

ANDALUSIAN PLAN FOR RESEARCH DEVELOPMENT AND INNOVATION



2007-2013





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STRATEGIC PLAN OF R&D&I (PAIDI)



I. Introduction: context for change



The current world is different from the one which led to the existing educational, scientific and commercial frameworks. During the 1960s and the 1970s the complex coincidence of processes such as the significant advancement in information

technology, the economic crisis and the emergence of social and cultural movements gave birth to a new social context, which is the current framework for human activity. It is the so-called **network society**, which permanently came together from the worldwide use of the Internet.

This example of a newly-shaped society involves essential life aspects, coexistence and progress, and it especially affects the knowledge-economy relationship.

On the one hand, there is a rapidly growing rate of knowledge creation, concentration and depreciation and consequently, there is intense scientific-technological progress which calls for the creation of **new knowledge-based networks**.

But a definite transition to the third industrial revolution also occurs. This knowledge-based revolution is considered the most valuable resource, leaving the classical ones (land, natural resources, labour and financial resources) behind. The result is an emerging **new economy**.

A noteworthy feature of this new economy is the market's increased involvement in scientific activities. This is an important challenge for the main participants in this knowledge-based society, regardless of whether they belong to scientific, economic or political worlds. The challenge has to do with using these three aspects in the creation of research and innovation.

Within this context, the concept of a scientific divide not only refers to economic disparities but also how it affects different political ideas, both economically and socially.

Women's access to the knowledge-based economy has contributed to better results in those activities related to both the scientific community and technological sectors. Women's contribution to economic, social and political areas is an important factor in closing this scientific divide, and can be considered the beginning of the Plan aimed to guarantee equal opportunities, from a mainstreaming point of view.



II. Knowledge-based Systems in the new economy

Going beyond the first decade of the XXIst century, the close connection between the scientific and technological development of a region and its economic and welfare standard is not under question. Consequently, scientific research and technological development in particular, are now considered the driving economic forces in society, and their range of activities are aimed at responding to society's needs, especially in work development and better ways of life and activity.

Research and technology represent important, essential tools for upgrading companies by creating new products, methods and markets. It directly and indirectly maintains quality employment by giving a boost to economic growth and increasing competition, all of which are essential to reinforce a region's competitive standings.

The clear result is that nowadays there is a strong tendency to incorporate fundamental research, technological development, entrepreneurial innovation, competitiveness, social needs, life quality, and economic and social development when planning scientific policies.

Within this framework, it is striking that Spain, despite being the eighth world economy regarding its gross national product (GNP), appears in lower positions in some of the scientific and technological level indicators which have been compared. Therefore, the aim is to set up solutions in order to make up for this imbalance, by increasing the interaction between companies and research centres.

As it is stated in the recent UNESCO world report "Towards knowledge societies":

While largely bound up with economic inequalities, the scientific divide is also due to specific institutional factors. The production and spread of knowledge are dependent on national systems of research and innovation which in turn result from interaction between business, industry, science research and teaching institutions, and government bodies. Typically, the systems held to be most effective are characterized by the closeness of the relationship between these various stakeholders.

One of the reasons for the gap may be that there is a growth pattern that is excessively based on traditional economic forces, even more than those used by other developing countries. This is despite the fact that their economic growth level is lower than our own.

Although Spain grows faster than some of the 15 EU countries, it is far from some

regarding competitiveness and innovative scientific and technological potential.

Andalusia has kept a higher growth pattern than the rest of Spain for a decade, but again, its economic profile is based on the service sector, tourism and the construction business despite industrial production and exports that are no longer marginal.

Both Andalusia and Spain have highly qualified scientific personnel, and both allocate more and more public funding to promote the development of R&D&I policies. Also when it comes to analyzing the variables which combine scientific knowledge and competitiveness, the traditional indicators such as the number of doctorates and their resulting scientific production seem to be adequate. However, if we look at the analysis in depth, we can see that there is not a similar connection with the rest of the following required parameters to consider the Andalusian System of Knowledge (R&D&I) as balanced: cost percentage in private R&D, risk capital proficiency, number of patents and number of technological companies and their invoicing.

Consequently, the initiatives for both correcting imbalances and consolidating a modern research, development and innovation system will have to combine initiatives that increase the research potential with the appraisal for knowledge generated. This is assuming that this research is capable of improving Andalusia's competitiveness and creates wealth, welfare and progress.

