



RedOTRI Annual Report 2008

Spanish Network of University Knowledge Transfer Offices



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1. University Knowledge Transfer Offices (Spanish acronym OTRI¹): Development and Data for 2007

1.1. Origin of the OTRIs

The evolution of the different elements that comprise the Spanish National System of Innovation needs a proper contextualization to be understood. This is also the case without doubt of the Spanish KTOs, created by the National Administration at the end of 1988, although at that time, and since some years before, there were some offices in a handful of universities that already played a knowledge transfer role.

In 1986, Spain joined the European Union, thus obliging the national authorities to promote science and research for the benefit of the entire society, a principle already stated in the Spanish Constitution (art. 44.2). That very year it was approved the Law 13/86 for the Promotion and Coordination of the Technical and Scientific Research –also known as **Law of Science**—, a cornerstone over which to build a science policy virtually nonexistent in Spain by then. Such action implicitly posed new challenges to the university system, challenges such as boosting Spanish research towards a world-class level to become it a real development engine. At the same time, the Spanish industry had to adapt itself to the new competitive framework of the then European Economic Community.

OTRIs were born to help dynamizing the relationships between the scientific and productive sectors

Thus, the OTRIs were born as the solution to one need: to dynamize the relationships between the scientific world –made up in Spain by the public and private universities plus other public research offices— and the productive economic sectors.

1-The 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).

The OTRIs were conceived within the 1st National Plan of R&D 1988-1991, main instrument of the Law of Science, as the catalyst of the relationships between the university and the business world. The OTRIs can be defined today as the units of knowledge transfer of the Spanish universities and public research offices, whose mission is to support and to promote the production of knowledge and its transference to the business companies and to other socioeconomic agents.

It is also important to bear in mind other factors that inspired OTRIs' goals by that time, and facilitated their correct setting up within their context. Such context was characterized by the structural weakness of the National System of Innovation, an R&D investment with respect to the GDP of around 0.85%, scarce means and stimuli for the scientific production, and an atmosphere of mutual ignorance between the universities and the business world in their R&D and innovation relationships.

OTRIs' mission is to support and promote the generation of knowledge in academia that will then be transferred to the society

The precise objectives that were entrusted to the OTRIs at the moment of their creation were the following:

- To elaborate databases of the knowledge, infrastructures and R&D offers available at their universities and centers.
- To identify the results generated by the research groups, evaluate their transfer potential, and promote them in the companies, both directly or by collaborating with intermediaries.
- To facilitate the transference of these results to the interested companies, or, in some cases, the correct assimilation of foreign technologies.
- To collaborate and participate in the negotiation of R&D contracts, technical assistance, consultancy services, patent licensing, etc., between their research groups and the business world.
- To manage, with the support of the administrative services of the universities, R&D contracts.
- To inform on the European R&D programs, and to technically support their management and design.

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 1992-2002². In 2006, university science contributed with 63.5% of the Spanish publications listed in the Science Citation Index, the main quality reference for the measurement of the international scientific production.

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

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**.

Spanish universities have assumed their compromise to develop their socioeconomic environment

Through their different organizational and operative models, Spanish universities have established and strengthened via the OTRIs those activities related with the commercial and social exploitation of knowledge. The instruments that have helped the OTRIs to develop and consolidate their transfer functions are:

tation of knowledge. The instruments that have helped the OTRIs to develop and consolidate their transfer functions are:

- 1) The research and technical support contracts for the exploitation of the scientific and technical abilities of the university researchers.
- 2) The R&D projects in collaboration with businesses and other bodies, and the public funding sources related to obtaining marketable results.
- 3) Strategic alliances with other organizations, 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 license 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.

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

At the present time, the OTRIs are evolving towards more proactive transfer models, oriented to guarantee the right valorization of the innovation potential that hoards the university.

In addition, another resource that facilitates the relation university-companies has arrived to complement the existing ones: the physical space of the university that, well equipped with advanced infrastructures, offers great opportunities to generate innovation and development poles around R&D groups and university centers. In this perspective, the scientific and technological parks must be therefore considered like an important instrument on which to articulate complementary routes to the already existing ones for the development and reinforcement of the transfer function.

Principal activity indicators of university OTRIs in 2007

617 M€ contracted from companies and other entities
546 M€ raised in R&D contracts, consultancy and technical services
434 national patent applications
192 international patent applications (PCT)
190 licence contracts signed
120 spin-off companies created

1.3. RedOTRI: Mission, Objectives and Structure

RedOTRI Universities was constituted in 1997 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. 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 aims to integrate in its activities and functions the greatest number of professionals from the world of knowledge transfer. To such end, two mechanisms are proposed:

RedOTRI was created in 1997 to reinforce and disseminate the role of the universities as essential elements within the National System of Innovation

- 1) The status of RedOTRI **associated member** for all public research entities that request it and fulfill 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 62 universities and 13 public research organizations as associated members. Ninety per cent of the 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.

The objectives of RedOTRI, according to their regulations, are the following:

- 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 recognizes the support to the socioeconomic development and to the business modernization process.

RedOTRI in 2007

62	Universities
13	Associated Public Research Organisations
499	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 their 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 CRUE’s facilities. It assists the Permanent Commission execute its functions while at the same time serving as the RedOTRI central office.

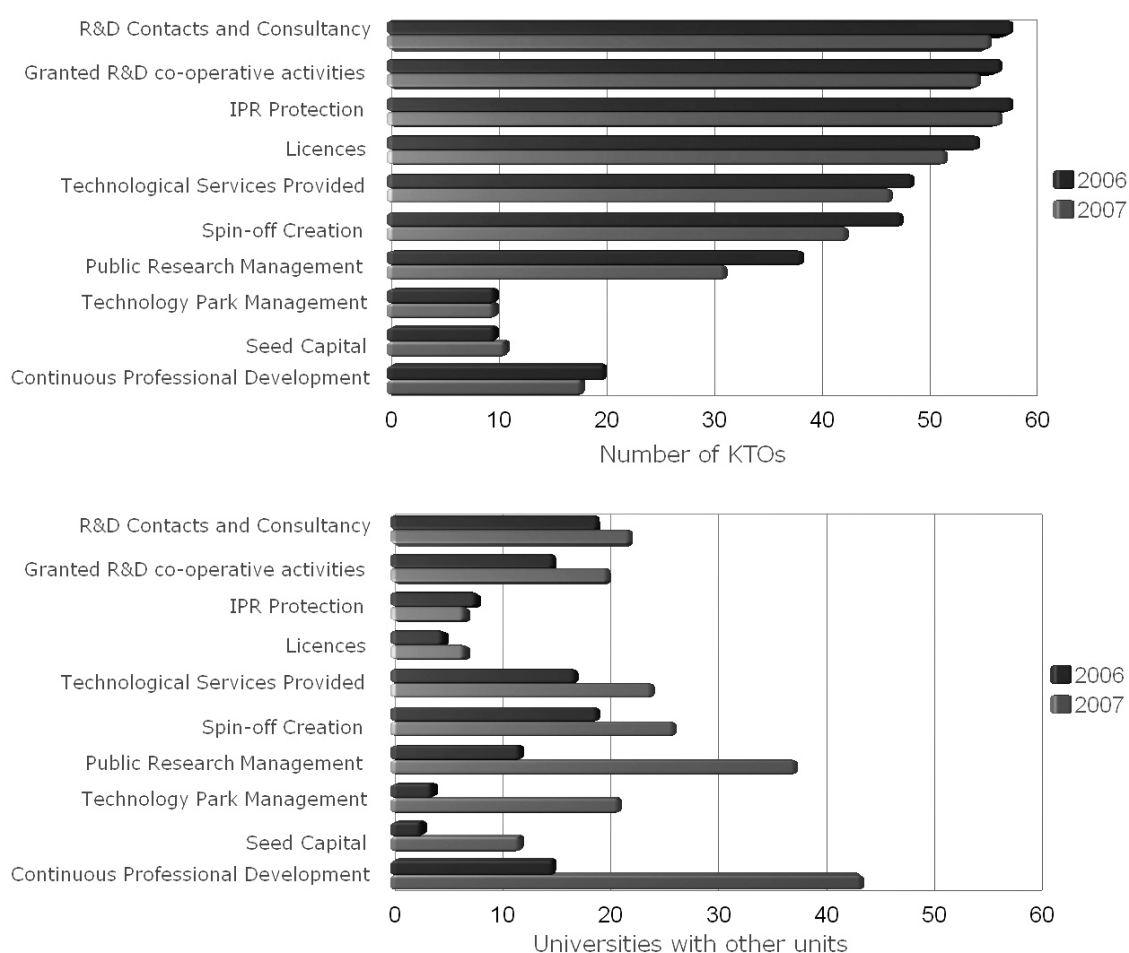
An essential component of that structure are the various **Working Groups**, in which professionals from the different offices voluntarily contribute their knowledge and experience for the conception and initiation of a variety of activities. Examples of the latter include educational and professional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

