



UNIVERSITAT ROVIRA i VIRGILI  
Chair for University  
and Knowledge Region



# SOUTHERN CATALONIA AS A KNOWLEDGE REGION:

CONCEPTUAL FRAMEWORK, ORIENTATION TOWARDS  
INNOVATION ECOSYSTEM AND INTERESTING  
EXPERIENCIES



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# 1. KNOWLEDGE REGION AS A CONCEPT

KNOWLEDGE REGIONS is a programme carried out in the context of the 7th Framework Programme. There is no label as such that can be applied to specific regions. In some cases the use of related concepts contains an element of regional branding.

Regions emerge out of the knowledge economy and intelligent territories by:

- Promoting the quadruple helix and a balance between regional strengths and globalisation.
- Undertaking long term planning and strategy for governance.
- Developing the capacity to overcome traditional administrative structures.

Based on a comparative vision in relation to Southern Catalonia (see the models section), some of the identifying features of a knowledge region are:

- Having at least one university with regional reach and strong R+D+I activity adapted to the sectors of specialization.
- Enabling progressive interaction between members in the form of a quadruple helix.

## SOME ESSENTIAL FACTORS

VISION OF THE EUROPEAN UNIVERSITY ASSOCIATION	VISION OF THE CONSULTANCY
<ul style="list-style-type: none"> <li>▪ Configuration of the quadruple helix.</li> <li>▪ Leadership, taking advantage of the vision of an individual or a small group of individuals.</li> <li>▪ Sufficient foundation in research and abilities.</li> <li>▪ Sufficient infrastructure assets.</li> <li>▪ Potent and multifaceted knowledge environment (business attraction factor).</li> <li>▪ Policies for innovating at different levels.</li> <li>▪ Favourable cultural attitude (and an ambition to be better than others). Application of the vision to all possible areas.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Constructing synergy between public, academic, business and social players. This goes hand in hand with education and training in order to generate a knowledge society, supported by social innovation.</li> <li>▪ Having a long term vision and setting goals for stages.</li> <li>▪ Guaranteeing the continuity of the process (interruptions are costly and difficult to overcome).</li> </ul>

Source: EUA/Jaime Acosta, consultant.

- A medium sized city that exercises leadership over the region (or a system of cities). Also, often close to a large metropolitan area of European dimensions.
- A moderate level of population density and quality environments (factors per a la recruitment and retention of talent and for attracting tourism).

- A potent network of infrastructure and diverse and competitive business spaces (which function as logistical platforms).

All the above implies undertaking conceptual changes such as moving from products to services and from technology parks to innovation ecosystems.

#### **GENERAL RESOURCES AND REFERENCES REGARDING KNOWLEDGE ECOSYSTEMS AND THE ROLE OF UNIVERSITIES IN DEVELOPMENT\***

The knowledge ecosystems of the future (signs and impacts of the transformation, including examples): <a href="http://www.iftf.org/uploads/media/SR-1236%20Future%20Knowledge%20Ecosystems.pdf">http://www.iftf.org/uploads/media/SR-1236%20Future%20Knowledge%20Ecosystems.pdf</a>
Resources and info on ecosystems (includes diverse examples regional range): <a href="http://www.innovation-ecosystems.org/resources/">http://www.innovation-ecosystems.org/resources/</a>
knowledge regions in the expanded Europa (includes extensive bibliography): <a href="http://crenos.unica.it/crenos/node/3276">http://crenos.unica.it/crenos/node/3276</a>
Opportunities for universities presented by the new direction: <a href="http://www.eua.be/fileadmin/user_upload/files/Publications/The_Rise_of_Knowledge_Regions.pdf">http://www.eua.be/fileadmin/user_upload/files/Publications/The_Rise_of_Knowledge_Regions.pdf</a>
Universities and regional development in the knowledge society: <a href="http://www.raco.cat/index.php/PerspectTerrit/article/view/90983">http://www.raco.cat/index.php/PerspectTerrit/article/view/90983</a>
University and regional development: <a href="http://www.conectadel.org/wp-content/uploads/downloads/2014/02/UNIVERSIDAD-Y-DESARROLLO-TERRITORIAL.pdf">http://www.conectadel.org/wp-content/uploads/downloads/2014/02/UNIVERSIDAD-Y-DESARROLLO-TERRITORIAL.pdf</a>
Innovation and metropolitan areas (papers presented at a congress), includes extensive bibliography: <a href="https://www.tlu.ee/UserFiles/Konverentsikeskus/KCWS/KCWS%20proceedings.pdf">https://www.tlu.ee/UserFiles/Konverentsikeskus/KCWS/KCWS%20proceedings.pdf</a>
Publication on Knowledge and Society (includes article by A. Segarra on the role of the universities): <a href="http://universitatsirecerca.gencat.cat/web/.content/home/02_serveis_i_tramits/publicacions/publicacions_antigues/coneixement_i_societat_2003-2008/docs/cis03_uk_tot.pdf">http://universitatsirecerca.gencat.cat/web/.content/home/02_serveis_i_tramits/publicacions/publicacions_antigues/coneixement_i_societat_2003-2008/docs/cis03_uk_tot.pdf</a>
Article on promoting economic growth and the quadruple helix: <a href="http://www.innoproconsulting.com/2015/05/algunas-reflexiones-sobre-promocion-economica-1a-parte/">http://www.innoproconsulting.com/2015/05/algunas-reflexiones-sobre-promocion-economica-1a-parte/</a>

\*The annex contains links to university rankings and impact indicators and to innovation indicators in the regions.

## 2. EXAMPLES OF KNOWLEDGE REGIONS

### 2.1. VALID EXAMPLES FOR CONFIGURATION AND THE ROLE OF THE UNIVERSITY

The hard and soft faces of European knowledge regions (areas of a certain dimension):

[http://www.feweb.vu.nl/gis/publications/docs/Sleutjes\\_2013%20Rapport%20URD-HELP\\_wp1\\_10-9-2013.pdf](http://www.feweb.vu.nl/gis/publications/docs/Sleutjes_2013%20Rapport%20URD-HELP_wp1_10-9-2013.pdf)

Network of creative regions:

<http://www.creative-regions.org/>

Lyon (role of the university and innovation strategy in the region; includes Grenoble as an innovating campus with synergies between research, education and industry):

<http://lyon-university.org/research/participating-in-the-region-s-socio-economic-development-186115.kjsp>

[http://www.innovation.rhonealpes.fr/SRI/upload/docs/application/pdf/2013-11/synthese\\_sri-si\\_v5.pdf](http://www.innovation.rhonealpes.fr/SRI/upload/docs/application/pdf/2013-11/synthese_sri-si_v5.pdf)

<http://www.giant-grenoble.org/en/>

Newcastle (city-knowledge region):

[http://www.theworkfoundation.com/DownloadPublication/Report/159\\_159\\_ideo\\_newcastle.pdf](http://www.theworkfoundation.com/DownloadPublication/Report/159_159_ideo_newcastle.pdf)

[http://www.researchgate.net/profile/Paul\\_Benneworth/publication/228383042\\_The\\_role\\_of\\_a\\_university\\_in\\_regional\\_renewal\\_the\\_case\\_of\\_Newcastle/links/00b495176893b4e806000000.pdf](http://www.researchgate.net/profile/Paul_Benneworth/publication/228383042_The_role_of_a_university_in_regional_renewal_the_case_of_Newcastle/links/00b495176893b4e806000000.pdf)

Bristol-Bath (creative activities, promotion of investment and innovation centre/science park):

<http://www.thecreativeindustries.co.uk/uk-creative-overview/facts-and-figures/focus-on-bristol-and-bath>

<https://www.bristolandbath.co.uk/>

<http://www.bbsp.co.uk/bristol-and-bath-science-park-innovation-centre/>

Tallinn (includes generic concepts):

<http://www.tallinn.ee/ettevotjale/Model-of-the-Region-of-Knowledge.pdf>

Helsinki (includes Espoo, with strategic associations of science, business and creativity):

