



# Go for innovation!

**XAVIER SALVADOR**

PSP is not the name of a new game console but the acronym of the three items innovation in a country needs to focus on: products, services and processes. If any of these items is introduced to the market or is provided with added value, a country innovates, creates and develops, especially in a highly competitive setting marked by global crisis. While there is a discussion all over the world about what innovation is, how and where to implement it, Catalonia is trying to develop a model of its own inspired by international expertise but trying to adapt to local conditions, to singularities of the business fabric and public authorities.



«There is an oversaturation of the concept of innovation that can lead to demotivation», says Jordi Cartanyà, director of the **Interministerial Council for Research and Technological Innovation (CIRIT)** and the man who spearheaded the **National Pact for Research**. Being a cross-disciplinary body, CIRIT has been commissioned by the Government of Catalonia to encourage policies aimed at improving the strategic position regarding innovation and generating social processes, services and products transforming what already exists and following the pace needed to change the market, social and environmental services. The ultimate goal is to specialise the country in general terms, make it more competitive and generate economic and social activity creating wealth and jobs in its turn. It is what has taken hold of the political agenda and seems to invade it all: the need of moving to an economic model less based on traditional business activities, which have shown a certain degree of inefficiency in times of crisis.

The difficulty in expanding this concept throughout the world of business is obvious. What are the advantages of innovation for economic stakeholders? «Any company or organisation has a sort of behaviour I would call basic capacities or competencies, which allow survival in the long term. That is, an innovating company or organisation can change their business or field of business from one year to another. Nokia started manufacturing metal, then wires, and did some telecommunications in the 1990s. They were able to reinvent themselves as a leading group in this industry. So an innovating economy reinvents itself.» Massive implementation of innovation techniques can of course lead to a new setting in the economic landscape of a territory. Innovating in a wider sense requires clear microeconomic derivations and even a certain macroeconomic change. «There will be no industries in the future, there will be metaindustries. That is, we won't have a textile industry, a chemical industry... A textile industry for what? To cover buildings, yes. These companies will be world leaders. Textile and fashion. Textile and sutures, textile and aerospace (where are Catalan company has been hired by NASA to make jackets for astronauts).»

What Mr Cartanyà anticipates for the short term resembles in fact a revolution rather than traditional evolution of the economy. «We're heading towards a macroeconomic structure within which we cannot talk of classical industries anymore but of competencies: we have to introduce value-added products and services into a value chain. For instance, to make this NASA jacket, the company had to contact another one making zippers in the United States. So to win this NASA call, the company had to change its market niche, but what is most relevant is that it had to get in touch with a US company. Together they manufacture a product so NASA buys it. This is another thing we need to address: our productive industries need to go international (and not because it's fashionable) as they need to innovate. If you want to be in value chains and niches for your products and services, either you do it this way or you won't find any partner.»

**«The economic structure of an innovating society is not the classical anymore in which everybody has their place in their industry.»**

Getting into this new dynamics will not be easy at all. Catalonia has a great productive structure based on an entrepreneurial tradition and culture that are both a problem and an opportunity. Deep atomisation of the market and viewing one's own neighbour as just a competitor are distinctive features practically since the Industrial Revolution. «This is one of the problems of our economy. Our companies have traditionally thought they can offer the whole product and the whole service, they have cooperated little. I'm not saying that this is like with savings banks, that they need to merge. To me, small organisations are of great value as they innovate more than big ones. The economic structure of an innovating society is not the classical anymore in which everybody has their place in their industry. Things will be different in the future.»

There are many examples we can look at. It is not difficult to find corporations that, as



Mr Cartanyà tells, have turned innovation into a philosophy of action to be considered. *«The Philips website tells you that it's a welfare and health company. They used to make appliances some years ago, and they still do so, but the change is paradoxical as you need to make TV sets that don't harm your eyes and they have doctors, ergonomists and ophthalmologists at their R&D department. To me, this is a revolution. There is going to be cross-disciplinarity in knowledge required to do innovative products. Social science and humanities have traditionally kept away from the innovation trend, and now they discover this was not the right way to go. Danone, for instance, has a department consisting of 25 people who are consumption anthropologists, a discipline of humanities and sociology. This is the other big concept, engineers need to mingle with sociologists and anthropologists with marketing people. We struggle to mingle in Catalonia.»*