1.4. OTRIs in 2007

1.4.1. Areas of Activity

The information provided by the RedOTRI 2007 Survey regarding the activities carried out by the OTRIs shows the appearance of new university organizations with transference functions that replace, complement or overlap those of the OTRIs that participate in the Survey (**Graph 1**).

Graph 1. Activity Fields of the Spanish KTOs



Source: RedOTRI Survey 2006 and 2007. 58 valid answers (2007)

These detected tendencies should be emphasized:

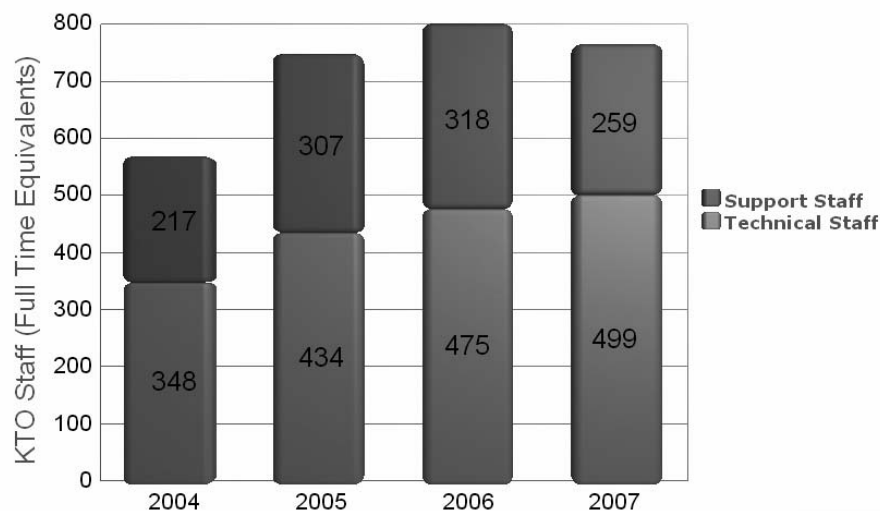
- The appearance of other units to support the creation of New Technology Based Firms (NBTFs) and to manage the collaboration programs. This implies that these functions are not exclusive of the OTRIs in many cases.
- There are not significant changes in IPR management, which constitutes the nucleus of the transfer function and on which the OTRIs maintain its preponderant role.
- For the first time in the last years, the number of offices that manages public research has been reduced. This activity, that demands many resources, seems that it begins to be discharged from the OTRIs towards other management units or services. In many cases, OTRIs assumed this task because at that time they probably were the best option within the university, in spite of not being a transference function itself.

In 2007, OTRIs maintain their preponderant role in IPR management whereas decreases the number of OTRIs in charge of the management of public research

1.4.2. Human Resources

As shown in **Graph 2**, the number of transfer professionals maintained a steady growth in 2007, summing up 499 permanent positions. At the same time, support personnel has been reduced, a fact whose cause may derive from the transfer to other administrative units of some research management tasks formerly performed by a significant number of OTRIs.

Graph 2. Professional KTO Staff Evolution



Source: RedOTRI Survey 2004-2007. 59 valid answers (2007)

The increase in transfer personnel of almost 12% implies larger offices, whose average size in 2007 was of 8.4 permanent positions.

The data provided by the survey show that in 2007 the rate of temporal positions among the staff of university OTRIs was of 54%, 5 points over the 2006 rate. Therefore, the growth of the offices comes, basically, with temporal personnel associated to projects. On the other hand, the length of service and stable situation of a many OTRI personnel indicate that they are consolidated structures with accumulated experience.

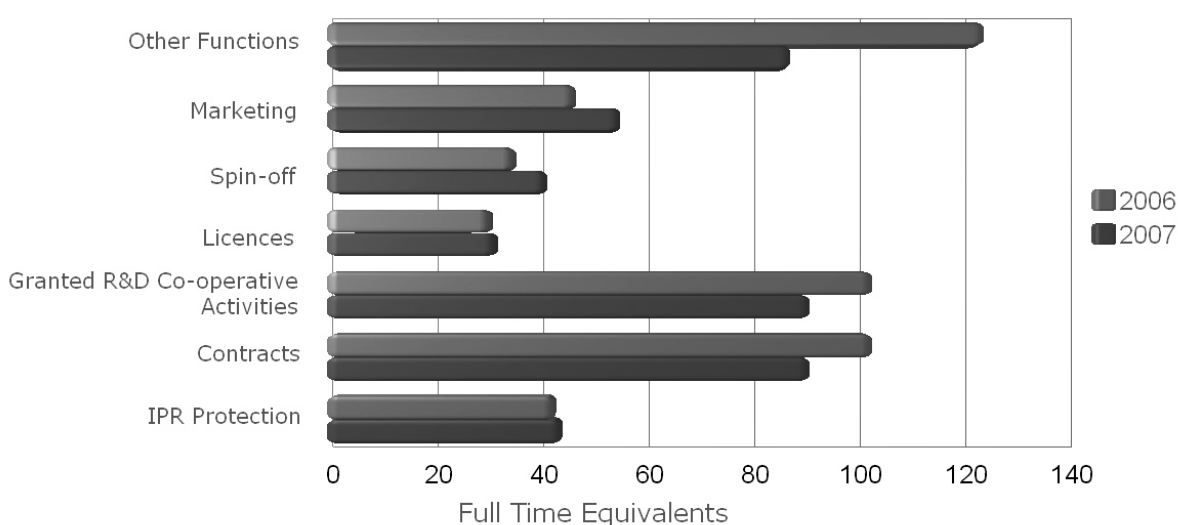
Temporary hiring financed with projects facilitates OTRIs' growth, although the stability detected in a significant part of their staff demonstrates that OTRIs are consolidated structures with a valuable accumulated experience

Another excellent data detected by the RedOTRI Survey is the ratio between internal clients (measured in number of professors and rest of R&D staff implied in knowledge transfer activities) and OTRIs' technical positions. In 2007 this figure reached 58 professors per transfer professional.