Furthermore, the transition towards the new economy will probably need something more than just "economic investments". The problems that will have to be tackled are those connected with the system's structure, its organization, the way in which processes are carried out and quality management, and always keeping in mind the principle of equality between men and women and the gender perspective.

And what is more, within the framework of the knowledge-based society, the creation of a new Andalusian Knowledge System (R&D&I) will have to be based on something more than just individual excellence and certain people's prestige. Therefore, it will be essential to create collaboration networks and infrastructures which will allow scientific personnel who may be far apart to work on common-interest projects together.



III. Political framework



The previously-mentioned comments were the basis of discussion which led to the [Second Modernization Plan for Andalusia](#), a political framework which brings together strategies aimed at accelerating the incorporation of Andalusia into the new social and economic paradigm described above.

Five objectives were definitely defined within this framework:

- ▶ To develop an [entrepreneurial culture](#), which favours initiative, creativity and business growth.
- ▶ To turn [education, research, culture](#) and [creative talent](#) into the main driving forces of the social and economic advances in Andalusia.
- ▶ To fully integrate an Information and Knowledge-based Society in Andalusia, using the [technological advances](#) as the most advanced countries in our environment do.
- ▶ To develop, organize and give cohesion to our Community so that the initiatives proposed do not disappear because of the lack of [suitable communication](#) channels that connect and open it to the world.
- ▶ To adapt the [Public Administration](#) so that it can offer more and better services to people; to create a changing Administration committed to citizens and offering assistance that verify guaranteed service.

The Second Modernization project promotes research and technological excellence which depends on both current and future productive needs.

This comes about with resource use and the capacity to create an innovative culture connecting both the University and research with business. In the future, high-rating research groups that are connected to either the current or future productive system will no doubt be chosen and funded by this project.

Moreover, one inalienable objective is the promotion of fair, unrestricted women's participation in every scientific and technological discipline at all levels.

Therefore, the Project will have to continue developing a basic, applied network which is also scientific and technological. Special demands need to be accomplished, depending on either the abilities of our research personnel or the significance of our companies. Researchers or groups following these lines of work will have to be supported or recruited so that they can work together in future lines of work in that field.

These groups and lines of work will focus their activities either on traditional areas or on other strategic ones so they can create a more valuable economy.

But the need also exists to ensure that knowledge is transferred in order to strengthen research results which will have an impact on innovation, economy and citizens. Therefore, the University will have to establish a suitable framework so that interested researchers or teachers can set up knowledge-based companies and be recognized professionally within this institution. Likewise, companies will have to allow for the recruitment of both professional doctorates and people with high scientific capacity. First, the present Second Modernization Project, which our Community is involved in, considers the need to promote the required changes so that the system can work according to the Principle of Excellence. Second, there is a need to create a suitable institutional framework for better research development, be it either independent or as a teaching complement. And lastly, there is a need to promote both the collaboration between research groups and the mobility of research personnel; in other words, the need for clear research guidance towards Andalusian needs and economy.

The first political response within the Second Modernization framework is the creation of the [Regional Ministry of Innovation, Science and Enterprise](#) (Consejería





de Innovación, Ciencia y Empresa, CICE) during the current legislature. This regional Ministry will be responsible for coordinating and implementing research, technological development and innovation policies. CICE, working under the same administrative and management scope, combines activities related to Research, University, the Knowledge-based Industry, New Technologies and the Knowledge-based Society, and those regarding business and energy development. All of it is aimed at creating the necessary interconnections and synergies so that this know-how becomes the driving development force.

The regional Government Council of Andalusia passed the [Andalusian Innovation and Modernization Plan](#) on 7 June 2005. The Plan is a strategic document where PAIDI is included. PAIDI follows the guidelines defined by the Second Modernization and classifies policies and actions aimed at placing Andalusia as one of the most advanced regions in Europe, thanks to the efforts of Andalusian men and women.

In 2005, a new regulatory framework aimed at encouraging excellence research, innovation and business development in Andalusia was set up as part of the process started by this Andalusian Plan of Innovation and Modernization. The framework redirects the traditional funding-based tendency towards a new formula which promotes entrepreneurial initiatives.

This formula considers expertise to be the main producer of innovation. Within this regulatory framework, CICE's [Order 24 of May 2005](#) highlights incentives for innovation and business development in Andalusia and [Order 5 of July 2005](#), sets up regulatory bases for granting incentives for excellence research projects by research teams, and yearly activities of Andalusian research and technological development groups, Public Universities and Research Institutions of Andalusia.