[http://www.uudenmaanliitto.fi/en/helsinki-uusimaa\\_region/knowledge\\_region](http://www.uudenmaanliitto.fi/en/helsinki-uusimaa_region/knowledge_region)

[http://lightingforpeople.eu/wp-content/uploads/2014/09/Markkula-Lighting-Copenhagen\\_140917.pdf](http://lightingforpeople.eu/wp-content/uploads/2014/09/Markkula-Lighting-Copenhagen_140917.pdf)

Innovation ecosystem of Christchurch, New Zealand:

<http://www.cdc.org.nz/documents/2013/02/greater-christchurch-innovation-ecosystem.pdf>

Berkley ecosystem for clean technologies:

<http://www.ebgreencorridor.org/index.php>

**BRITISH UNIVERSITIES CANDIDATES TO TIMES HIGHER EDUCATION  
(2015): TERRITORY IMPACT**

**AWARDS**

Significant contribution to local community	<ul style="list-style-type: none"> <li>• University of East London</li> <li>• Queen Mary University of London</li> <li>• Royal Holloway, University of London</li> <li>• University of Southampton</li> <li>• University of Stirling</li> <li>• University of Sunderland</li> </ul>
Compromise in occupational initiatives	<ul style="list-style-type: none"> <li>• University of Leeds, with Marks &amp; Spencer</li> <li>• Manchester Metropolitan University</li> <li>• University of Nottingham</li> <li>• University of Portsmouth</li> <li>• University of Sunderland</li> <li>• University of Surrey, on behalf of SEPnet</li> </ul>
Business School of the Year	<ul style="list-style-type: none"> <li>• Henley Business School, University of Reading</li> <li>• Manchester Business School, University of Manchester</li> <li>• Newcastle Business School, Northumbria University</li> <li>• Northampton Business School, University of Northampton</li> <li>• Sheffield Business School, Sheffield Hallam University</li> <li>• Strathclyde Business School, University of Strathclyde</li> </ul>
Entrepreneurial University of the Year	<ul style="list-style-type: none"> <li>• University of Central Lancashire</li> <li>• University of Leeds</li> <li>• University of Lincoln</li> <li>• Loughborough University</li> <li>• Northumbria University</li> <li>• University of Nottingham</li> </ul>
Contribution to innovation and technology	<ul style="list-style-type: none"> <li>• University of Aberdeen</li> <li>• Cardiff University</li> <li>• Cardiff Metropolitan University</li> <li>• City University London</li> <li>• University of Glasgow</li> <li>• Queen Mary University of London</li> </ul>
Contribution to leadership development	<ul style="list-style-type: none"> <li>• Birmingham City University</li> <li>• University of Chester</li> <li>• University of Huddersfield</li> <li>• University of Nottingham</li> <li>• Royal Holloway, University of London</li> <li>• University of Sheffield</li> </ul>

Source: Times Higher Education.

## 2.2. SIMILAR TERRITORIES (STRUCTURE AND SIZE)

Tampere and Finland southwest (oriented to biomedicine):

<http://www.emeraldinsight.com/doi/full/10.1108/VINE-09-2013-0056>

<https://ipc.mit.edu/sites/default/files/documents/03-004.pdf>

Sköne:

<https://circlelund.wordpress.com/tag/scania/>

<http://eur.sagepub.com/content/early/2011/12/22/0969776411427326.abstract>

Limburg:

<http://yoinlimburg.eu/wp-content/uploads/2013/11/Maastricht-University-Presentation.pdf>

Newcastle (also links in item 2.1):

<http://www.researchgate.net/publication/228383042> The role of a university in regional renewal the case of Newcastle

[http://www.theworkfoundation.com/downloadpublication/report/159\\_159\\_ideo\\_newcastle.pdf](http://www.theworkfoundation.com/downloadpublication/report/159_159_ideo_newcastle.pdf)

Umbria:

<http://www.umbriainnovazione.it/>

Franche Comté:

<http://www.rifc.fr/>

Overijssel (oriented to computer science):

<http://www.kennispark.nl/news/7547-innovation-voucher-province-overijssel-awarded-computer-guided-systems/>

Neubrandenburg (university with different campus; no administrative territory):

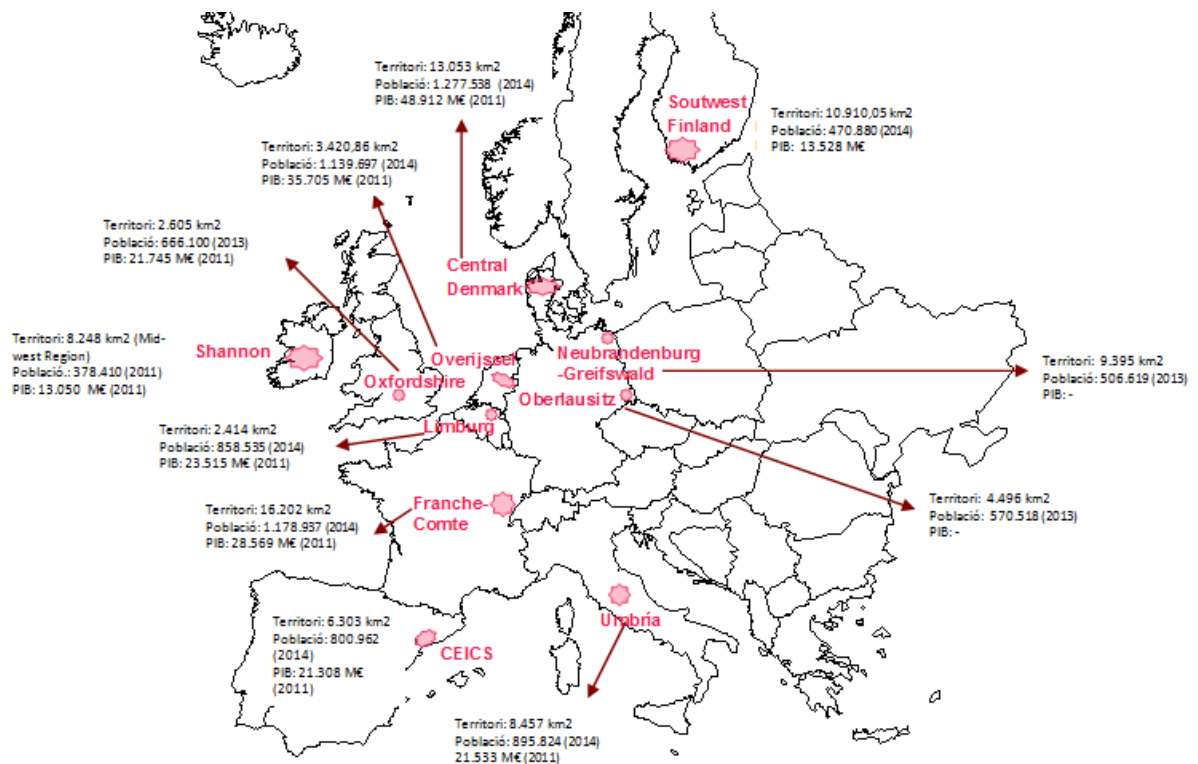
<http://www.sea-your-future.de/en/home.html>

Oxfordshire (start up support):

<http://oxin.co.uk/>

<http://oxfordinnovationservices.co.uk/>

#### INITIAL REFERENCES\*\*



\*\*Identificació 2008, Aleyois Haro.

