



RedOTRI Annual Report 2007

Spanish Network of University Knowledge Transfer Offices





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CONTENTS

1. University Knowledge Transfer Offices-OTRI: development and data for 2006	5
1.1. Origin of the OTRIs	5
1.2. The OTRIs today	6
1.3. RedOTRI: mission, objectives and structure	7
1.4. OTRI: Areas of Activity	9
1.5. OTRIs in 2006	11
2. RedOTRI activities in 2006	14
2.1. RedOTRI Working Groups	14
2.1.1. The OTRI-Escuela Working Group	14
2.1.2. The Indicator Working Group	14
2.1.3. 7th Framework Program Working Group	14
2.1.4. Contracts Working Group	14
2.2. RedOTRI Projects	15
2.2.1. Uniemprendia	15
2.2.2. "Red Valor" Project	15
2.3. III RedOTRI Training Plan	16
2.4. International Activities	17
2.5. Events	17
3. The Transference Function: Indicators for 2006	19
3.1. RedOTRI Annual Survey	19
3.2. R&D contracted activity and resources attracted	19
3.3. Knowledge & IPR Protection	21
3.4. Licences	23
3.5. University based Spin-offs	25

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Edita **RedOTRI Universidades (CRUE)**
Plaza de las Cortes, 2
28014 Madrid

<http://www.redotriuniversidades.net>

Imprime: **Javipar LC 13**

1. University Knowledge Transfer Offices (Spanish acronym OTRI¹): development and data for 2006

1.1. Origin of the OTRIs

OTRIs are knowledge transfer units that belong to universities and public research entities in Spain. Their mission is to support and promote the generation of knowledge and its subsequent transfer to industry and other socioeconomic bodies.

The OTRI concept was conceived within the National Research & Development (R&D) Scheme, as a mechanism that would serve to strengthen the relationship between the scientific and business sector, with the support and encouragement of the Interministerial Committee for Science and Technology since 1998. Upon the creation of the OTRIs, a number of concrete objectives were defined for these interface units:

- Create a database of knowledge, infrastructure and R&D capacity of the corresponding universities.
- Identify the results generated by the associated research groups, assessing their transfer capacity and ensuring adequate dissemination to industry, either directly or in collaboration with other intermediating organisations.
- Facilitate the transfer of these results to industry or, where appropriate, the correct assimilation of novel technologies.
- Collaborate and participate in the negotiation of research contracts, technical support, assessment, patent filing etc. between the associated research groups and industry.
- Manage the R&D contracts with the aid of the university's administrative services.
- Provide information regarding European R&D programs and offer technical support in the drafting and management of this type of projects.

¹ In Spain the offices for the transfer of university knowledge and technology are known as OTRIs (Offices for the Transfer of Research Results). In this text all Spanish acronyms will remain faithful to OTRI (i.e. RedOTRI), whilst elsewhere the offices will be referred to as KTOs (Knowledge Transfer Offices).

It is important to remind some of the factors that helped define these objectives and currently allow to put in context the actual role of the OTRIs: the structural weakness of our national innovation system, only a 0.85% of the Gross Domestic Product (GDP) spent on R&D, the lack of the necessary means and motivation for scientific productivity, the challenge for the Spanish industry of entering the European Community, and among others the state of mutual ignorance that was characterising the relations between academia and industry in all things related to innovation and R&D.

The main mission of an OTRI is to support & promote the generation of knowledge in academia that will then be transferred to the society

Another point worth noting in the evolution of the public policies targeted to the OTRIs, was the initiative of the General Secretariat of the National Scheme to create, in 1996, an *OTRI Registry*. The original program supporting the creation of OTRIs, which started up at the end of 1988, was linked to certain entities within the scientific environment, such as universities and public research organisations. With the arrival of the OTRI Registry, there was a great increase in the number of registered entities and in the diversity of their nature, due to the possibility of participation for non-profit private entities as long as they included "units with transference functions regarding research and technology results". In this way, the 67 OTRIs registered in 1994² have reached today a total of 216 registered knowledge transfer offices.

1.2. The OTRIs today

The Law 13/86 of Promotion & General Coordination of Scientific & Technical Research –"Law of Science"– came to define and start-up a scientific and technological policy that would allow confronting certain deficiencies of our system that were previously identified. Twenty years after the law took effect, we can agree that the Spanish university has decisively contributed to the improvement of that system, especially in quantitative terms of scientific productivity that have placed our country in the 10th position of the world ranking in scientific publications and in the 12th position of the most cited articles for the period 1992-2002³.

These days, universities have assumed a tight compromise to develop both their cultural and socioeconomic character, also known as their "*third mission*", a substantial part of which is the **function of knowledge transference**.

Through the different operative and organisational models, Spanish universities established and strengthened via the OTRIs those activities related with the commercial and social exploitation of knowledge. Despite recent progress, there still remains a great effort to be done, both at the institutional as well as at the technical level, so that knowledge transfer assumes the corresponding significance within the Spanish university and our innovation system similar to that of the countries in our surroundings. In that sense, today, OTRIs are progressing towards more proactive transference models directed to guarantee the adequate evaluation and assessment of the innovation potential that the university holds.

