

# **Innovation and Policy Innovation in Girona**

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# 1. A quick look at the area

## 1.1. Basic Facts

Girona is situated in the North East of Catalonia, and is bordered in the south by the province of Barcelona, in the west by Lleida and in the North by France. It has a total area of 5.900km<sup>2</sup> and a population of about 730.000 inhabitants, nearly 20 % of the total of Catalonia.

The city of Girona has about 100,000 inhabitants. In the last few years, the area has seen great economic development, placing it in one of the highest positions in Spain. The bi-annual growth of GDP has been approximately 4 % since 2001.

**Figure 1. Main details of the province of Girona compared to Catalonia.**

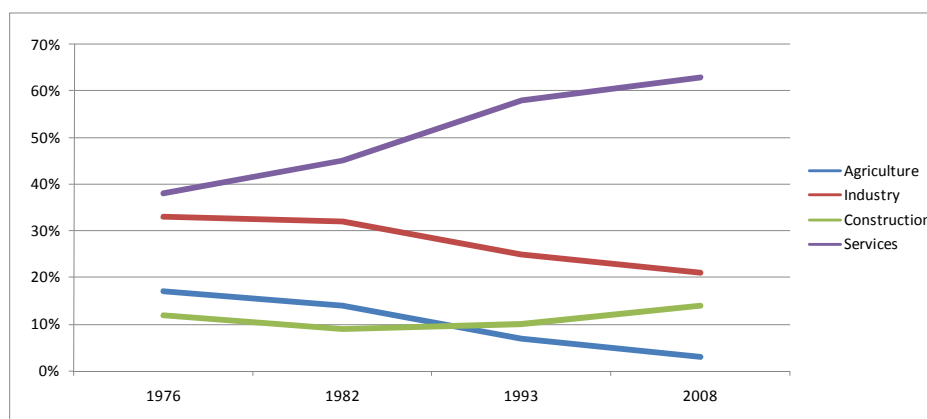
	Region of Girona	%Girona/Catalonia
Total Area(km <sup>2</sup> )	5.900	18,4
Population	731.864	9,9
Population density (pers/km <sup>2</sup> )	124	
Working Population	390.250	10,2
Rate of Employment (%)	65	
Rate of Unemployment (%)	11	
GDP (M Euros)	18.100	9,8
GDP per worker (Euros)	52.200	

Source: Girona Chamber of Commerce.

## 1.2. Economy

Over the past years Girona's economy has evolved towards a model much more centred on services. 62% of the working population is employed. With respect to this, tourism plays a major role. After tourism, comes industry but it is experiencing a steady decline.

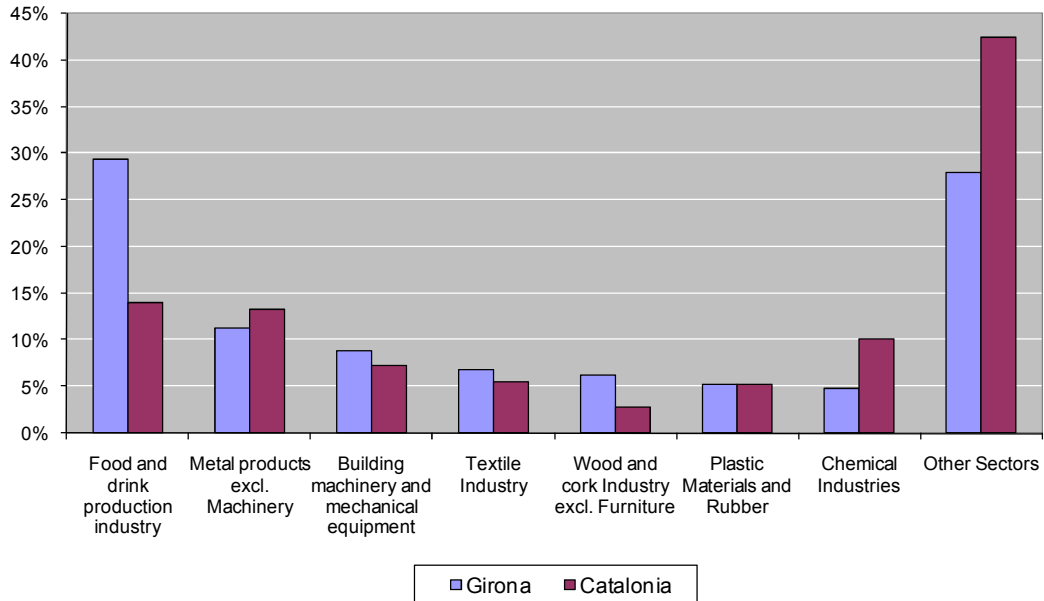
**Figure 2. Evolution of employment in Agriculture, Industry, Building and the service sector.**



Source: Based on data from the Catalonia Institute of Statistics (IdesCat)

According to data from 2008 the main industrial sector is the food and drink industry (29%). A long way down the scale we find the metal product sector (11%) and building of machinery and mechanical equipment (9%). The high percentage of companies in the food sector is more impressive if we compare it with the average of the whole of Catalonia, as it is nearly double.