Shannon (territorial development in a context oriented to innovation):

<http://www.shannondevelopment.ie/>

Center of Denmark:

<http://www.midtlab.dk/>

[https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/sites/default/files/report/140113\\_RIM%20Plus\\_%20Regional%20Innovation%20Report\\_Central%20Denmark.pdf](https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/sites/default/files/report/140113_RIM%20Plus_%20Regional%20Innovation%20Report_Central%20Denmark.pdf)

Leuven as a reference in knowledge:

<https://lrd.kuleuven.be/doc/leuven-knowledge-pearl>

Groningen, creative industries and high potential in energy industry:

<http://g3c.nl/en/creative-industries-groningen-2/knowledge-city-groningen>

Cardiff:

<http://www.innovation-network.org.uk/>

#### **SOME EUROPEAN TERRITORIES WITH SIMILAR REALITIES TO SOUTHERN CATALONIA**

Sector	Zones
Chemicals	<ul style="list-style-type: none"> <li>- Center Europe: Germany (Rhin-Rhur), Switzerland, east of France, part of Benelux.</li> <li>- England: Midlands/traditional university centres from center and south.</li> <li>- North of Italy: Lombard and surroundings.</li> <li>- Eastern Europe: Danubio-Elda-Oder-Volga.</li> <li>- Moscow.</li> </ul>
Energy	<ul style="list-style-type: none"> <li>- France: Rhone-Alps, Savoy.</li> <li>- Spain (polycentric).</li> <li>- Germany (polycentric).</li> <li>- England: Midlands and center.</li> <li>- Sweden.</li> </ul>
Nutrition and agrofood industry	<ul style="list-style-type: none"> <li>- Spain (Mediterranean area as a center.)</li> <li>- Italy/France.</li> <li>- Germany/Sweden/Finland.</li> <li>- Russia.</li> </ul>
Tourism and leisure	<ul style="list-style-type: none"> <li>- Spain (polycentric).</li> <li>- France (polycentric).</li> <li>- Italy (polycentric).</li> <li>- Central Europe (Belgium, Netherlands, Germany, Paris and London). Urban tourism offer.</li> </ul>
Oenology	<ul style="list-style-type: none"> <li>- Spain (polycentric).</li> <li>- France (east and southwest as a centre).</li> <li>- Italy (polycentric, central-north area).</li> <li>- Germany (Rhin, Bayern).</li> <li>- Portugal (Douro area, Alentejo, Illes, as centres).</li> </ul>
Culture and Heritage	<ul style="list-style-type: none"> <li>- Central Europe system (Paris/London/Brussels/Amsterdam).</li> <li>- Western Mediterranean area (Madrid-Barcelona-Milano-Roma).</li> <li>- Central-eastern Europe (around Berlin).</li> <li>- Moscow/Russia.</li> </ul>

Note: based on technology centres, research references and other, as well as on CEICS internal document.

Kent (focused on Enterprise and innovation centers):

<http://www.kent.ac.uk/enterprise/>

<http://www.locateinkent.com/where-to-invest/innovation-centres>



Central Macedonia (Greece):

[http://www.cmgizc.info/documenti/002\\_MEDLAB/Presentaz\\_Salonicco/new%20innovation%20actions%20in%20thessaloniki-regional%20innovation%20pole.pdf](http://www.cmgizc.info/documenti/002_MEDLAB/Presentaz_Salonicco/new%20innovation%20actions%20in%20thessaloniki-regional%20innovation%20pole.pdf)

Centre and north of Sweden:

<http://www.nordregio.se/en/System/News/North-Central-Sweden--Universities-and-clusters-as-regional-drivers/>

Joensuu (territory with a strong university to capture talent and investment):

[http://www.josek.fi/files/file/materiaalipankki/JOSEK\\_investointiesite\\_210x210mm\\_ENG\\_www.pdf](http://www.josek.fi/files/file/materiaalipankki/JOSEK_investointiesite_210x210mm_ENG_www.pdf)

Zilina, Slovakia:

<https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/policy-document/stredne-slovensko/regional-innovation-strategy-%C5%BEilina-region>

### 3. FACTORS THAT DRIVE A KNOWLEDGE REGION

#### 3.1. FROM THE TRIPLE TO THE QUADRUPLE HELIX

The mission of universities has evolved towards spheres of knowledge transfer to society and business. For over a decade now businesses have been demanding ever greater knowledge and universities have been moving to meet this demand.

Society can bring a competitive advantage to science, technology and innovation (*innovation culture*) by combining research and development initiatives coordinated with the private sector.

**Regions based on the fourth helix incorporate society into the system.** The tendency is to speak of innovation ecosystems that migrate to more sophisticated spheres of development, thus moving to a society of knowledge and collective intelligence.

Regions develop the capacity to co-create their own development outside of government intervention. The move is made towards cultural change based on innovation as a collective purpose (co-responsibility of all involved).

Some of the elements that define this new reality are:

a) **An orientation towards intelligent specialisation.**

This concept is based on the structural gap between Europe and the USA (less economic and technological specialization and lower capacity to prioritize regional efforts).

The concept guides the new ideas in European regional policy that form part of Europe 2020 and has become a condition for the ERDF for its 2014-2020 programming period. It focuses on the regional prioritization of potentially competitive sectors and technologies that can generate new activities in a global context and in the face of specialization by other regions.

b) **The appearance of quad leaders in various ambits.**

As Ernest J. Wilson said, individuals with resources and belonging to the business and innovation have to be involved.

These are people with open minds and the capacity to combine complex and disparate factors, regardless of their backgrounds.

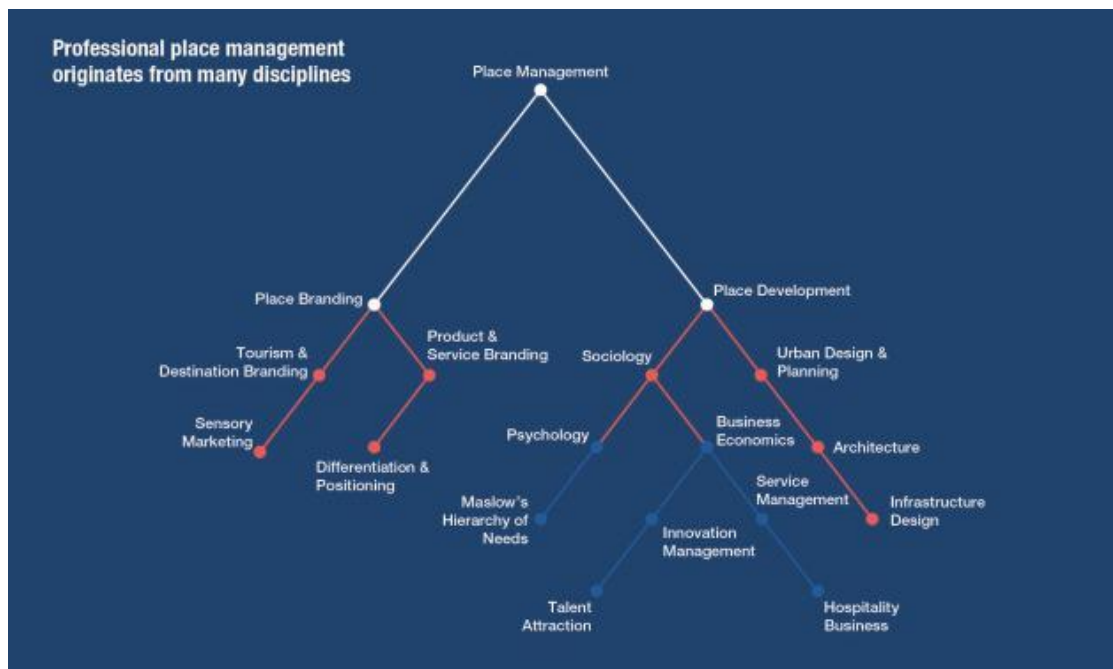
c) **The availability of context management mechanism (or of the ecosystem itself).**

This section contains:

- Transversal and complementary factors for intelligent specialization (e.g. coordination business support).
- Tools for strategic planning of the system (consistent with sectorial and local strategic planning).
- Regional planning that includes the design of new strategic elements for the knowledge economy.
- Elements for improving general governance.
- Management of the branding of the region as an innovation ecosystem and of the talent recruitment policies.

Other variables also need to be taken into account depending on the characteristics of each region.