Recently, a further element in the relationship of academia and industry has been added to the existing ones: the physical space of the university that being well equipped with advanced infrastructures offers great possibilities to create nuclei for regional development and innovation around

university research groups or R&D centers. In that perspective, the technological and scientific parks can be considered as an important instrument for establishing complementary ways for the development and reinforcement of the transference function.

OTRIs are progressing towards transference models that guarantee an adequate appreciation of university R&D

Instruments of transference function:

- 1) The research and technical support contracts for the exploitation of the university researchers' scientific and technical abilities.
- 2) The R&D projects in collaboration with other bodies and the public funding sources related to obtaining marketable results.
- 3) Strategic alliances with other organisations, aiming to exploit the scientific skills and the results coming out of university research.
- 4) The protection of research results through patents and other ways of protecting the intellectual and industrial property rights (IPR).
- 5) Transforming university research results to patented licence contracts.
- 6) Creating and developing new companies, based on the knowledge generated by the universities.
- 7) Promoting the bonding of universities with companies and other institutions.

Principal activity indicators of university OTRIs in 2006:

12.506 R&D contracts
 428 million euros contracted
 568 million euros raised in R&D
 401 national patent applications
 171 international patent applications (PCT)
 192 licence contracts
 143 spin-off companies created

1.3. RedOTRI: mission, objectives and structure

The Technology Transfer Office, aided by the Interministerial Committee for Science and Technology and promoted via the National R&D Scheme, was created in the beginning of the 90s with the aim to assist and endorse the activities of the OTRIs with issues like patent filing and R&D contracts. This created a novel reference point of operating as a network that helped drive in a decisive way the function of the offices in their initial stages.

² Escorsa P. "Experiencia de vinculación de la universidad con los sectores productivos en España", ESPACIOS, Vol 15 (1) 1994.

³ FECYT, Informe SISE de Indicadores Bibliométricos de la Actividad Científica Española 1990-2004, Madrid (2005)

With time and the progressive evolution of the OTRIs in the scientific environment, a better coordination and focusing of efforts became necessary, which in March of 1997 led to the creation of the Network of Spanish University Offices for the Transfer of Research Results (RedOTRI). This Network was constituted within the Conference of the Spanish University Rectors (CRUE), adopting the status of a permanent work group in its R&D Sectorial Committee since 1999. The main aim of RedOTRI, as reflected in its regulations, is to "reinforce and disseminate the role of the universities as essential elements within the National System for Innovation".

RedOTRI is comprised of the OTRIs from universities belonging to the CRUE, private or public and regardless of their nature. This last aspect grants RedOTRI a great heterogeneity, since the offices can vary from being installed in a general academic foundation to adopting the form of private non-profit entities.

Complementary to this institutional focus, RedOTRI is directed to facilitate the integration in its activities and functions of the greatest number of professionals from the world of knowledge transfer. For that, two mechanisms are proposed:

RedOTRI is created in 1997 with the task to reinforce and disseminate the role of the universities as essential elements within the National System for Innovation

- 1) The status of RedOTRI **associated member** for all public research entities that request it and fulfil two requirements: the first is to be a knowledge generating entity, meaning to engage in its own research activity that creates transferable results, and the second to be equipped with a unit responsible for performing the *transference function*.
- 2) The RedOTRI **Regulations** that stipulate the integration of all knowledge transference university units into the network. With the above, RedOTRI seeks to draw together the interests of those professionals, which through distinct posts within academia, are in charge of the transference function.

Currently, RedOTRI consists of 61 universities and 9 public research organisations as associated members. The largest part of university OTRIs are internal units of the university, except 6 offices that are formed as external units controlled by the university and 1 that is a non-profit corporation.

Objectives of RedOTRI:

- Enhance both the development of the OTRIs and the professional development of their staff.
- Encourage all OTRIs to function as a network, through initiatives such as actions, instruments and services of common interest.
- Establish a robust university presence within the various programs and activities of the European Union.
- Guide the R&D Sectorial Committee in aspects related to linking university research efforts with other instruments of the National System for Innovation.
- Collaborate with the Administration and other social and economical bodies to strengthen the relations between universities and companies.

- Contribute to the development and establishment of a new university "image", one that recognises the support to the socioeconomic development and to the business modernisation process.

RedOTRI in 2006

61 universities
9 Associated Public Research Organisations
475 professionals

The RedOTRI structure & function are analogous to those of an association, consisting of:

- A **Plenary of OTRI Directors and managers**, the main body for debate and representation, whose principal functions are: to approve the annual work plan, elect the Permanent Commission, as well as the general control and monitoring of the network's activities.
- A **Permanent Commission made up** of seven members, responsible for leading and executing the network's work program.
- A **Coordinator**: the Permanent Commission elects one of its members as the highest institutional representative of the network. Within his/hers responsibilities, the Coordinator participates in the Executive Committee meetings of the CRUE R&D Sectorial Commission.
- A **Technical Secretariat**, position created in May 2004 and housed at the office of CRUE, assisting the Permanent Commission execute its functions while at the same time serving as the RedOTRI central office.