Therefore, this framework lays the foundation for controlling the funding for research start-up, technological development and innovation projects. These projects will lead to the creation and modernization of Andalusian companies as well as better collaboration between the previously mentioned organizations, Universities, and other Public Research Institutions. In other words, it will develop a Knowledge-based Society that will improve regional competitiveness, and wealth and welfare production, while always keeping in mind the genre mainstreaming strategy which clearly contributes to equality between men and women.

At the European level, the Plan is within the framework objectives of the Lisbon strategy and its later documents: The Renewed Lisbon Strategy: Document on "Integrated Guideline Package for Growth and Jobs 2005-2008", The Community Lisbon Programme (Actions at Community level) and Community Strategic



Guidelines 2007-2013: Communication of the Commission to develop the National Strategic Reference Framework (NSRF)(Marco Estratégico Nacional de Referencia, MENR) and proposals for the VII Framework Programme of the EU. Likewise, at a national level, the Plan is included in both the reference framework of the National Programme of Reforms and the objectives of the [Imagenio 2010 Programme](#). Finally, this Plan takes the programming documents of the [National Strategic Reference Framework 2007-2013](#), into account, as well as the [Strategy for the regional development of Andalusia](#), and the [Andalusian Operational Programme 2007-2013](#).

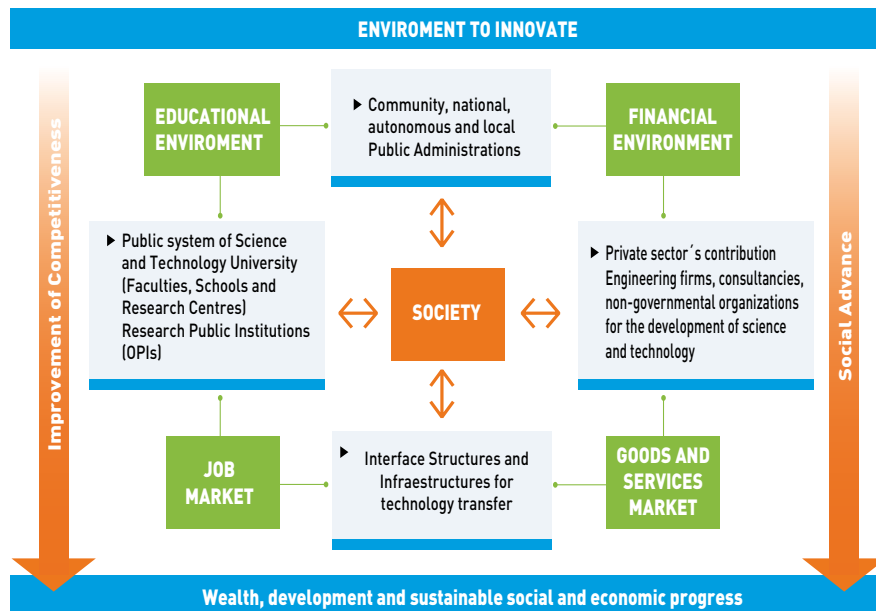
The Plan's commitment is to get Andalusia to invest at least 1,8% of its NGP (PIB) on R&D in 2010 and in this way, comply with the common State objective of 2% of the NGP at market prices. Likewise, 2% of the Andalusia NGP in 2013 is targeted to reach full convergence with the most advanced regions of Europe.



IV. The andalusian knowledge-based system (r&d&i): Framework, structure and agents involved

Within the current context, a new concept of Andalusian Knowledge-based System (I&D&i) emerges. It is conceived as a group made up of both agents and organizations involved in knowledge-based processes and technological production. Furthermore, there is a transfer of these resources to productive, social and cultural areas and their application to produce wealth through innovation.

At the organizational level, the system is built as a network which organizes a range of needed links between agents, especially among the processes in which the agents are involved. It is, therefore, a dynamic structure where the institutions and processes involved interact continuously and receive feedback from each other. The systemic notion of the agents participating in R&D&i processes is clear as it allows those responsible for decision-making in a scientific and technological context to approach their task from a joint perspective, by taking into account the economy, politics and society.



Moreover, this scientific production is not only different from the former ones, but is also a framework of analysis that highlights concrete actions. The key factor to success is based on agents working together, as previously mentioned.

Therefore, the base is that any research and innovation policy must take a complex set of problems into account. Neither public or private sectors, nor fundamental or applied research embody the essence of "good practice" separately. This implies the need for a complementary relationship between the different participants involved and the role each one plays.

