | - | 2 | 1 | 4 | - | - | - | **16** |
| Malta | - | - | - | - | - | 2 | 4 | - | - | - | **6** |
| Norway | 7 | 9 | 7 | 2 | 2 | - | 1 | 14 | - | - | **42** |
| Netherlands | 69 | 44 | 23 | 32 | 1 | 3 | - | 19 | 6 | 2 | **199** |
| Poland | 39 | 27 | 9 | 2 | 4 | 10 | 11 | 2 | 6 | 12 | **122** |
| Portugal | 52 | 106 | 51 | 13 | 5 |  | 9 | 12 | 2 | 2 | **252** |
| United Kingdom | 64 | 68 | 18 | 47 | 1 | 8 | 7 | 7 | 8 | - | **228** |
| Czech Republic | 3 | 9 | 18 | 3 | 2 | 4 | 3 | 3 | - | - | **45** |
| Romania | 19 | 23 | 8 | - | 4 | 4 | - | 1 | - | - | **59** |
| Sweden | 17 | 22 | 22 | 15 | - | - | - | 3 | - | - | **79** |
| Switzerland | - | 14 | - | 15 | - | - | - | 6 | - | - | **35** |
| Turkey | - | - | 1 | - | - | - | 2 | - | - | - | **3** |
| **Totals** | **1,211** | **1,279** | **645** | **401** | **118** | **110** | **150** | **229** | **55** | **75** | **4,273** |

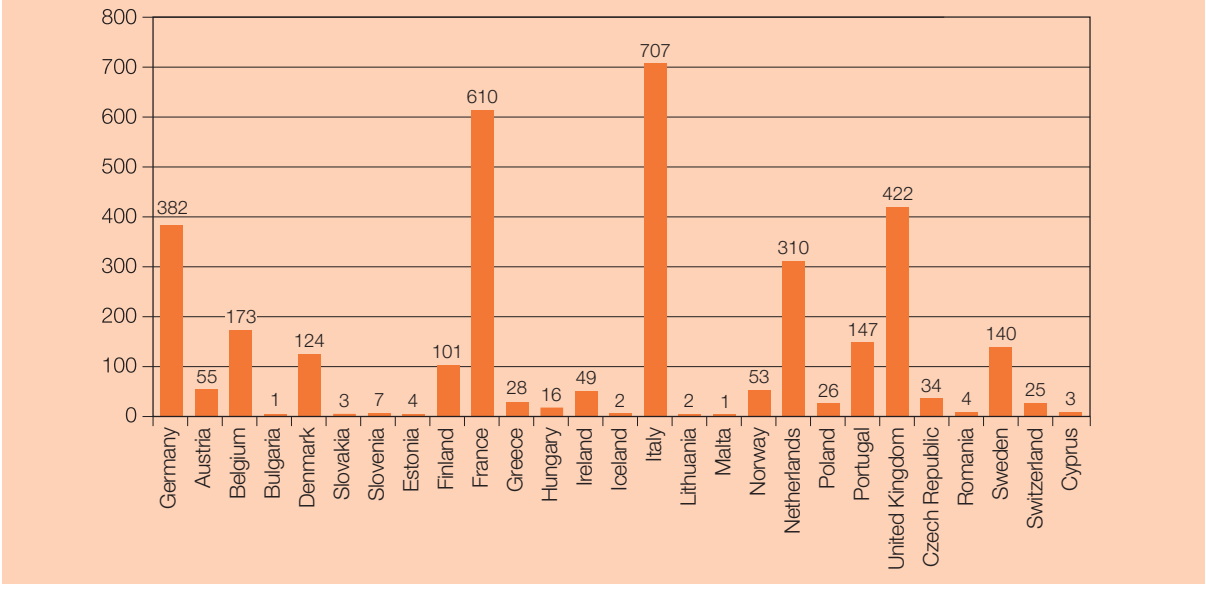
**Table 3**
**ERASMUS programme: student mobility of Catalan universities, by host country. 2004-2005 academic year**

| Country | UB | UAB | UPC | UPF | UdG | UdL | URV | URL | UVic | UIC | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Germany | 90 | 88 | 97 | 55 | 14 | 5 | 16 | 9 | 7 | 1 | **382** |
| Austria | 12 | 12 | 19 | 5 | 1 | 1 | 5 | - | - | - | **55** |
| Belgium | 34 | 26 | 32 | 19 | 30 | 6 | 1 | 24 | 1 | - | **173** |
| Bulgaria | - | - | | - | 1 | - | - | - | - | - | **1** |
| Denmark | 34 | 25 | 38 | 7 | 6 | 3 | 4 | 5 | 2 | - | **124** |
| Slovakia | - | 1 | 2 | - | - | - | - | - | - | - | **3** |
| Slovenia | - | - | 5 | - | - | - | 2 | - | - | - | **7** |
| Estonia | 2 | - | - | - | - | 2 | - | - | - | - | **4** |
| Finland | 15 | 39 | 17 | 3 | 6 | 13 | 3 | 3 | 2 | - | **101** |
| France | 141 | 138 | 172 | 69 | 25 | 10 | 26 | 24 | 2 | 3 | **610** |
| Greece | 11 | 11 | 1 | - | 2 | 1 | 2 | - | - | - | **28** |
| Hungary | 5 | 2 | 1 | - | 4 | 1 | - | 1 | 2 | - | **16** |
| Ireland | 8 | 15 | 6 | 4 | 10 | - | 4 | 2 | - | - | **49** |
| Iceland | 1 | 1 | - | - | - | - | - | - | - | - | **2** |
| Italy | 159 | 230 | 105 | 69 | 31 | 38 | 22 | 39 | 2 | 12 | **707** |
| Lithuania | 1 | - | 1 | - | - | - | - | - | - | - | **2** |
| Malta | - | - | - | - | - | 1 | - | - | - | - | **1** |
| Norway | 17 | 11 | 14 | 1 | 3 | 1 | 3 | 3 | - | - | **53** |
| Netherlands | 103 | 83 | 47 | 30 | 13 | 9 | 8 | 11 | 6 | - | **310** |
| Poland | 9 | 8 | 1 | - | 1 | 4 | 1 | 1 | 1 | - | **26** |
| Portugal | 21 | 62 | 21 | 4 | 9 | 9 | 7 | 13 | 1 | - | **147** |
| United Kingdom | 81 | 106 | 65 | 95 | 4 | 6 | 18 | 22 | 24 | 1 | **422** |
| Czech Republic | 1 | 10 | 9 | 3 | 1 | 5 | 2 | 3 | - | - | **34** |
| Romania | 1 | 1 | - | - | 1 | - | 1 | - | - | - | **4** |
| Sweden | 29 | 31 | 47 | 22 | 3 | 2 | 3 | 3 | - | - | **140** |
| Switzerland | - | 9 | - | 15 | - | - | 1 | - | - | - | **25** |
| Cyprus | - | - | - | - | 2 | 1 | - | - | - | - | **3** |
| **Totals** | **775** | **909** | **700** | **401** | **167** | **118** | **129** | **163** | **50** | **17** | **3,429** |

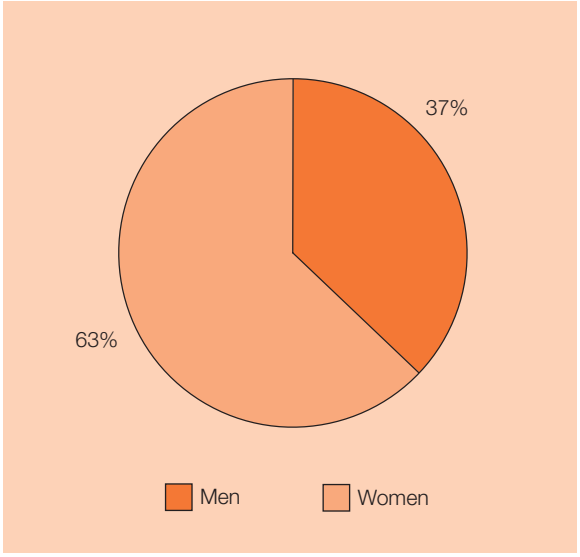
**Graphic 2**
**Country of origin of students visiting Catalonia (2004-2005 academic year)**



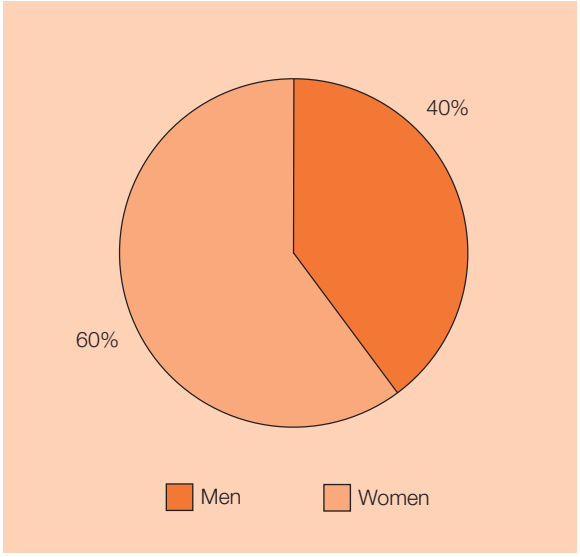

**Graphic 3**
**Host countries of students from Catalonia (2004-2005 academic year)**



**Graphic 4**
**Student mobility from other countries to Catalan Universities, by gender. ERASMUS programme (2004-2005 academic year)**




**Graphic 5**
**Student mobility from Catalan Universities to other countries, by gender. ERASMUS programme (2004-2005 academic year)**




countries visiting Spain was 25,511, of whom the largest group were the Italians (6,005), followed by the French (5,167) and the Germans (4,710). The number of Spanish students visiting other European countries was 20,819, of whom 4,631 chose Italy, 3,362 chose France, and 2,844 chose the United Kingdom. Spain was again a net recipient of mobility students within the programme.

In the 2004-2005 academic year two new countries were incorporated in the programme: Turkey and Liechtenstein.