#### GROWING INVOLVEMENT OF PROFESSIONAL AMBITS AND THEMATIC AXES



Source: Bearing Consulting

## 3.2. LINKS ABOUT TRANSITION TO KNOWLEDGE REGIONS

### FOSTERING INNOVATIVE ECOSYSTEMS

Governance of innovation systems (OCDE):

[www.raco.cat/index.php/Paradigmes/article/viewFile/223817/304751](http://www.raco.cat/index.php/Paradigmes/article/viewFile/223817/304751)

From regional clusters to knowledge hubs and role of education in the development (application of reflections to Irish case):

[www.hea.ie/.../hea\\_forward-look\\_forum\\_26.11....](http://www.hea.ie/.../hea_forward-look_forum_26.11....)

[www.hea.ie/.../forward-look\\_forum\\_15.4.15\\_pr...](http://www.hea.ie/.../forward-look_forum_15.4.15_pr...)

[www.hea.ie/.../hea\\_forward-look\\_forum\\_30.5.1...](http://www.hea.ie/.../hea_forward-look_forum_30.5.1...)

[http://www.researchgate.net/publication/274158963\\_International\\_Trends\\_and\\_Challenges\\_How\\_does\\_Ireland\\_fare](http://www.researchgate.net/publication/274158963_International_Trends_and_Challenges_How_does_Ireland_fare)

Horizon 2020 and support to knowledge regions:

<http://www.2020horizon.es/Regiones-del-conocimiento-y-apoyo-a-los-clusteres-regionales-orientados-a-la-investigacion-t312.html>

Regional systems, innovation and technology policy (theoretical approach):

<http://biblioteca.ucm.es/cee/iaif/24/24.pdf>

Role of administration and governance/requirements for creating systems/ecosystems:

<http://www.slideshare.net/bernatox/modulo-i-innovacion-publica-territorio-y-ciudadania>

<http://www.bu.edu/pardee/files/2012/11/Knowledge-Economies-Pardee-Report.pdf?PDF=innovation-ecosystem>

<http://www.objetivocastillalamancha.es/content/de-cluster-tecnologicos-y-ecosistemas-innovadores>

Reflection about innovative ecosystems and competitive territories (new productive model):

<http://dag.revista.uab.es/article/view/v59-n3-pareja-eastaway-Turmo>

<http://thenextsiliconvalley.wordpress.com/>

<http://urbanohumano.org/social-innovation/territorios-innovadores-espacios-transformadores-evento-innosfera/>

<http://www.marcialpons.es/static/pdf/9788497688963.pdf>

<http://www.diariovasco.com/20090127/alto-deba/territorios-innovadores-debate-polo-20090127.html>

<http://www.madrimasd.org/revista/revista28/tribuna/tribuna2.asp>

Other (articles, knowledge maps, system analysis):

<http://plataformacti.cat/ca/publicacions/10/2013>

<http://comein.uoc.edu/divulgacio/comein/ca/numero27/articles/Article-Montserrat-Garcia.html>

<http://iytc.universiabllogs.net/2010/03/08/reflexiones-sobre-analisi-sistema-innovacion/>

### EXAMPLES OF TERRITORIES

Regional innovative ecosystem (difference in scale and university structure):

<http://www.noticias.com/buch-resalta-que-la-comunitat-esta-consolidando-un-ecosistema-innovador-que-cree-empleo-cu.2166130>

<http://www.innobasque.com/home.aspx?tabid=199>

<http://www.aliaragon.es/index.php/es/noticias/63-ecosistema-innovador>

[http://www.anii.org.uy/web/static/El\\_sistema\\_vasco\\_de\\_innovacion-](http://www.anii.org.uy/web/static/El_sistema_vasco_de_innovacion-)

[Un\\_caso\\_de\\_estudio\\_para\\_Uruguay-Alberto\\_Nieto\\_0.pdf](http://www.anii.org.uy/web/static/El_sistema_vasco_de_innovacion-Un_caso_de_estudio_para_Uruguay-Alberto_Nieto_0.pdf)

<http://canal.ugr.es/medios-digitales/item/32792-el-nuevo-ecosistema-innovador>

[http://www.midipyrenees.fr/IMG/pdf/Note\\_de\\_synthese\\_octobre\\_2012.pdf](http://www.midipyrenees.fr/IMG/pdf/Note_de_synthese_octobre_2012.pdf)

Creation of an ecosystem and development agency in north-west Ireland/higher education and Irish ecosystem:

<http://www.co-lab.ie/2013/08/15/creating-a-north-west-regional-ecosystem-for-innovation-and-jobs/>

<http://www.ul.ie/news-centre/features/building-an-innovation-ecosystem8>

<http://www.shannondevelopment.ie/>

<http://innovationecosystem.wordpress.com/>

Innovation system and local policies (Helsinki):

[http://www.edu.helsinki.fi/activity/publications/files/335/KVARTTI\\_4-06\\_verkko.pdf#page=17](http://www.edu.helsinki.fi/activity/publications/files/335/KVARTTI_4-06_verkko.pdf#page=17)

Strategy for an innovative ecosystem in Esmirna (Turkey):

<http://www.insme.org/files/izmir-regional-innovation-strategy>

Orientation to a knowledge region in Colombia (and criteria identified):

<http://bios.co/actualidad/noticias/ID/89/El-eje-cafetero-busca-ser-una-regi%C3%B3n-de-conocimiento>

Specialized consulting in the configuration of innovative spaces and knowledge regions (South America):

<http://jaimeacostapuertas.blogspot.com.es/>

<http://www.colombialider.org/wp-content/uploads/2011/07/Pol%C3%ADtica-Productiva-Innovacion-y-parques-tecnol%C3%B3gicos-Julio-2011.pdf>

Strengths and weakness of Santiago (Chile) ecosystem:

<http://mipymeinnova.com/archivos/6768>

Research Triangle Creation, USA:

<http://sites.duke.edu/urbaneconomics/?p=899>

Geography of innovation (regional innovative clusters program in the US:

[http://www.scienceprogress.org/wp-content/uploads/2009/09/eda\\_paper.pdf](http://www.scienceprogress.org/wp-content/uploads/2009/09/eda_paper.pdf)

## 4. SOUTHERN CATALONIA: FROM KNOWLEDGE REGION TO INNOVATION ECOSYSTEM

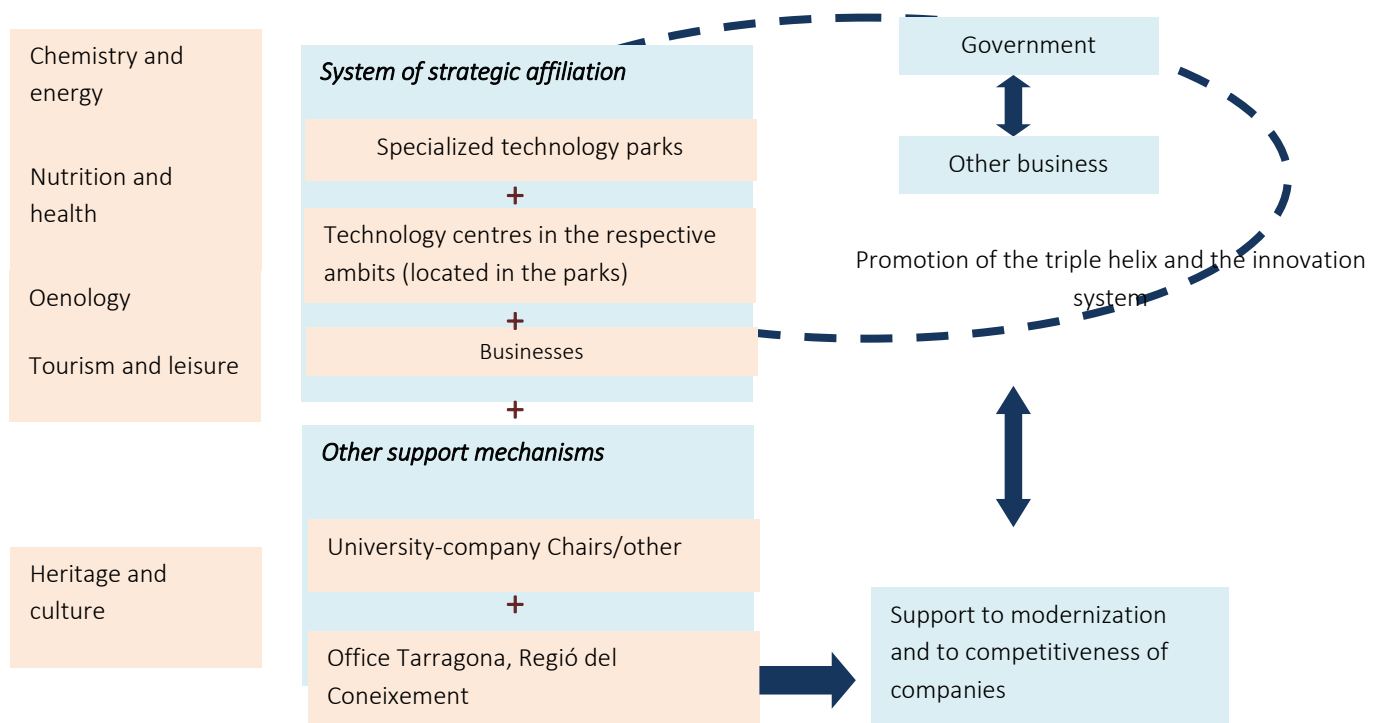
### 4.1. THE URV AS A DRIVER OF A REGIONAL INNOVATION SYSTEM

