

**A Survey of Technology Transfer Offices
in Portugal**

excerpted from the

UTEN | Portugal 2009-2010 Annual Report

UTEN Portugal
University Technology Enterprise Network

3.3 A Survey of Technology Transfer Offices

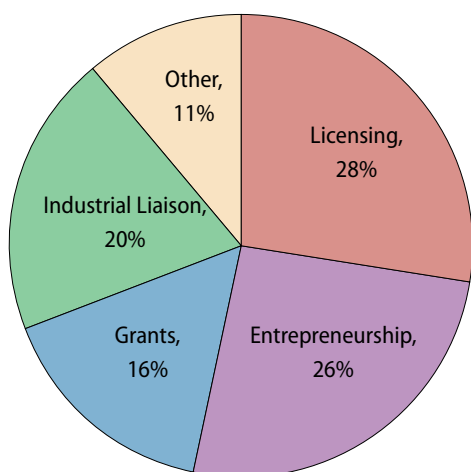
In 2010 the first annual UTEN network survey of technology transfer offices was conducted to obtain a more comprehensive view of technology transfer activities in Portugal. The survey results presented here are based on responses from eleven Portuguese technology transfer offices.¹ Key findings follow.

Organization and Budget²

Maturity of TTOs. Many of the TTOs have been established only recently. Only one TTO is at least a decade old, while another was created in 2001. The others are more recent, having been established in 2003 or later, including one in 2009 and another in 2010.

Employee Duties. The number of full-time technical/professional employees ranges from one to nine per office. A total of 49 technical/professional employees work in the offices of the TTOs that responded. Across the responding TTOs, on average employees divide their time among several key functions, as shown below.

Primary Functions of TTO Employees
(Average for 11 TTOs)



¹ The two researchers with primary responsibility for the survey were Dr. James Jarrett of the IC² Institute and Dr. Aurora Castro Teixeira of the University of Porto. Additional significant contributions were made by Ana Paula Amorim and Maria José Francisco. A group of four senior technology transfer office professionals in Portugal reviewed a preliminary version of the survey questionnaire and made valuable suggestions. We wish to thank all of the technology transfer offices for their cooperation and effort in providing information.

² Nineteen offices were contacted. Responses were received from 11 TTOs: New University of Lisbon, Technical University of Lisbon (ISA, INOVISA), University of Minho (TecMinho), University of Algarve, University of Aveiro, University of Coimbra (IPN), University of Coimbra, University of Evora, University of Lisbon, University of Porto, and University of Trás-os-Montes e Alto Douro.

Expenditures. Resources vary considerably across the TTOs. In 2009, expenditures ranged from approximately €50,000 at one TTO to more than €200,000 at other TTOs. The total resources expended in 2009 by the TTOs were approximately €2,652,000.³

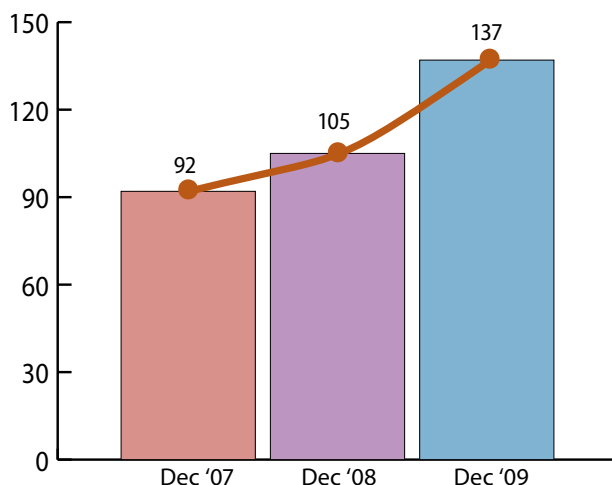
Sources of Revenues. As with expenditures, there is variation in the sources of revenues. In 2009, five of the eleven TTOs received no funding from their institutions, and three others received 25% or less of their revenues from their institutions.

Intellectual Property and Commercialization

Royalties. While the university receives 100% of royalties at two institutions, eight TTOs report that royalties are split between their institutions and the inventors in varying proportions, usually 50%-50% or 40%-60%.⁴

Invention Disclosures. There is a clear trend of increasing invention disclosures by the TTOs as shown in the figure below.