On the functional profile of the OTRIs, it is observed (**Graph 3**) that a greater effort is dedicated to valuation tasks and the transfer of research results, whereas it is dedicated a minor effort, in relative terms, to hired contracts and subsidized collaborative projects, despite their importance for the OTRIs. This evolution proves the professionalization effort made by the OTRIs during the last years, assigning more human resources to activities such as IPR protection, licenses and entrepreneurship.

In 2007, a greater effort has been registered in valuation and transfer tasks with respect to other functions carried out by the OTRI

Graph 3. KTO Staff Functions



Source: RedOTRI Survey 2006 and 2007. 59 valid answers (2007)

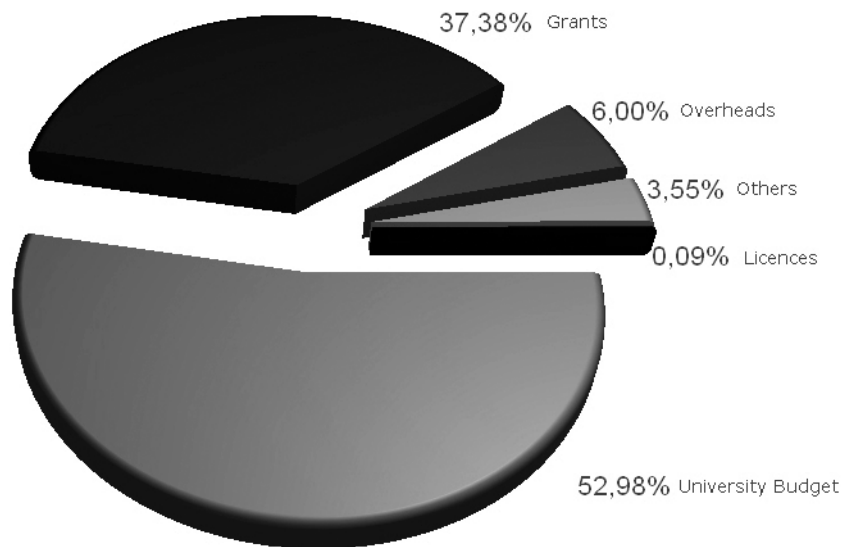
1.4.3. Funding

It can be affirmed that during 2007 there have been no significant changes in the financial structure of the OTRIs. With almost a 53% of the funds coming from the general budget of the university, an increase of 3% has taken place in the funds via subsidies. The remaining financing sources are, with some exceptions, minority ones **(Graph 4)**.

The main financing sources of the OTRI are the own budget of university -53%- and public subsidies -37%-.

It can be mentioned that in only 2 offices, all of them legally independent of their universities, its main financial source (more than 50%) are overhead revenues from contracts.

Graph 4. Sources of KTO Funding



Source: RedOTRI Survey 2007. 49 valid answers.

2. RedOTRI Activities in 2007

RedOTRI's 10th Anniversary

In 2007, RedOTRI celebrated its Tenth Anniversary. During the 15th Congress on Research in Spanish Universities, celebrated in the island of Gran Canaria, Rector Francisco Tomás Vert, President of the R&D Sectorial Committee of the CRUE, gave to RedOTRI's coordinator, Ana Cortés, a commemorative sculpture with the motto **"Making way for an Enterprising University"**. All former RedOTRI coordinators were present in the act: José Luis Virumbrales (University Carlos III of Madrid), Fernando de la Puente (University of Navarre), Rogelio Conde-Pumpido (University of Santiago de Compostela), Jordi Red (Autonomous University of Barcelona), Fernando Conesa (Polytechnical University of Valencia) and Santiago Romo (King Juan Carlos University).

2.1. RedOTRI Working Groups

One of the elements that have strengthened RedOTRI dramatically from its very beginning is their work groups, about which it is essential to know that:

The work groups, one of RedOTRI's greatest assets, are essential to develop network projects and activities. Experts from many KTOs volunteer in different professional fields

- They are made up by experienced volunteer personnel from university and associated KTOs, elected by their directors and supervisors.
- Each group follows an annual working program approved by RedOTRI's Permanent Commission which includes all the activities to be carried out.
- Its operation is based on actual meetings as much as online work.
- The composition of the groups is periodically renewed depending on the technical necessities and the professional circumstances of its members.

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**, whose 4th edition was held in 2007. More information on the plan is available in section 2.6 of this report.

During 2007, the main tasks carried out by this group were the following:

- Designing of a questionnaire of training needs, and implementation of a survey to the network members. The 2008 training plan was organized on the basis of the data collected.

- Development of new activities to evaluate the training actions, their transfer to the everyday work, and its impact in the KTO. This evaluation complements those already in progress on the learning and the satisfaction of participants.
- Starting of a mobility plan to exchange and share good practices between offices and professionals of the network.
- Organizing the first specific courses for teachers, addressed to the professors who take part in RedOTRI's training actions.

Participants:

Polytechnic University of Valencia (Coordination), University of the Balearic Islands, European University of Madrid, University of Granada, University of the Basque Country, Polytechnic University of Catalonia, University of Santiago de Compostela, and Technical Secretariat of RedOTRI.

2.1.2. The Indicator Work Group

Its objective is to measure the activity of knowledge and technology transference that Spanish universities carry out.

During 2007, the main tasks carried out by this group were the following:

- Updating of RedOTRI's Survey on knowledge and technology transfer, coordinated and aligned with ProTon-Europe Annual KT Survey.
- Improvements in RedOTRI's Survey Online Tool.
- Elaboration of RedOTRI's 2007 Survey Report

Participants:

Polytechnic University of Valencia (Coordination), Autonomous University of Barcelona, Autonomous University of Madrid, Spanish National Research Council, University Carlos III of Madrid, University of Jaén, University of Murcia, Open University of Catalonia, University of Oviedo, Pablo de Olavide University, King Juan Carlos University, Rovira i Virgili University, University of Santiago de Compostela, University of Zaragoza, and Technical Secretariat of RedOTRI.

2.1.3. 7th Framework Program Working Group

Its goal is to improve the participation of the research groups from Spanish universities in the European R&D programs by means of the professionalization of OTRIs' services in that area.