### 3.3. Figures by autonomous communities

The figures of exchanges for the 2004-2005 academic year by autonomous communities (Table 6), show that Catalonia ranks third in the number of students visiting its universities, after Madrid and Andalusia, and second in the number of students visiting other European countries, after Madrid. However, in order to assess the relative weight of these exchanges for each autonomous community, the exchanges must be related to the number of students in each university system. This information can be seen in Table 7. In the 2004-2005 academic year, 1.79 of every 100 students

**In the case of Catalonia, in the 2004-2005 academic year, 1.79 of every 100 students studied in other European countries.**

**Table 4**
**ERASMUS programme: Student mobility from Catalan universities, by area of study. 2004-2005 academic year**

| Area of study | Students from other countries who have studied at Catalan universities | Students from Catalan universities who have studied at universities in other countries |
|---|---|---|
| Sciences | 204 | 253 |
| Health Sciences | 270 | 206 |
| Social Sciences | 1,709 | 1,151 |
| Sport Management and Practice | 55 | 22 |
| Humanities | 1,240 | 773 |
| Technical | 791 | 951 |
| Unspecified | 4 | 73 |
| **TOTAL** | **4,273** | **3,429** |

**Table 5**
**ERASMUS programme: student mobility by countries. 2004-2005 academic year**

| Country | Students from other countries visiting Spain | Students from Spain visiting other European countries |
|---|---|---|
| Germany | 4,710 | 2,509 |
| Austria | 646 | 331 |
| Belgicum | 1,325 | 1,151 |
| Bulgaria | 48 | 27 |
| Denmark | 296 | 599 |
| Slovakia | 96 | 25 |
| Slovenia | 94 | 31 |
| Estonia | 43 | 14 |
| Finland | 508 | 547 |
| France | 5,167 | 3,362 |
| Greece | 413 | 173 |
| Hungary | 157 | 87 |
| Ireland | 271 | 545 |
| Iceland | 26 | 19 |
| Italy | 6,005 | 4,631 |
| Latvia | 21 | 5 |
| Liechtenstein | 4 | 0 |
| Lithuania | 81 | 19 |
| Luxembourg | 12 | 0 |
| Malta | 17 | 17 |
| Norway | 220 | 231 |
| Netherlands | 926 | 1,198 |
| Poland | 764 | 246 |
| Portugal | 989 | 1,130 |
| United Kingdom | 1,651 | 2,844 |
| Czech Republic | 354 | 222 |
| Romania | 316 | 76 |
| Sweden | 314 | 769 |
| Turkey | 32 | 1 |
| Cyprus | 5 | 10 |
| **TOTAL** | **25,511** | **20,819** |

studied in other European countries. The proportion is higher for Navarre, Aragon, the Valencian Community, Cantabria and Castilla y León. With regard to the proportion of foreign students in each autonomous community, Catalonia is slightly better situated at 2.18%, after the Valencian Community, Castilla y León and Aragon. The total relative impact, which gives an overview of European student mobility through the Erasmus programme, provides the total proportion of Catalan students visiting Europe and of foreign students visiting Catalan universities: 3.98% of all the students in the Catalan system. In this case Catalonia ranks fifth among the autonomous communities.

## 4. Academic accreditation of the study period

Before starting the study period, the students must reach an agreement with their tutor on the work plan that they will carry out during the academic year. Within six weeks after reaching their destination, they can modify the work plan if changes arise in the conditions agreed with the host university.

The regulations of exchange programmes establish that participating students must be able to take at least 20 free-elective credits at the host

**Table 6**

**Student mobility from other European countries to Spain by autonomous communities**
**ERASMUS programme. 2004-2005 academic year**

| Autonomous community | Number of students | Percentage |
|---|---|---|
| Madrid | 4,448 | 18.10 % |
| Andalucía | 4,438 | 18.06 % |
| **Catalonia** | **4,109** | **16.72 %** |
| València | 3,835 | 15.61 % |
| Castilla y León | 2,162 | 8.80 % |
| Galicia | 1,117 | 4.55 % |
| Basque Country | 834 | 3.39 % |
| Aragón | 787 | 3.20 % |
| Canary Islands | 683 | 2.78 % |
| Murcia | 544 | 2.21 % |
| Asturias | 422 | 1.72 % |
| Castilla–la Mancha | 297 | 1.21 % |
| Extremadura | 296 | 1.20 % |
| Navarre | 250 | 1.02 % |
| Cantabria | 208 | 0.85 % |
| Balearic Islands | 94 | 0.38 % |
| La Rioja | 49 | 0.20 % |
| **TOTAL** | **24,573** | |

**Student mobility from Spanish universities to other European countries**
**ERASMUS programme. 2004-2005 academic year**

| Autonomous community | Number of students | Percentage |
|---|---|---|
| Madrid | 4,215 | 20.25 % |
| **Catalunya** | **3,371** | **16.19 %** |
| València | 3,029 | 14.55 % |
| Andalucía | 2,970 | 14.27 % |
| Castilla y León | 1,617 | 7.77 % |
| Basque Country | 1,023 | 4.91 % |
| Galicia | 993 | 4.77 % |
| Aragón | 808 | 3.88 % |
| Canary Islands | 572 | 2.75 % |
| Murcia | 457 | 2.20 % |
| Navarre | 431 | 2.07 % |
| Castilla–la Mancha | 413 | 1.98 % |
| Extremadura | 310 | 1.49 % |
| Asturias | 265 | 1.27 % |
| Cantabria | 211 | 1.01 % |
| Balearic Islands | 89 | 0.43 % |
| La Rioja | 45 | 0.22 % |
| **TOTAL** | **20,819** | |

**Table 7**
**Erasmus programme: student mobility by autonomous communities in relation to the total number of students of each community. 2004-2005 academic year.**

| Autonomous community* | Students visiting other EU countries | Total number of students in the autonomous community | % of students of the community participating in exchanges in the ERASMUS programme against the total number of students of the community | % of students from other European countries visiting the autonomous community in the ERASMUS programme against the total number of students of the autonomous community | % of students of the autonomous community and other European countries carrying out exchanges in the ERASMUS programme against the local number of students of the autonomous community |
|---|---|---|---|---|---|
| Madrid | 4,215 | 238,590 | 1.77% | 1.86% | 3.63% |
| **Catalonia** | **3,371** | **188,159** | **1.79%** | **2.18%** | **3.98%** |
| València | 3,029 | 139,792 | 2.17% | 2.74% | 4.91% |
| Andalucía | 2,970 | 235,121 | 1.26% | 1.89% | 3.15% |
| Castilla y León | 1,617 | 88,884 | 1.82% | 2.43% | 4.25% |
| Basque Country | 1,023 | 62,596 | 1.63% | 1.33% | 2.97% |
| Galicia | 993 | 79,074 | 1.26% | 1.41% | 2.67% |
| Aragón | 808 | 34,009 | 2.38% | 2.31% | 4.69% |
| Canary Islands | 572 | 46,274 | 1.24% | 1.48% | 2.71% |
| Murcia | 457 | 38,732 | 1.18% | 1.40% | 2.58% |
| Navarre | 431 | 16,810 | 2.56% | 1.49% | 4.05% |
| Castilla-la Mancha | 413 | 28,292 | 1.46% | 1.05% | 2.51% |
| Extremadura | 310 | 24,861 | 1.25% | 1.19% | 2.44% |
| Asturias | 265 | 31,619 | 0.84% | 1.33% | 2.17% |
| Cantabria | 211 | 11,260 | 1.87% | 1.85% | 3.72% |
| Illes Balears | 89 | 12,431 | 0.72% | 0.76% | 1.47% |
| La Rioja | 45 | 6,756 | 0.67% | 0.73% | 1.39% |
| UNED** | | 146,330 | 0.00% | | |
| UOC** | | 33,307 | 0.00% | | |
| **Total for Spain** | **20,819** | **1,283,260** | **1.62%** | **1.91%** | **3.54%** |

* Students of the autonomous communities in face-to-face universities.
** Students of UNED and UOC (non-presencial universities) do not participate in the Erasmus Programme.

university. They may not take subjects at the host university that they have failed at the university of origin. At the end of their study period, the students must deliver a certificate with the list of the marks they have obtained to their university of origin.

## 5. Other mobility programmes organised by the European Commission[1]

Though the ERASMUS programme is one of the best-known programmes in the European Union,

[1] Further information on the objectives, participation and requisites of the exchange programmes analysed above can be found on the web page of the Ministry of Innovation, Universities and Business under the heading "Universities": http://www10.gencat.net/dursi/uk/un/estudiarfora.htm

student mobility also includes other international mobility programmes whose aim is to contribute to a quality education and to foster the development of the international dimension in the field of education. Accordingly, the Catalan universities offer their students the possibility of participating in programmes that allow them to study and do practicals at universities outside Catalonia. The international relations offices of the universities manage and coordinate the exchanges in the framework of the programmes for which each university establishes collaboration agreements.

Without wishing to be exhaustive, below is a brief description of the most important mobility programmes offered by the European Commission to promote mobility of students and teaching staff at different levels of education.

### Tempus

The Tempus programme promotes mobility of students and teaching staff between the higher education institutions of the countries of Central and Eastern Europe, Central Asia and the Mediterranean countries that are members of the European Union. Its objectives are to allow students to go on work placement through cooperation between companies and universities, to promote life-long training and to provide support to the European dimension of vocational training systems.

### Leonardo da Vinci

The Leonardo da Vinci programme promotes higher education and vocational training in Europe. Its objectives are to adapt the systems of education and training to life-long learning, to promote integration in employment and society through an investment in knowledge and skills, to create an information society for everyone, and to foster mobility.

The countries participating in the programme are the fifteen members of the EU, plus the three members of the European Economic Area (Iceland, Liechtenstein and Norway), Cyprus, the associated countries of Central and Eastern Europe (PECO: Bulgaria, Slovakia, Slovenia, Estonia, Hungary, Latvia, Lithuania, Poland, the Czech Republic and Romania), Malta and Turkey.

**The Leonardo da Vinci programme aims to promote higher education and vocational training in Europe.**

### Erasmus Mundus

The aim of the Erasmus Mundus programme is to improve the quality of European higher education and to favour intercultural understanding through cooperation with third countries. It is intended to strengthen international links in higher education in order to allow university students from all over the world to engage in postgraduate study at European universities, and to encourage the outgoing mobility of European students towards third countries.

It is open to the 25 member states of the European Union, the candidate countries for accession to the European Union (Bulgaria, Romania and Turkey), the countries of European Free Trade Association / European Economic Area and the rest of the countries of the world (third countries).

### Alfa

Alfa is a programme of cooperation between higher education institutions of the European Union and Latin America. Its main objectives are to foster cooperation between higher education institutions of Europe and Latin America in the areas of institutional management and scientific training.

The participating countries are the member states of the European Union and the following eighteen countries of Latin America: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela.