The achievements of the Universitat Rovira i Virgili can be seen in its figures. For example, the URV has more than 1100 master's students, more than 400 doctoral students, more than 300 students on mobility programmes and an impressive position in the rankings on scientific production.

The URV's strategic priorities seek to consolidate its achievements and to broaden its regional role, particularly in terms of knowledge transfer. It aims to take advantage of the current opportunity to **define an economic model focused more heavily on knowledge**.

Essential to this model are the roles played by the University and by the technology parks, the technology centres and the clusters in the corresponding ambits excellence, in addition to support from other entities (e.g. the University's Chairs).

#### A SYSTEM THAT FOSTERS THE TRANSITION TO A KNOWLEDGE-BASED ECONOMY: STARTING POINT



The commitment to **strategic affiliation** to promote knowledge transfer involves the most important players in the private sector and increases general and sectorial dynamism.

#### SOME SYNTHETIC DATA

	Total Tarragona	% s. Catalonia	% s. Spain
Population (2014)	800,167	10.65	1.72
GDP (2011)	21,308,777 €	10.97	2.04
Tourism activity (overnight stays, 2012)	9.67 M	10.77	2.01
Hotel beds (2013)	62,253	20.69	3.58
Personnel employed in hostelry establishments	7630	19.49	3.20
Inscribed in SS, hostelry, 2013	13,662	9.04	1.50
GVA to basic prices in commerce, hostelry, finance and other services (2010), M€	9,055,276	9.36	0.02
Cultural heritage (BCIN, 2012)	403	18.28	2.43
Food industry (inscribed in SS, 2012)	5755	10.17	1.78
GDP agriculture and fishing (2011)	360,979	16.16	1.51
Gross energy generation (Gwh)	200,925,372	76.90	9.33
Inscribed in SS, Energy supplies (2013)	1.427	27.49	3.76
Chemical production (2013)	17.2 Mt/any	50.00	25.00
Designations of origin - wine (2014)	8	72.70	11.59
Qualified designations of origin (2014)	1	100.00	50.00

Sources: ICAEN, IDESCAT, Department of Business and Employment, INE, Red Eléctrica Española, AEQT, INCAVI, MAGRAMA.

The current transition is linked to the **new role of the universities** in development and as a focus point for innovation in business, work, culture and social cohesion. As such, the university (with the support of the Campus of Excellence) aims to:

- Mobilize its change potential as a driver of development.
- Optimize its services and infrastructure for innovation.
- Promote the transformation of the economic model, employment and productivity.
- Recruit talent and to bring together businesses and creative individuals.
- Advance the collaborative culture of public and private initiatives and the confluence between knowledge, organizations, groups and individuals.
- Provide the region with a knowledge structure that has international visibility and recognition.
- Promote internationalization in general.

## 4.2 TOWARDS AN INNOVATION ECOSYSTEM

Currently in Southern Catalonia, steps are being taken to advance towards an innovation ecosystem **through a process of internal reflection at the URV and through a desire to actively work closer to other regional sectors**, all within a systemic vision and a process of continuous evolution.

The region **is now contributing important elements to a regional innovation system**:

- Sectors of specialized and structured clusters.
- Knowledge hub (as a structure that consolidates the affiliation of the members).
- Technical R+D+I office (and raising of funds).
- Mechanisms for disseminating knowledge and innovation (Knowledge Antennas, Innovation Hub, etc.).
- Other forms of support for intelligent specialization (e.g. coordination of support for enterprise).
- Governance adapted to the university's regional ambit, and mechanisms for supralocal coordination.
- Strategic planning for developing the region (and its main affiliates), and urban and regional planning at municipal, regional and sectorial levels.

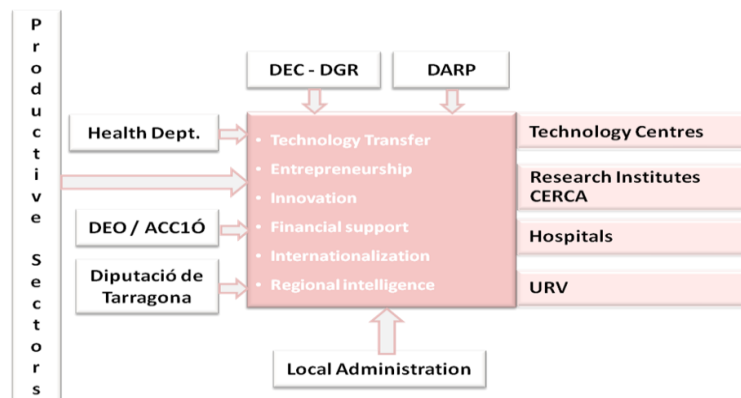
As part of the current process of reflection, the possibility has been raised of shared work or collaborative platforms between the URV and other affiliates to create a systemic vision and even the possibility of a future umbrella organization for the system as a whole.

The URV system is already setting out its vision of the future organization of this knowledge region. **Some of the future challenges** agreed upon are:

- Improving the internal organisation of the main affiliates, that is, coordination of projects, services and platforms with other affiliates in order to offer: support for R+D+I projects; design and innovation; enterprise; transfer; clusters and alliances; group intelligence; analysis and strategy; internationalization.
- Consolidating the modernization of economic sectors.
- Improving the mechanisms of governance (both internally and those of each principal affiliate). Working in conjunction on flagship projects.



## FUTURE ORGANIZATION OF THE TARRAGONA KNOWLEDGE REGION



\*Variables needed to support a knowledge region (apart from teaching and research).

Apart of the aspects of the system described in the previous point, **there are several elements which will strengthen the ecosystem.**

### SOME COMPONENTS TO BE CONSOLIDATED (APART FROM ECONOMIC FACTORS)

- The existence of a regional administration and an internal structure.
- Central metropolitan context and relatively distributed network of cities.
- Promotion of specialisation sectors in the region as a whole.
- Involvement of individuals, companies and other affiliates in the orientation towards a knowledge economy.
- The existence of specific support (technology centres, hub, knowledge antennas, etc.).
- Resources to promote quality of life and the attractiveness of the region.
- Meeting point for the principal European and Spanish development agencies.
- Forming part of the Lyon-Barcelona-Alicante megaregion.
- Participating in the Barcelona hub of the global economy.

Source: authors' own.