The main activities carried out by this group in 2007 were:

- Elaboration of a technical handbook on total costs management in the 7th EU Research Framework Program, a guide that deals with the obligation of KTOs and other RedOTRI members to adopt the "total costs formula" in their 7th FP projects.
- Organization of a technical session to present the new features of the 7th Framework Program, held in the University of Cádiz between 22 and 23 of March 2007.
- Collaboration in the elaboration of the program and organization of RedOTRI's Course on European Projects Management, of which 2 editions were celebrated (9th-11th, and 29th-31th of October) in the University of the Balearic Islands.

Participants:

University of Cantabria (Coordination), University of Alicante, Autonomous University of Barcelona, University of Granada, University of the Balearic Islands, Astrophysics Institute of the Canary Islands, Comillas Pontifical University of Madrid, Ramón Llull University, King Juan Carlos University, Polytechnic University of Catalonia, and R&D Office of the CRUE.

2.1.4. Contracts Work Group

The main goal of this group is to deepen into the technical, legal, economic and budgetary details of the research and consultancy contracts regulated in article 83 of the Organic Law of Spanish Universities (LOU). The group generates tools and proposes good practices to assist the work of KTO technicians in charge of this area.

The main activities carried out in 2007 were:

- Elaboration of a contract model for R&D projects, adapted to the new situation of the university-business relationships and to the needs of KT professionals.
- Collaboration in the elaboration of the program and organization of RedOTRI's R&D Contracts Course, held in Pamplona between the 12th and 14th of September 2007.

Participants:

University of Vigo (Coordination), Autonomous University of Barcelona, University Carlos III of Madrid, Jaume I University, University of La Rioja, University of Seville, Polytechnic University of Valencia, University of Valencia, and Technical Secretariat of RedOTRI.

2.1.5. Ad-hoc Work Group on IPR Management

In April 2007 an ad-hoc work group was created on "IPR licensing: conflicts of interest and legal ethical aspects" (brief: IPR-Management Work Group). Its goal was to draft a document that provided KTO professionals a series of guidelines to consider when licensing IPR to businesses.

This document, whose first version was presented during 15th Congress on Research in Spanish Universities, celebrated in the island of Gran Canaria, offers basic principles to guide good practices in IPR management, and analyzes every phase that chronologically structures a negotiation process.

2.2. RedOTRI Projects

2.2.1. *Uniemprendia*

Uniemprendia is a competitive program of RedOTRI for the promotion of new technology-based firms (NTFs) within Spanish universities. Promoted and coordinated by the University of Santiago de Compostela, its 4th edition in 2007 saw the participation of 46 universities, INTA and CSIC. Grupo Santander and CDTI are the sponsors of the project.

Participants:

University of Almeria, Autonomous University of Barcelona, Autonomous University of Madrid, University of Barcelona (FBG), University of Cantabria, University of Granada, National Institute for Aerospace Technology, University of Murcia, University of the Basque Country, Polytechnic University of Madrid, Polytechnic University of Valencia, Polytechnic University of Catalonia, King Juan Carlos University, University of Vigo, and University of Valencia.

Main objectives:

- 1) To support the creation and consolidation of business ideas based upon the knowledge generated in universities, and 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.

Thirty business ideas took part in Uniemprendia 2007, identified by the Network of Business Creation Technicians of RedOTRI. The best 23 teams were selected to receive specific training sessions on the following issues:

- Tutorials, organized by School of Industrial Organization, to draw up the respective business plans of each promoting team.
- Three seminars, organized by the Instituto de Empresa Business School, during the months of September, October and November, which dealt with the essential theoretical and practical elements to draw up business plans: the marketing plan, the operations plan, negotiation techniques, legal aspects, etc.

UNIEMPRENDIA 2007 Outcomes

46 universities, CSIC and INTA participated
30 business ideas registered
23 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 the industry and business world.

One of the main strengths of this project is the implication of associations directly linked with the industrial sectors, such as the Spanish Electronics, Information Technology and Telecommunications Industries Association (AETIC), and the Spanish Chemical Industry Federation (FEIQUE). During 2007, more contacts with other business associations were initiated in order to expand the project to sectors such as Biotech, Pharmacy, the Food Industry, and the Metal Industry, among others.

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

Between the most significant results achieved by RedValor in 2007 there was the accomplishment of 50 evaluations of 26 technologies coming from 21 OTRIs. These evaluations were carried out by 24 experts from the ICT and chemical areas.

The project, started out in 2004, is coordinated by the University of Valencia and counts with the collaboration of the Polytechnic University of Valencia, the University Carlos III of Madrid, the Jaume I University, the Miguel Hernandez University of Elche, AETIC and FEI-QUE. The CSIC and 15 more universities also holds up this project.

"Red Valor" is supported by the Ministry of Education and Science, under the Framework Program of OTRI Aids (project reference: OTR2004-0103-B-C06).

2.3. 4th RedOTRI Training Plan

The 4th edition of the RedOTRI Training Plan continued diversifying the training activities (RedOTRI courses, technical-day events, and the integrated courses) by extending the catalog with the mobility actions and the courses for teachers. Mobility actions aside, 396 persons attended all the training actions, 184 of which attended RedOTRI courses, a fact to be emphasized.

Aiming to enable the professionalization of the staff in the transference offices, RedOTRI designs and implements its own Training Plan. In 2007, 11 educational courses and seminars attended by 396 participants were carried out, in addition to 11 mobility actions

RedOTRI Courses				
	Course	Date	Host/place	Participants
1	Beginner's Training Course for RedOTRI officers	23-27 April	Univ. of Oviedo	36
2	Evaluation of university R&D	4-6 July	Univ. of Málaga	21
3	Beginner's Training Course for RedOTRI officers	22-26 Oct.	Univ. of Almería	36
4	Costs Management in European Projects	(1st ed.) 9-11 Oct.	Univ. of the Balearic Islands	25
5		(2nd ed.) 29-31 Oct.		34
6	R&D Contracts	12-14 Nov.	Univ. of Navarre	32
Technical Day-Events				
7	Presentation and Innovations of the 7th FP	22-23 March	Univ. of Cádiz	62
8	Legal and Financing Aspects Integrated Courses	13 July	Polytechnic University	84
9	Course: "Protection of Research Results: Patents"	29-30 Nov.	Univ. of Jaén	25
10	Technical Seminar: "New Legal Framework for Spin-off Creation"	13-14 Dic.	Univ. Santiago de Compostela	25
Courses for Teachers				
11	Courses for Teachers	28-29 June	Polytechnic University of Valencia	15

2.4. International Activities

2.4.1. Collaboration with the ProTon-Europe Network

In 2007, 30 OTRIs were already members of ProTon Europe, the pan-European network of KTOs and companies affiliated to universities and other Public Research Organisations.

Fernando Conesa (Polytechnic University of Valencia) was re-elected to represent RedOTRI in the Direction Committee of ProTon. Mr. Conesa also leded ProTon's Metrics Committee until February of 2007.

The most outstanding actions carried out during 2007 within ProTon's framework were:

- Support in the programming and organization of the "Proton Survey Tool Training Session", held in Brussels the 27 of February of 2007, a seminar intended to instruct administrators of each national network in the use of the ProTon Survey online tool.
- Contribution to the debate and final writing of Proton's position document on the reform of the EU patent system.