### Youth for Europe

This is an education programme outside the formal and regulated structures that is aimed at persons between the ages of 15 and 25 and open to 31 European countries (the member countries of the European Union, Iceland, Liechtenstein, Norway and the candidate countries for accession in the future: Bulgaria, Romania and Turkey). It offers young people the possibility of going on transnational exchanges within the community with the associated countries, or with third countries, and encourages individual volunteer work and activities of support related to youth.

## 6. Advantages of mobility

In addition to the advantages mentioned above, another factor that leads students to participate in the mobility programmes is the desire to learn a language in the host country. The knowledge of the language of the country facilitates communication and integration in the host university system, and is considered to be especially important by the Commission for Universities and Research of the Ministry of Innovation, Universities and Enterprise of the Generalitat of Catalonia. Therefore, in the framework of the offer of subsidies for developing the language policy programmes of universities, an annual assignment is planned for cultural and linguistic induction activities of students from other countries who visit Catalan universities. Furthermore, one of the requisites for obtaining mobility grants for the Erasmus programme and others awarded by the Commission for Universities angh Research of the Ministry of Innovation, Universities and Enterprise of the Government of Catalonia is the certification of sufficient knowledge of the language of teaching in the host country.

The European university systems now face a new challenge: the consolidation of the European Higher Education Area, a project that emerged from the Bologna Declaration signed by the ministers of Education of 29 European countries at a meeting in Bologna in 1999. This declaration marked the start of a process of construction of the European Higher Education Area, of which all the member states of the European Union, and other European countries that will soon become members, form part.

This process, which should conclude in 2010, involves establishing a new structure of university studies that will be divided into undergraduate and postgraduate level. It also involves the application of a new teaching methodology in which student mobility can play a fundamental role as a system for improving learning. It must therefore be promoted in order to achieve a

considerable increase in the number of students participating in exchange programmes.

## 7. Mobility promotion policies of the European Union and future prospects

One of the objectives of the Bologna Declaration is that this process should be developed harmoniously and through agreement, in a context in which institutions and organisations will hold meetings and seminars in different parts of Europe in order to establish a common education policy. The aim of this is to unify the aspects that will improve the transparency and comparability of university qualifications within the European Union.

In order to achieve and guarantee the promotion of mobility for students as well as for the teaching, research and administrative staff of higher education establishments, international, national and regional institutions must improve the current policies concerning grants and subsidies. The new Lifelong Learning Programme for 2007-2013 is a step forward in this direction. It proposes to include the Comenius programme for school teaching, the Erasmus programme for university teaching, the Leonardo da Vinci programme for work placement, and the Grundtvig programme for adult education.

The Lifelong Learning Programme emphasises the need to improve the requirements of the ERASMUS university charter, which should place emphasis on the quality of the organisation of mobility, recognition of studies, agreements for learning, language training and services to students. The new programme provides special, more flexible conditions with higher grants for students registered in interuniversity master's degrees developed within the framework of the European Higher Education Area. It plans to promote the mobility of the teaching and administrative staff of higher education establishments in the framework of the European Higher Education Area. Finally, it plans to improve and increase cooperation between universities and companies by reorganising the Leonardo da Vinci programme and evaluating the possibility of including it in the new ERASMUS programme.

This new approach to mobility programmes should help to improve and increase student mobility in the European Union, in order to guarantee the adaptation of the university studies to the new structure that is taking shape within the European Higher Education Area.

# THE CATALAN INSTITUTE OF CLASSICAL ARCHAEOLOGY (ICAC): A RESEARCH AND ADVANCED TRAINING CENTRE

**Clara Ventura Manén* and Josep Guitart i Duran****

**The Institut Català d'Arqueologia Clàssica (Catalan Institute of Classical Archaeology, or ICAC) is a public consortium that was created by the Department of Universities, Research and the Information Society of the Generalitat of Catalonia and by the Universitat Rovira i Virgili. Its headquarters, which were inaugurated in September 2003, are located in the historic heart of the city of Tarragona. The aim of the ICAC is to implement research and provide advanced training in the field of classical archaeology. Its research efforts are largely centred on studies of Greek and Roman archaeological remains, and the corresponding results are analysed in the context of other ancient world studies, such as classical languages, numismatics, epigraphy, art history, and Greek and Roman thought. Despite its few years in existence, the ICAC has made a promising start; it has already undertaken a number of research programmes and projects and also runs an officially recognised inter-university post-graduate programme. This article describes some of the more important aspects of the organisation and activities of the ICAC, and provides some examples of ICAC research projects currently underway.**

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5. Publication of research results

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** Josep Guitart is the Director of the Institut Català d'Arqueologia Clàssica.

6. Towards the creation of research support services
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## 1. The ICAC: a classical archaeology research centre

The Institut Català d'Arqueologia Clàssica (Catalan Institute of Classical Archaeology, or ICAC) is a research centre created by a formal agreement of the Catalan Autonomous Government (Generalitat de Catalunya) of 2 May 2000. It is included in the Third Research Plan for Catalonia (2001-2004). Its mission is to implement research and provide advanced training in classical archaeology. In the broadest sense, classical archaeology is understood in both geographical terms (the Mediterranean and its European context, North Africa and the Near East—the cradle of classical culture) and historical terms (the Greek and Roman civilisations and the peoples with which the Greeks and Romans had dealings, for example, the Iberians).

The ICAC is a consortium participated in by the Department of Innovation, Universities and Enterprise (DIUE) of government of Catalonia (Generalitat), and the Rovira i Virgili University (URV). The Inter-University Council of Catalonia is also represented on the ICAC Governing Board. The programme-contract signed with the Generalitat and the definition of a policy provided the input to the ICAC's First Four-Year Action Plan (2002-2006).

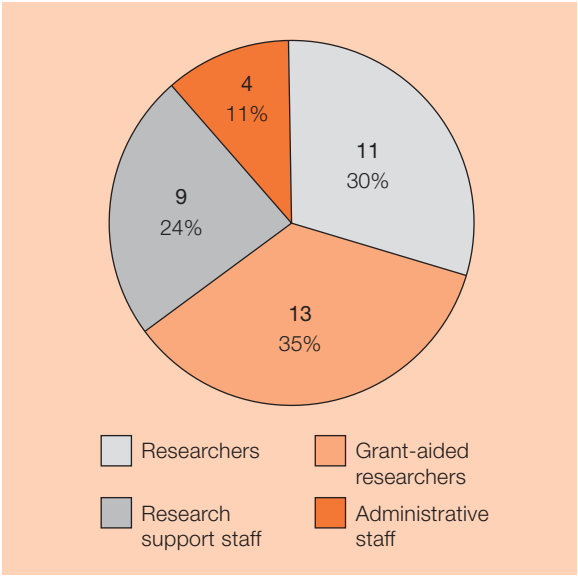
**Funding of the centre is largely by the Generalitat, complemented by contributions from other public bodies (obtained via open competitions), and from other organisations and companies.**

Funding of the centre is largely by the Generalitat, complemented by contributions from other public bodies (obtained via open competitions) and from other organisations and companies.[1]

In these early years of functioning, the ICAC has been gradually recruiting researchers and research support staff so as to be able to comply with the provisions of its four-year plan. One of its main activities in this area has been the recruitment of

[1] ICAC has received funding from, for example, the Spanish Ministry of Educación and Science, the Government of Andorra, a number of town councils, and from private enterprises such as Repsol YPF and ACESA.

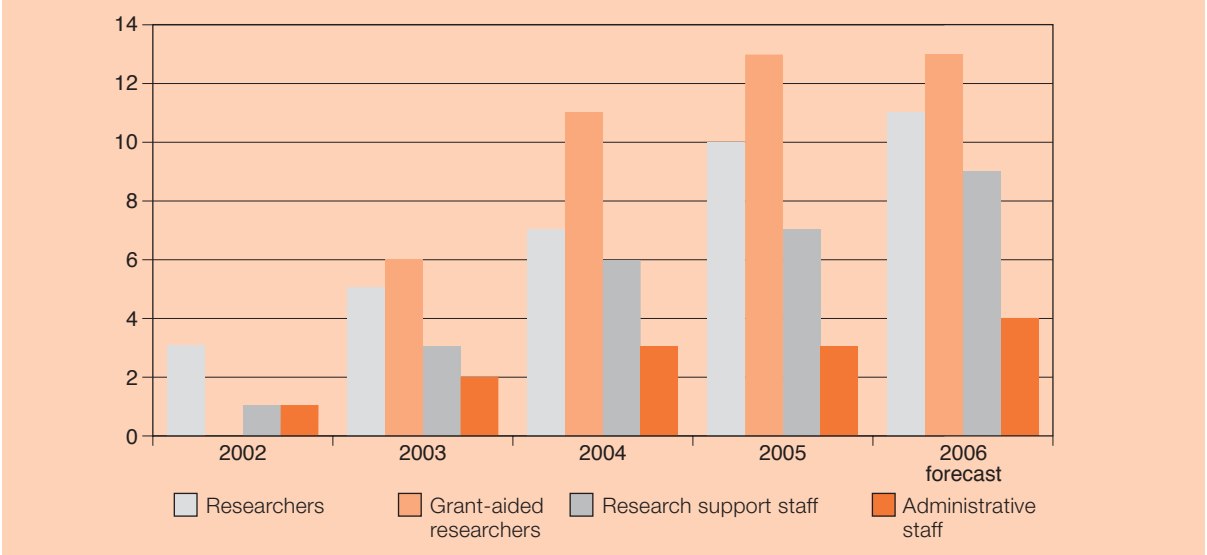
**Graphic 1**
**ICAC staff by professional category (forecast for 2006)**




pre-doctoral researchers. A Research Initiation Programme (*Beques d'iniciació a la recerca*, or BIR) was launched in cooperation with a number of archaeology organisations, which by now incorporates a total of 15 researchers. The ICAC has also recruited grant-aided pre-doctoral researchers under the Generalitat Programme of pre-doctoral grants for training of researchers, FI. Graphics 1and 2 summarise ICAC staffing data, and Figure 1 illustrates the organigram of the ICAC.