**«There will be no industries in the future, there will be metaindustries.»**

There is also a perception that innovation is exclusive to companies, to their owners and managers. To Mr Cartanyà, the role of entrepreneurial innovation is inseparable from what could be called social innovation, that is, the role of citizens and public authorities in this challenge. *«Citizens play an active role in the innovation system as they are seeing it now in the Nordic countries, and we'll place that at the core of the next **Research and Innovation Plan of Catalonia**. It is calculated that between 20% and 30% of products brought to the market in the next ten years will be transformed by people or, at least, the population will play a key role in how that product eventually comes to the market. So when a Catalan opens an iPhone to have it talk in Catalan, the company doesn't like it at all, but that iPhone is an innovation introduced by a citizen. Besides, they don't sell it, they share it. Nokia has 3000 people who are professional users and are paid a salary. It's a new marketing concept. When a food company wanted to launch a new product in the past, they had a taste panel and consumers decided on the proposals submitted by the company.*

### Jordi Cartanyà i Solé

Jordi Cartanyà is the director of the programme to the National Pact for Research and Innovation and the Interministerial Council for Research and Technological Innovation (CIRIT) of the Department of Innovation, Universities and Enterprise of the Government of Catalonia. A doctor in Chemical Sciences, he has been professor and researcher of Biochemistry and Molecular Biology at the Rovira i Virgili University (URV) and postdoc at the Faculty of Medicine at Saint George's Hospital, University of London. He specialised later in strategic university management, holding different managing positions at the URV and managing the start-up of science and technology parks in the Tarragona area.



▲ *«Countries and regions economically innovative, so are usually socially.»*

*Today this is different. The consumer helps in designing the product.»*

**«Between 20% and 30% of products brought to the market in the next ten years will be transformed by people or, at least, the population will play a key role in how that product eventually comes to the market.»**

Having public authorities sell innovation is not easy. First, there is mistrust of public messages among their recipients. Then, authorities need to set a good example, and this is another challenge CIRIT wishes to tackle as a priority matter. Besides, it is also hard to convey the advantage for a country in keeping a straightforward commitment with innovation policies. Will citizens benefit from it? What direct advantage will they draw from it? *«There is a direct association»,* says the director of CIRIT, *«between measuring welfare out of different metrics and the degree of innovation in a country. There are countries with more economic and less social innovation. But what can be seen is that countries and regions with economic innovation hardly leave social innovation aside.»*

The Finnish dream, the example of that Scandinavian country, is permanently in the mind of the architects of the Catalan economic model of the future – as a mirror where to look into, but also to learn from its weaknesses. A recent study claims that Finland, which devotes resources equivalent to 3.5% of its GDP to research and innovation, still invests little. The economy of that country needs investment amounting to 4.5% of GDP to stay highly competitive. Just to have an idea of the gap, Spain devoted the equivalent of 1.27% of its GDP in 2007, according to the latest **COTEC** report.

Spreading the interest for innovation is a challenge for public authorities but also a need the country has, according to Mr Cartanyà. *«Social innovation brings along economic one. **The European Union** is clear about that. No focus shall be*

*placed on one or another industry, but a challenge is to be posed. Say, for instance, that we want to cure cancer, that we want to go to the moon or that we'll work in building an artificial tree leaf that uses energy and transforms it without polluting... Now it has been discovered that a leaf has an inner architecture protecting it from rain; leaves never become wet as water slips off them. Now they are working in applying this to architecture and other areas. This is biomimetics. To summarise, when we envisage challenges as a society or as a company, we usually do it very technologically to sell more.»* What those in charge of innovation policies in Catalonia doubtless pursue is an adequate combination of experiences from countries with research tradition and its implementation in business with a discussion that is very present at all business schools of the world: how to project a future with diversification, specialisation, research, environmental awareness and productivity.

*«The future lies in finding value niches»,* asserts the director of CIRIT. *«The economy needs to go along these lines and this is what we have tried to do in the last three months, copying the Scandinavians to a certain extent. It's not about being leaders in biotechnology or nanotechnology, we'll see what we can do there. What is important is that Catalonia is able to solve the issue of socially distributed energy. Is there any sort of energy with which everybody will be able to be self-sufficient at home or at work, or will we keep an energy type concentrated in huge fusion or fission reactors nobody can afford?»*

**«What we need to do as public administration is to encourage what is not happening and should happen.»**

The issue is who determines what the challenge of a territory is and why. Is this up to private initiative or rather a duty of public authorities? *«There are things that are a duty of public initiative»,* answers Mr Cartanyà. *«For instance, having a health service system for all Catalans and sustainable in future depends on Catalan public authorities, and if we don't innovate in the health economy we won't be able to*