Invention Disclosures over the Past 3 Years



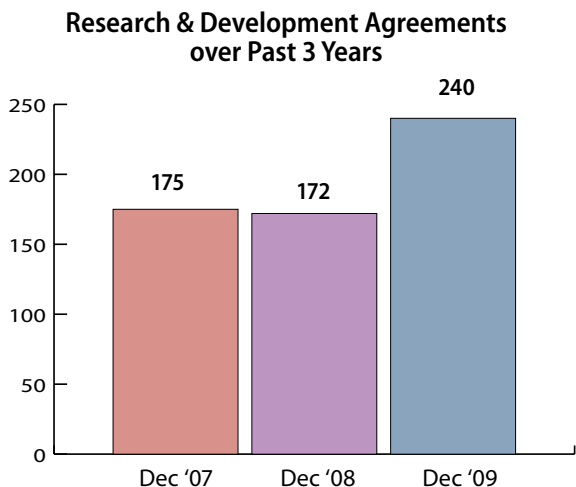
Licenses, Option Agreements, and Assignments. Nearly all of the licenses, agreements, and assignments have been executed with Portuguese partners. As shown below, the number has increased over the past three years.

	2007	2008	2009
Executed with Portuguese Partners	16	20	24
Executed with EU Partners	1	3	2
Executed with U.S. Partners	2	1	2
Executed with other int'l partners	0	0	0

³ One TTO stated its 2009 expenditures were not yet available.

⁴ One TTO reported the allocation was unavailable.

Research and Development Agreements. The TTOs reported they executed some 240 R&D agreements in 2009, up substantially from both of the prior years, as shown below.



3.4 Technology transfer and commercialization activities in Portugal: A quantitative overview⁵

Higher education organizations have extended activities beyond their primary tasks of education and research, into the area of commercialization of knowledge and business activity. To this purpose they have established a range of new institutions such as technology licensing offices, industry liaison offices, and science parks, as well as extensive incubation policies.

In recent years, there has been a rapid rise in commercialization of publicly-funded research at European universities. In Portugal this trend was particularly evident and was accompanied with the emergence and implementation of several national public policy initiatives involving international partners, most notably The University of Texas at Austin, Carnegie Mellon University, and Massachusetts Institute of Technology (MIT). Focusing predominantly on the commercialization and internationalization of Portuguese science and technology, the University Technology Enterprise Network (UTEN), part of the UT Austin program, includes Portuguese institutions with relevant activities of technology transfer and commercialization from universities, polytechnic institutes, associated R&D labs, university-linked incubators, and science parks.

The present section provides a quantitative overview of the main activities performed by the Portuguese members of UTEN (excluding FCT and IPIN) in the five year period 2006-2010, categorized into three main areas: protocols,

⁵ This study was coordinated by Aurora Teixeira with the research assistance of Cláudia Moutinho Brandão, Inês Santos Silva, Mafalda Carmo, and Sara Fernandes. The research team sincerely and gratefully acknowledge all coordinators of the technology transfer and commercialization organizations who kindly spent part of their precious and scarce time responding to our requests and promptly answering our queries. Without their valuable and insightful collaboration this study would not be possible.

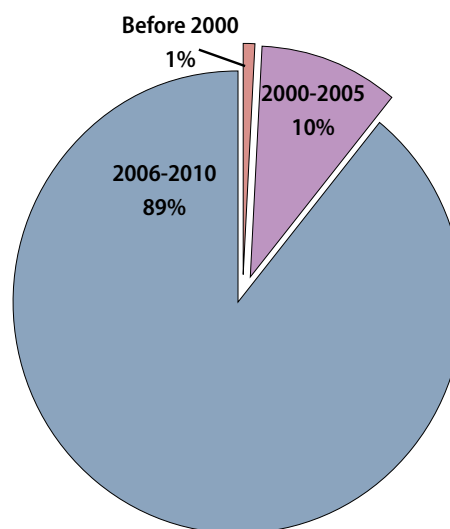
patents, and the formation and support of spin-off companies.⁶

From the target 28 UTEN Portuguese members, 17 (40%) participated in the survey. As evidence in table 4 the activity associated with spin-off formation emerges, in quantitative terms, as the most relevant activity.

The volume of spin-off creation is rather extraordinary even when compared to other European countries. For instance, in Spain, where the spin-off creation process experienced a major breakthrough after 2000, Morales-Gualdrón, et al. (2009) identified 459 academic spin-offs tied to 39 public universities and public research organizations (year of reference: 2007), which represents an average of 12 academic spin-offs per institution. This figure compares favorably with the Portuguese numbers presented here: the 17 organizations surveyed were responsible for supporting the creation of 154 spin-offs which represents an average of 9 academic spin-offs per institution. It is important to recall, however, that this Portuguese figure is quite underestimated, given that 3 out of the 5 science parks and 3 out of the 4 incubators of the UTEN did not participate in the study.