It is particularly important that the elements for **improving governance** be adapted to the development phase of the region to ensure effective leadership and the adequate distribution of roles. In Southern Catalonia, outside the university setting and certain business circles, there are low levels of awareness regarding the elements in the region.

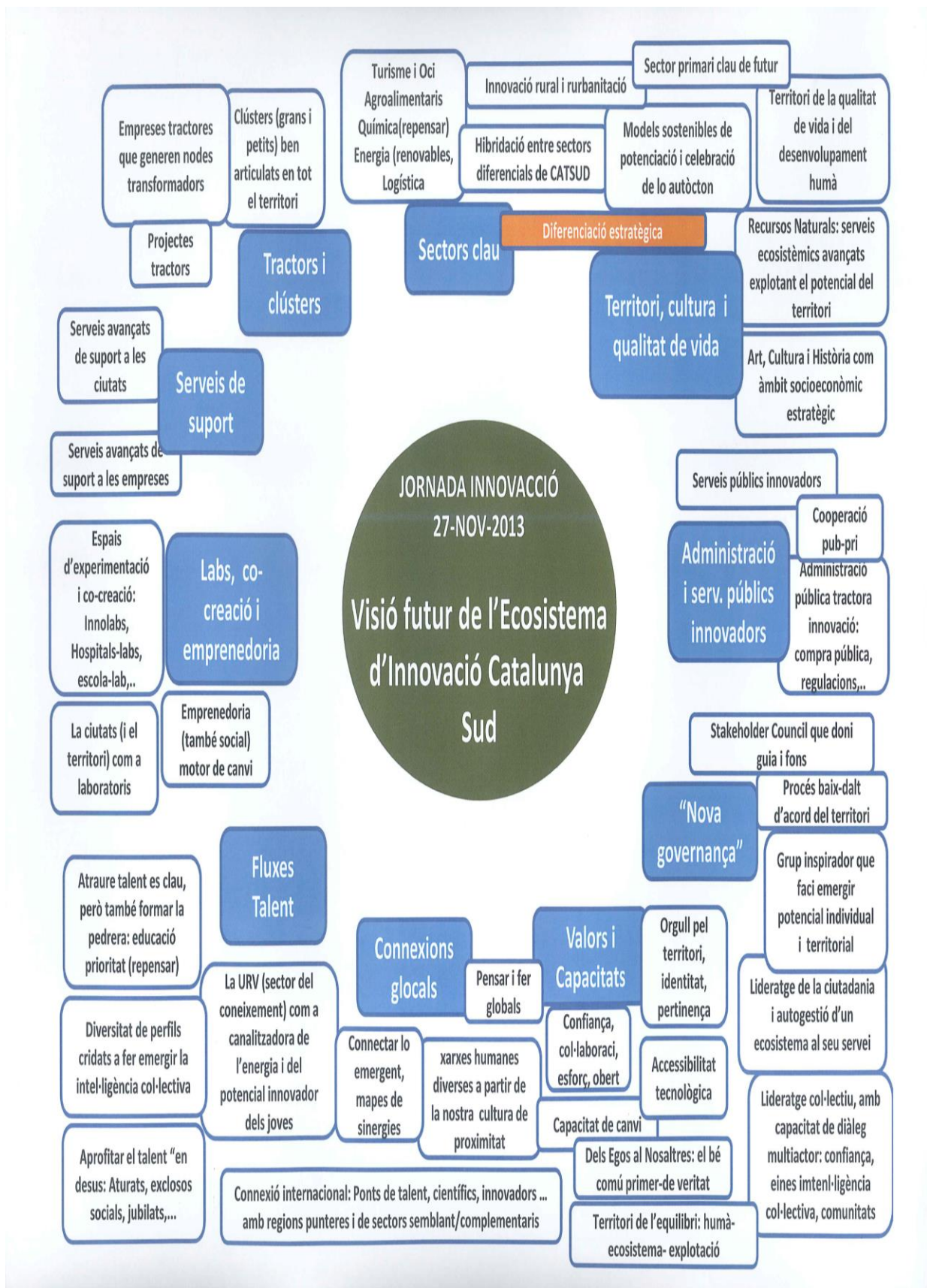
Regarding the components needed to configure a comprehensive ecosystem (see section 3.1), we can state that the region is **relatively lacking in the following aspects:**

- The presence of consolidated social leaders with pulling power.
- A promotion and development system (including the management of strategic projects and the monitoring of and prospecting for opportunities).
- Active and continuous management of the strategic regional plan, understood as a process and an element in decision taking rather than a final document or an institutional milestone.
- Management of a single and coordinated process of regional branding, with particular attention paid to the tendency to create two political regional ambits, fierce local rivalry, the emergence of new areas of cooperation, the terminological and sectorial complexity (e.g. Tarragona versus Camp de Tarragona versus Costa Daurada) and the proximity of the Barcelona hub.
- Active policies for recruiting and retaining talent.
- The design of regional products adapted to modern needs. For example, the creation of creative spaces and latest-generation business spaces and the recycling of obsolete spaces that do not meet the needs of the market, thus expanding innovative hubs throughout the region.
- Overcoming internal regional disparities (balance between the various innovation and development initiatives) and making the necessary infrastructure a viable priority.

Adapting these ambits will help to orient the region towards its comprehensive vision of becoming an innovation ecosystem that is flexible and dynamic. Some of the **benefits of this orientation** are:

- The generation synergies with all local entities and agents in the region and increased institutional involvement.
- A multi-layered regional network, from the ambits of internal coordination to an active role in the Mediterranean Arc (with multidirectional flows).
- Improved regional positioning and competitiveness based on regional branding (which will also benefit the university).
- The incorporation of new concepts and trends in the development of society.

VISION OF THE FUTURE OF THE SOUTHERN CATALONIA INNOVATION SYSTEM



Source: Innovaction (2013).

In this regard it is interesting that, independently of the R+D+I structure and the baseline elements of the innovation system, regions such as the metropolitan area of Malaga have aimed to:

- a) Become a European leader in ICTs.
- b) Configure the region as a platform for attracting European businesses and talent.
- c) Incorporate other elements of an innovation ecosystem (including innovative business spaces and branding).
- d) Coordinate metropolitan and provincial strategies.

See the diagram below for more information on Malaga:

Main plan:

[http://www.coitt.es/res/publicoitt/080206\\_LibroBlancoPlanDirectorMVe27Final.pdf](http://www.coitt.es/res/publicoitt/080206_LibroBlancoPlanDirectorMVe27Final.pdf)

Information on Malaga's innovation ecosystem strategy:

<http://www.diariosur.es/v/20121111/malaga/mlaga-ecosistema-innovador-20121111.html>

## INNOVATION ECOSYSTEM OF MALAGA: COMPONENTS

Region	Population: 800,000 inhabitants in the metropolitan area, 1.2 million in the greater region  -Surroundings: high quality of life, good environmental standards. -Economic and technological capital of Andalusia and European capital of leisure -Many educational possibilities and technology promoting initiatives. -Transport links: high speed rail, international airport.	
Governance	Jointly designed system to deal with internal singularities.	
Brand	Malaga Valley	 Combined development strategy and external promotion
Road map	Document “Malaga towards Innovation”	
Road map for the region	Strategic plans for Malaga (metropolitan area) and the rest of the province with specific structures for management and cohesiveness	
Specialization	High speed rail, smart cities.	
Main elements	R+D+I	-University (35,000) -Technology centres (Habitec, CITIC, Surgenia, rail technologies, etc.) -Andalucía Tech (campus of excellence, focusing on ITC and biotech) -OTRI
	Relations with business	-Technology Park of Andalusia (PTA). -Incubators (technologies, spin-offs and PTA co-working space). -Open for business (international projection office).
	Energy	-Intelligent buildings electric vehicle charge points, cogeneration, electrical mobility, climate change management project, etc. -Leader in compact urban design (Manzana Verde)
	Malaga Smart	-Information systems and applications in transport LED implementation, intelligent payment systems etc. -Extension to private ambit (e.g. electric bike hire).
	Management potential	Club Malaga Valley: <i>think tank</i> with representatives from companies that design strategies. Clear implications for City Council, University and others
Projection in regional planning	-Technology park. -University city. -Medialab (audiovisual production space). -Techno-industrial city (rebranding of classic urban area). -Creative district (artists and similar) -Digital Portal (advanced activities space). -Intelligent housing (living lab, hybrid houses, eco-technology park). -Eco-boulevards connecting various areas	

Source: author's own.