The relationship between agents and their surroundings stems from the Andalusian Knowledge System (R&D&i) concept which is detailed below:

- The **Andalusian society** is made up of individuals that respond to social phenomena and have the capacity to produce and accept both technological changes and innovation. Moreover, it is the society itself which demands more high-quality services that are more efficient and more technologically advanced. This shows how important research and innovation is once its own needs are identified.
- On the one hand, the **Administration** submits requests to the System by using innovation and technology. In this way it contributes to both creating competitive and innovative environments and guiding research and innovation policies. On the other hand, it encourages scientific and technological advance through a range of incentives.
- The **scientific Community**, mainly represented by Universities, Research Public Institutions and the research teams which develop their activities for both, and are considered their main knowledge generators.
- The **business sector** is both the main knowledge and technology consumer and the agent that makes innovation possible. It gathers the main requests for highly-productive services, competitive funding and human resources prepared to negotiate change.
- The **technological environment and the Innovation support services** environment facilitate the contact between the scientific community and the productive sector. They channel research results, requests and needs and offer support for technological improvement, innovation implementation, creation of companies and production globalization.



V. The Andalusian Plan for Research, Development and Innovation: Paidi mission and vision



PAIDI mission or “raison d’être”:

PAIDI’s task is to promote strategies and measures aimed at improving welfare, sustainable economic development and social cohesion in Andalusia. At the same time it coordinates the public and private agent groups which make up the Andalusian Knowledge-based System (R&D&i), and the policies aimed at encouraging research effort, knowledge transfer and innovation. It must also focus attention on the needs of enterprises so that they can produce competitive outcomes.

PAIDI is the new planning framework for research and technological development policies for innovation. It is focused on improving business competitiveness, quality job creation and public benefits in order to contribute to Andalusia’s social, economic and cultural advancement.

PAIDI Vision:

In order to carry out this task, PAIDI attempts to show the new generations of Andalusian men and women the Vision for an Andalusian Knowledge System (R&D&i) that improves the economic, social and cultural advancement in Andalusia.

The aim is to set up a new framework of scientific and technological advances for Andalusia which are aimed at yielding gender equality. Research will be more recognized and prestigious and carried out in such a way as to create and improve our economy’s competitive edge. To summarize, this framework must consolidate a better society for everyone, where scientific personnel and business institutions work together to develop a new market of knowledge and ideas.

PAIDI is the main tool for programming, coordinating, stimulating and assessing the Regional Government of Andalusia’s scientific and technological development policies. It assumes and highlights the importance of fostering R&D&i as the driving force for social change and modernization for Andalusia while setting up a series of prior actions which are considered strategic for developing the Andalusian society.

PAIDI comes about as a result of a political willingness to find a strategy to join synergies and networks together. It must coordinate both the participants with previous strategies while gradually setting up a new framework for interaction. That means that many of them will be included or modified until a real Andalusian Knowledge System (R&D&i) is created as a versatile and efficient tool for future defined goals.

VI. Paidi values and principles

PAIDI is conceived as a funding tool that complements the national and European research plans in those aspects which, despite being strategic for Andalusia, could be inadequately covered. But PAIDI is, above all, the central core of research, development and innovation which have an impact on Andalusia. They should act as a “whole”, yielding synergies to carry out the R&D&I objectives defined for our region in the Second Modernization, the Academic Exchange and Mobility Programme (Programa de Intercambio y Movilidad Académica, PIMA) and in the Regional Development of Andalusia Strategy 2007-2013.

PAIDI is based on a set of values and principles:

PAIDI Values:

1. **SOCIETY PARTICIPATION IN SCIENCE AND TECHNOLOGY:** The Andalusian society will have to be trained and informed, and permanent discussion forums and other channels have to be set up so that they can participate in the strategic decisions on Research planning and guidance.
2. **RESEARCH AS THE DRIVING FORCE OF CHANGES IN SOCIETY AND ECONOMY:** In a changeable and uncertain environment, research and knowledge are the cornerstones for innovation that lead to a more competitive society, full of new aims and strengths.
3. **COOPERATION AND PARTNERSHIP AS A BASIS FOR CHANGE:** The aim is to ensure the creation of knowledge-based networks that continuously update research programmes and measure task outcomes.
4. **HIGHER SOCIAL RECOGNITION FOR RESEARCHERS:** This is recognition which comes from researcher’s contributions to the way citizens progress, given the value of their newly obtained knowledge for economic and social progress.
5. **PREEMINANCE OF EXCELLENCE AND RESULTS:** This is the control of the total volume of quality research production, considering the international impact achieved, and its protected, patented or applied end result.
6. **INTUITIVE MANAGEMENT AND NEW VALUES BASED ON INCENTIVES AND TRANSPARENCY:** As far as innovation management is concerned, the



Administration changes from a funding-based tendency to an incentive-based criterion with the aim of promoting this new type of sustainable development.