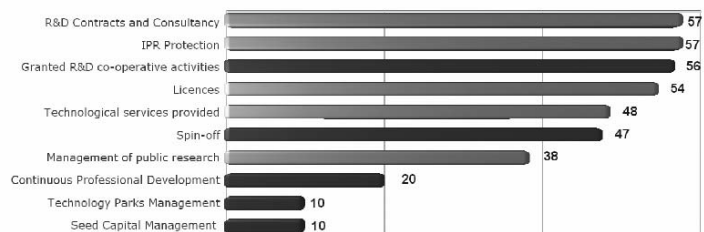
An essential component of that structure are the various **Working Groups**, in which professionals from the different offices voluntarily contribute their knowledge and experience for the conception and initiation of a variety of activities. Examples of the latter include educational and professional skills development, preparation of technical reference documents, survey design, development of new methodologies and good practices etc.

1.4. OTRI: Areas of Activity

The information provided by RedOTRI 2006 Survey regarding the activities carried out by the OTRIs confirms the tendencies detected in previous years. Despite the known heterogeneous character of Spanish universities, OTRIs, through diverse management models, converge in selecting tools and focusing on objectives for the development of the transference function.

As we can see in Graph 1, practically all of the offices are accountable for activities related to the commercialisation of the university's research capacity and the resulting innovations.

Graph 1 - Activity fields of the Spanish KTO's
Número de oficinas en cada ámbito de actividad



Data provided by 58 out of 60 universities
Source: RedOTRI 2006 Survey.

98% of OTRIs are responsible for R&D and consultancy contracts, and manage the applications for public funding for the activities to be developed in collaboration with companies and other entities. To these tasks we have to add those derived from IPR protection, both via patents and other national property rights, and ever increasingly with its international patent applications. All these activities form what could be called the basic and more traditional activity of an OTRI.

The big majority of the OTRIs are responsible for R&D contracting activities, fundraising for third-party collaborations and knowledge protection

On the other hand, an increase has been detected in the number of offices that have expanded their field of action with tasks related to the assessment and exploitation of R&D results generated in their universities. In that way, objectives such as contract licensing and entrepreneurship are undertaken more and more by Spanish universities.

In recent years, OTRIs are intensifying their activities in matters related to the appreciation and exploitation of R&D results

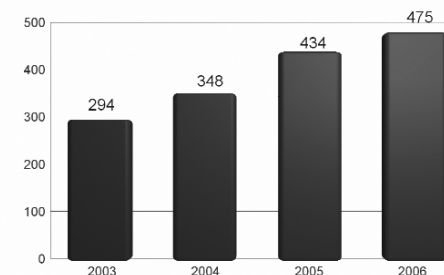
From the 58 OTRIs that contributed data to this section of RedOTRI 2006 Survey, a 66% declared to be leading or when needed, provide research services for their university, engaging them in undertaking tasks that are highly charged with administrative work and far from the strict environment of the transference function. This fact has been interpreted without proper weight in many opinion forums as a symptom of failure of the OTRI constituting as the driving force, whenever it cannot cease to be an office model where the transference function and the research management are found integrated in a single unit.

1.5. OTRIs in 2006

Human Resources

During the last years, the full-time technical personnel of university OTRIs has been constantly increasing, as can be seen in Graph 2. In 2006, the number of full time staff was 475.

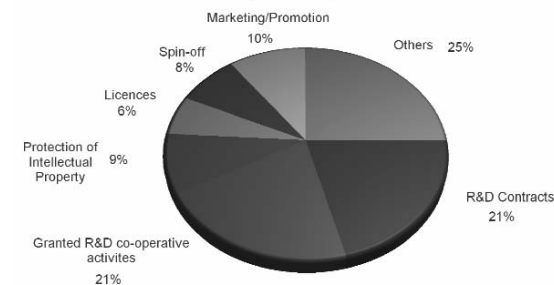
Graph 2.- Professional staff* (Full Time Equivalents) that work for the Spanish KTOs



* Excluding administrative and support staff
Source: RedOTRI Survey (several years).

Graph 3 illustrates the high percentage of human resources – a 21% - that the OTRIs dedicate to tasks like contracting and the management of all types of public programmes and offer help for R&D, corresponding to activity areas traditionally undertaken by the offices since their creation and fully generalised as noted previously

Graph 3.- Functions perform by Professional KTO staff



Data provided by 58 out of 60 universities.
Source: RedOTRI 2006 Survey.

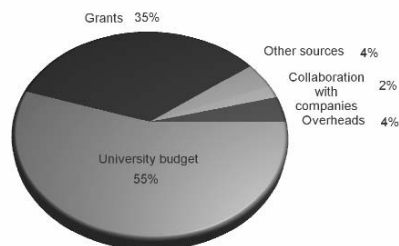
The areas of activity related to result exploitation, despite their increasing strategic importance, present inferior percentages – licences with 6% and spin-off with 8% - relative to the current needs. These percentages are exceeded, with a 10% of the resources, by tasks intrinsic to the transference function such as R&D marketing and promotion.

Finally, the offices state that they dedicate a 25% of their actual personnel to tasks included in the sector "Others". Although RedOTRI 2006 Survey does not specify concrete tasks for this sector, most of this percentage accounts for activities within the research services.

Funding

The available data indicate that regarding the OTRI funding, same as in previous years, the contribution from the university budget itself is the principal source of funds, with a 55% of the total, as illustrated in Graph 4.

Graph 4.- Sources of KTO funding



Data provided by 51 out of 60 universities.
Source: RedOTRI 2006 Survey.