2.4.2. Collaboration with the Argentine RedVITEC Network

In 2007, RedOTRI and the KT Network of Argentine National Universities -RedVITEC- started up a collaboration project, cofinanced by the Spanish Agency for International Cooperation -AECI -, whose objective is to stimulate the interchange of experiences between both networks and to plan joint ventures within the field of the knowledge transfer.

Within this project the following activities were carried out:

- Presentation of RedOTRI activities in the 7th RedVITEC Plenary Session, celebrated the 17 and 18 of May in the Argentine city of Corrientes, by prominent members of RedOTRI
- Program of visits to Argentine KTOs by RedOTRI members. The offices visited were in the National University of Matanzas, the National University of the Coast and the National University of the Northeast.
- A delegation of RedVITEC participated in RedOTRI's Annual Conference, celebrated in Salamanca the 7 and 8 of June, and presented the activities and operation of their network.

2.4.3. Other International Activities

- Programming and teaching of the course "Professionalizing the University and Opening Their Socioeconomic Means", organized by the International University of Andalusia and celebrated in the University Abdelmalek Essaâdi of Tangiers (Morocco) between the 9 and 13 of July 2007.
- Coordination of a program of visits to Spanish universities for the Technological University of Panama (8-12 of May 2007).

2.5. Mobility Actions

After 20 years of activity, the OTRIs have acquired a valuable experience in the management of university knowledge transfer. It can be affirmed that many KTOs and professionals are true referents in diverse areas of work. For this reason, and with the goal in mind of being able to share and to transmit these knowledge and experiences between the professionals of the transference offices, RedOTRI started up in 2007 the denominated **Plan of Mobility**, which includes two types of mobility actions:

- 1) Training Stays:** an OTRI receives one or several visitors (coming from one or several other OTRI) between 2 and 5 days to be trained by their personnel. In 2007 the universities of Zaragoza, Santiago de Compostela, Carlos III of Madrid, Autonomous of Madrid, and Polytechnic of Valencia, and the CSIC and the National Center for Cardiovascular Research received training in European projects management, NTFs creation, TRIP Methodology, CARTA tool, comprehensive project management, entrepreneurship, and R&D licensing and contracts.
- 2) Visits of Experts:** an expert moves to an OTRI between 1 and 3 days to take care of their training needs. In 2007 the experts that participated in the program were Francisco de Borja Domínguez, Xavier Garcias and Mónica de Forn, who assisted in European projects management and total costs managements in the 7th FP.

The RedOTRI Plan of Mobility is financed by the Ministry of Education and Science within the framework of the Financial Aids Program to OTRIs (reference OTR050028).

2.6. Training Evaluation

During 2007, the reach of the evaluation tasks of RedOTRI training was extended, understanding "evaluation" as the actions able to determine if the awaited results in the three scopes of the learning process have been obtained and to what extent. Whereas the first scope, the one that has to do with knowledge, abilities, skills and attitudes, and the satisfaction of the participant, had been already analyzed, the present training plan deals for the first time with the evaluation of the remaining two scopes: the transfer of the new knowledge to the regular working activities (assessed through a questionnaire addressed to the students) and the impact of the training in the KTO (with another questionnaire addressed to KTO directors and/or other managers).

The most significant conclusions of the RedOTRI courses belonging to the 2007 Training Plan, in each of the above mentioned scopes, were the following:

The students of RedOTRI courses held in 2007 valued specially the usefulness of their practical exercises and the quality of the teaching staff

- 1) The aspects related to the general satisfaction of the student and the learning process obtained a high general score in all the courses, with an average of 4.61 points in a Liker scale (1 to 5). The variables measured in the **questionnaire of satisfaction**

have to do with the contents, teaching staff, methodology, technical and didactic means, facilities, organization and teaching. Nearly all of them scored over the cut off point considered optimal (4). The highest score went to the usefulness of the practical exercises (4.61 on average) and to the teaching staff (4.43 on average). The schedule (3.89 on average) and the facilities (3.94 on average) were less valued.

- 2) In the second place, it should be highlighted the high score reached in all the evaluated aspects of the **questionnaire of the transfer to the job**, specially in those that analyze the relationship of the training with the real work (4.1 on average) and the degree of applicability (3.75 on average). This allows affirming that the courses fulfil one of their primary targets: that the new knowledge is directly related to the real professional activity of the KT job.

The RedOTRI Courses are related to the activity carried out by the KT professionals in their jobs and contribute to increase their productivity, according to those polled

- 3) The results have also been equally positive in the aspects analyzed by the **questionnaire of impact in the OTRI**. The repercussion that the courses have in the work quality is valued in 3.55 on average, measuring "quality" as the increase in productivity, work planning improvement, and reduction in work supervision, among other factors. On the other hand, the courses do not seem to influence much on the work atmosphere (2.93 on average), but they do in the competence level (3.39 on average) through the improvement of OTRIs' image and diversification of their services.

2.7. RedOTRI Annual Conference

The 2007 edition of RedOTRI's Annual Conference, held in the Pontifical University of Salamanca and the University of Salamanca the 7 and 8 of June, had as central topic university patents and their transfer value. Under the motto **"Making patent the research"**, the program included a round table with a panel of experts that approached the different aspects of university patent exploitation, and presented success cases of new companies or business lines generated from university knowledge. Some of the participants were Gerardo Penas (vocal adviser of the Spanish Patent and Trade Mark Office), Miguel Vega (Strategic Studies and Innovation Director of Genome Spain), Sebastián Chávez (founding partner of the company INGENITRICS LTD.), Enrique Monte (Professor of Microbiology of the University of Salamanca) and Carlos Pérez (R&D coordinator of Ros Roca Ltd. Company). More than 180 professionals interested in knowledge and technology transfer attended the event.

3. The Transference Function: Indicators for 2007

3.1. RedOTRI Annual Survey

The RedOTRI Annual Survey on Knowledge and Technology Transfer is the only source of transference function information in Spain.

After 6 years of continuous presence, **the RedOTRI Survey** is a consolidated measurement tool whose contents continue converging with those of the ProTon-Europe Survey. To that result 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. In 2007 60 OTRIs participated in the Survey, 97% of all the offices, and they answered a significant part of the questions, specially those more representative of OTRIs' activities.

The questionnaire used in RedOTRI's Survey 2007 has the same structure of the 2006 edition, with only slight changes in some questions. In addition, this questionnaire shares a common base of sections and questions of the ProTon questionnaire, to which specific questions related to RedOTRI interests were added.