**Figure 3. Employment Distribution within the Industrial Sectors. Girona versus Catalonia**



Source: *Region of Girona Economy. Girona Chamber of Commerce.*

More specifically, the main local industrial systems are the following:

- **Meat Industry:** The main meat is pork meat. Catalonia is responsible for 33% of the Spanish production of pork meat and approximately half of exportation.
- **Mineral Water:** Catalonia is responsible for 45% of mineral water production in Spain and Girona has about 44 % of the Catalonian companies.
- **Recycling Cotton Thread:** Consists of recycling old cotton fibres. The result is a thick thread which is normally used for types of knitting 50% of Spanish exports of recycled cotton threads and material comes from the Garrotxa, one of Girona's counties.
- **Wood Industry**
- **Cork transformation:** The main activity is making corks for wine and cava. Girona has 70% of the world market in corks for sparkling wines (cava and champagne) and 10% of wines.
- **Machinery for food industries.** The main activity is the fabrication of machinery for food industries. The majority of businesses are specialised in machinery for the meat industry, over all ready-made products and cured, they also make machines for fresh meat such as grinders, fridges, mixers...

- Automobile bodywork: The main business is making the bodywork for motor vehicles. The production of the local cluster businesses represents a 90% of the bus segment in Catalonia and 60% of Spain.
- Decorative Pottery: This local production method produces and sells ceramic products, mainly for domestic or ornamental use, containers for food, paving, mosaic and garden objects.

**Table 1. Comparative local production systems in Girona Region**

	Pork meat	Mineral Waters	Cotton	Wood	Cork	Machinery Industry Food	Bodywork	Pottery
<b>Businesses</b>	222	11	22	227	83	77	23	67
<b>Workers</b>	8289	634	738	1228	1130	939	1276	579
<b>Bill (M€)</b>	2000	400	100	100	225	125	250	60
<b>% exportation</b>	25	0	80%	10	55	35	20	10-15
<b>% weight on the sector</b>	38,41	44	18,00	11,70	89,25	42,78	15,65	51,54

Source: Girona Chamber of Commerce

In the technological sector in the way of information and communications, the province of Girona has a total of 381 companies, employing a total of 4,792 people. The majority of these businesses belong to the computing sub sectors (37.0%) and Mail and Telecommunications (35,2%) followed some way behind by electric materials (17,9%).The rest of the sectors (manufacturing of office equipment and computers, electronic goods, TV, radio, communication, surgical and precision instruments) have a joint value of approximately 10%. Out of this group of companies, 30,4% are in the city of Girona, of which there is a concentration of computing companies (44%) and companies specialising in surgical and precision tools (37.9%)

### 1.3. Tourism and Gastronomy

But Girona isn't just about industry and innovation. This is an area where tourism and trade have traditionally had (and continue having) a great economic and cultural importance. It is important to comment on a new facet that this area has been known to generate and exploit: gastronomy. On the well-known list compiled by the English magazine Restaurant, Girona boasts two of the restaurants named in the top 5 in the world. For the fourth year running, El Bulli has been crowned the best restaurant in the world and el Cellar de Can Roca, in Girona city itself, comes in at fifth place. Gastronomic Week, an event which has a great impact locally and regionally, takes place annually.

All this indicates another fundamental aspect of this area: the quality of life. It's an area which combines a group of factors: enterprising capacity, strong presence in the trade and tourism sectors, a powerful traditional industry and a relatively recent purpose for research, innovation and technology

## 2. The local innovation system context

### 2.1. The influence of Spanish and Catalan Innovation policies

Spain, as a decentralised country, is characterised by a definition of industrial, scientific, technological and innovation policies on different levels: state, autonomous and local. The Spanish innovation system is perfectly described in the publication of R&D AND INNOVATION IN SPAIN: IMPROVING THE POLICY MIX, edited in 2007 by the OCDE and the Spanish Foundation for Science and Technology (FECYT).

The National Plan of R&D 2008-2011 is currently the central element in the structuring in the field of science and innovation at a state level. The plan focalises its strong points in different instrumental fields: Human Resources, I+D+I Projects, Institutional Strength, Scientific and Technological Infrastructures, Use of Knowledge and Technological transfer, system Articulation and Internationalisation. The University, the investigation centres and the businesses in Girona turned up at the different help conferences that the National Plan organised. Also evidently the Centre for Technological Industrial Development is influential as all its programmes and services are used by the businesses in this area of Catalonia.

In the same way, Girona is influenced by all the events and programmes carried out by the Catalan Government. Girona is influenced by:

- Catalan Government Department of Innovation, Universities and Business
- The Catalan Research Foundation and other recently created agencies
- Accio
- The National Pact for Research and Innovation

### 2.2. Cluster promotion programmes

The Grouping of Innovative Businesses Programme (AEI) is promoted by the Ministry of Industry. It is described as "The combination in a geographic space or a specific industrial sector, businesses, training centres and public or private investigation units, involved in the collaborative exchange processes, led to obtain advantages and/or benefits resulting from joint innovative projects". In 2008, Catalonia had 9 AEI's registered, two of which worked greatly with businesses and institutions in Girona.