7. **GUARANTEEING AND FOSTERING WOMAN’S ACCESS TO THE FIELD OF EXCELLENCE RESEARCH AND INNOVATION:** The aim is to set up the ideal and necessary conditions that allow women equal treatment in their access to both knowledge and economic values.





PAIDI Principles:

1. ARRANGEMENT OF AND CONNECTIONS WITHIN THE ANDALUSIAN KNOWLEDGE SYSTEM (R&D&I). This principle responds to the need of both guaranteeing interaction between the system agents and facilitating a multidisciplinary problem approach. The aim is, above all, to ensure the connection between expertise and its use by the productive sector and public and private organizations that request it. Creating new expertise and innovation processes do not take place in isolated contexts but rather where several relevant elements come together.

These are some of the most outstanding ones:

- ▶ The existence of both a productive and an institutional system where requests and initiatives may come up that will take advantage of both expertise and human resources available in the Andalusian Knowledge-based System(R&D&i).
- ▶ The existence of a public sector that produces quality science which may be transformed into strategic research for solving significant problems and boosting economic and social advancement.
- ▶ The existence of human capital able to tackle complex tasks, which calls for a suitable combination of significant academic qualifications, unspoken expertise and company ideology.
- ▶ The existence of synergies among institutions which facilitate the interaction between the agents involved in the production and their use of knowledge and innovation.
- ▶ The existence of complex problems that need the cooperation of different fields to study them.

2º QUALITY, EXCELLENCE AND ADEQUACY FOR CREATING EXPERTISE.This is the quality that is applied to the Plan's management processes and to research, technological development and innovation. It also applies to any results that come from companies, or public and private institutions that join the system, since a knowledge-based society is meaningless without quality.



In this sense, PAIDI starts from the premise that a Knowledge-based system only has meaning whenever quality, and consequently, creativity and competition, become needed objectives for all the system agents and for all the actions carried out within. That is the reason why all actions must follow a quality criterion.

The notion of quality is twofold. Quality is understood as excellence, which means that the level of R&D&I activities should be internationally standardized. Quality is understood as relevant, which means that activities should be aimed at fulfilling objectives which show true expertise or contribute to the production and solution of social, environmental, technical and cultural problems in Andalusia.

Eventually, this principle means that the R&D&i policy has to consider not only quality control but also its integral promotion within the system, as it is the only way to guarantee that its constituents reach the required level.

On the other hand, quality is excellence-oriented, which is considered the highest standard of performance in the different institutions that make up the Andalusian Knowledge-based System (R&D&i), which in turn effectively carry out their goals and defined value criteria.



3º COORDINATION AND COMPLEMENTARITY IN TECHNOLOGICAL DEVELOPMENT.

Although the wide range of national and European research programmes and others aimed at technological development and innovation are important sources of resources for Andalusia, they show a partial point of view. This is because of different interests which do not always coincide with circumstances or real community interests. Some other cases show that it is the agents themselves who set individual contacts with other entities without adequate feedback and opportunities for the rest of the system.

As a result, all of the participants and agents participating in the Andalusian Knowledge-based System (R&D&i) should lean towards a joint **Network model** using adequate cooperative tools. They should try to simplify tasks and procedures, and avoid operative redundancies at work, especially when dealing with expertise.

Likewise, the agents involved will have to set up permanent alert mechanisms that identify possible synergies among already- formed groups or stimulate the creation of others especially aimed at:

- ▶ Subjects related to strategic sectors for Andalusia which follow the criteria for scientific-technical research areas defined in this Plan.
- ▶ Subjects with special interests after finding possible knowledge-based niches which have not been studied yet and where Andalusia has a distinct advantage.

Appropriate mechanisms to simplify, coordinate and include the numerous public and private devices devoted to the same tasks in the R&D&i scope will be set up with the same purpose.

- ### 4º RESULT-ORIENTED PROCESS.
- Budget constraints, shifts in economic and social structures with less competition and productivity may jeopardize our future welfare within a global economy. The system's key factor is the demand to reach specific goals and break away from traditional ones.

With this purpose in mind, the research contract will be used in funding processes associated with the current plan or any other where it could be incorporated. The objectives, expected outcomes, social and business goals and their usefulness, any corresponding criteria and patent and copyright protection will be clearly defined.