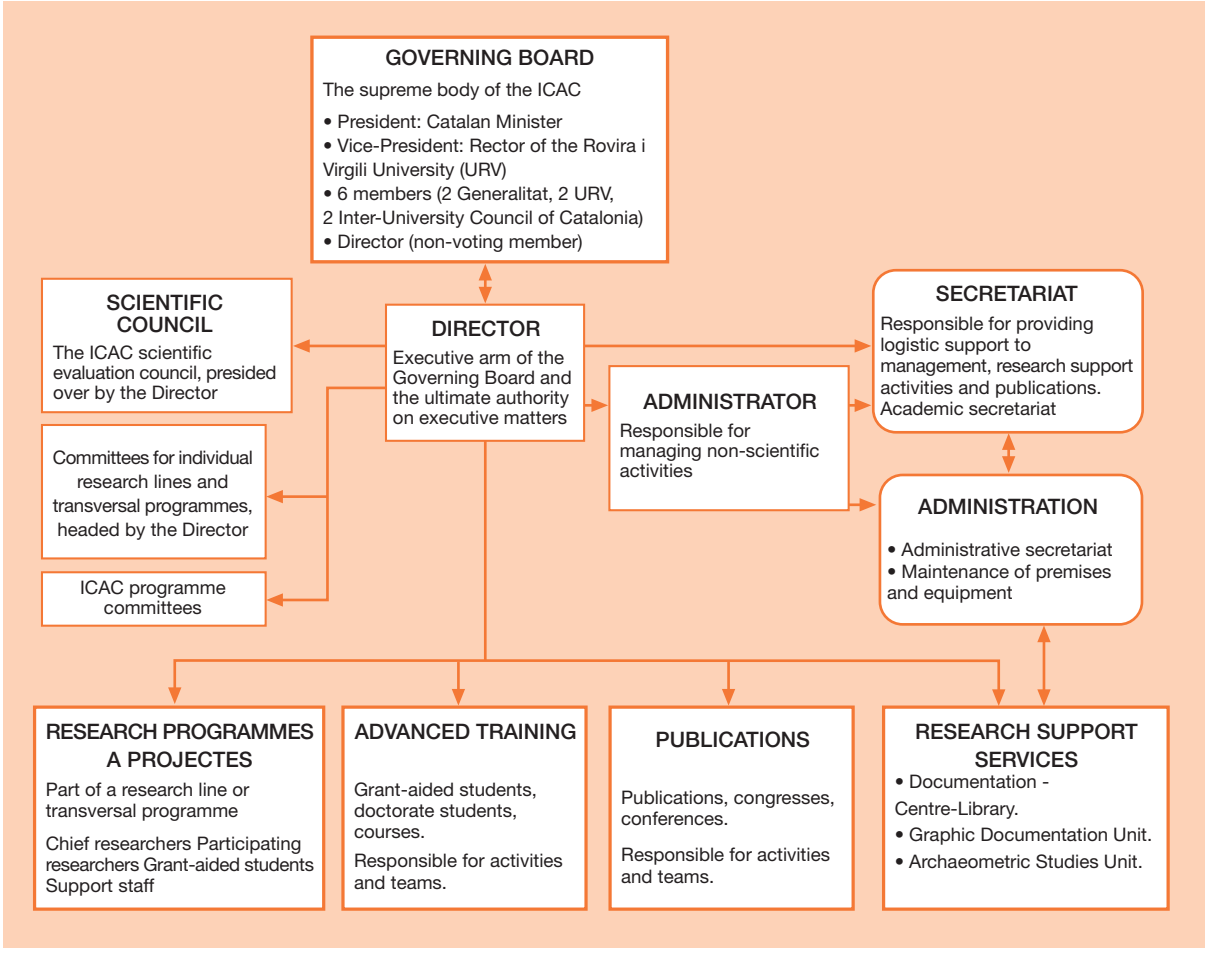
The ICAC has signed a total of 42 cooperation agreements (Graphic 3). Agreements signed with universities aim to implement scientific cooperation and advanced training activities; those signed with archaeology organisations are aimed at participation in the BIR programme; and agreements entered into with a number of town councils and other public and private bodies refer to specific research projects.

**Graphic 2**
**ICAC staffing by professional category for the period 2002-2006**

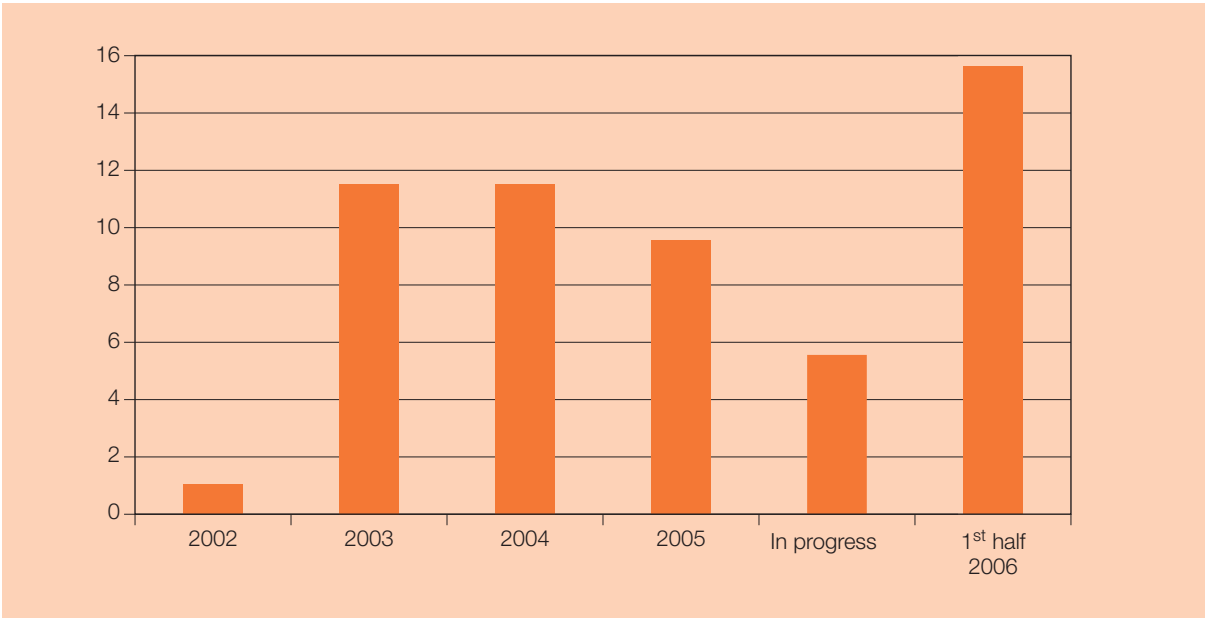


In order to implement its pioneering research function in the classical archaeology field, the ICAC has focused its research activity by developing programmes and projects that focus on relevant aspects of the discipline and that apply the most advanced techniques available in science and technology. It also fosters interdisciplinary research involving experimentation with new analysis techniques. The ICAC works closely with other Spanish and international research centres working in the same field. Considered particularly important is the development of close ties with universities with the aim of creating an international cooperation platform that will be a landmark in the European research context. The ICAC also cooperates with institutions that manage the archaeological heritage

**Figure 1**
**ICAC organigram**



**Graphic 3**
**Signed cooperation agreements**




of Catalonia with the aim of contributing to scientific and cultural studies. It also provides advanced training in archeology and publishes the results of its research.

## 2. The ICAC headquarters: *Tarraco*

The city of Tarragona is the former Roman city of *Tarraco*, the brilliant capital of *Hispania Citerior*. Designated a World Heritage city by UNESCO in 2000, it represents the perfect backdrop for the activities of the ICAC. The ICAC premises on the campus of the Rovira i Virgili University (URV)—located in the historic part of the city in what was the market of the forum—was ceded to the ICAC by Tarragona Town Council. The building, comprising 1,129 square metres distributed over three floors, has offices, researcher rooms, a documentation centre/library, workshops and laboratories, a meeting room, seminar rooms, and storage rooms. Following extensive renovations to the building, it was finally inaugurated as the ICAC headquarters on 26 September, 2003. Thereafter the ICAC gradually acquired equipment, focusing particularly on the research support areas.

## 3. ICAC research

### 3.1. Research lines and transversal programmes

The scientific mission of the ICAC, which is both diverse and interdisciplinary, is structured along four research lines that cover key aspects of classical archaeology. Research is conducted by in-house

and sub-contracted researchers, occasionally in cooperation with external or visiting researchers. Each research line focuses on specific programmes that include a range of research projects that are representative of the scientific aims of the ICAC.

The research lines established according to the First Four-Year Action Plan (2002-2006) are as follows:

1. **The archaeology of ancient cities**. This research focuses on the study of ancient cities from archaeological remains and an analysis of the processes that had a bearing on their establishment, their idealogical and urban formation, and their evolution into late Antiquity and the Middle Ages. A number of projects are underway, most of which fall under the following three programmes:

   – *Tarraco*: This consists of four projects focusing on the archaeological planimetry of *Tarraco*, subterranean aqueducts in *Tarraco*, excavations under the Cathedral of Tarragona, and the Francolí suburb in paleochristian *Tarraco*.
   – Archeology in the Roman city of *Iesso* (Guissona).2 This includes projects such as the excavation and study of Roman public baths in Iesso, a study of *Cardo Minor* No. 2 in the Roman city of *Iesso*, and a study of the northern wall of the *Iesso* fortifications.
   – Archeological mission to Oxyrhynchus (al-Minya, Egypt): This includes projects such as excavations of the early necropolis, in Osireion and in the western suburb of the city of Oxyrhynchus.

2. **The archaeology of landscapes, settlements and territory**. This research focuses on all aspects of landscapes, forms of settlement and territorial organisation in Antiquity, taking into account environmental, social and human aspects. Among the several projects being conducted under this programme, the following are worthy of particular mention:

**The scientific mission of the ICAC is structured along four research lines that cover key aspects of classical archaeology. The ICAC also has three transversal programmes underway, aimed at developing methodological disciplines.**

   – Settlement dynamics and territorial organisation forms in the Mediterranean *Hispania Citerior*: This includes a project on land occupation and mountain landscape forms in the eastern Pyrenees from Antiquity to the Middle Ages.
   – *Ager Tarraconensis*: Among other projects, this includes a study of the ancient archaeological landscape in *Ager Tarraconensis* (on the right bank of the Francolí river).
   – Formation of complex societies in Catalan protohistory: The following projects are covered by this programme: the Iberian citadel at Alorda Park and Toixoneres (Calafell, Baix Penedès), the necropolis of Santa Madrona (Riba-roja d'Ebre, Ribera d'Ebre), the Iberian settlement at Castellot de la Roca Roja (Benifallet, Baix Ebre), the Iberian settlement at Castellet de Banyoles (Tivissa, Ribera d'Ebre) and the protohistoric site at Sebes (Flix, Ribera d'Ebre).