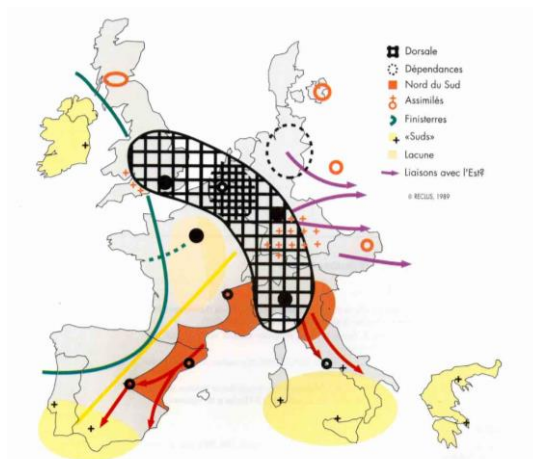
### 4.3 A NEW REGIONAL VISION

Creating an innovation ecosystem **must actively take into account the regional variable**. It must use existing elements to effectively configure a regional ecosystem.

In addition to business sectors, Southern Catalonia has **other regional variables that enable it to thrive as an innovation ecosystem**:

- Different administrative levels that, together and independently, enable shared projects to be undertaken.
- An important and growing socioeconomic role in Catalonia.
- A favourable position in relation to the principal regions of development due to its location in the emerging Lyon-Barcelona-Alicante mega-region.
- Various factors that promote quality of life.

#### SIGNIFICANT EUROPEAN DEVELOPMENT REGIONS

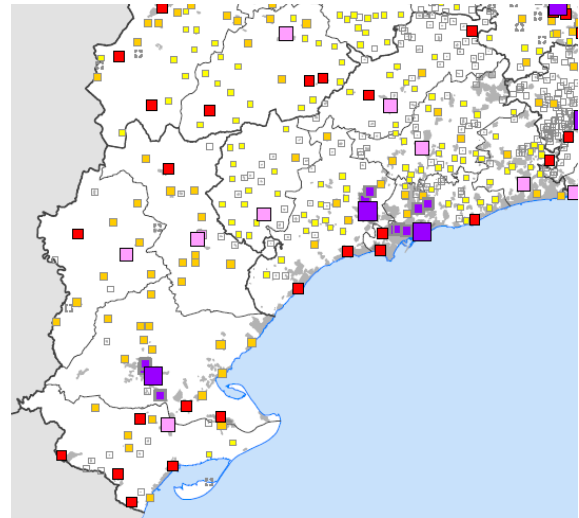


Source: Réclus/DATAR

- A polycentric network of cities and towns that will favour metropolitanization, specially the Tarragona-Reus area, and the existence of broad demographically progressive zones and even rural areas that show signs of modernization).
- Strategic infrastructures that help to configure a comprehensive logistic system with visibility beyond its borders.

#### URBAN NETWORK (PRINCIPAL SETTLEMENTS AND DISTRICT CAPITALS) AND PLANNED HUB STRUCTURE

Tarragona	133.545
Reus	106.790
Vendrell, el	36.747
Tortosa	33.992
Cambrils	33.775
Salou	26.752
Valls	24.649
Calafell	24.563
Vila-seca	21.689
Amposta	21.511
Montblanc	7.409
Móra d'Ebre	5.608
Gandesa	3.117
Falset	2.883



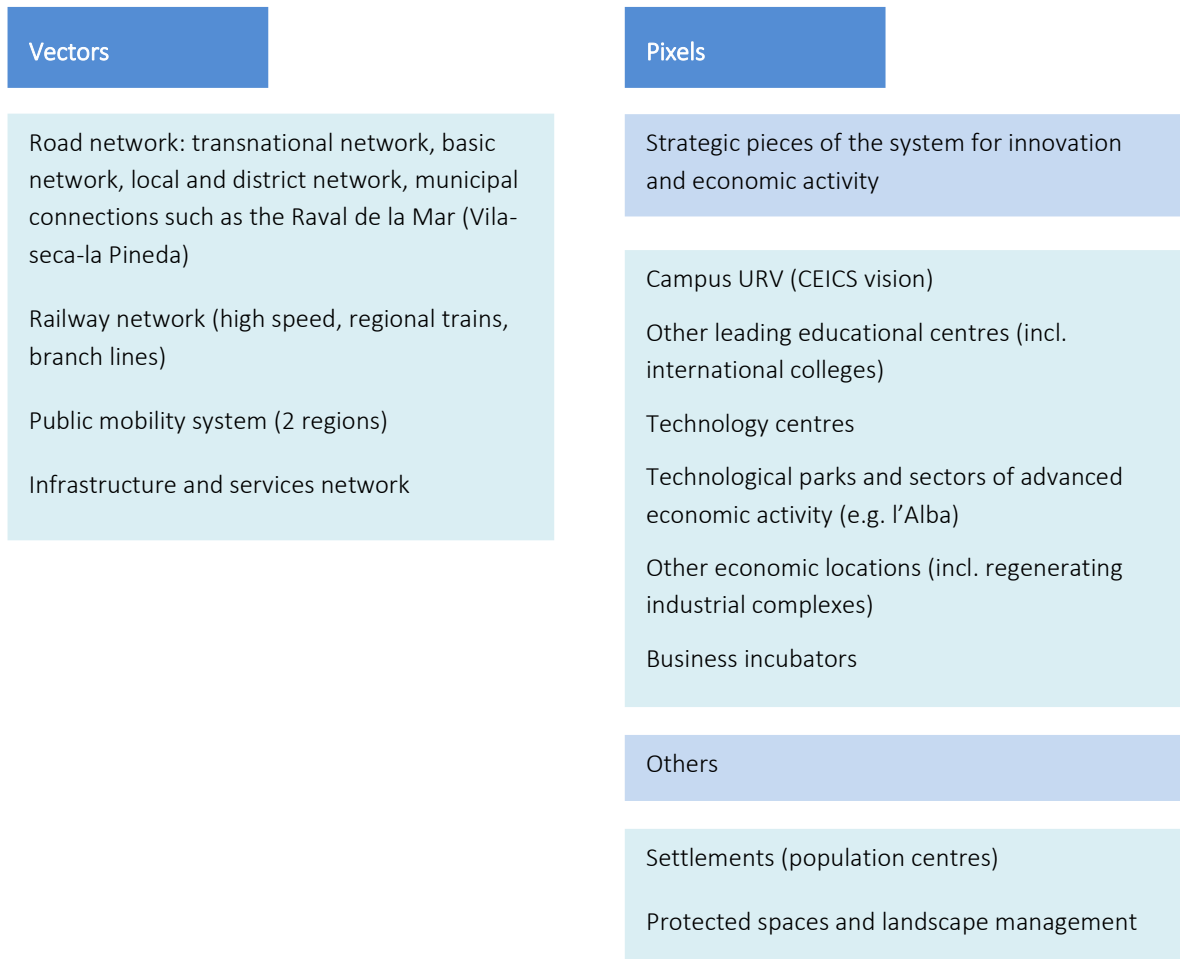
Source: compilation based on data from IDESCAT/Síntesi de Plans Territorials Parciais.