- AEI INNOVAC: Is the cluster from the pork meat sector and its objective is to promote business competitiveness through innovation and cooperation.
- AEI TECMAP: Is the cluster of highly advanced production technologies in the mecatronic sector (metal – mechanics – electronics)

The aim of the Programme for revitalization of Clusters in Catalonia is the design and execution of specific reinforcement plans in the competitive sector in those areas in which Catalonia has a consolidated industrial structure or in those in which there is a heightened growth perspective. In the Girona counties there is an outstanding presence of 6 of the 21 clusters detected in Catalonia.

## **2.3. Strategic Studies at a local level**

### **Girona Chamber of Commerce Girona 2010**

From a business point of view, the prospective document, “Girona 2010: The counties of Girona faced with the challenge of the new global economy”, notes a necessary change of attitude. Knowledge is a crucial factor in competitiveness and training is essential in order to incorporate knowledge into economic activity. The document defines the businesses as a main innovative agent in a market economy but evidently doesn’t forget the group of public shares headed to reinforce the innovation capacity.

The document highlights as Girona’s main weaknesses the reduced average of businesses and the specialisation of technological activities medium or low. This causes an innovation that’s barely systematised. As the main obstacles in the way of innovation they stated:

- The existence of a certain technological mistrust, made worse by the insufficient penetration by the IT into the business network.
- The low rate of graduate use.
- Reticence towards cooperation between businesses.

The document proposes making the following priorities:

- Favouring innovation systemisation.
- Increased visualisation of the potential of external support through the design of a route map for innovation.
- Promoting interaction between the business network and the University of Girona
- Promoting technology transfer procedures and giving support to new technological companies.
- Participating actively in the definition of “superior” innovation policies.

### **The University of Girona’s Strategic Plan 2008 – 2013**

The University of Girona wants to declare itself a research university, where all its academic staff take part in basic research, applied research and technology transfer. This is the fundamental aim of its Strategic Plan, which foresees 5 plans of action: Creation and transfer of knowledge, teaching and learning, the

University as a social reference, the university community and the organisation and management of resources.

The University also has a Strategic Research Plan that divides its objectives into final and instrumental. The end objectives are an end in themselves. The instrumental ones are a way of achieving the end goals.

**Table 2. End and Instrumental Objectives of the Strategic Research Plan of the University of Girona**

End Objectives	Instrumental Objectives
<ol style="list-style-type: none"> <li>1. Increase research impact</li> <li>2. Increase knowledge transfer</li> <li>3. Increase training given to Researchers</li> <li>4. Increase the attractiveness of resources at competitive conferences</li> </ol>	<ol style="list-style-type: none"> <li>1. Internationalisation</li> <li>2. Increase the number of researchers.</li> <li>3. Develop the areas of research in which UdG are the strongest.</li> <li>4. Facilitate the progression of research groups</li> <li>5. Improve recognition of research activity</li> <li>6. Assess the activity of research groups.</li> <li>7. Improve internal methods of promotion and management in the research field.</li> <li>8. Promote research and activity and results and improve the University – Business relationship procedure.</li> <li>9. Develop the Technological and Scientific Park</li> <li>10. Promote the Research Technical Services</li> </ol>

*Source: University of Girona ,Research Plan 2005-2008*

**Table 3: Internal and External Analysis of research and knowledge transfer at UdG**

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>• Young academic staff and recently consolidated (+40% growth)</li> <li>• University Community allegedly flexible due to the structure and space of the University.</li> <li>• Development of the Library into a resource centre for learning and research</li> <li>• Scientific and Technological Park</li> <li>• Positive development of OITT into an invaluable service for the researcher.</li> <li>• Dynamics in attracting resources (+40 % biannual growth)</li> <li>• Availability of an internal structure at the research institute.</li> <li>• Multidisciplinary University</li> <li>• University Strategy Plan</li> <li>• Research Strategy Plan. Clear will to progress and assess the best way to feed back into the system</li> <li>• Imminent introduction of GREC( comprehensive research management system)</li> <li>• Postgraduate School and a clear vocation to direct the post graduate studies (masters and doctorates) towards Europe and to connect these studies with the research areas and research potential.</li> </ul>	<ul style="list-style-type: none"> <li>• Attractive to students from outside the territory but losing students from the territory (doctorate)</li> <li>• Low growth in the number of theses, impact and transfer.</li> <li>• Definite symptoms of coming to a standstill or saturation despite being a young university.</li> <li>• The university has moderate prestige concerning the research and transfer results</li> <li>• Doesn't always give the most relevant response to external demands (society, institutions, businesses)</li> <li>• Heterogeneous nature within the UdG collective, with regards to what are the objectives and responsibilities of each member.</li> <li>• There is still a weak connection between teaching and research</li> <li>• Unequal participation in research and transfer (implication of 50% of the PETC)</li> <li>• They are handing PETC over to other universities</li> <li>• Low level of internationalisation</li> <li>• Low mobility of researchers (postdocs)</li> <li>• Lack of partner research centres (CSIC, etc) or reference centres</li> <li>• There are many research groups which are small and barely interdisciplinary.</li> <li>• Excessive proportion of academic staff with management activities (staff and jobs)</li> <li>• Excessive proportion of part time academic staff</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• Europe as a transversal objective for the University (VII Programme framework)</li> <li>• High expectations of the University's transfer of knowledge</li> <li>• European research, overall to increase the mobility of researchers.</li> <li>• Opportunity of creating partner research centres.</li> <li>• Ownership of the FEDER 2 area</li> <li>• Catalonia Research Plan</li> <li>• Shared desire in Catalonia and Spain to duplicate the GDP in research in the coming years.</li> <li>• Strength of the society concept of knowledge</li> </ul>	<ul style="list-style-type: none"> <li>• Tendency to concentrate research infrastructures around the metropolitan area of Barcelona and Madrid</li> <li>• The system doesn't favour the endowment of first class and top of the range research spaces on the university territory.</li> <li>• UdG is perceived as a territorial university without national or international projection</li> <li>• The financial model demands a high teaching dedication to basic courses in detriment to research and advanced courses</li> </ul>

Source: University of Girona Research Plan, 2005-2008.