[2] *Iesso* is the ancient name of a settlement located at the site of the town of Guissona, in the Catalan hinterland.

Recently initiated within this line of research is a project in cooperation with the UMR 5140 (Archaeology of Mediterranean Societies) database for Roman settlement in Catalonia and Languedoc, operated by the Lattes Archaeology Centre under the auspices of the French National Scientific Research Centre (CNRS).

3. ***Instrumentum domesticum*.** Materials and trade in the ancient world. Referring to materials and trade in the ancient world, this research focuses on archaeological finds from Antiquity and the reconstruction of trading activities from these materials. These constitute an instrument for the study of the economic, social and political aspects of classical Antiquity. Four research projects are being implemented as part of this programme, as follows: a thematic network in regard to the production and sale of copies of fine porcelain imports to Hispania Citerior in the late Roman Republic and early Roman Empire; a restudy of fine black-glazed pottery from Cosa Deposits A-E (Ansedonia, Tuscany, Italy); and studies of Xanten amphora materials (*Colonia Ulpia Traiana*, Xanten, Germania Inferior) and of amphora marks and workshops in *Barcino* (Barcelona).

4. **Classical archaeology and artistic productions.** This research examines artistic creation in antiquity and the corresponding archaeological documentation for sculpture, painting, mosaics and the minor arts. It also covers other closely related areas of study, such as, for example, iconography, crafts production, political and social use of the plastic arts, and associated ideological aspects. One of the most notable projects in this programme is the *Corpus Signorum Imperii Romani. Hispania.*

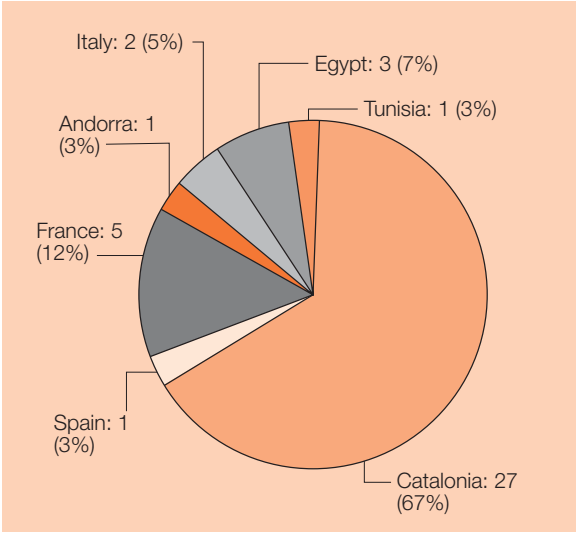
The ICAC is also involved in three transversal programmes, involving classical archaeology methods and applied disciplines, which interact with the above-mentioned four lines of research.

1. Experimental scientific methods and techniques applied to classical archaeology. Archaeometry, paleoenvironment and environmental archaeology.
2. Information and communication technologies applied to classical archaeology.
3. Classical archaeology and studies of Antiquity. Textual sources, epigraphy and numismatics.

### 3.2. A selection of research projects underway in the ICAC

The ICAC has a total of 33 research projects underway, classified according to different programmes. It is also active in developing synergies between the institutions and agents involved in these projects. Some of these projects are described in further detail below.

**Graphic 4**
**Geographical distribution of ICAC research projects (2003-2006)**



### Archaeological planimetry of *Tarraco*

**The Achaeological planimetry of *Tarraco* project has as its aim the compilation of planimetric information on archaeological activities implemented in Tarragona in the 20th century and up to 2004.**

This project is co-funded by the Museum of History of Tarragona and the ICAC and is also supported by the Directorate-General of Cultural Heritage of the Generalitat. It has as its aim the compilation of planimetric information on archaeological activities implemented in Tarragona in the 20th century and up to 2004. This task involves a very extensive historiographic and administrative documentation process prior to digitalization and processing using a Geographical Information System (GIS). To achieve the aims of the project, information collected by fifty archaeologists who have worked in the city in the last twenty-five years is being compiled. Close to 450 official archaeological excavation reports and around 500 scientific publications are being consulted. The project is assisted by four archaeology companies operating in the city of Tarragona, by the Royal Tarraconensis Archaeology Society and by the Urban Development Department of Tarragona Town Council. A topography company is applying Global Positioning System (GPS) technology to the main monuments in the city and the planimetries are being implemented in the current city layout using coordinates provided by the Cartographic Institute of Catalonia.

The project also involves advising the Museum of History of Tarragona on the preparation of a 1:500 scale model of *Tarraco in the 2nd century*. All the planimetry necessary to create the scale model was generated and supplied by the ICAC on the basis of the historical information collected for its planimetry project.

This project is in its final phases and it is anticipated that it will be included in the town's land registry and made available on the Internet. Once concluded it will be a valuable tool that will enhance archaeological research and analysis in ancient *Tarraco* by permitting data to be drawn together for comparison purposes and by facilitating a range of publication, management and heritage protection activities.

### The Can Tacó Roman archaeological site (Montmeló–Montornès del Vallès)

In 2003, the Montmeló and Montornès del Vallès Town Councils undertook a project aimed at the scientific and cultural recuperation of the archaeological site at Can Tacó-Turó d'en Roïna. Since 2004 the ICAC has taken charge of the scientific management of the archaeological dig. Currently underway is the process that will enable the site to be declared a cultural site of national interest by the Directorate-General of Cultural Heritage of the Generalitat of Catalonia. Data obtained to date would indicate that this site was the location of a Roman *castellum* in the 2nd century BCE. To data the site marked out covers 1,740.80 square metres. The Can Tacó -Turó d'en Roïna project is particularly important because there are very few such sites in the Iberian Peninsula and because the settlement was military. Its chronology, moreover, is relatively old, dating back as it does to the early days of the romanisation of Iberia. It is located at a strategic point in the Via Augusta, which was the main axis for the process of romanising the peninsula.

Found in the first dig in 2003 were remains of parietal decorations, consisting of stucco and part of a denticulated moulding. The layout of the stucco indicated the possible existence of an upper floor

**Since 2004 the ICAC has taken charge of the scientific management of the archaeological dig at the Can Tacó Roman archaeological site (Montmeló–Montornès del Vallès).**

where it was likely that the walls of a residential part of the *castellum* were decorated. The decorations recreated an ashlar arrangement that was a characteristic element of wall decorations in an early Pompeian style and which was used mostly in the 2nd century BCE. the singularity of the find and the restoration work has made an invaluable addition to archaeological knowledge.

### The ancient *Ager Tarraconensis* archaeological landscape (right bank of the Francolí river)

This is a joint project that involves 16 town councils from the Camp de Tarragona area, the Provincial Council of Tarragona, the Tarragonès County Council, the Baix Camp County Council, the Institute of Catalan Studies, and the company ACESA. The aim is to study how the *Ager Tarraconensis* landscape evolved between Iberian times and late Antiquity. The landscape is being analysed using a multidisciplinary and diachronic approach, by means of studies of geology, mineral and water resources, soil change, climate, crops, flora, fauna, domesticated animals, territorial morphology, and human settlements. The project is broad in its scope and the intention is to remain open in terms of the territory to be covered. It is implemented in cooperation with a number of institutions, including the Municipal Museum of Cambrils and the Salvador Vilaseca Aracheology Museum of Reus.

Exhaustive data collection to date has focused on 173 sites. An extensive prospection campaign has already been conducted, on the basis of which an intensive campaign will be prepared, i.e., field work based on total ground coverage by means of sampling bands strategically drawn on the map of the area. A paleobotanical study has also been prepared involving a study of humid areas for pollen column extractions; this will enable a study of the vegetation, crops, fauna and climate of the area. To complete this study of landscape and site evolution, the geological sedimentology and the edaphology of the area is being studied, as also water and mineral resources. Studies of the road system, agrarian structures and land registration systems have begun to reveal that there was significant Roman centuriation of this area; i.e. orthogonal divisions of agrarian plots. At a fairly advanced stage is the study of archaeological materials in public and private collections. The first dig has already started, at the Molins Nous (Riudoms) site, where an oil-producing agrarian structure is being studied. All the information obtained will be processed in a Geographical Information System (FIS), which will generate thematic layers of maps for the area, thus fulfilling the basic aim of the project.

All the information generated will be contrasted with studies of the geology, crops, domesticated animals, climate, water resources, fauna and vegetation for the area. This project will add considerably to existing knowledge on the economy of ancient *Tarraco*, in terms of territorial arrangements and political and social structures. It will also improve understanding of how the Romans influenced the basic configuration of a landscape that endured to the Middle Ages and to some degree to modern times.

### Land use and mountain landscapes in the eastern Pyrenees from Antiquity to the Middle Ages

This project is being implemented jointly with the

Prehistoric Studies and Research Centre of the University of Barcelona, the Jaume Almera Institute of Earth Sciences of the Advanced Scientific Research Council (CSIC), the Limnology Unit of the Centre for Advanced Studies of Blanes and the Historical Research Service of the Government of Andorra. It focuses on the study of the archaeological evidence of Pyrenean mountain anthropization, and pays particular attention to pastoralism in Antiquity. The study is divided into a number of sub-projects covering the Cerdanya plain, the Madriu valley in Andorra and the Cadí range in Alt Urgell.

### Archaeological mission to Oxyrhynchus (al-Minya, Egypt)

The Oxyrhynchus archaeological site is located next to the small town of al-Bahnasa, 180 kilometres south of Cairo. It was discovered during an expedition by Napoleon Bonaparte to this area of Egypt, and since 1897 it has undergone intermittent excavations. The structures of the city and various burials site are known, and thousands of papyri have been found, mostly written in Greek.

In 1992, when an important necropolis was discovered covering the Saitic to Christian period (664 BCE–640 CE), the Egyptian Antiquities Organisation (now the Supreme Council of Antiquities) offered the University of Barcelona the opportunity to form a mixed archaeological mission in order to continue excavations at Oxyrhynchus and organise a research programme that would deepen understanding of Oxyrhynchus society. The mission, which got underway in 1992, was organised in cooperation with the University of Cairo, the Paul Valéry University of Montpellier, the Polytechnic University of Catalonia, the Generalitat, the Catalan Society of Egyptology and the Archaeological Museum of Barcelona. The Rovira i Virgili University joined this group in 1999.