The other great source of funding are public subsidies, with a 35% (same as in 2005), coming from the support framework of the Ministry of Education and Science and from other initiatives implemented by regional communities of Spain. However, other sources are still not so important with respect to the total funding. This is the case for the overhead revenues, which are not charged directly to the OTRIs, contrary to other European countries where this concept is fundamental as a way of funding.

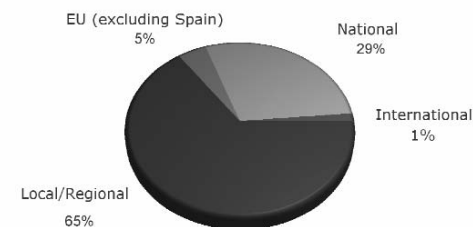
Clients

Regarding the internal clients of OTRIs, the data obtained in 2006 show that a 29% of the total academic staff of the Spanish universities takes part in activities related to knowledge transference, such as being part of a research group that undertakes a project under a third-party contract, entrepreneur of a business idea based on the research activity or being the inventor in a patent. The percentage obtained in last year's survey was 25%.

From all the academic staff of the Spanish universities, a 29% has carried out some form of knowledge transference activity

Regarding external clients – companies, public organisations and other entities – the same trends as in previous years is observed: tight links with the business network of the region where the university is situated and a low number of clients from other countries in relative terms (Graph 5).

Graph 5.- Geographical distribution of private clients



Data provided by 46 out of 60 universities.
Source: RedOTRI 2006 Survey.

2. RedOTRI activities in 2006

2.1. RedOTRI Working Groups

2.1.1. The OTRI-Escuela Working Group

The objective here is contributing to the continuous development of the offices and the training of their staff. For that reason this group designs and implements the **RedOTRI Training Plan**, the 3rd edition of which was held in 2006 and included the following 9 training actions: 5 courses, 3 technical one-day-seminars and one integrated course, for which more information is available in section 2.3 of this report.

2.1.2. The Indicator Work Group

Its objective is to measure the activity of knowledge and technology transference that Spanish universities carry out. The main activity is to design and implement analytical tools adapted to the reality of the Spanish System for Innovation and to carry out studies regarding the transference function.

Within its principal activities is to prepare the contents and electronic tools of RedOTRI Survey about Transference of Knowledge and Technology, on top of coordinating them with those of the *ProTon-Europe Annual Survey*.

In 2006 a comparative study was carried out for the main transfer indicators in France, United Kingdom, Italy, Spain and the networks ProTon, ASTP and AUTM, part of which was included in the RedOTRI 2006 Report.

2.1.3. 7th Framework Program Working Group

This group was set-up in July of 2006 with the aim to tackle the challenges that arise once the new framework program takes effect, taking over from the previous RedOTRI working group called Management of European Projects.

Within its initial activities was the participation in the organisation of the "Technical Day of RedOTRI about the Management of European Projects", that took place on the 19th of December 2006 in the Universidad Pontificia de Comillas.

Another activity of this group, initiated in 2006 is the preparation of a guide regarding how universities and other members of RedOTRI can adopt the Full Cost model of participation in 7th Framework program projects.

2.1.4. Contracts Work Group

Created in the beginning of 2006, the fundamental objective of this work group is to deepen the knowledge in technical, economical, legal and budgetary aspects of research and consulting contracts regulated under the Spanish university law (article 83 of LOU).

During 2006 it centered its activities in devising a contract model adapted to the reality of the relations between academia-industry and the needs of the transference professionals.

2.2. RedOTRI Projects

2.2.1. *Uniemprendia*

Uniemprendia is a competitive program of RedOTRI for the promotion of new technology-based firms (NTBs) within Spanish universities. Promoted and coordinated by *Universidade de Santiago de Compostela*, its 3rd edition in 2006 saw the participation of 46 universities, INTA and CSIC. Grupo Santander and CDTI are the sponsors of the project.

Main objectives:

- 1) To support the creation and consolidation of business ideas based upon the knowledge generated in universities, to foster business culture in the academic environment.
- 2) To strengthen the leadership of universities in the management processes of academic spin-offs.
- 3) To articulate, through OTRIs, common strategies and systematic methods for the management of the spin-offs.

UNIEMPRESIA 2006 Outcomes

46 universities, CSIC and INTA participate
44 business ideas registered
19 groups received business training

2.2.2. "Red Valor" Project

"Red Valor", standing for *value network*, aims to develop and validate an evaluation system for the market potential of the R&D results obtained by Spanish universities and CSIC. This system will be articulated through a Network of Technology Evaluators, consisting of experts coming mainly from industry.

It is worth noting that entities with direct links to the industrial sector are implicated, such as sectorial business associations: the association of companies for electronics, information technology and telecommunication industries of Spain (AETIC) and the business federation of the Spanish chemical industry (FEIQUE). This aspect makes "Red Valor" a space for communication and interaction between academia and industry.

Among the most significant results achieved by "Red Valor" in 2006 are the 28 technology evaluations carried out in the fields of ICT and chemistry, and the training of a group of 20 active evaluators.