## «There are companies and public authorities that don't know they're innovating, so they don't know how to manage it.»

### Shouldn't public authorities set a good example with innovation?

It's fundamental, it's strategic. Following the Pact, the R&D plan we are doing now and that will be published in January says: «we the first». That is, public authorities, public services and the government as the organisation that has to manage knowledge have to foster these public policies by setting a good example. This means that when I implement a given public policy to have less disasters and this is done by the Home Ministry, action will need to be based on scientific studies and knowledge. When innovative public services are rendered, I'll address innovating companies. At the Igualada health care centre, a director developed a new management model three years ago. He found there were no products on the market. He hired an SME from Barcelona to set out the new health care centre model. That SME, then with two employees, has currently forty, sells its product throughout Spain and is going international. That is, the public sector attracts and raises the economy when doing innovative things. And this hasn't been recognised in Catalonia, it hasn't been recognised as a potentiality.

### What's better: subsidise, encourage or directly act as an example, a role model?

All three things. First, act as an example. This implies what we were saying before, but also innovative public purchase. The first buyer of goods and services in a European country are public authorities. This purchase can be done in different ways. The EU has been saying for the last three years that we're missing opportunities based on doing innovative public purchasing. When Dutch city councils agreed in calling for offers for a new, environmentally sustainable public lighting system, what did they find? That there was nothing on the market like what they were demanding. So there has been a joint venture (five SMEs and one big Dutch firm) that just launched a product that is a lighting system with bulbs that are more intense than others thanks to sensors placed in the street. Not all streets need to be lit equally. You may say that an avenue needs lighting and the one next to it not. What do I mean by that? That these companies that will now launch a product thanks to an innovative public purchase policy will for sure sell us in some years these lighting systems that are really very innovative.

### But this is product. We're talking of processes and services. Of CIRIT, for instance. Are you innovative in your processes?

This is very important, and it's what we're doing first: how do we innovate, how do we apply it? What we've seen in our masterplan is that we need to apply this to ourselves as we are the instrument coordinating governmental policies. Next year we'll implement the so-called «government knowledge management system». That is, set out like a company. Just a very easy example to understand it: every time a government passes its knowledge on how things are to another one, knowledge management in transfer is very low. Sometimes you find one sheet or nothing. All knowledge that isn't on paper gets lost. At a big company, this is not the case.

### So we're not talking of putting more paperwork into processes?

No, this is improving government knowledge management processes. What the CIRIT wants to do first is to have the different departments of the government to think as an innovating organisation. We've done an audit and have found one important issue: there are departments innovating more than what we think, but it's hidden innovation. It's like some people telling us that Catalonia produces few patents. Well, the cultural industry has overtaken agrofood as the one with the biggest share in Catalan GDP...

First of all, we've found that there are innovative processes in public authorities that are hidden. Secondly, there isn't a systematic innovation process. This also occurs in business, there are some who don't know they're innovating, so they don't know how to manage it. Others don't know how to innovate and you need to make them grow. The current innovation pyramid has to be replaced by a pentagon. That is, the range of companies doing permanent innovation needs to be widened a lot; there will be still a middle range that will need to be taught how to do it, and left will be a little portion that doesn't know of innovation. The pentagon strategy is the one we want to help implement in the next four years in public administration, at universities, at research centres and in business.

I agree with the diagnose: first, public administration and public services; second, stakeholders depending on public resources as well. Universities and research centres have to publish but they also have to be efficient in human resource management, in processes; for instance, allowing students to register from China, which is not the case right now.

*set out a future-minded service offer able to be sustainable.»*

Setting the priorities for development regarding innovation is important. The director of CIRIT concedes that Catalonia, despite having good researchers, capacities and some resources, has not done so yet. The plan is that a sort of basic guideline for the country be ready within one year and a half. *«This roadmap has to be agreed upon among all social partners, public authorities and business. Otherwise, we'll find that we do wind turbines that could disturb the tourist industry. If we had taken sociologists and ecologists into the design of wind farms, instead of building towers 100 metres high, we would have known that engineers can do inverted engines with only 20 metres now, thus reducing their visual impact. If this component of social contestation had been integrated into technological design, we would have different wind turbines causing less impact now. When you design a technology, a roadmap, you need to take all views on board, and I believe that countries and regions doing so are winners.»*