In mid-2004, the ICAC, the University of Barcelona and the Rovira i Virgili University signed a three-year programme-contract to support and publicise the Oxyrhynchus mission with the aim of fostering research into the site and publicising and ensuring the sustainability of the mission. The mission aims to continue the historical and archaeological studies of the previous excavations and to implement a new stage aimed at enhancing research efforts, preserving the structures, and developing a museum project for the site.

The Master Plan for 2004-2006, drawn up by the mission's scientific committee, establishes three basic aims. The first aim is to conduct an archaeological, historical and philological study of the site and to publish the results of this research in accordance with Egyptian legislation. The second aim is—in agreement and cooperation with the Egyptian authorities—to contribute to the preservation and maintenance of the site, and to prepare it for cultural and tourism purposes. The final aim is to assist with the training of researchers and specialists in Egyptology and in eastern Greek and Roman archeology.

The site is being excavated in three sectors. The first of these is the early necropolis, which is a burial area with tombs and funerary deposits that date from the Saitic period (7th century BCE) to the invasions of the Arabs at the beginning of the 7th century CE. Tombs 1 to 3 are the largest and most important monuments on the site, given the writing on the building and on the sarcophagi. The second sector is the Osireion, an area of worship in the environs of the old city, with a large subterranean chamber dedicated to Osiris and used for annual rituals in this god's honour. The third sector is the western suburb of the city, a large tract that commences just west of the walls. In this area there are a number of necropolises dating from the

Greek-Roman and subsequent periods, and a fortified dwelling dating from the Byzantine era.

*Corpus Signorum Imperii Romani*. Spain

The *Corpus Signorum Imperii Romani* (CSIR) is an international project which has as its aim the compilation and analysis of data on sculptures dating from ancient Roman times. This initiative arose in the framework of the 8th International Congress of Classical Archaeology, which took place in Paris in 1963, organised by the International Association for Classical Archaeology.

The CSIR-Spain project is directly supported by the Autonomous University of Barcelona, the University of Murcia and by the ICAC. Also involved are the Spanish Historical Heritage Institute of the Ministry of Culture, the Catalan Studies Institute, the Directorate-General for Cultural Heritage of the Generalitat, and the University of Alacant. A scientific committee composed of academics and experts from Spanish universities and non-Spanish bodies performs the monitoring and evaluation work related to the project .

As for the structure of the collection, the CSIR-Spain series is organised in three volumes, each divided into fascicules. Volume I refers to current administrative divisions, Volume II is ordered by themes, and Volume III describes museums and collections.

In addition to these three volumes published since 2002, published in 2005 was Volume II, Fascicule 2, *La escultura hispánica figurada de la antigüedad tardía (siglos IV-VII)*, by Sergio Vidal Álvarez, which described Hispanic sculpture in the 4th to 6th centuries. Currently in press is Volume I, Fascicule 3, *Los sarcófagos romanos de la Bética*, by Luis Baena and José Beltrán, on the subject of sarcophagi in Roman Andalusia. Work is also underway on four new fascicules, on Roman sculpture in the Republican era in Hispania, Roman sculpture in Murcia, paleochristian sarcophagi in *Tarraco* and Tarraconensis, and finally, the sculpture of *Barcino* (Barcelona).

## 4. Advanced training in classical archaeology

One of the ICAC's objectives is to provide advanced training in the classical archaeology field. Conscious of the need to coordinate efforts in the training of new researchers, the ICAC has offered an Inter-University Doctorate in Classical Archaeology, in cooperation with the Autonomous University of Barcelona (UAB) and the Rovira i Virgili University (URV), since the 2004-2005 academic year.

Since 2003, the ICAC has organised twelve major specialist international seminars for doctoral students, researchers and professionals from the archaeology fields, as well as a number of minor courses.

In the context of the reform of post-graduate studies, an Inter-University Master's in Archaeology was launched in the 2005-2006 academic year by the UAB, the URV and the ICAC. In 2005, conscious of the interest in international studies and with the aim of improving teaching quality, the UAB, the URV and the ICAC signed an agreement with the University of Provence and the Second University of Naples with a view to creating a consortium to develop a programme for an international master's degree in archaeology, to be offered from the 2006-2007 academic year. The interest in this international master's programme is justified, above all, by the track records of the participating institutions in the archaeology, protohistory and classical studies fields in the western Mediterranean region. Researchers

and teachers from the consortium's participating institutions have already cooperated in a number of projects. From the 2006-2007 academic year, the Inter-University Doctorate in Classical Archaeology and the Inter-University Master's in Archaeology will be combined as a single officially approved post-graduate programme. Within this framework, the Official Inter-University Master's in Classical Archeology, which will be known as ARCHEOMED (Archeology of the Ancient Mediterranean), will be supported by the above-mentioned French and Italian universities.

**From the 2006-2007 academic year, drawing on its previous advanced training experience, the ICAC offers a single officially aprouved post-graduate archaeology programme.**

## 5. Publication of research results

The ICAC publishes monographs under the title «Documenta»; to date four editions have been published, and a number of others are in press. The first publication, which went to press at the end of 2002, was the book by Eva Subías entitled *La corona immarcescible: Pintures de l'antiguitat tardana a la necròpolis alta d'Oxirinc (Mínia, Egipte),* a study of mural paintings dating from the 5th and 6th century CE that decorated the walls of a paleochristian oratory discovered in the early necropolis of the ancient Egyptian city of Oxyrhynchus.

Good examples of the research carried out in Tarragona in recent years are represented by the books *Les termes públiques de l'àrea portuària de Tàrraco. Carrer de Sant Miquel de Tarragona*, edited by Josep M. Macias i Solé, and *Les basíliques paleocristianes del suburbi occidental de Tarraco. El temple septentrional i el complex martirial de Sant Fructuós*, by Jordi López Vilar. The first of these books deals with the subject of the public Roman baths of Tarragona. Probably built in the first half of the 3rd century, they are a unique monument in the context of Roman archaeology in Hispania. The second of these books (based on the first doctoral thesis submitted to the ICAC) is an exhaustive description—covering ceramics, epigraphy, numismatics and paleopathology—of an excavation which confirmed, in 1994, the existence in Tarragona of one of the most important paleochristian complexes in the Iberian Peninsula. This publication includes a study of a suburban *domus* dating from the 4th century, a funerary basilica from the 5th century and related buildings.

The ICAC has also published *El Palatí. La formació dels palaus imperials a Roma*, by Ricardo Mar, which is a study of the topography of the Palatine Hill, a neuralgic centre of classical archaeology.

The ICAC has also participated in other publications. Published in 2005, within the framework of the *Corpus Signorum Imperii Romani Hispania* project, was the book *La escultura hispánica figurada de la Antigüedad tardía (siglos IV-VII).* Although authored by Sergio Vidal Álvarez, the ICAC provided research support through its own Classical archaeology and artistic productions research project. The book was co-published by the ICAC, the Autonomous University of Barcelona, the University of Múrcia and Tabularium.

ICAC researchers have also published the results of their research in specialist journals, have attended a large number of national and international conferences and encounters, and have had their contributions subsequently published in the corresponding acts. Worthy of mention, for example,

was the talk on agrarian landscapes on rural landscapes *La dinámica de los paisajes agrarios antiguos: problemas de método, técnicas de análisis y nuevas perspectivas de investigación* given by Dr. Josep M. Palet at the University of Múrcia in April 2005, in the framework of the 2nd Course in Field Archaeology 2004-2005: Ancient Archaeology, Territory and Landscapes. Strategies, Methods and Techniques. Another interesting presentation was the talk on domestic productive activities in the protohistoric north-eastern Mediterranean *Aproximación arqueológica a las actividades productivas en el ámbito doméstico en el Mediterráneo nordoccidental protohistórico*, given by Dr.Carme Belarte at the Casa de Velázquez, Madrid in April 2005, in the framework of the Round Table on Archaeological Approaches to Ancient Economies: Methodological and Theoretical Problems. Dr. Ramon Járrega also gave an interesting presentation, entitled *The end of the Roman amphorae in the coastal Hispania Tarraconensis (Catalonia) in the 6th-7th centuries. The flat-based amphorae,* at the 2nd International Conference on Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean: Archaeology and Archaeometry (Aix-en-Provence-Marseille-Arles, 13-16 April 2005). Dr. Jordi Principal gave a seminar on Iberian black-glazed pottery entitled *Ceramica a vernice nera tardoellenistica nel NE della penisola Iberica: tradizioni produttive e pratiche sociali*; organised by the Scuola di Specializzazione in Archeologia of the University of Lecce (Lecce, Pulla, Italy), this seminar was held in June 2005. More recently we can mention the presentation on the cathedral of Tarragona, entitled *La catedral de Tarragona y su entorno. Nuevos datos sobre el recinto de culto del Concilium Provinciae Hispaniae Citerioris,* given by Dr. Josep M. Macias, Joan Menchon, Andreu Muñoz and Immaculada Teixell at the international conference entitled Imperial Worship: Politics and Power, held in May 2006 and organised by the National Museum of Roman Art of Mérida.

**The Documentation Centre-Library has a total of 1,623 documents and 63 specialist journal titles.**

## 6. Towards the creation of research support services

Since its commencement the ICAC has been committed to making resources available to support research. In 2006, in addition to its ongoing work on the development of a documentation centre, it has been developing two research support units, one on archaeometric studies and the other on graphic documentation. Once the process of equipping the three units is complete and the activity protocols have been consolidated, these units will provide a valuable service to researchers.

### 6.1. Documentation Centre–Library

The Documentation Centre-Library has a document collection consisting of archaeology and other monographs, reference works and dictionaries, journals, audiovisual materials and databases. After just two years in existence, the centre has a total of 1,623 documents, and 63 specialist journal titles. The centre is located on the first floor and has a consultation area of 47 square meters,16 reading points, and terminals providing access to the Internet and to a range of databases.

The goal of the Documentation Centre-Library is to safeguard all the scientific information generated by the ICAC, to provide bibliographical support to the research performed by the ICAC, to act a reference point for researchers, to cooperate with

other libraries specialising in archeology, and to establish bibliographical exchange systems.

In 2004, the ICAC signed a cooperation agreement with the Rovira i Virgili University with the aim of coordinating documentary management. Under this agreement, the ICAC catalogues its collection according to the VTLS system and has its collection included in the Collective Catalan University Catalogue.

Recently the private collection of Dr. Pere de Palol, who unfortunately passed away in December 2005, was donated to the ICAC. Dr. Palol was an eminent Catalan archaeologist who played an instrumental role in setting up the ICAC.