"Red Valor" proposes a tool to evaluate and assess the market potential of the inventions generated by universities and Public Research Organisations

The project, initiated in 2004, is coordinated by Universitat de València and counts with the participation of: Universidad Politécnica de Valencia, Universidad Carlos III de Madrid, Universitat Jaume I, Universidad Miguel Hernández de Elche and with 15 more associated universities and the CSIC.

"Red Valor" is supported by the Ministry of Education and Science, under the framework program for OTRI aid (project reference: OTR2004-0103-B-C06).

2.3. III RedOTRI Training Plan

The 3rd edition of the RedOTRI Training Plan is characterised by the diverse type of training activities initiated. More specifically, the Scheme is structured in the following modules:

- 1) **RedOTRI Courses:** their aim is to train OTRI staff regarding the main tools and capacities necessary for carrying out their tasks. They last between 2-3 days and have a practical focus.
- 2) **Technical Day-Events:** brief events where current issues of interest for OTRI staff are approached. They are also open to researchers and staff from industry.
- 3) **Integrated Courses:** training activities organised and driven by the initiative of one particular OTRI that out of its own interest, offers the course to the rest of the network members.

*From all the academic staff of the Spanish universities,
a 29% has carried out some form of knowledge
transference activity*

RedOTRI Courses				
	Course	Date	Host/place	Participants
1	Beginner's Training Course for RedOTRI officers	15-19 May	Univ. de Castilla La Mancha	48
2	Consolidation of university Technology-Based Firms (TBF)	28-29 Sept.	Univ. del País Vasco	22
3	Contracts for IPR Exploitation	16-17 Nov.	Univ. Europea de Madrid	35
4	Assessment & Commercialisation of Research results	28-29 Nov.	Univ. de Zaragoza	28
5	Creating TBFs in the University	nov 06 - Dec.	Univ. de La Rioja	18
Technical Day-Events				
6	Funding sources for TBFs	30-31 March	Univ. Santiago de Compostela	19
7	Assessment methods for TBFs	19-20 Oct.	Palma de Mallorca	12
8	Management of European Projects	19 de Dec.	Universidad Pontifica Comillas	76
Integrated Courses				
9	Negotiation Course: Effective Strategies & Techniques	27-28 April	Univ. Santiago de Compostela	21

2.4. International Activities

Collaboration with the ProTon-Europe network

Some of the activities carried out by RedOTRI in 2006 under the framework of the collaboration agreement signed with the European Transfer Office network *ProTon* were:

- Organising the "Expert Workshop on Continuous Professional Development and Training", which took place at the Universidad San Pablo CEU (Madrid) from 27 to 29 of March 2006.
- Collaboration in the development of a project aiming to create a database of university spin-offs and European Public Research Organisations.
- Coordination of RedOTRI 2006 Survey with those of the *ProTon-Europe Annual Survey* and adaptation of the management tools of itself.

In November 2006 the statutes of ProTon were approved as an independent association of university knowledge transfer offices and European Public Research Centers, self-financed by its members after the financial aid received by the European Community until that point was ended. Fernando Conesa (Universidad Politécnica de Valencia) was elected as the representative of RedOTRI at the new ProTon Management Committee.

In 2006, RedOTRI participated in the following international events:

- Annual conference of the Association of University Technology Managers (AUTM), held in Orlando (USA) March 2-4 2006, with the main theme being "Improving Society". Poster presentation "RedOTRI: Spanish Network of University Knowledge Transfer Offices".
- Seminar with the title "Structuration d'interfaces marocaines université-Entreprise", held in Casablanca (Morocco) January 19-20 2006, where 3 network models of European transfer organisations were proposed, one of those being that of RedOTRI.
- Annual ProTon conference that took place in Vienna December 11-12. Presentation entitled: "The Spanish approach to Knowledge Transfer from public research" on behalf of the coordinator of RedOTRI.

2.5. Events

In addition to the aforementioned training activities, RedOTRI also organised and promoted the following events:

- "Expert Workshop on Continuous Professional Development and Training", Madrid, March 27-29 2006. Organiser: RedOTRI. Host: Universidad San Pablo CEU.
- Kick-off Day-event for the Network of University Partners for the 7th Framework Program, Madrid, April 26 2006. Organisers: Servivio Europa I+D (European R&D Facility) and RedOTRI. Host: Universidad Complutense de Madrid.
- *RedOTRI Annual Conference*, Barcelona, June 22-23 2006. Organiser: RedOTRI. Host: Catalan universities, coordinated by the Universitat de Barcelona-FBG.

- "5th Forum NEOTEC Venture Capital", Valencia, November 7 2006. Organisers: CDTI, RedOTRI & IMPIVA.

RedOTRI Annual Conference, Barcelona 2006

This is the key meeting point for all staff of the networks' member offices. In the 2006 edition, under the theme "Appreciating Research", more than 250 people registered. The program approached the new cooperation models between the university and its surroundings and the knowledge transfer to the business world, focusing on the aspects related to the assessment of the university R&D.

Conference sessions were complemented by four parallel workshops that allowed participants to deepen their knowledge in technical aspects of interest for OTRI staff. The conclusions of the conference are summarised in the document: "OTRIs in the new environment of knowledge transference: reflections and suggestions".