Structure of RedOTRI 2007 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
- Spin-offs & Start-ups Creation
- Success stories

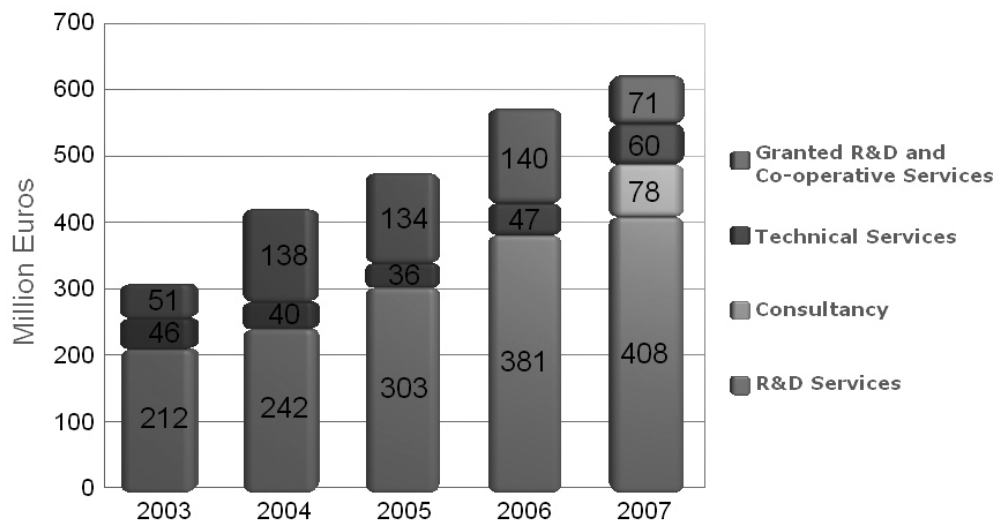
The data collected was exploited by RedOTRI's Indicator Work Group. In 2008 this group prepared the **RedOTRI's 2007 Survey Report** which deeply analyzes all the gathered information.

The following sections of this chapter provide a brief analysis of the most representative indicators of the transference in the Spanish universities during 2007. For more details the above report should be consulted.

3.2. R&D Contracted Activity and Resources Attracted

In 2007, the revenue obtained through the interaction of the universities with companies and other organizations reached 617 Million Euros (**Graph 5**), an increase of 8.6% over last year.

Graph 5. Revenue Generated by R&D Activities with Industry and Other Entities

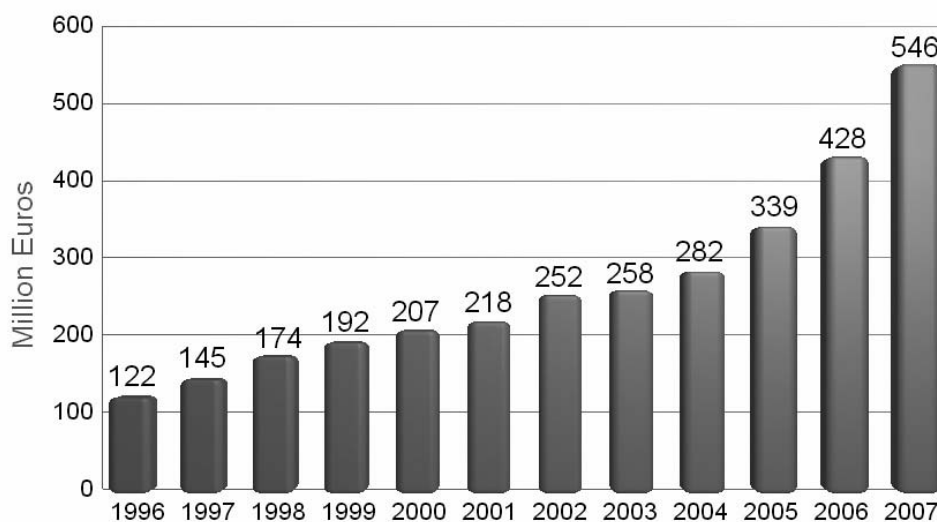


Source: RedOTRI Survey 2003-2007. 53 valid answers (2007)

The most significant increase took place in those activities in which third-party relationships imply economic returns to the university, either in the form of R&D services, consulting (advice, studies...) or technical services. The 2007 growth has been around 28% (**Graph 6**).

In 2007, universities gained 617 Million Euros from R&D requested by companies and other entities, standing out 546 Million Euros obtained through R&D services, an increase of 28% over 2006

Graph 6. Evolution in the Volume of R&D Contracted



Source: RedOTRI and RedOTRI Survey 1996-2007. 53 valid answers (2007)

However, the subsidies granted to the universities in 2007 within the programs that support co-operative activities in R&D were reduced in half. The reason for this is that the financing of some of these programs has been reoriented towards the companies, which must hire a university to perform a part of the R&D related to the projects. As a result, according with the data gathered in the RedOTRI 2007 Survey, 29.6% of the 408 Million Euros obtained through R&D contracts is financed with money obtained by the companies in public programs. A significant part of these funds belonged to the CENIT program, which represents a 19% of the contracted R&D works.

19% of the 408 Million Euros obtained by the universities in R&D contracts with companies come from the CENIT program

On the other hand, the analysis of the recipients of the knowledge transferred in R&D and technical activities changes noticeably with respect to the previous year. The 2007 data shows a greater inter-

action with private organizations, which raise their funding contribution to those activities from 49% to 62%, with the consequent reduction of the relative weight of the funding of public organizations (**Graph 7**).

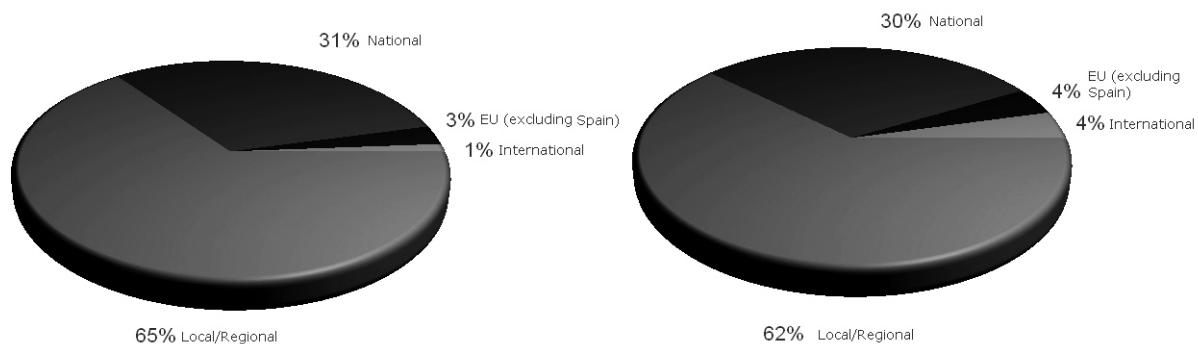
Graph 7. Origin of R&D Third-Party Funding



Source: RedOTRI Survey 2007. 40 valid answers.

As for the geographic location of the private organizations that request R&D and technical support from the universities, the distribution of the contracted amounts resembles much last year's situation. The main difference lies in the three-point reduction experimented by foreign hiring (**Graph 8**) in benefit of Spanish companies from the same or different region. This is due to the impact of public programs such as CENIT, which has generated in the companies a strong demand of R&D.