## 3. Girona & Innovation

### 3.1. Players related to R+D, technology and innovation

#### Girona University

The University of Girona is the public university to the Girona counties. At present it offers 48 courses and has 13,000 students.

Research, transfer of knowledge and innovation at the University of Girona is carried out over 100 research groups, brought together by 21 departments and ten research institutes. The professors, who promote study and research and other structures like observatories and laboratories, also play an important role. The hundred research groups are specialised according to their fields of knowledge (scientific, technological, health, humanities or social sciences).

The UdG has also got Research Technical Services and a library with different headquarters. Through its Office of Research and Technological Transfer of Knowledge, the UdG manages the grants, dissemination and precision of research in society.

Within the framework of strategic policies, the UdG takes part in different Research Centres as part of the Catalonia Government's CERCA programme , among them The Catalan Institute of Water Research, The Catalan Institute of Cultural Heritage Research and the Girona Institute of Biomedical Research.

The University of Girona encourages the training of researchers through their own grant scheme which complements the Catalan Government and the State Government's grant schemes. The research organisation is proud to achieve excellence in research and internationalisation.

**Table 4. Research Institutes, Professorship, Foundations and other research bodies of the University of Girona**

Research Institutes		Professorship		Foundations	Other Research Bodies
Institute of Aquatic Ecology	Institute of Higher Studies in Tourism (ISET)	Professorship in Art and Contemporary Culture	Lluís Santaló Professorship in Mathematical Applications	University of Girona Innovation and Training Foundation	GAMAR (Office of Research and Materials in Mathematics at School)
Institute of Computing and Applications	Catalan Institute of Water Research (ICRA)*	Professorship in Family Business	M. Àngels Anglada Professorship	Private Foundation Girona, University and Future	Observatory of Private European Law and Compared
Institute of Catalan Language and Culture	Catalan Institute of Heritage Research (ICRPC)*	Professorship in Scientific Culture and Digital Communication	Martí Casals Professorship in Medicine and Health in the Rural Environment	Private Foundation Scientific and Technological Park	Observatory of European Languages
Environmental Institute	Centre for New Food Technologies (CENTA-UdG)*	Professorship in Mediterranean Coastal Ecosystems	Professorship in Sustainable Industry Processes		Centre of European Documentation
Institute of Chemical Calculation		Professorship in Sport and Physical Education	Professorship in Health Promotion		Girona Food and Agriculture Campus
Institute of Historical Research		Professorship in Maritime Studies	Professorship in Health and Safety in the Workplace		Girona Institute of Biomedical Investigation (IdiBGi)
Institute of Education Research (IRE)		Ferrater Mora Professorship in Contemporary Thinking	UNESCO Professorship in Sustainable Human Development		Human Development Laboratory (Lab-DH)
Institute of Life Quality Research		Professorship in Geography and Territorial Thinking	UNESCO Professorship Cultural and Cooperation Policies		Centre of Innovation and Management for Public Administration
Institute of Agriculture and Food Technology		Professorship in Immigration, Rights and Citizenship			

\*Participated Research Institutes. Source: University of Girona.

## The University of Girona Scientific and Technological Park

The University of Girona Scientific and Technological Park has been conceived as a medium that contributes:

1. to the attraction, creation and development of:
  - highly innovative businesses,
  - spin-offs and start-ups based on technology and knowledge
  - R&D centres, in particular those of the University of Girona promoting the transfer of knowledge that they generate
  - innovation support structures
2. to the promotion of interaction and relations between these agents and those in the field.
3. to the promotion of the connection between the park and the local agents with the global field.

The promoters of the Park show the total implication of the territory in the project as much on an institutional as a company level:

- Girona University
- Girona city council
- Girona Chamber of Commerce
- Girona council
- Girona Federation of Business Organisations (FOEG)

This arrangement of the Board of Trustees of the Foundation proves two things:

1. It's an initiative that follows the Triple Helix model
2. Girona has a characteristic which is hard to find in other places and it constitutes an enormous competitive strength: It is to do with the closeness and the good expertise of the agents in the territory. This feature is very relevant and is mentioned often in this summary.

Presently, the Park takes up a space of 36,000m<sup>2</sup> which is distributed across six buildings. The initial investment in the project was 60 million Euros. Shared out between the buildings are 19 Research Groups of the University of Girona , 6 Research centres, each with its own legal body, 1 Technological Centre and 39 businesses in the Park , which works out at approximately 600 people.