The problem arises when deciding what industries are eligible to be the first. In fact, it is difficult to know where to start this new innovative era. *«Food is an industry we could clearly be world leaders in, but not only producing for our market but for the whole world. For instance, we have to make organic wines at 4% without losing any quality. This is fundamental, focusing on issues that pose social and economic challenges, that are not just hypes that come and go. There is now big pressure with biotechnology and it's said that Catalonia can be leading in this industry. Well, perhaps it can, but do we know what requirements are needed to achieve it?»*

The challenge is obvious: there is a long way to go as regards innovation, and it needs to be done urgently. Even the conception of this guideline is also an innovation in itself. It shall not be a model imposed hierarchically on the industry by public authorities: *«It's just the opposite»,* Mr Cartanyà says, *«what we need to do as public administration is to encourage what is not*

*happening and should happen.»* Put in other words, universities, business, the public sector and any stakeholder involved in the economy of the country need to be better coordinated.

*«There is a system error. Public authorities need to intervene here, but not to tell where to go. We have detected twenty areas we can be satisfied with in the future if we invest in R&D. If the government considers that with that list in the hand, it can appear as the father and say what's going to happen, that's bad. This list needs to be built bottom-up. Regarding energy, if the government states that Catalonia has the opportunity of creating jobs, of doing innovation, what the roadmap has to say is what the stakeholders altogether say.»*

**«Each industry, subindustry and company type needs a tailor-made suit. Public policies here as well as anywhere tend to standardise. We need to find a balance between standard and customisation.»**

Many companies are put off by certain public policies. Mistrust is an unavoidable factor those in charge of setting out Catalonia's innovation future do not want to forget. Employers' organisations are sometimes more inclined to defend policies providing companies with direct tax allowances, infrastructure, labour cost reduction, environmental benefits, etc. Joining the country's needs with those of economic stakeholders is as such another working line for CIRIT. *«We are aware that each industry, subindustry and company type needs a tailor-made suit. Public policies here as well as anywhere tend to standardise. We need to find a balance between standard and customisation, the latter according to the kind of industry and its purpose. What's very difficult to do is a tailor-made suit for one single company. Nevertheless, I think the Government of Catalonia will be brave and try to do them. ACCIÓ is progressively placing a person in some companies to become known. Knowing that person means that the company sees the government as a partner and a facilitator. If they see us like this, making a*

*tailormade suit by means of public policies will do us good. We need to try and have everybody make progress, like at school.»*

### «We need the Catalan Finance Institute to behave as venture capital rather than a traditional bank.»

The latent risk in any public policy pushing for such an ambitious economic shift as that derived from implementing innovation in all industries and business areas bears a certain risk of exclusion and marginalisation. Although Mr Cartanyà minimises that risk («*there shouldn't be any*», he says), he admits that there are difficulties. The first, of political nature, is that jurisdiction in research, just to give an example, is basically with the Spanish government. Only agricultural research has been transferred to the Catalan government. And he goes on explaining that despite this factual situation, the Catalan government went from devoting 300 million euros to research and innovation in 2004 to 900 million last year. «*This is little, but it's the Spanish government that has to do its homework as it has 90% of all research jurisdiction.*» In exchange for this, Catalan companies and local researchers obtained considerable resources from European programmes measuring the quality of projects instead of being awarded according to population criteria or other classical magnitudes. It is also urgent to use own bodies with an innovative vision. Besides preparing thirty policies of aid to innovation, Mr Cartanyà believes that Catalan venture capital should start moving – though beginning with the **Catalan Finance Institute (ICF)**, as «*we need it to behave as venture capital rather than a traditional bank. That is, having a Catalan Finance Institute that isn't a classical bank, that takes more risk, that enters unexplored industries*», he states categorically, adding to trade union criticism that is starting spreading even throughout different departments of the Catalan government.

However, facilitators of public policies to stimulate innovation are aware that current times are difficult to spread their message. The crisis has

deeply affected many business areas and companies often make headway with a foot on the brake. Nevertheless, innovating in times of crisis is a future opportunity if it offers convenient advantage. Such a methodology can strengthen business within short time. «*When no resources are devoted to innovation, the opportunity cost is high. When an organisation reduces its training, marketing and innovation budget, it will have a problem if this is not assumable for its position after some years. I have to convince SMEs not to hold back a single euro for innovation, to double them, it's the right time to be competitive and public authorities will help them. How? Directly. Second thing: when money is given to a company to help it, it needs to return, the company needs to show that it has added on value with it. Not as some companies do...*» Mr Cartanyà refers specifically to the big aid programmes companies like Telefonica (telecommunication), Endesa (energy), Seat (car manufacturing) and others consume based on their volume. Subsidies eventually become public gifts as they fund investment such big groups should do in any case following the very market dynamics.