### 6.2. Graphic Documentation Unit

The Graphic Documentation Unit has three fundamental goals: to provide support for training of drawing and photography professionals and technicians; to implement research and develop innovative methods and approaches to optimising existing technical resources and exploring new applications (photogrammetry, digital photography, 3D laser scanning, Global Positioning Systems, etc); and finally, to support archaeological research projects and research groups in (or associated with) the ICAC, as also other research centres, public bodies, companies and individuals.

The services which this unit proposes to offer in the medium term include drawing and delineation for movable materials, archaeological planimetry, planimetric delineation and infographic processing, topographic support for archaeological fieldwork, graphic and cartographic information processing, the creation of plans and prior studies of monuments and buildings, photographic documentation and post-processing, and graphic restoration and reconstruction. Since 2005, the unit has supported ICAC research projects and projects in Andorra, Catalonia, the Balearic Islands, Italy, Tunisia, etc.

### 6.3. Archaeometric Studies Unit

The Archaeometric Studies Unit, which is composed of an interdisciplinary team of archaeologists and geologists, is the fruit of a collaboration with the Autonomous University of Barcelona (Department of Geology and the Laboratory for the Study of Lapidary Materials of Antiquity). Applying analytical techniques to inorganic archaeological materials (ornamental stones, building materials, pottery, etc), it offers field and laboratory services in support of ICAC research projects and of heritage management, archaeological and restoration projects implemented by public and private organisations. The analyses involve standard analysis and characterisation techniques, but services also include chemical analyses, electronic microscopy, X-ray diffraction, cathode-luminescence, isotope analysis, thermoluminescence (to date pottery), etc.

## 7. Towards the future

As far as the future is concerned, the main challenge of the ICAC will be the consolidation of both its structure and activities. In the research field this will require the consolidation of research teams in cooperation with other Catalan institutions that operate in the classical archeology field. The ultimate aim is to become a referent for classical archaeological research in both Catalonia and in Europe, and to place ICAC researchers at the heart of European research in this field. It will be necessary to consolidate and develop the research support units further and to consolidate the advanced teaching programme within the framework of strong links with universities in Catalonia, Europe and other countries, so as to ensure quality training for professionals and researchers in this field.

# resúmenes en castellano

# resums en català

## LA CARRERA PROFESIONAL DEL PERSONAL INVESTIGADOR EN CATALUÑA. POLÍTICAS Y PROYECTOS DE LA GENERALITAT

**Blanca Ciurana, Joan Cadefau, Olga Alay y Josep Maria Vilalta**

Se lleva a cabo un análisis detallado del conjunto de políticas y proyectos que ha desarrollado la Generalitat de Cataluña en materia de personal investigador los últimos cinco años. Específicamente, se estudian las iniciativas promovidas desde el Departamento de Universidades, Investigación y Sociedad de la Información de la Generalitat, actualmente Comisionado para Universidades y Investigación. Desde este punto de vista, se analizan diferentes programas de becas y ayudas que conviven en Cataluña, promovidos por las administraciones catalana, española y europea, la política de creación de centros de investigación o el plan de profesorado universitario Jaume Serra-Hunter. Finalmente, se presta una especial atención a la situación de la carrera investigadora en las empresas y a las iniciativas que se han tomado en este campo.

## EL SÉPTIMO PROGRAMA MARCO DE INVESTIGACIÓN Y DESARROLLO TECNOLÓGICO (2007-2013): UN INSTRUMENTO PARA DESARROLLAR LA EUROPA DEL CONOCIMIENTO

**Xabier Goenaga Beldarrain y Marta Truco Calbet**

En el centro de la Estrategia de Lisboa, la investigación forma parte del «triángulo del conocimiento» que, junto con la educación y la innovación, tiene que impulsar el crecimiento y el trabajo de la Unión Europea (UE) en una economía mundializada. El séptimo Programa marco de investigación y desarrollo tecnológico, que comprende el período 2007-2013, tiene un presupuesto total de 50,5 billones de euros, hecho que representa un aumento medio anual del 40 % respecto al sexto Programa marco.

Este artículo revisa las novedades del séptimo Programa marco de investigación y desarrollo tecnológico (2007-2013) y cómo éste contribuirá a la renovada Estrategia de Lisboa. Además, presenta algunas de las iniciativas complementarias en el campo de la investigación.

A pesar de que continua muchos elementos del programa predecesor, el séptimo Programa marco introduce novedades significativas. Pone más énfasis en la investigación que responde a las necesidades de la industria europea, mediante, por ejemplo, las iniciativas tecnológicas conjuntas. Se apoya por primera vez la calidad en la investigación europea con la creación del Consejo Europeo de Investigación (CEI). Asimismo, ofrece nuevas oportunidades a las regiones para que éstas ejerzan un papel protagonista en la realización de la Estrategia de Lisboa. En general, para la mayoría, la participación en el séptimo Programa marco será más fácil y simple.

## VALORIZACIÓN DE LA INVESTIGACIÓN EN LA UNIVERSIDAD. ¿ES ÚTIL LA INVESTIGACIÓN MÁS ALLÁ DE LAS PUBLICACIONES QUE HACEN LOS INVESTIGADORES?

**Francesc Solé Parellada, Mireia de la Rubia y Raquel Egea**

En los dos últimos siglos, las universidades y los laboratorios públicos de investigación se han convertido en instituciones creadoras de conocimiento y han constituido un espacio de apoyo al sistema productivo. Sin embargo, el tránsito de este conocimiento previo a la sociedad no ha estado garantizado siempre. En este momento histórico el sistema productivo no puede competir sin la aportación del sistema de ciencia y tecnología en su conjunto y, por tanto, se hace necesario instaurar una nueva cultura de creación de conocimiento previo que incorpore su valorización.

¿En qué condiciones se produce el traspaso desde la investigación hasta la competitividad pasando por la innovación? ¿Se dan estas condiciones en nuestro sistema de ciencia y tecnología? Y si no se dan, ¿qué debemos hacer y cuántos recursos hay que destinar a ello?

En este artículo se analiza de manera crítica cómo se organiza la investigación en Cataluña y se dan pautas para conseguir su valorización.

## EL SUPLEMENTO EUROPEO AL TÍTULO COMO INSTRUMENTO PARA EL RECONOCIMIENTO DE CUALIFICACIONES Y LA MOVILIDAD DE LOS GRADUADOS UNIVERSITARIOS

**Pere Torra Pla**

Se caracteriza el suplemento europeo al título como uno de los mecanismos con los que se pretende resolver varios interrogantes que se plantean actualmente como, por ejemplo, al establecer una prelación entre personas tituladas procedentes de sistemas educativos de diferentes países. También se analiza la función de este documento como un instrumento que tiene que servir para facilitar el reconocimiento académico y profesional de las cualificaciones y las competencias obtenidas por una persona, con independencia del país o el siste-

ma en el que haya tenido lugar el proceso educativo. Se enmarca el suplemento europeo al título dentro del conjunto de documentos Europass y se describen los objetivos específicos de este documento, su contenido básico, la situación de las lenguas y sus características formales principales. También se analiza la situación del reconocimiento de cualificaciones superiores en el Estado español, con una referencia especial a las últimas normas adoptadas y al Convenio de Lisboa de Reconocimiento de Cualificaciones. Finalmente, se describen las perspectivas de implantación efectiva en Cataluña del suplemento europeo al título y se presentan las principales conclusiones a las que se llega.

## LAS COMPETENCIAS EN MATERIA DE UNIVERSIDADES Y EN MATERIA DE INVESTIGACIÓN, DESARROLLO E INNOVACIÓN TECNOLÓGICA EN EL ESTATUTO DE AUTONOMÍA DE CATALUÑA DE 2006

**Encarnació Grau Corominas**

Este artículo hace un breve repaso a las novedades más importantes que incorpora el Estatuto de autonomía de Cataluña de 2006 (EAC) en relación a las competencias en materia de universidades (que el Estatuto ahora trata como un título competencial diferente al de Educación), y en materia de investigación, desarrollo e innovación tecnológica (I+D e Innovación). El análisis de cada uno de los sectores requiere para comprenderlo adecuadamente una breve referencia a otra de las novedades de este Estatuto, y es la relativa a la definición de la diferente tipología de competencias, definición que, junto con la llamada técnica del blindaje, pretende evitar que el legislador estatal, en sus regulaciones, exceda lo que establece específicamente para cada sector material el EAC.

Se observa que, a excepción de algunas novedades importantes que se remarcarán adecuadamente en el texto, gran parte de las actividades y funciones que se detallan tanto en el ámbito de universidades como en el de I+D e Innovación ya se ejercían o eran susceptibles de ser ejercidas en el marco del EAC de 1979 si no hubiera sido por las injerencias del Estado en su ejecución, lo que ha originado bastante conflictividad competencial. No es de extrañar si se tiene en cuenta que el tope competencial del Estatuto vigente lo continua marcando la Constitución española de 1978. No obstante, no hay duda de que los nuevos mecanismos y las nuevas técnicas que utiliza el Estatuto ponen más difícil la intervención del Estado en los ámbitos que el Estatuto reserva a la Generalitat de Cataluña.

## LA MOVILIDAD ESTUDIANTIL EN CATALUÑA: PROGRAMA ERASMUS

**Montserrat Solé i San Millán y Cristina Miràngels i García**

En el año 2007 se cumplirán veinte años de la existencia del programa Erasmus, que fue instaurado por la Comisión Europea el año 1987. Éste es uno de los programas de intercambio de estudiantes más conocidos en la Unión Europea, porque permite cursar una parte de los estudios en cualquiera de las universidades participantes.

Actualmente, los sistemas educativos europeos tienen que afrontar el reto de la consolidación del Espacio europeo de la educación superior. En este contexto, la promoción de la movilidad del estudiantado debe tener un papel fundamental como sistema para mejorar el aprendizaje, por ello se deberá aumentar el número de estudiantes que participan en los diferentes programas de intercambio. Este artículo hace un análisis de les datos de movilidad estudiantil en Cataluña desde los inicios del programa Erasmus, y apunta algunas consideraciones sobre las perspectivas de futuro de este tipo de mobilidad.