The Park focuses its strategic events on the following areas:

- 2 sectors within the environment: Food and Manufacturing Technologies
- 2 emerging sectors: Biotechnology and IT -MEDIA
- Water and environmental technologies
- Tourism and social sciences

### ***The internationalisation of technology: Landing Programme and Parks Network***

The Scientific and Technological Park is developing programmes to be able to attract international clusters of businesses like those in security in new technologies. To do this, to launch their programme “ **Landing at the Scientific and Technological Park**” they are hoping it will lead to publicity to the interested businesses to facilitate the attraction for overseas companies that might be interested in setting up base at the Park.

Taking advantage of more than 60 Ryanair flights, the Park has brought together the “ **International Network of Parks**” which allows companies from the Park to go to other countries to open up the market, making use of the facilities and resources from the parks that they made a deal with. In the same way the park already has two spots reserved for companies from other Parks that want to come here temporarily and have a place where they can get to work immediately. The objective is double sided, to facilitate internationalisation of the established businesses in the Park and to catalyse contact between businesses from different Parks, making it easier to achieve collaborations or find synergy between them.

### **Biomedical Campus**

In the North of the city of Girona, there is an area of knowledge linked to biomedicine, biotechnology and health. It involves the health campus, a project promoted by the territory and sustained in three main pillars:

- The new Dr. Josep Trueta University Hospital
- Girona University’s School of Medicine
- The Girona Institute of Biomedical Research (Idibgi)

Over the next years , this project is expected to consolidate new sectors and areas of territorial strength. There are currently various existing research projects which have already been consolidated:

- Cancer
- Epidemic Studies and Public Health
- Metabolic Matters - Vascular, with groups dedicated to:
  - Nutrition and health
  - Microbiology Clinic and infectious illnesses
  - Metabolic Syndrome
  - Research in cardiovascular genetics etc.
- Technology applied to health (Medical image, negatives, etc.)

### **Institute of Research and Food and Agriculture Technology**

IRTA is a globally known, powerful Catalan Government research institute, which focuses its efforts on scientific research and technological transfer within the

fields of agriculture, aquaculture and the agriculture and food industry. L'IRTA has got two centres in Girona, specifically in Monells:

- Centre of Food Technology
- Centre for the Control and Assessment of Pork meat

Both centres enjoy worldwide prestige and make up a fundamental element which brings the industry together and consolidates Girona's specialisation in the food sector in general and in the meat sector in particular

The Centre of Food Technology is dedicated to the

- Characterisation and improvement of the quality of meat.
- Characterisation and optimisation of manufacturing technologies.
- Diagnosis on the changes in the manufacturing processes.
- Improvement of the meat transformation processes.
- Sensorial, nutritional and hygienic-sanitary quality.
- Study of bio chemicals and biology in meat.
- Increase in food security in meat products.
- Study and applications of technological micro organisms in fermented products.
- Improvement of oxidised stability in meat and transformed products.
- Control techniques (analysis and traceability) of waste in the meat production chain.
- Optimising of equipment for the control process and the transformation of meat products.
- Conservation of sliced meat products using high-pressured isostatic treatments.

The Centre for the Control and Assessment of Pork meat focuses on:

- Genetic Assessment of select reproductive pigs.
- Genealogical management of the towns providing selected pigs
- Technical support for the selection and pig hybridisation programme.
- Characterisation of pork gene types: genetic line and specific crosses.
- Technical Economic Analysis of the pork production with regards to productive aptitude and potential markets.

### **Technological Innovation Support Centres (IT network)**

In Girona there are ten research groups which form part of the IT network promoted by the Catalonia Government. They are the following:

- Centre for New Product Innovation and Conceptual Development (CID)
- Centre for Innovation and Development in Plant Health (CIDSAB)
- Laboratory of Chemical and Environmental Engineering (LEQUIA)
- Laboratory of Paper Engineering and Polymer Materials (LEPAMAP)

- Centre for Industrial Computing and Intelligent Systems (EASY)
- Centre of Analysis and Advanced Materials for Structural Design (AMADE)
- Process Innovation and Organic Synthesis Product Laboratory (LIPPSO)
- Centre for Geology and Environmental Cartography (GEOCAMB)
- Technosperm
- Centre for Robotics and Intelligent Perception Systems (CRPS)

### **Other R +D Centres and Structures**

- Blanes Centre of Advanced Studies (CEAB), centre that belongs to the Consejo Superior de Investigaciones Científicas (CSIC)
- R+D Centres in the Catalonia Government network of reference centres:
  - o Food Technology Reference Centre (CeRTA)
  - o Biotechnology Reference Centre (CeRBa)
  - o Advanced Production Techniques Reference Centre (CeRTAP )
- Institutes and Foundations dedicated to R+D
  - o Girona Biomedical Research Institute (IdIBGi)
  - o Dr. Josep Trueta Foundation – Dr.Josep Trueta Girona Hospital
  - o Catalan Institute of Oncology (ICO)
  - o Catalan Institute of Cork
  - o Mas Badia Foundation
  - o Eduard Soler Technological Centre
  - o New Food Technologies Centre (CENTA)
- R+D Services
  - o Livestock Improvement and Expansion and Applied Genetics Services (SEMEGA)
  - o University of Girona Technical Research Services
  - o Geographical and Remote Sensing Information Systems Service (SIGTE)
- Business Schools and Further Training Centres
  - o Girona University Foundation: Innovation and Training
  - o School of Business Management

## **3.2. Clusters Promotion**

### ***The Association of Innovative Business in Very Advanced Production Technologies (AEI-TECMAP)***

The Association of Innovative Business in Very Advanced Production Technologies aims to promote the metal sector. The AEI-TECMAP is made up of more than 70 businesses and bodies among which are Councils, Universities, Businesses, Business Boards, Business Associations, Patrons, Chambers of Commerce, Technological Centres and others. In accordance with the Strategic Plan, the AEI

will develop its projects in 6 strategic areas: direct manufacturing, technical iron, boilers and advanced mechanisation, TECMAP Design (training) scale Economies and internal consultancy.