Events were RedOTRI participated or was represented:

- Seminar entitled "*Structuration d'interfaces marocaines université-Entreprise*", held in Casablanca (Morocco) January 19-20 2006, Organiser: Program TEMPUS of the European Union.
- Presentation of the UNIPYME Loans for technological cooperation, Madrid, February 17 2006. Organiser: General Research Management of the Ministry for Education & Science.
- Annual conference of the Association of University Technology Managers (AUTM) "Improving Society", Orlando (USA), March 2-4 2006. Organiser: AUTM.
- Day-event "University and Entrepreneurial Initiatives", Madrid, April 27 2006. Organisers: General Management of the Policy for SMEs of the Ministry for Industry, Tourism and Commerce.
- Day-event "Cooperation Science-Technology-Company", Pamplona, May 31 2006. Organisers: Navarra Innovation Agency and Scientific & Technological Institute of Navarra.
- ProTon Annual Conference "*Funding and Growing the Knowledge Transfer Function*", Vienna (Austria), December 11-12 2006. Organiser: ProTon-Europe.

For more information regarding RedOTRI activities:
<http://www.redotriuniversidades.net>

3. The Transference Function: Indicators for 2006

3.1. RedOTRI Annual Survey

After 5 years of continuous presence, the **Transfer of Knowledge & Technology RedOTRI Survey** is nowadays the main source of information available in Spain, for an area of activity increasingly relevant in terms of both national and European policy. To that presence, contributes the high number of responses obtained every year thanks to the work and effort of the staff responsible for collecting and introducing the information in their respective offices. 59 out of the total 61 offices participated in RedOTRI 2006 Survey.

RedOTRI 2006 Survey continues the effort initiated one year before converging to a European survey about knowledge transfer that was promoted by the ProTon-Europe network. The tools used to collect the data for this year were designed in the Universidad Politécnica de Valencia with the support of the directors of the ProTon Metrics Committee, in which a member of the RedOTRI Indicators Group participates.

Structure of RedOTRI 2006 Survey:

- General Information on the University
- General Information on the OTRI
- Management of the protection of intellectual property rights
- Licences
- Article 83 contracts and co-operation with companies
- Creating Spin-offs & Start-ups
- Success stories

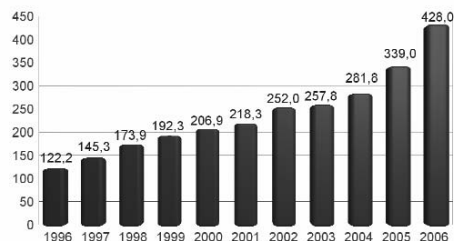
3.2. R&D contracted activity and resources attracted

The capacities and resources of academic research constitute one of the key assets of our National System for Innovation. Numerous signs illustrate the increasing importance of the activity linked to the interaction of this university R&D offer with businesses and other requesting organisations.

In 2006 the volume of R&D contracts increased by 26%, reaching 428 Million Euros, 34.4 of them under the framework of the CENIT program

The data collected by RedOTRI 2006 Survey regarding contracted activity show a continuation of the increasing tendency in the total volume of R&D contracted (Graph 6), reaching the number of 428 million euros. Included in this amount, are both the R&D and consulting contracts (established under art.83 of LOU 6/2001, December 21, Universities, of which a total of 12.506 were signed in 2006) and also the technical services, including small-scale laboratory work such as analysis, reports, etc. that is yearly attributed to the invoiced amount of the period referred to in the survey.

Graph 6.- Evolution in the volume of R&D contracted *
(In Million Euros)

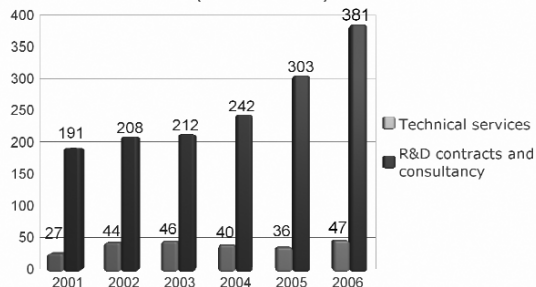


* R&D contracts, services and other activities contracted.
Data provided by 52 out of 60 universities.
Source: RedOTRI 2006 Survey.

The weight of the increase observed in the total contracted volume – slightly more than 26%- is due to the positive evolution of the R&D and consulting contracts (art.83 LOU), that goes from 303 million euros in 2005 to 381 million euros in 2006 (Graph 7), which also represents an increase of the same proportions, around 26%.

One of the reasons for this significant quantitative jump can be found in the sub-contracting carried out by companies benefiting from CENIT projects. According to the survey itself, a total of 106 sub-contracts of Spanish universities were registered in 2006, distributed among the various running CENIT projects, which result to a total global contracted income of 34.4 million euros.

Graph 7.- Volume contracted by companies and other entities
(In Million Euros)



Data provided by 52 out of 60 universities.
Source: RedOTRI 2006 Survey.

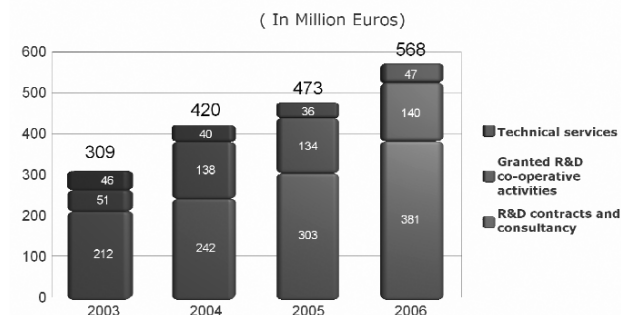
At the same time, the data illustrate that in the last years a certain stabilisation has been produced in the income from technical services.