Likewise, the mechanisms for evaluating funding projects will include the values for measuring the achieved results, and not only for what was planned previously. The groups of excellence will be the ones with the most support, in order to avoid the division of research groups that are searching for financing. The idea is for groups with low results to join the stronger ones if there are no results after repeated evaluations.





5º CREATED EXPERTISE AND COPYRIGHT PROTECTION. Registration of patents and copyrights, key elements in a growing economy, will be as important for the promotion of researchers and teachers as the number of scientific publications or doctorates have been up to now. Every research project, wherever it is technically feasible, will have to include budget allocations to protect the end results as a necessary financial requisite. These elements will have to be considered in any promotion process.

The described facts incorporate copyright contributions as a creator of wealth. That is why Humanities professionals also have a new role as creators of associated companies: **THE CULTURAL INDUSTRY.**

6º PUBLIC-PRIVATE INTERACTION, RESEARCH TRANSFERENCE AND TECHNOLOGICAL DEVELOPMENT: The participation of multidisciplinary collective groups made up of scientific personnel with global expertise and businessness with social sense will be rewarded. This will be done by working together and turning this energy into a permanent capability for future expectations.

Moreover, private research institutions working together with public bodies will have equal opportunities to compete with universities, and the only element that helps differentiate them will be the quality of their accredited results, especially in patented expertise. The R&D&i private sector will also be promoted.

7º RESEARCH AND TECHNOLOGICAL DEVELOPMENT AS A GLOBAL PROCESS: The new model should lead to the search for excellence and work through common objectives. In this sense, incorporating foreign research personnel and sending Andalusian research personnel abroad will be considered an added value. In both cases, necessary reforms will be undertaken so that researchers can have either a permanent or temporary link, as there is a short-term need for producing enough "critical mass" that allows for synergies and competitive scientific research to obtain more resources. There will be a major need for exchanging teams of professionals among laboratories of different countries so that the transfer of intermediate ideas can produce a faster advancement in achieving the final product. **Work on Collaboratory** will be awarded.



8º EQUAL OPPORTUNITIES. With regard to gender, and with the aim of favouring women's access to excellence and Innovation research, the Plan will guarantee the inclusion of gender indicators which allow for the assessment of each specific action.

The promotion of equal conditions between men and women is a crosscutting principle in the Plan. Moreover, when the gender indicators are not enough, this will indicate positive discrimination in favour of women. Likewise, the mainstreaming gender will be implemented so that scientific research and innovation can contribute efficiently to the achievement of equality between men and women.

In any case, gender indicators will be assessed each tax year and increased in the forthcoming edition.



VII. Paidi General aims

The following are PAID 's general aims:

1. TO GENERATE EXPERTISE AND MAKE THE MOST OF IT.

Everyone should keep expected benefits in mind, not only concerning tangible assets but also more abstract and personal ones.

Powerful driving forces for our work can be the pleasure gained from know-how, the advantages learning provides, or just how points of view change when this expertise increases.

However, it is necessary to make the most of knowledge, that is, by applying what is known in order to change methods, products and services by focusing on the advantages they produce.

2. TO PROMOTE AN ENTREPRENEURIAL AND INNOVATIVE CULTURE AT UNIVERSITIES, RESEARCH INSTITUTIONS AND BUSINESSES.

A business attitude is crucial for higher development. However, assuming risks, accepting challenges and encouraging improvement strategies are necessary but uncommon tasks in the common practice of these institutions. Thus, it is necessary to set up conditions aimed at encouraging the appearance of entrepreneurial initiatives in every field of the Andalusian Knowledge System (R&D&i), as the achievement of higher goals implies not only more personal pleasure but also higher social and economic expectations and welfare.

3. TO IMPROVE EXPERTISE EXCHANGES WHICH FAVOUR TECHNOLOGICAL DEVELOPMENT.

Two essential questions need to be better understood: What is the knowledge which flows between two organizations? and, What are its effects? It is true that such flows may produce some specific financial currents, but it is also certain that the transfer process demands and produces interpersonal relations that increase people 's and institutions 's capital stock. If capital stock is produced (capital stock is understood as a series of knots which become present and future resources for network links), then a wide range of effects will come about, which are not recorded in statistics.

4. TO INVOLVE PRIVATE INITIATIVE PARTICIPATION IN THE ANDALUSIAN KNOWLEDGE-BASED SYSTEM THROUGH RESEARCH, TECHNOLOGICAL DEVELOPMENT AND INNOVATION.