### ***The Innovative Business Association of the pork meat sector (AEI-INNOVACC)***

INNOVACC is a cluster from the Catalan pork meat sector whose aim is to promote business competitiveness through innovation and cooperation. It is an initiative driven by the Municipal Institute for the Promotion of the City of Olot (IMPC). To date, 86 businesses have already signed up to the initiative which represents 33% of meat production from the sector in Catalonia and 28% of the market quota in Spain. Concerning the turnover, the figures continue to go up until it reaches 70.8% of the turnover in Catalonia and 31.9% of the turnover in Spain. In short, the pork meat sector cluster can be considered as the most important in Europe.

### ***IT-Media cluster***

The Girona IT -MEDIA cluster brings together a group of key players linked to the new technology in computing and communications. It is an emerging cluster, in the process of training and it agglutinates around the Scientific and Technological Park. Different agents involved are:

- Several research groups and centres from the University of Girona
- The UdG School of Communication Sciences
- The School of Audiovisual and Multimedia Production (ERAM)
- The Girona Association of New Technology Companies (AENTEG)
- The Association of Audiovisual Producers and Production (ARPAGI)
- The companies in the sector
- Girona TV
- The Scientific and Technological Park, the county council and the city council of Girona

The Cluster Strategic Plan encompasses four economic areas which the cluster can affect: Tourism, Press, Health and Industry. At the same time the plan suggests three emblematic areas to be dealt with: Local info contents, interaction with the environment and “serious games”. Examples are presented in table 5

### ***Biotechnology and Biomedicine Cluster***

It is based on powerful research players in the territory: UdG, IRTA, Idibgi, The Faculty of Medicine, Dr. Trueta University Hospital, Department of Health, county council represented through DIPSALUT, different spin-offs to emerge from the University, some biotech has been attracted to Girona. But the explicitly and promotion of this cluster is still in its early stage. However, it is an emerging cluster largely related with the food and meat sector.

## Water Cluster

The Catalan Institute of Water Research (ICRA) and the businesses of the sector can constitute the nucleus of a water cluster in Girona. But, like the one above it is still in its early stages of development.

**Table 5. Examples of topics suggested by the IT MEDIA Cluster Strategic Plan**

<b>Tourism</b>	Touristic Marketing “just in time” Audiovisual Reports on points of interest Digital Simulation GPS and tourist routes, easy access to information for the user
<b>Press, TV</b>	Personalised options and interaction with the user in the new TDT framework Interactive publicity, e-commerce Television set Virtual Reality Centre for new technology tests
<b>Health</b>	Medical Image Technological diagnosis tools Biomechanics and other biomedical applications E-Health
<b>Industry</b>	Improvement in the quality analysis of products New interaction tools with the final consumer: geographical siting systems, innovative media combinations with telecommunication systems analysis of products New interaction tools with the final consumer: geographical location systems, innovative media combinations with telecommunication systems

Source: IT-Media Strategic Plan. Science and Technology Park

## Synergies

The four discussed clusters are linked by common technologies and projects. A biotech which emerged from the UdG and which developed a highly innovative technology to detect salmonella in foods is completely related with companies from the food sector. The analysis technologies of the medical image of UdG are applied throughout the health sector, with strict collaboration with the Hospital and the Idibgi, etc. The territory is favoured by this complement and these synergies.

## 3.3. The creation of technologically based companies

Over the past years, in the area of Girona, a number of start-ups have been created, technological companies, in new sectors and following new business models. These companies diversify the area’s industrial map, which until recently

was mainly made up of businesses with a traditional profile. The university has contributed in a very positive way to this creation process. Also, certain structures like the business incubators promoted by local bodies and grouped together in the Consortium of Incubators.

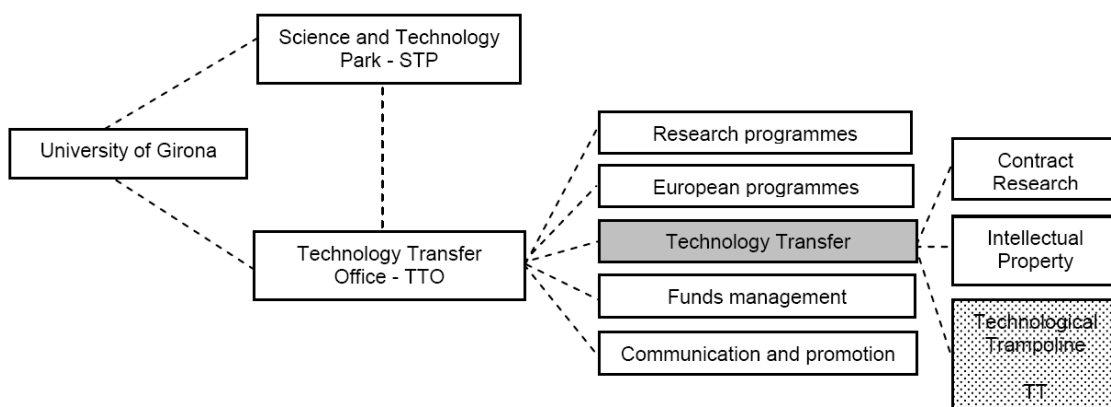
***The transfer of Technology and the creation of businesses at the University of Girona***