Graph 8. Geographical Distribution of Clients and Income of R&D Activities and Technical Support



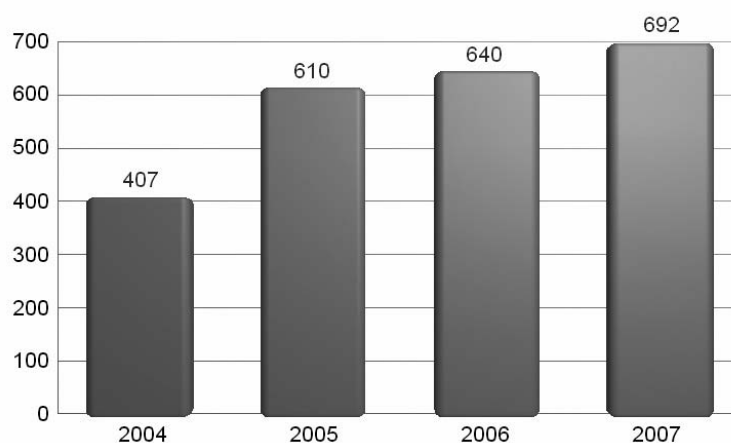
Source: RedOTRI Survey 2007. 40 valid answers.

3.3. Knowledge & IPR Protection

In 2007, these essential indicators of OTRIs activities kept on rising. Thus, the invention reports received in the OTRIs during this period grew 8% reaching 692 reports, as can be seen in (Graph 9).

The OTRI received in 2007 692 invention reports, 434 of which resulted in filing for a national patent, 7.4% more than in 2006, which means an average of 7.9 requests per university

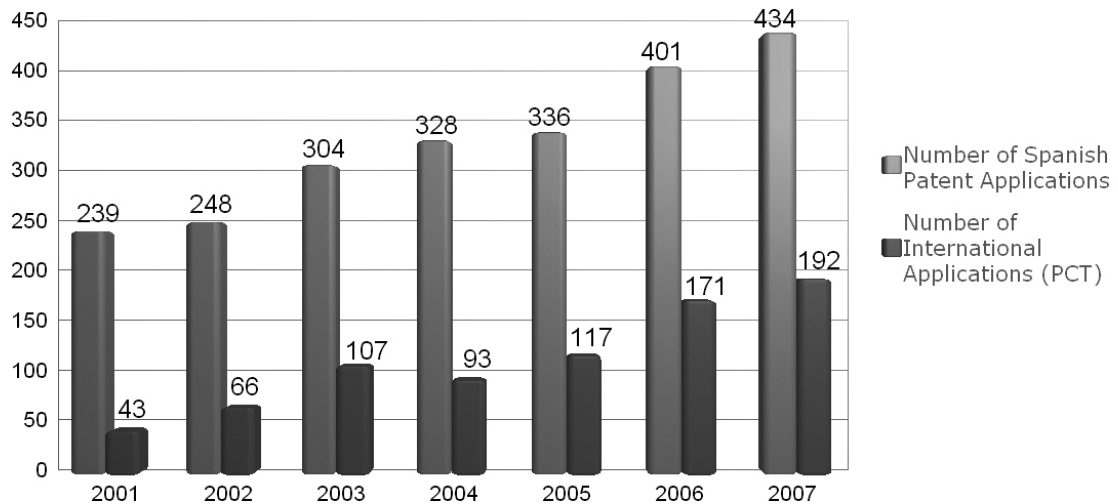
Graph 9. Evolution of the Invention Reports Received in the KTOs



Source: RedOTRI Survey 2004-2007. 55 valid answers (2007).

The number of patent applications in 2007 was 434 (**Graph 10**), 7.4% more than in 2006, which means an average of 7.9 patents per university. The number of international extensions via PCT, the most common, was 192, 12% more than the previous year.

Graph 10. Evolution of IPR Protection Through Patents



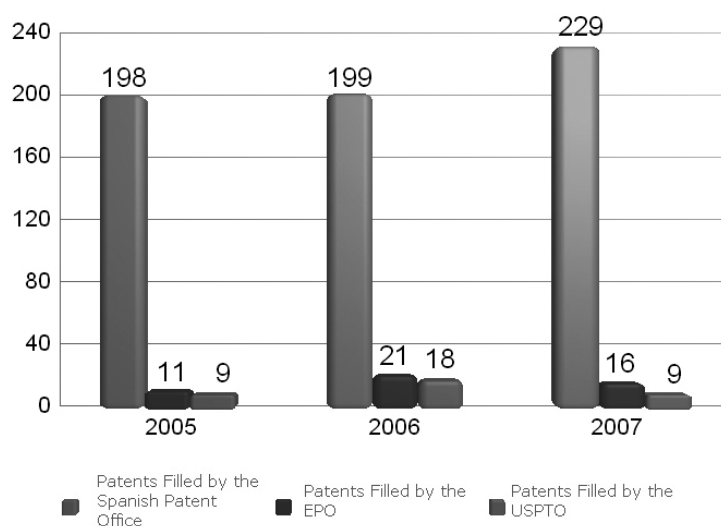
Source: RedOTRI Survey 2004-2007. 57 valid answers (2007).

A first look at the indicators shows that professionalization of IPR protection is progressing, with an intense activity to detect results with transfer potential, complemented with a better selection process to determine which results should be finally protected. In addition, the effort to extend IPR protection beyond Spanish borders is more important than in previous years.

In 2007, IPR protection confirms its progressive professionalization with a more intense effort to detect research results, to better select which are finally protected, and to increase their international protection

Finally, it should be mentioned that the number of patents filed in 2007 were 299 in the Spanish Patent and Trade Mark Office (OEPM), 15 in the European Patent Office (EPO), and 9 in USPTO (**Graph 11**). The reduction of patents filed by the EPO and the USPTO may be related to the low number of international extensions applied in 2004, in addition to the fact that, as it is well-known, obtaining of a patent filing from the EPO or the USPTO is more difficult than from the OEPM. Despite this, the number of patent filings keeps on indicating that the international technology transfer activities are still weak in Spanish universities.

Graph 11. Evolution of Patent Filing in Some Territories

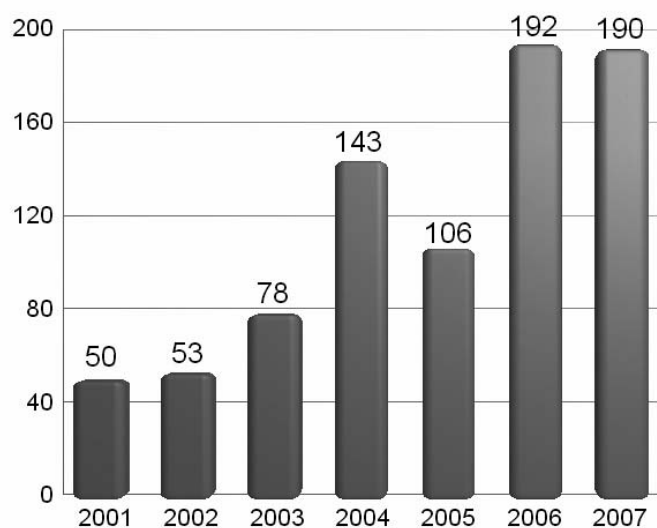


Source: RedOTRI Survey 2004-2007. 55 valid answers (2007).

3.4. Licenses

During 2007, Spanish universities signed a total of 190 license contracts, a figure quite similar to the one registered in 2006 (**Graph 12**).