In the Portuguese case the formation of academic spin-offs seems to be also a quite recent phenomena. The bulk (136 or 89%) of academic spin-off tied to UTEN's organizations was created in the last five years (figure below).

Portuguese academic spin-offs created between 1996 and 2010 tied to UTEN's member organizations



⁶ The data gathering process occurred into two phases. The first consisted in direct contacts with all Portuguese technology transfer and commercialization organizations which are members of UTEN, asking information regarding their technology transfer and commercialization activities in the last four years (2007-2010)—namely protocols established with large firms, patents and the formation and support of spin-offs. Then, in a second phase, based on the previous information about spin-offs, fifteen firms from distinct scientific and industry areas were selected as object of more detailed analyses. Such analyses aimed at uncovering their economic and employment potential, their internationalization paths, and their perception on the role of technology support infrastructures (e.g., technology transfer offices (TTOs), science parks, incubators) at the level of the Portuguese science and technology system.

Table 4. Technology transfer and commercialization activities of Portuguese UTEN members, 2006-'10

	Acronym	Name	Founded	Spin-offs	Patents	Protocols	
University TTOs	TecMinho	TecMinho (includes OTIC-Minho and GAPI), Universidade do Minho	1990	25	35	-	
	UPIN	UPIN, Universidade de Porto Inovação, Universidade de Porto	2004	3	9	16	
	OTIC UC	OTIC UC, Oficina de Transferência de Tecnologia e de Conhecimento, Universidade da Coimbra	2003	5	26	-	
	OTIC-GAPI UTAD	OTIC-GAPI UTAD, Oficina de Transf. de Inovação e Conhecimento & Gabinete de Apoio à Promoção da Propriedade Industrial, Univ. de Trás-os-montes e Alto Douro (UTAD)	2006	1	-	-	
	UBIACTIVA	UBIACTIVA, Office of Technology and Knowledge Transfer, University of Beira Interior (UBI)	2006	4	-	-	
	TECMU Madeira	OTIC-TECMU - Oficina de Transferência de Tecnologia e Conhecimento, Universidade da Madeira	2009	1	-	-	
	DPI Évora	DPI Évora, Divisão de Projectos Informação, Univ. de Évora		1	-	-	
	GAPI Madeira	GAPI at Madeira Tecnopólo, Gabinete de Apoio à Promoção da Propriedade Industrial, Madeira Tecnopólo			1	-	2
	TT@IST	tt@ist - Transferência de Tecnologia do IST			4	-	-
	INDEG/Audax	INDEG/AUDAX, Empreendedorismo e Empresas Familiares, Instituto Superior de Ciências do Trabalho e da Empresa (ISCTE)	2005	3	-	-	
INOVISA	INOVISA, Assoc. para Inov. e Desenv. Empresarial, Instituto Superior Agronomia, UTL	2006	5	-	-		
CRIA	CRIA - Centro Regional para a Inovação do Algarve	2007	21	3	3		
University-linked Incubator	grupUNAVE Aveiro	Grupunave inovação e serviços, lda	1998	12	-	-	
Associated R&D labs	INESC Porto	INESC Porto LA, Inst. de Eng. de Sistemas e Computadores do Porto	1985	7	-	-	
	IMM	IMM, Instituto de Medicina Molecular, University of Lisbon Medical School	2004	2	4	-	
Science parks	UPTEC	UPTEC, Associação de Transferência de Tecnologia da Asprela, University of Porto	2007	35*	-	-	
	Parkurbis	Parkurbis, Science and Technology Park of Covilhã	2006	24	-	-	
			Total	154**	77	21	

* The most recent list of academic spin-offs of UPTEC (from September 2010) provides a significantly higher number of spin-offs; we opted nevertheless to consider as in the remaining cases, the number of spin-offs that by July 2010 were listed in the official web sites of the corresponding organizations and/or were provided until that date by the organizations.

** Of the total 154 spin-offs, 18 (12%) were created between 1996 and 2005.

From a regional economic perspective, such dynamics in spin-off processes and the fostering of growth of small firms, namely through incubation policies, is critical. Table 5 highlights that the process of academic spin-off creation has been particularly dynamic in the North and Centre regions, with these two regions encompassing over three-quarters of the academic spin-offs created in the period in analysis. In terms of industries, Portuguese academic spin-offs were created essentially in ICT/Software/Digital Media (42%) and Energy/Environment/Sustainability (23%). The North emerges more specialized in ICT/

Software/Digital Media whereas the Algarve predominates in Energy/Environment/Sustainability.