The UdG shows a continuous and sustained growth of R&D contracts, the most used technology transfer mechanism among academic researchers. For example, in 1993 there were 20 R&D contracts that represented €390,000 and in 2004 there were 164 contracts with the business sector representing €3,020,000. The UdG applies for a specialised and decentralised model of technology transfer. Located in the main campus, together with science and engineering faculties, the Technology Transfer Office (TTO) provides administrative and supporting services relative to the different transfer modalities. Their functions are divided in two main areas:

1. Specific activities of managing research incentives such as information, promotion, application and registration of European, national and regional research funds.
2. Technology transfer and knowledge management, acting as a bridge between industry and academia, promoting knowledge exchange basically through three mechanisms: R&D contracts; intellectual property, licensing and patenting; and spin-off creation.

Figure 4 describes its main units: 1) research programmes; 2) European programmes; 3) technology transfer unit including the Technological Trampoline (TT); 4) funds management; and 5) research communication, promotion and diffusion.

**Figure 4. Main units of UdG’s science-based and technology transfer activity**



The Technological Trampoline (TT) is a public independent entity integrated in the TTO and responsible for promoting technology and knowledge exchange basically through spin-off creation. Although the TT is linked to the TTO in terms of office spaces and other physical resources, its functioning and budget are independent from both the University and the TTO.

Since June 2001, the TT has evaluated approximately 101 projects of which 29 have received support. Of those, 12 have received public funding (1.7 M€ in total) even though they have not been legally constituted as a firm. Only 10 spin-offs have been legally constituted, which makes a ratio of 1 every 10 projects evaluated. Half of these spin-offs have received venture capital (2.6 M€ in total) and only two owned one or more patents. They are mainly situated in the incubation stage of development and none of them has reached the breakeven.

The historical evolution of the TT in Girona has gone through 4 main stages: 1999-2001 concept, 2002-2003 creation, 2004-2005 consolidation and since 2006, growth.

#### ***Other local agents involved in the creation of companies***

- The Foundation of Self Employment
- The University of Girona Scientific and Technological Park Incubator
- Consortium of Territorial Incubators:
  - Les Preses Business Centre
  - Pla de l'Estany Incubator
  - Celrà Incubator
  - Sant Feliu de Guíxols Incubator
  - Ripollès Development Incubator
  - Vila Icària Incubator
  - Ripoll Incubator
- UniBA Network, coordinated by the University of Girona
- Business Angels Network Catalonia (BANC)

### **3.4. Institutional and associate activity**

Girona presents one of its main strengths in its associative activity and in the closeness of all the institutions and associations. In the research and innovation field, its developing role is noticed by:

- Girona Chamber of Commerce
- Economic Promotion of Girona's County Council
- Economic Promotion of Girona City Council

- Girona Economic and Social Board
- Board for the international promotion of Girona and its counties
- The Girona Federation of Business Organisations (FOEG)
- Catalonia Small and Medium Sized Businesses (PIMEC)
- Girona Association of New Technology Businesses (AENTEG)
- Girona Association of Audiovisual Producers and Production (ARPAGI)
- Girona Association of Young Business people (AJEG)
- Girona International Youth Chamber (JCI)
- Stic.cat Association
- Carlemany Forum
- Girona Observatory of Technologies and computing
- Engineering In the Girona counties

### ***Chamber of Commerce***

The Girona Chamber of Commerce, Industry and Shipping is a Public Corporation that has among others, the following functions:

- process public grant schemes to companies
- promote trade and tourism and exportation,
- provide business training,
- carry out studies on town and country planning, transport, communications, business, touristic and industrial localisation and technical FP needs for companies.
- Gather statistics on trade, industry, shipping and tourism and studies on the position and needs of the sectors,
- Promote the commercialisation of products, goods and services,
- Publicise innovation and design and promote R+D, etc.

### ***Girona Council (Diputació)***

The county council's area of Economic and New Technologies promotion includes the following

- The economic promotion of the Girona counties
- European programmes and projects
- European networks
- European information
- Following the reform of the structural and cohesive reform
- Harmonisation and analysis of socio-economic data
- Influence of a Network of Economic Promotion Services in the Girona counties.
- Deployment of a Network of Local Agents for Equality
- The management of European Regional Development Funds (Feder)

Recently Girona County Council and the Catalonia Government Department of Governing and Public Administrations signed an act of collaboration in the joint

management of the European Regional Development Funds (Feder) for the period 2007-2013. The agreement has the objective of competitiveness of the Catalonia Feder Operative Programme and foresees a line for the financing of projects from the local businesses in Girona within the fields of innovation, business development and economic knowledge. It involves the organisation Eix 1, dedicated to innovation, business development and the knowledge economy and its destined to the funding of the following projects: support to the transfer of technology and improvement of cooperation networks, support to business projects, the impact of business growth in local companies with global projection and the impact of electronic administration as an area of attention to the citizen. Through this agreement, the Catalonia Government has donated 10 million Euros to the Girona counties to the Feder Eix 1, 50% of the financing corresponds to Feder. Girona County Council will finance these projects with 25% of the expense of every co-financed project.