### «The Catalan government went from devoting 300 million euros to research and innovation in 2004 to 900 million last year.»

Mr Cartanyà's passion in defending innovation as a tool to change the production model is not unlimited though. Innovation is not only about thinking of creating new hi-tech products able to revolutionise the market, but it is often something closer to everyday life. «*We think too much of technological innovation, which sooner or later is copied. What can't be copied is the business model. All sorts of public aid only think of the classical thing, but an SME can change its business model and subsidies are not ready for this today. So we'll try and introduce policies for non-technological innovation, help companies in processes and services. 30% of German companies already use so-called service products, that is,*

**Table 1. R&D&I priorities set in different countries and regions and their validity**

Icon	Category	Icon	Category
	Energy		Health and welfare systems
	Natural resources/Climate		Learning and society
	Cultural and audiovisual products		Innovation and advanced production systems
	Food		Organisations, governance and globalisation
	New materials and services		Infrastructure, mobility, logistics and security

  

GERMANY	
	Energy
	Water infrastructure/Environment and sustainability
	Biotechnology, nanotechnology, optic technologies/Materials
	Health research
	ICT/Change of human-machine limits/Industrial production processes
	Mobility

  

DENMARK (2015)	
	Energy, climate and environment
	Growth and education/Personal and social design
	Prevention and health
	Innovation and competitiveness/Production and technology

  

FLANDERS (2015)	
	Energy and environment for manufacturing industry services
	Nanotechnology, new materials
	Health, prevention and treatment services
	ICT/Supply chain management
	ICT for social and economic innovation
	Transport/Logistics

  

BASQUE COUNTRY	
	Energy sector/Alternative energies
	Meteorology and climatology
	Language industry and ICT
	Food safety
	New materials/Biolsciences, nanosciences/Trade/Tourism
	Social research
	Electronics for smart transport/High performing manufacturing industry
	Business transformation
	Smart settings

  

SPAIN (2008-2011)	
	Energy
	Agriculture and fisheries/Climate change
	Building, regional planning and cultural heritage
	Food
	Biotechnology, nanotechnology, nanoscience/New materials
	Health/Pharmaceutics
	ICT/Industrial sectors/New industrial processes
	Transport infrastructures/Security and defence

  

AUSTRALIA	
	Climate change/Tropical solutions/Resource industries and marine industries
	Agriculture and food safety
	Finance and management risk
	Population health
	Broadband applications
	Outer space and astronomy

  

FINLAND	
	Energy
	Environment/Bioexpertise
	Information and communication
	Innovative services/Materials
	Knowledge and knowledge, understanding and human interaction society
	Welfare and health
	Global economy/Biosociety
	Infrastructure and security

  

ONTARIO	
	Alternative energies/Clean technologies
	Digital media and ICT
	Biotechnology
	Advanced health technologies/Pharmaceutical research
	Advanced industrial manufacturing
	Bioeconomics

  

SWEDEN (2009-2012)	
	Climate
	Medicine
	Technology

  

CATALONIA (2005-2008)	
	Energy technologies
	Biotechnology, nanotechnology and new materials
	ICT/Industrial processes
	Organisation sciences

Source: Own from the material collected by CIRIT.

*associating a product to a service. In doing so, the value curve changes completely. Producing and selling isn't everything anymore, there is also service, aftersales... We have many industries able to play here.»*

**«When money is given to a company to help it, it needs to return, the company needs to show that it has added on value with it.»**

To summarise the interview with Jordi Cartanyà, we can conclude that Catalan public authorities have built a discourse from which they develop public and private action – a sort of roadmap of which both the person in charge

of its orientation and its active and passive beneficiaries know that only time, results and its adaptation to market demand will allow to see if it has been well designed.

**«We think too much of technological innovation, which sooner or later is copied. What can't be copied is the business model.»**

What can hardly be challenged right now is that without social or economic innovation, the future will not be easy. Or, as can be inferred from the work done by Jordi Cartanyà and his team at CIRIT, innovation per se diversifies a country and makes it stronger.

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