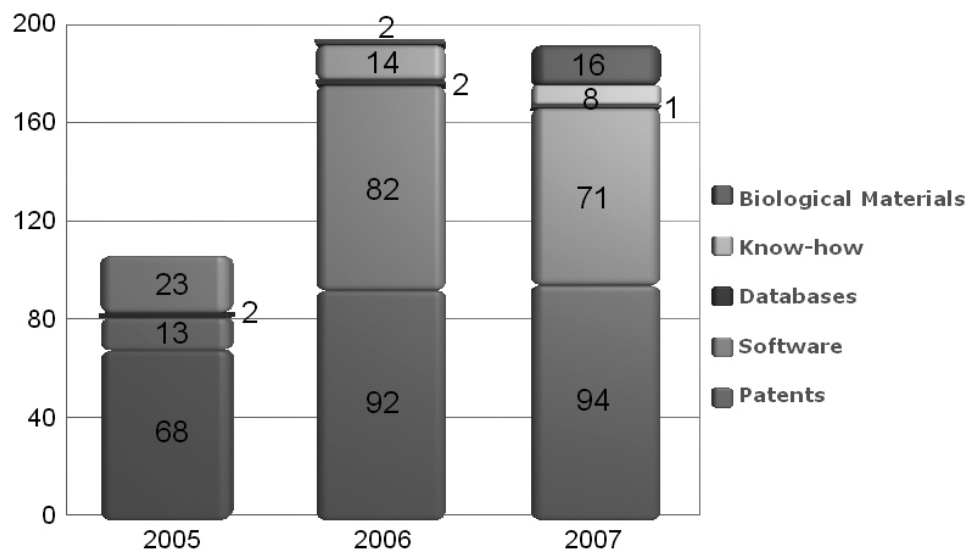
Graph 12. Evolution of the Number of License Contracts



Source: RedOTRI Survey 2001-2007. 52 valid answers (2007)

Analyzing the evolution of the licenses by type of result (**Graph 13**), it is observed how the patent licenses, more numerous and relevant for technology transfer, have increased 2.1% with respect to the previous year, up to 94 contracts. The software licenses have diminished from 82 in 2006 to 71 in 2007, and so have know-how transfer, from 14 contracts to 8. On the other hand, the licenses over not patented bacteriological agents have risen to 16 in 2007.

Graph 13. Evolution of the Licenses of Research Results

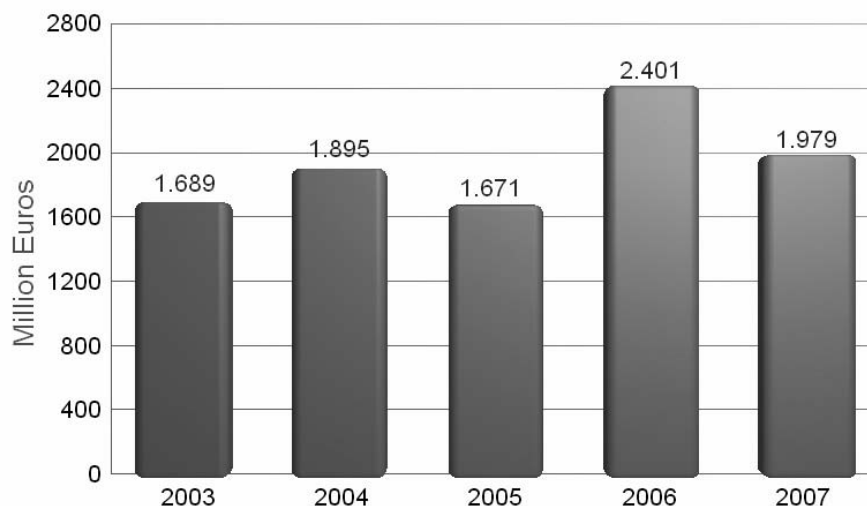


Source: RedOTRI Survey 2005-2007. 52 valid answers(2007)

The volume of income obtained with licenses raised to almost 2 Million Euros in 2007, 17.5% less than the previous year. This amount comes from the 27 OTRIs that have reported this kind of income, 4 less than 2006. As it can be seen in (**Graph 14**), the evolution of this indicator is irregular, which probably reflects individual situations, very typical in the context of the Spanish universities, with still little practice in licensing technology. It should be pointed out that this income often come from initial payments or fixed-price contracts, rather than royalties produced by sale of the products that incorporate the licenses.

The almost 2 Million Euros in income obtained with licenses are not a significant amount, although the number of licence contracts signed has increased during the last years

Graph 14. Evolution of Royalties from Licences

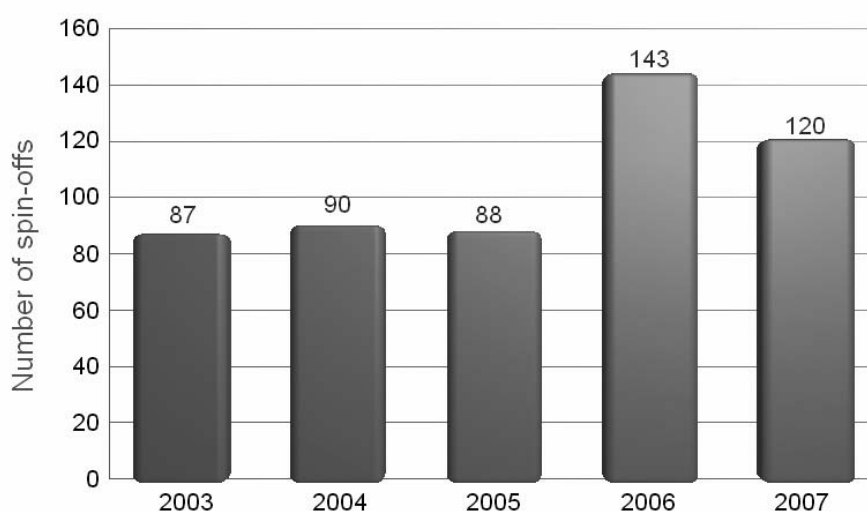


Source: RedOTRI Survey 2003-2007. 44 valid answers (2007).

3.5. Spin-off Creation

In 2007, 120 spin-off companies were created, 16.1% less than the previous year (**Graph 15**). A fact to underline is that a handful of universities concentrate a high number of these businesses, although the great majority of the 28 universities that reported at least 1 spin-off creation during this period declared that the companies created were between 1 and 5.

Graph 15. Evolution of Spin-Off Creation



Source: RedOTRI Survey 2003-2007. 50 valid answers (2007).

Another detail to consider is that universities had stockholdings in only 14 companies in 2007, far below the 44 companies reported last year. According to the RedOTRI 2007

Survey, there have been no economic returns from spin-off stockholding, a logical fact taking into account that most of these businesses are in the first steps of their development. In addition, the research staff who promoted the companies created in 2007 has been 197, 18 less than 2006.

The creation of spin-offs in the Spanish university still needs new incentives for its definitive establishment, although the average of 2.4 new companies per university is an indicator similar to the one of our surrounding countries

All these data concludes that the spin-off creation processes in our country need to be further developed. The situation of the Spanish universities in this field, with an average over 2.4 companies per university, shows however results not very far from those of the EU (1.6 on average) or the USA (2.96 on average).