Therefore, ideal conditions that result in business creation, risk capital investments and the recruitment of more business researchers and technicians, either men or women, are all promoted.





VIII. PAIDI agents

As previously described, the Andalusian Knowledge-based System (R&D&I) is understood as the interaction-based scenario of agents involved in the creation, planning, implementation and evaluation of research development and innovation policies in our Autonomous Community. These are agreed upon by institutional, scientific, work and social settings.

PAIDI will have to arrange and coordinate the previously mentioned participants in an operational network, as a developmental strategy. With the purpose of better understanding PAIDI agents, the following is their classification and description. They are grouped into the following categories, depending on the role they play within the system:

- ▶ TECHNOLOGICAL AND KNOWLEDGE-BASED SPACES.
- ▶ BODIES GEARED TOWARDS CREATING EXPERTISE: KNOWLEDGE-BASED CREATION CENTRES.
- ▶ ORGANIZATIONS GEARED TOWARDS IMPLEMENTING AND TRANSFERRING TECHNOLOGY AND KNOWLEDGE.
- ▶ SUPPORT BODIES FOR THE COORDINATION AND MANAGEMENT OF KNOWLEDGE AND TECHNOLOGY.

A) TECHNOLOGICAL AND KNOWLEDGE SPACES

Scientific and Technological Parks (PCT) are the technological and knowledge-based areas with advanced technological infrastructures which are home for enterprises and organizations aimed at research, technology and innovation. Scientific and Technological Parks have a management unit that watches over the criteria for the admission of agents of the knowledge-based system within their area, and where knowledge dinamization and transfer activities are done. And there must be at least one Andalusian University included in each Park management unit.

There are also **Innovation Parks (Parques de Innovación Empresarial, PIE)**, with a geographical -based objective. They are located in determined areas where enterprises or organizations work together. They are aimed at reaching technological synergies, promoting economic development within their area of influence and connecting with their surroundings through knowledge disclosure, implementation and transfer processes.

B) Organizations geared towards Knowledge generation. Knowledge-based Generation Centres

These are essentially Universities and Public Research Institutions, research centres and groups; Institutes, Singular Research Institutes and Research Centres which belong to The Regional Government of Andalusia or mixed centres, IFAPA, research groups for the Andalusian healthcare System and Advanced Technological Centres and business R&D departments. These agents contribute to the development of knowledge-based creation through their research activities. They also complete their job with other disclosure activities and scientific and technological training.

Specifically, it carries out research tasks through the **Andalusian Institute of Agriculture, Fisheries, Food and Ecological Production**. IFAPA's programmes are the sector-based tool whose aim is to encourage agricultural and fishing agents, enterprises, and professionals to use productive innovation to create wealth, quality jobs and social welfare in Andalusia, therefore leading our community to join the group of the most competitive economies.

The **Scientific and Technical Research Areas** (Áreas de Investigación Científico Técnico, AICT) will be identified. They are subjects that have special importance for creating expertise, management and integration.

They can be either disciplinary or thematic platforms. Initially, the following Research Areas will be set up:

- ▶ Aeronautics.
- ▶ Space.
- ▶ Biotechnology.
- ▶ Agroindustry and Food Industry.
- ▶ Exact and experimental sciences.
- ▶ Health.
- ▶ Social, economics and legal sciences.
- ▶ Humanities and artistic creation.
- ▶ Production and construction technology.
- ▶ Nanosciences, nanotechnologies and materials.
- ▶ Natural Resources, Energy and Environment.
- ▶ Information and Communication technology.



- ▶ Social Integration, Dependence and Immigration.
- ▶ Globalization and Cooperation.
- ▶ Violence and Social Behaviours.
- ▶ Cultural and Artistic Heritage.
- ▶ Territorial Integration, Transport and Intermodality
- ▶ Tourism.

C) Organizations geared towards implementing and transferring technology and knowledge

They are the agents that, in one way or another, produce effective value **know-how within the system**. They advise the agents who are responsible for creating expertise towards the needs of the business sector, favouring the spread of knowledge, generating technology and innovation, supporting the creation of new startups and, in short, contributing to the increase of the system's competition.

Within this category we find: Advanced Technological Centres, Technological Centres, Centers of Innovation and Technology, Knowledge Transfer Organizations, Offices for the Transfer of Research Results (OTRIs), Centres of Creation and Consolidation of Technology-based Companies and Accredited Agents of Technological Knowledge.