In addition to the aforementioned administrative elements, **it is also necessary to foster a change in the vision of the region** on several levels in order to strengthen future actions in the form of a regional platform that simultaneously stimulates development, competitiveness, cohesion and sustainability. The vision of the region must include:

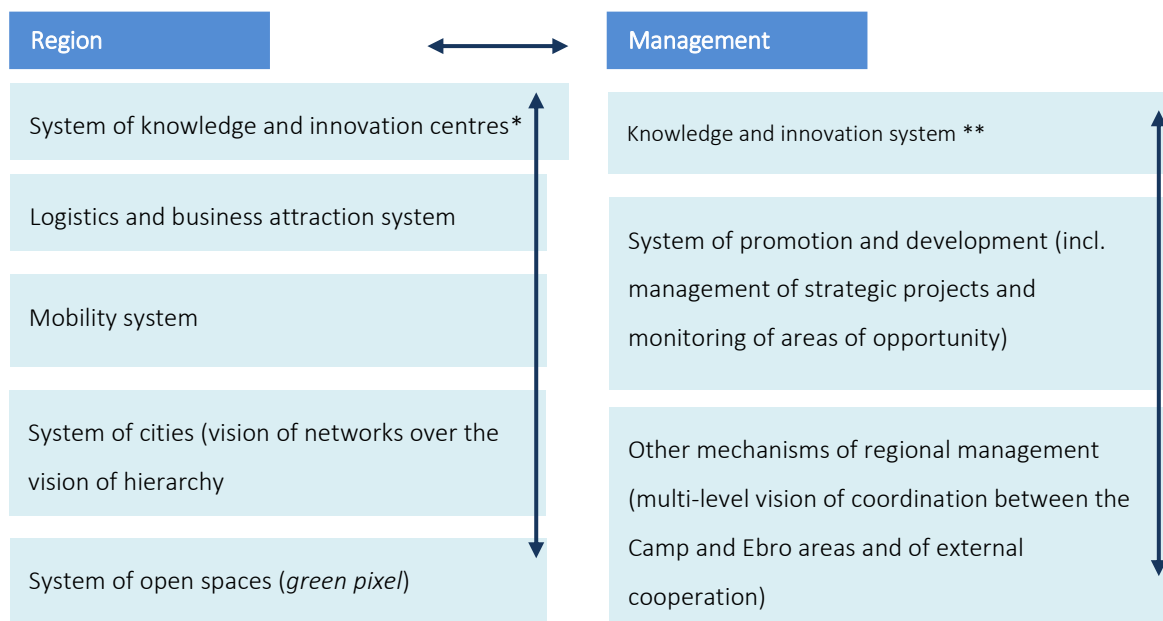
- Local realities and systems.
- External projection to ensure the correct functioning of the ecosystem.
- New emerging dynamics and activities at a regional level.

## ELEMENTS OF A NEW REGIONAL VISION

### Current orientation/trend



### Possible future orientation



\*Regional pieces perspective. \*\*A management perspective.



## 5. ANNEX: OTHER INTERESTING LINKS

### RANKINGS, INDICATORS AND OTHER REFLECTIONS ON THE ROLE OF THE UNIVERSITY

University ranking and impact:

[http://www.eua.be/pubs/Global\\_University\\_Rankings\\_and\\_Their\\_Impact.pdf](http://www.eua.be/pubs/Global_University_Rankings_and_Their_Impact.pdf)  
<http://www.chea.org/pdf/Global%20Rankings%20Impact.pdf>  
<http://blog.scielo.org/en/2013/08/15/indicators-of-academic-productivity-in-university-rankings-criteria-and-methodologies/>

Indicators of the Triple Helix in innovation systems based on knowledge:

<http://www.leydesdorff.net/rp06th5/>

University impact United Kingdom (general and regionalized):

[http://www.universitiesuk.ac.uk/highereducation/Pages/ImpactOfUniversities.aspx#.VWMGVbUw\\_rc](http://www.universitiesuk.ac.uk/highereducation/Pages/ImpactOfUniversities.aspx#.VWMGVbUw_rc)

Website on universities and development and meeting of knowledge promoting regions:

<http://www.unicreds.eu/latest-news/item/88-seven-regions-of-europe-share-knowledge-in-finland.html>

Innovation ecosystem and role of the University (Georgia Tech):

[http://www.stephenfleming.net/files/Fleming\\_GT\\_Innovation\\_Ecosystem.pdf](http://www.stephenfleming.net/files/Fleming_GT_Innovation_Ecosystem.pdf)

### UNIVERSITY SUPPORT STRUCTURES FOR INNOVATION DEVELOPMENT

Repsol Chair for Competitiveness and Regional Development:

<http://www.cdr.udl.cat/>

Chair for Strategic Regional Planning, Local Development and Governance, U. Jaén:

<http://blogs.ujaen.es/catpetdlg/>

Institute of Local Development (research group), U. Huelva:

[http://www.uhu.es/idl/que\\_hace.php](http://www.uhu.es/idl/que_hace.php)

Regional Organization Studies Group, U. Zaragoza (support for the Ebrópolis plan):

<http://iuca.unizar.es/?q=es/grupo-de-investigacion/grupo-de-estudios-de-ordenacion-del-territorio-geot>

Regiolab, University of Oviedo (laboratory of regional economic analysis):

<http://www.uniovi.net/regiolab>

### INDICATORS AND IMPACTS INNOVATION AND THE KNOWLEDGE ECONOMY: REGIONAL PERSPECTIVE

Innovation in the regions of Europe:

<http://ec.europa.eu/enterprise/policies/innovation/policy/regional-innovation/>

Indicators for measuring the EU's R+D policies:

<http://www.ibs.ee/publication/BEFORE%20Indicators%20Study%20Final.pdf>

Index of knowledge economies in the EU:

<http://www.distretti-tecnologici.it/rassegnastampa/internazionale/RIR%20Report%20411.pdf>

Indicators for knowledge regions:

<http://www.oecdbookshop.org/get-it.php?REF=5LMQCR2K8PJK&TYPE=browse>

Indicators regional competitiveness:

<http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.197.8343>

Measuring R+D investment impact:

<http://www.ibs.ee/publication/BEFORE%20Indicators%20Study%20Final.pdf>

Indicators of innovation:

<http://docs.politicasciti.net/documents/Doc%2008%20-%20capacitacion%20lugones%20ES.pdf>

Statistics, knowledge and policies (OECD):

<http://www.oecd.org/site/worldforum06/36422528.pdf>

Indicators Regional Innovation (pdf):

[http://www.academia.edu/6228918/Developing\\_the\\_Knowledge\\_Economy\\_Trends\\_and\\_Indicators\\_on\\_Regional\\_Innovation-Based\\_Development\\_Sociology\\_Seminar\\_University\\_of\\_Limerick](http://www.academia.edu/6228918/Developing_the_Knowledge_Economy_Trends_and_Indicators_on_Regional_Innovation-Based_Development_Sociology_Seminar_University_of_Limerick)

Indicators of knowledge in global economies (includes examples indicators):

<http://www.cforic.org/pages/wkci.php>

## **OTHERS**

Innovation and development agencies:

<http://www.valladolidadelante.es/>

<http://www.ade.jcyl.es/>

<http://www.innobasque.com/>

Resources on social innovation:

<http://www.socialinnovator.info/>

Other projects linking region and innovation:

[http://www.b30i.cat/b30/p/AmbitB30\\_cat.asp](http://www.b30i.cat/b30/p/AmbitB30_cat.asp)

<http://barcelonacatalonia.cat/b/>

Provincial/department development agencies:

[www.globalleida.org/](http://www.globalleida.org/)

<http://www.desarrolloprovinciazaragoza.com/>

<http://www.ariege-expansion.com/>

Support mechanisms for regional strategy:

<http://www.diba.cat/web/plansestrategics/xpel>

<http://www.iermb.uab.es/>

Prospecting tools and examples:

<http://www.fmetropoli.org/es/noticias>

<http://www.slideshare.net/eneko/la-prospectiva-territorial>

[https://www.utu.fi/fi/yksikot/ffrc/julkaisut/tutu-julkaisut/Documents/Tutu\\_2006-1.pdf](https://www.utu.fi/fi/yksikot/ffrc/julkaisut/tutu-julkaisut/Documents/Tutu_2006-1.pdf)