Summing up the volume of contracts and subsidies obtained for R&D carried out in collaboration with companies and other entities, the total amount raised in 2006 for R&D activities increased to 568 million euros

However, to include in its true dimensions the academic R&D linked to the demand of companies and other entities, one should also add the financial activity carried out with public grants, that undertaken by university research

groups, pursues scientific, technical and strategic targets proposed by these entities. As it can be seen in Graph 8, taking into account these subsidies, the total amount would reach 568 million euros in 2006.

Graph 8 - Revenue generated by R&D activities with industry and other entities
(In Million Euros)



Source: RedOTRI Survey (several years).

It should be made clear that contrary to the CENIT program, where the universities have to be sub-contracted by the benefiting companies, the subsidies to which this indicator refers belong to the university itself; included, among others, would also be those obtained under programs such as PROFIT, PETRI or the respective regional and European programs.

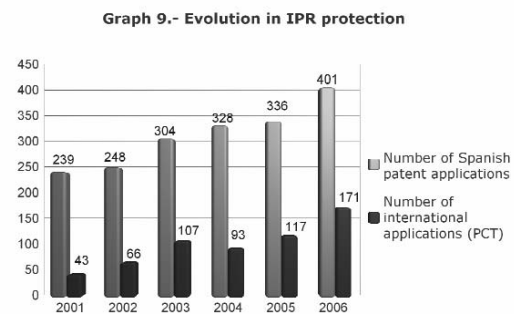
3.3. Knowledge & IPR Protection

The activity of protecting the intellectual and industrial property rights is, together with the R&D contracts management, the task most often carried out by the university OTRIs. The data collected for RedOTRI 2006 Survey reflect the above, where the 98% of the offices carry out this function. This fact, in line with previous surveys, shows that the professional management of IPR was totally assigned to the OTRIs. The accumulating experience in this field and the progressive

professional improvement of their staff, combined with the tendency of the universities to channel through an internal unit the management of assets with ever increasing strategic value, made OTRIs the best choice for that function.

National Patent Applications

The data of 2006 regarding the protection of academic R&D results (Graph 9) indicate a 19% increase in the total of priority patent filing and other national titles of property, overtaking the trend of recent years, showing only moderate increases in that particular indicator.



Data provided by 59 out of 60 universities.
Source: RedOTRI 2006 Survey.

During that period, OTRIs received a total of 640 invention reports, 401 of which – approximately 63% - deriving from national patents, compared to the 611 in 2005, the 55% of which were applied for. It turns out that there were a total of 53 universities applying for at least one national patent.

In 2006 the OTRIs received 640 invention reports, 401 of which resulted in filing for a national patent

International Patent Applications

However, the increase experienced in the number of international patents is especially striking, since in 2006 it reached 171, 46% more than the previous year. This fact requires a second reading apart from the mere quantitative dimension, where other components should also be considered. Like that, the financial costs that the international IPR protection brings about to the public universities in comparison to tax exemption at a national level, makes the decision to protect an invention at international level a risk regarding its potential commercial value and in a way reveals the intention for return on investment with the possible exploitation through license royalties.

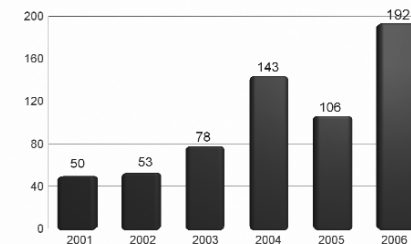
In the same way, in 2006 the number of universities that filed for at least one international patent has increased, surpassing the 27 in 2005 to 32 in 2006, augmenting as well the average value of patents applied at international level by Spanish universities of 2.3 in 2005 to that of 3 in 2006, as can be seen in Graph 9.

During 2006, 171 international patent applications were filed, 46% more than in 2005

3.4. Licences

During 2006 Spanish universities signed a total of 192 licence contracts, a significantly greater figure – 81% more, as seen in Graph 10 – than that registered in 2005, when this indicator experienced a setback.

Graph 10.- Evolution of the number of licence contracts

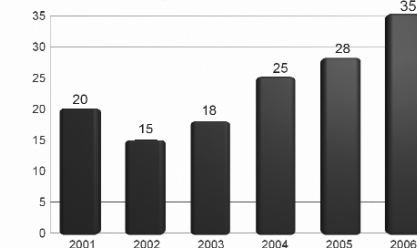


Data provided by 53 out of 60 universities.
Source: RedOTRI 2006 Survey.

The 192 licence contracts signed in 2006 suggest a growth of 81% in respect to the previous year

Consistent with the number of contracts, there was also a notable increase in the number of universities that have turned to licence contracts in order to exploit their scientific output. In 2006 a total of 35 universities resorted to this type of contracts, 7 more than in 2005 and 10 more than in the year 2004 (see Graph 11).