### ***Girona City Council***

Girona City Council through its project of Local Development and Promotion of the City promotes the creation of new companies. As an innovative action in employment policies, the council just launched the service Girona Empren which gives support to entrepreneur people. This project is thought to help to make every business project viable, will be based on personalised attention and will give basic training to elaborate a Business Plan and support the business people through different telematic methods.

### ***Girona Association of New Technology Companies (AENTEG)***

AENTEG brings together and represents the interests of companies from the Girona Region in the technology, information and communication sector. To date it has nearly 80 associate companies. The objectives of the Association are to establish points of contact between companies linked to new technologies, defence and coordination of the interests of these businesses and services for the members. It also promotes the spreading of new technologies.

### ***The Girona Observatory of Technologies, Information and Communication***

The Girona Observatory of Technologies, Information and Communication (OTIC) has converted itself into the current analysis tool for the information society within the Girona counties. The OTIC, influenced by the Girona Association of New Technology Companies (AENTEG), counts on the collaboration of the Secretary of Telecommunications and the Catalonia Government's Information Society, Girona County Council, Girona Chamber of Commerce, the Girona City Council and the University of Girona.

## 4. Girona Innovation SWOT

### Strengths and Opportunities

- The powerful local networks and the proximity of stakeholders (businesses, institutions, private), who share a clear common vision of the territory. It's a great strength which will facilitate the definition of future proposals.
- A strong industrial structure, formed by innovative longstanding companies, already globalised and also conscious that is required to increase the technological content of their products to increase their competitive capacity.
- A good scientific and technological base with a wide number of research and technology centres, completely related to and led by the needs of the territory. (University, IRTA, Faculty of Medicine, Eduard Soler Technology Centre, Centre for new food technologies)
- The Health Point, with the new University Hospital, the new Faculty of Medicine and the Girona Institute of Biomedical Investigation contributes to diversifying the economy, and introducing biotechnology and biomedicine as new areas of interest.
- The Scientific and Technological Park, promoted by the institutions of the territory, centres the efforts of that area addressed to innovation, technology and creation of companies.
- The future bets for emerging sectors ( biotechnology IT. media) are totally complementary to the current main industrial sectors (food and meat and production technologies and building of machinery)
- Clusters will be a good tool of innovation policy to facilitate the process of complimenting between sectors.
- The culture of the creation of technological companies. Young entrepreneurs appear who emulate processes which began in different highly technological environments.
- The University, in past years has internalised the third mission. The transfer of technology and the promotion of spin-offs are activities consolidated within academic life.
- It also has to be, although it is an incipient process, a culture of private investment in technology. The territory is starting to see its first business angels dedicated to technological businesses.
- The company Ryanair connects Girona with more than 60 destinations. Many of the airports which this company flies to from Girona are important European Technological areas. This facilitates the internationalisation of technology and the opening up of the country.

- The quality of life is has gone up. This (The valley effect), adds to the constantly better communications (High Speed Train or Ryanair), and makes it easier to attract technological projects to the area.
- In the same way, the distance to a city like Barcelona, which has a global name and image, transfers some clear benefits and opportunities.
- One of those is the “dispersion” of technology and knowledge. Historically, Catalonia located technological investments on Barcelona. Today, the closeness of the two cities and the maturity of our country offer possibilities to attract projects which years ago would have stayed in the Capital.

### Weaknesses and threats

- Girona’s main weakness in the technological field is the critical mass. The area is relatively small (above all compared to Barcelona) for the number of people, companies and institutions.
- In the technological field, Girona lacks focalisation and specialisation.
- A second weakness is the lack of a territorial strategic reflection in the Innovation and technology area. In the near future, Girona will have to elaborate its own Innovation Plan with strategic dimensions but also with measures to take action.
- The participation of the territory in the governing of science and technology and in the definition of innovation policies of the country could be higher as much as at the Catalan level as a state one.
- Up until now public help has focused little on a strategic and sector (this is a problem that affects the whole of Catalonia) and has been fragmented. They haven’t focused on the territory either.
- Girona has been known to have an excellent international reputation in other social and economic fields (art, cinema, tourism, gastronomy), but it hasn’t projected an external reputation of its dedication to technology. It is necessary that in the near future Girona develops this image as it will contribute to the attraction of innovative talent and projects.
- Paradoxally, the success of the economy in the area and its current powerful industrial base can be classed as a weakness as it isn’t generating enough incentives to promote new emerging technological sectors.
- There is a lack of local seed capital. Although Barcelona is really close and seed capital societies of that city also invest in projects in Girona, a local society would stimulate the creation of local companies.
- The attractiveness of Barcelona can also be a negative factor as it hinders the investment of talent in the local territory as it is easier to find good opportunities in the big city.