An exhaustive list of all the 154 academic spin-offs is provided in Annexes A and B, with identification of the TTO/Incubator/Science Park they are associated with, the year of establishment, industry sector, and, when available, the location and spin-off source are also provided.

The activities related to patents and protocols with large firms—on the whole and by reference to the organizations surveyed—evidence more modest figures albeit revealing

promising paths for establishing linkages with the industry. Indeed, regarding protocols, the three (UPIN, GAPI Madeira and CRIA) out of the 17 respondent organizations that provided details on the protocols established with large firms reveal a quite selective and demanding industrial partners (e.g., Galp Energia, Alcatel – Lucent, Soares da Costa, Iberdrola, Qualitron) and other organizations (Fundação Gomes Teixeira, ADVID, APIMA, APICER), not

only collaboration protocols, but also contracts for services provision by the TTO and exclusive license agreement for technology. Concerning patents, the volume of activity is reasonably sizeable but rather concentrated in two respondent technology transfer organizations—TecMinho and OTIC-UC—which are responsible for almost 80% of the patent activity listed.

Table 5. Technology transfer and commercialization activities of Portuguese UTEN's members, 2006-2010

NUTs II	Region	TTO	Number of Spin-offs	Agri/Food	Bio/Pharma	Energy/Environment /Sustainability	ICT/Software/Digital Media	Medical devices / Diagnostics	Microelectronics / Robotics	Other
North (#71; 46.1%)	Guimarães	TecMinho	25	3	1	6	12	2	1	0
	Porto	INESCPorto	7	0	0	1	3	0	3	0
	Porto	UPIN	3	1	1	1	0	0	0	0
	Porto	UPTEC	35	1	3	8	18	1	4	0
	Trás-os-Montes	OTIC-GAPI UTAD	1	1	0	0	0	0	0	0
Centre (#46; 29.9%)	Aveiro	grupUNAVE Aveiro	12	1	1	1	8	0	1	0
	Coimbra	OTIC-UC	5	3	0	0	2	0	0	0
	Covilhã	Parkurbis, Parque de Ciência e Tecnologia da Covilhã	24	0	0	5	15	0	2	2
	Covilhã	UBIACTIVA - Gabinete de Apoio a Projectos e Promoção da Investigação da UBI	4	0	0	0	3	0	1	0
	Évora	Uévora	1	1	0	0	0	0	0	0
Lisboa (#13; 8.4%)	Lisboa	INDEG	3	1	0	0	0	0	0	2
	Lisboa	INOVISA – Associação para a Inovação e o Desenvolvimento Empresarial	5	3	1	0	1	0	0	0
	Lisboa	Instituto de Medicina Molecular (IMM)	2	0	2	0	0	0	0	0
	Lisboa	TT@IST	4	0	0	1	1	2	0	0
Algarve (#21; 13.6%)	Algarve	CRIA - Centro Regional para Inovação do Algarve	21	4	0	11	2	1	1	2
Madeira (#2; 1.3%)	Madeira	Gapi Madeira	1	0	0	0	0	1	0	0
	Madeira	TECMU Madeira	1	0	0	1	0	0	0	0
Total			154	19	9	35	65	7	13	6
<i>Percentage</i>			<i>100%</i>	<i>12.3%</i>	<i>5.8%</i>	<i>22.7%</i>	<i>42.2%</i>	<i>4.5%</i>	<i>8.4%</i>	<i>3.9%</i>

Recent research suggests that science technology transfer organizations, and in particular, TTOs vary in their mandates and capabilities. Whereas, in general, licensing remains their primary activity, TTOs are also involved in negotiating multiparty research contracts, performing incubator services, and, to a larger extent in Portugal by comparison to other countries, actively investing in and managing university-based spin-offs.

This brief quantitative and exploratory study shows that in Portugal in the last five years the activities of technology transfer and commercialization of science and technology organizations observed a huge increase, with particular emphasis on spin-off creation. The diverse public initiatives aimed at fostering entrepreneurial attitudes and international business competitiveness of Portuguese science and technology, facilitating access to market opportunities worldwide (e.g., workshops and advanced international internships for TTO staff) explain, at least in part, such noticeable dynamism.