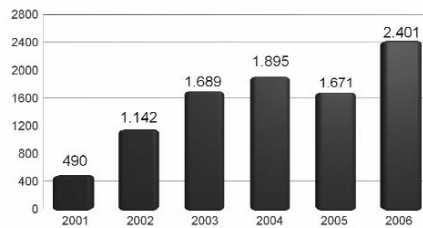
Graph 11.- Evolution in the number of universities that have signed licence contracts



Data provided by 53 out of 60 universities.
Source: RedOTRI 2006 Survey.

Nevertheless, the most significant fact in this area to be extracted from RedOTRI 2006 Survey is undoubtedly the figure for revenues from royalties. During 2006 a total of 2.4 million euros was registered as originating from licence contracts, 43% more than the 1.7 millions in 2005.

Graph 12.- Evolution of royalties from licences
(Millards Euros)



Data provided by 53 out of 60 universities.
Source: RedOTRI 2006 Survey.

Despite an increase of 43% in the figure of royalties registered in 2006, with 2.4 Million Euros, the volume of this type of revenue has not reached a significant level

Obviously, these revenues come from contracts that were signed in previous time periods – the number of which has been increasing with the years at least since 2003 (Graph 12) – and that naturally create royalties once the innovations have passed through a process of being implemented and developed in the market.

The improvements pointed out in the analysed indicators pave the way to follow for establishing the role the transference function has to assume in the Spanish university. However, what is missing, both at the technical and at the institutional level, is a greater attention in the assessment of the R&D results that will facilitate their transfer and subsequent exploitation, thus preventing the loss of what constitutes a key asset for the university of the future. This would convey the necessary investments, in specialised human resources in the university itself and also in the associated costs that the valuation of knowledge brings with it, like for instance sub-contracting specialist services, validation actions, proof of concept, normalisation, etc.

The activities of evaluation and assessment the university R&D results have to be adequately reinforced, in order to facilitate the transfer and exploitation of the latter

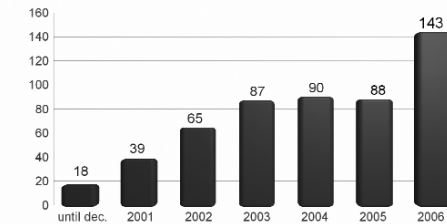
3.5. University based Spin-offs

In recent years, in Spain, it has been observed the starting-up of numerous initiatives directed to favour the emergence, development and consolidation of technology-based firms. Many of them tend to pay increasing attention to the university as a key source of novel business activity and as a consequence, as investment opportunities.

Spanish universities play an ever more relevant part in the creation of novel technology-based firms

The information gathered by RedOTRI 2006 Survey allows a certain justification of this trend. During the past year 143 spin-offs were created in the academic environment (see Graph 13), where *spin-off* is termed “a new company that

Graph 13.- Evolution of number of spin-off created in the university environment



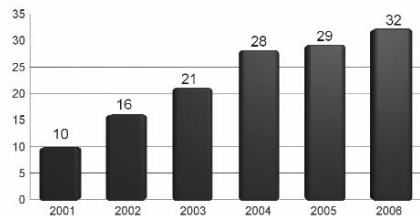
Data provided by 58 out of 60 universities.
Source: RedOTRI 2006 Survey.

bases its business primarily on knowledge generated by the university”. The striking growth of this indicator in respect to previous years – around 62% - can be partly explained by the noteworthy aid that everything related to entrepreneurship is receiving within academia, especially with the initiation of the university’s own programs for creating companies and assisting entrepreneurs. Furthermore, one should also take into account the cyclic character of the emergence of this type of business projects.

Although the survey does not take into account, for the time being, information on certain aspects of great interest for the analysis like for instance the survival rate of such companies, their sectorial distribution or their dimensions, it does make clear that the role of the source for new business today belongs to the Spanish university. For example, an important presence of business projects from universities and Public Research Organisations (especially CSIC) is confirmed in venture capital forums like NEOTEC. With that origin, 7 initiatives participated in the 2005 edition and 11 in that of 2006, held in Seville and Valencia respectively, over a total of 16 projects presented in each one of them.

Equally relevant is the implication of an increasing number of universities in matters of entrepreneurship. In 2006, 32 universities created at least one spin-off (Graph 14), 3 more than in 2005.

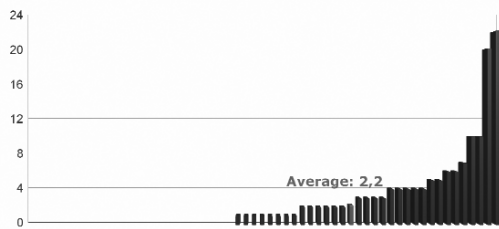
Graph 14.- Evolution of the number of universities that have created at least one spin-off



Data provided by 58 out of 60 universities.
Source: RedOTRI 2006 Survey.

In Graph 15 it can be observed a great differentiation in the results obtained from the various universities, mainly due to the known heterogeneity of the universities themselves and also due to the distinct levels of experience in entrepreneurship. It is worth noting that in 2006 a total of 43 universities were registered at UNIEMPREDIA, the competitive program of RedOTRI to assist the detection and development of technology-based firms in the Spanish universities.

Graph 15.- Distribution by universities of the total number of spin-offs created



Data provided by 58 out of 60.
Source: RedOTRI 2006 Survey.