## EL INSTITUTO CATALÁN DE ARQUEOLOGÍA CLÁSICA (ICAC): UN CENTRO DE INVESTIGACIÓN Y DE FORMACIÓN AVANZADA

**Clara Ventura Manén y Josep Guitart Duran**

El Instituto Catalán de Arqueología Clásica (ICAC) es un consorcio público creado por el Departamento de Universidades, Investigación y Sociedad de la Información de la Generalitat de Cataluña y la Universidad Rovira i Virgili. Su sede, inaugurada el mes de septiembre del 2003, está ubicada en pleno centro histórico de Tarragona. El objetivo del Instituto es la investigación y la formación avanzada en el campo de la arqueología clásica. Una investigación que parte de la arqueología, es decir, del estudio de los vestigios materiales que todavía nos quedan de la civilización grecorromana, pero trabajando en colaboración, e integrando los resultados con las otras ciencias de la antigüedad, como la filología clásica, la numismática y la epigrafía, la historia del arte y del pensamiento. El ICAC es un instituto aún joven que ha comenzado a desarrollar una actividad notable, iniciando numerosos programas y proyectos de investigación, y liderando un programa oficial de posgrado interuniversitario. Esta presentación expone los aspectos más relevantes de su organización y actividad, haciendo énfasis, a modo de ejemplo, en algunos de los proyectos de investigación que se están llevando a cabo.

## LA CARRERA PROFESSIONAL DEL PERSONAL INVESTIGADOR A CATALUNYA. POLÍTIQUES I PROJECTES DE LA GENERALITAT

**Blanca Ciurana, Joan Cadefau, Olga Alay i Josep Maria Vilalta**

Es duu a terme una anàlisi detallada del conjunt de polítiques i projectes que ha desenvolupat la Generalitat de Catalunya en matèria de personal investigador els darrers cinc anys. Específicament, s'estudien les iniciatives promogudes des del Departament d'Universitats, Recerca i Societat de la Informació de la Generalitat, actualment Comissionat per a Universitat i Recerca. Des d'aquest punt de vista, s'analitzen els diferents programes de beques i ajuts que conviuen a Catalunya, promoguts per les administracions catalana, espanyola i europea, la política de creació de centres de recerca o el pla de professorat universitari Jaume Serra-Hunter. Finalment, es presta una especial atenció a la situació de la carrera investigadora a les empreses i a les iniciatives que s'han pres en aquest camp.

## EL SETÈ PROGRAMA MARC DE RECERCA I DESENVOLUPAMENT TECNOLÒGIC (2007-2013): UN INSTRUMENT PER DESENVOLUPAR L'EUROPA DEL CONEIXEMENT

**Xabier Goenaga Beldarrain i Marta Truco Calbet**

Al centre de l'Estratègia de Lisboa, la recerca forma part del «triangle del coneixement» que, juntament amb l'educació i la innovació, ha d'impulsar el creixement i el treball de la Unió Europea (UE) en una economia mundialitzada. El setè Programa marc de recerca i desenvolupament tecnològic, que abraça el període 2007-2013, té un pressupost total de 50,5 bilions d'euros, fet que representa un augment mitjà anual del 40% respecte al sisè Programa marc.

Aquest article fa un primer cop d'ull a les novetats del setè Programa marc de recerca i desenvolupament tecnològic (2007-2013) i a com aquest contribuirà a la renovada Estratègia de Lisboa. A més, presenta algunes de les iniciatives complementàries en el camp de la recerca.

Malgrat la continuació de molts elements del programa predecessor, el setè Programa marc (7è PM) introdueix un nombre de novetats significatives. Posa més èmfasi en la recerca que respon a les necessitats de la indústria europea, mitjançant, per exemple, les iniciatives tecnològiques conjuntes. Dóna suport per primera vegada a la millor investigació europea mitjançant la creació del Consell Europeu de Recerca (CER). Així mateix, ofereix noves oportunitats a les regions perquè aquestes exerceixin el seu paper protagonista en la realització de l'Estratègia de Lisboa. En general, per a la majoria, la participació en el setè Programa marc serà més fàcil i simple.

## VALORITZACIÓ DE LA RECERCA A LA UNIVERSITAT. ÉS ÚTIL LA RECERCA MÉS ENLLÀ DE LES PUBLICACIONS QUE FAN ELS INVESTIGADORS?

**Francesc Solé Parellada, Mireia de la Rubia i Raquel Egea**

En els dos darrers segles, les universitats i els laboratoris públics de recerca han esdevingut institucions creadores de coneixement i han constituït un espai de suport al sistema productiu. Tanmateix, el trànsit d'aquest coneixement previ a la societat no ha estat sempre garantit. En aquest moment històric el sistema productiu no pot competir sense l'aportació del sistema de ciència i tecnologia en el seu conjunt i, per tant, cal instaurar una nova cultura de creació de coneixement previ que incorpori la seva valorització.

En quines condicions es produeix el traspàs des de la recerca fins a la competitivitat passant per la innovació? Es donen aquestes condicions en el nostre sistema de ciència i tecnologia? I si no es donen, què hem de fer i quants recursos hem de destinar-hi?

En aquest article, s'analitza de manera crítica com s'organitza la recerca a casa nostra i es donen pautes per aconseguir-ne la valorització.

## EL SUPLEMENT EUROPEU AL TÍTOL COM A INSTRUMENT PER AL RECONEIXEMENT DE QUALIFICACIONS I LA MOBILITAT DELS GRADUATS UNIVERSITARIS

**Pere Torra i Pla**

En aquest article es caracteritza el suplement europeu al títol com un dels mecanismes amb què es pretén resoldre diversos interrogants que es plantegen actualment com ara, per exemple, a l'hora d'establir una prelació entre persones titulades procedents de sistemes educatius de diferents països i s'analitza la funció d'aquest document com un instrument que ha de servir per facilitar el reconeixement acadèmic i professional de les qualificacions i les competències obtingudes per una persona, amb independència del país o el sistema en què hagi tingut lloc el procés edu-

catiu. A continuació s'emmarca el suplement europeu al títol dins del conjunt de documents Europass i es descriuen els objectius específics d'aquest document, el seu contingut bàsic, la situació que hi tenen les llengües i les seves característiques formals principals. També s'analitza la situació del reconeixement de qualificacions superiors a l'Estat espanyol, amb una referència especial a les darreres normes adoptades i al Conveni de Lisboa de Reconeixement de Qualificacions. Finalment, es descriuen les perspectives d'implantació efectiva a Catalunya del suplement europeu al títol i es presenten les principals conclusions a les quals s'arriba.

## LES COMPETÈNCIES EN MATÈRIA D'UNIVERSITATS I EN MATÈRIA DE RECERCA, DESENVOLUPAMENT I INNOVACIÓ TECNOLÒGICA A L'ESTATUT D'AUTONOMIA DE CATALUNYA DE 2006

**Encarnació Grau i Corominas**

Aquest article fa un breu repàs de les novetats més importants que incorpora l'Estatut d'autonomia de Catalunya de 2006 (EAC) pel que fa a les competències en matèria d'universitats (que l'Estatut ara tracta com un títol competencial diferent del d'Educació), i en matèria de recerca, desenvolupament i innovació tecnològica (R&D i Innovació). L'anàlisi de cadascun dels sectors requereix per comprendre-la adequadament una breu referència a una altra de les novetats d'aquest Estatut, i és la relativa a la definició de la diferent tipologia de competències, definició que, juntament amb l'anomenada tècnica del blindatge, pretén evitar que el legislador estatal, en les seves regulacions, vagi més enllà del que estableix específicament per a cada sector material l'EAC.

Veurem que, tret d'algunes novetats importants que remarcarem adequadament en el text, bona part de les activitats i funcions que es detallen tant en l'àmbit d'universitats com en el d'R&D i Innovació ja s'exercien o eren susceptibles de ser exercides en el marc de l'EAC de 1979 si no hagués estat per les ingerències de l'Estat en el seu exercici, la qual cosa ha originat força conflictivitat competencial. Això no és estrany si tenim en compte que el sostre competencial de l'Estatut vigent el continua marcant la Constitució espanyola de 1978. Malgrat tot, no hi ha dubte que els nous mecanismes i les noves tècniques que empra l'Estatut posen més difícil la intervenció de l'Estat en els àmbits que l'Estatut reserva a la Generalitat de Catalunya.

## LA MOBILITAT ESTUDIANTIL A CATALUNYA: PROGRAMA ERASMUS

**Montserrat Solé i San Millán i Cristina Miràngels i García**

L'any 2007 es compliran vint anys de l'existència del programa Erasmus, que va ser instaurat per la Comissió Europea l'any 1987. Aquest és un dels programes d'intercanvi d'estudiants més coneguts arreu de la Unió Europea perquè permet cursar una part dels estudis a qualsevol de les universitats que hi participen.

Actualment, els sistemes educatius europeus han de fer front al repte de la consolidació de l'espai europeu d'educació superior. En aquest context, la promoció de la mobilitat de l'estudiantat ha de tenir un paper fonamental com a sistema per a la millora de l'aprenentatge, per la qual cosa caldrà incrementar el nombre d'estudiants que participen en els diferents programes d'intercanvi. Aquest article fa una anàlisi de les dades de mobilitat estudiantil a Catalunya, des dels inicis del programa Erasmus, i apunta algunes consideracions sobre les perspectives de futur d'aquest tipus de mobilitat.

## L'INSTITUT CATALÀ D'ARQUEOLOGIA CLÀSSICA (ICAC): UN CENTRE DE RECERCA I DE FORMACIÓ AVANÇADA

**Clara Ventura Manén i Josep Guitart i Duran**

L'Institut Català d'Arqueologia Clàssica (ICAC) és un consorci públic creat l'any 2000 pel Departament d'Universitats, Recerca i Societat de la Informació de la Generalitat de Catalunya i la Universitat Rovira i Virgili. La seva seu, inaugurada el setembre del 2003, està ubicada en ple centre històric de Tarragona. L'objectiu de l'Institut és la recerca i la formació avançada en el camp de l'arqueologia clàssica. Una recerca que parteix de l'arqueologia, és a dir, de l'estudi dels vestigis materials que encara ens queden de la civilització grecoromana, però treballant en col·laboració, i integrant-ne els resultats amb les altres ciències de l'antiguitat, com la filologia clàssica, la numismàtica i l'epigrafia, la història de l'art i del pensament. L'ICAC és un institut encara jove que ha començat a desplegar una activitat notable, engegant nombrosos programes i projectes de recerca, i liderant un programa oficial de postgrau interuniversitari. Aquesta presentació exposa els aspectes més rellevants de la seva organització i activitat, posant l'èmfasi, a tall d'exemple, en alguns dels projectes de recerca que s'estan portant a terme.

CONEIXEMENT I SOCIETAT \12

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