The Regional Ministry of Innovation, Science and Enterprise will set up, by Order, the Andalusian knowledge-based System (R&D&i) agents' qualifications, characteristics, functions and requirements they have to carry out.

D) Supporting coordination, management and disclosure bodies of the Andalusian Knowledge-based System (R&D&i)

Several organizations make up the R&D&i framework, and work, to a greater or lesser extent, as supporting infrastructures for the main activity.

Among these bodies, there are some which should be highlighted because of their importance. They are: RETA, the Agency for Quality Assurance and University Accreditation of Andalusia, the Technological Corporation of Andalusia, Agency for the Innovation and Development of Andalusia and INVERCARIA.

The **Andalusian Technology Network (RETA)** is set up as part of the Regional Ministry of Innovation, Science and Enterprise with the aim of coordinating and developing the Andalusian system of innovation. RETA is, therefore, the communication channel between centres and public research institutions, Public Administrations, technological spaces, knowledge-based transfer bodies and enterprises.

The **Scientific and Technological Parks of the Andalusian Knowledge-based system (R&D&i)** are the steering groups of the Andalusian Technology Network (RETA).

Technology Clusters are the **Andalusian Technology Network (RETA)** nodes. They manage and integrate those bodies especially devoted to knowledge implementation and internally coordinate, cooperate and exchange scientific and technical research with other system agents.

The **Agency for Quality Assurance and University Accreditation of Andalusia** ensures the quality of the System. It suggests the quality criteria that each activity must have, and designs and manages the evaluation processes that take place in order to check if objectives are carried out. It values any impact that may be produced, analyses disparities, defines feedback actions that are inherent to the system itself and improves results.

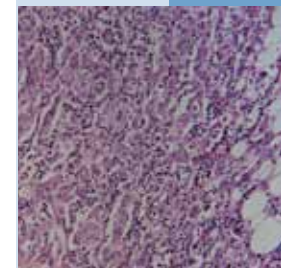
The **Technical Corporation of Andalusia (CTA)**, as a coordination and management structure promoted by the Regional Ministry of Innovation, Science and Enterprise, will have the task of promoting applied research, producing innovative business projects, gathering enterprises which have similar technological objectives and leading the change process in Andalusia.

Consequently, the **Technical Corporation of Andalusia** will be the outstanding promoter of R&D&i projects which have been jointly carried out by Universities, research centres and enterprises of strategic sectors. Likewise, it will be the consultation body which helps define the main R&D&i guidelines within the strategic sectors and it will be the tool for assessing the impact of R&D&i projects funded by the Regional Government of Andalusia.

The last agents involved in the R&D&i process in Andalusia are the **Agency for Innovation and Development of Andalusia**, the instrumental body of the Regional Ministry of Innovation, Science and Enterprise in charge of promotion, support and financial incentives, and **INVERCARIA**, which encourages business initiatives.

The **Scientific and Technical Dissemination Network of Andalusia** (Red de Espacios de Divulgación Científica y Técnica de Andalucía, RECTA), will be developed during the Plan activity. It will be in charge of managing and coordinating the activities carried out in science and technology museums, and encouraging their creation and opening as a means of promoting culture based on expertise.

PAIDI shows three main guidelines for achieving the previously defined general objectives.





IX. PAIDI strategics guidelines

These guidelines, in accordance with the PAIDI-based approach of unifying problems, solutions and agents, represent a transversal perspective. They are directed towards reinforcing the chain of creating expertise in all of the areas involved in R&D&I processes. Defining these guidelines is a way of improving knowledge-based generation in every field, creating a significant critical mass of scientific and technical knowledge, producing an entrepreneurial culture, strengthening knowledge- exchange processes and encouraging synergies between public and private agents.



OBJECTIVE I: TO CREATE EXPERTISE AND MAKE IT WORTHWHILE

▶ STRATEGIC GUIDELINE I: PROMOTE COMPETITIVE RESEARCH

Turning Andalusia into a Knowledge-based Society with an economic model based on knowledge calls for developing a solid scientific and technological research system that changes traditional products and services into new more valuable ones.

This research system will have to strengthen its activity in those areas which have more potential for generating wealth and social welfare. There will be more focus on regional productivity so that any advances in the knowledge-based industry results in greater competitiveness, wealth and social welfare.

SPECIFIC OBJECTIVES:

- ▶ Promote new expertise.
- ▶ Value expertise by using what is known in order to change methods and procedures and generate new products and services.
- ▶ Achieve ethical and social values within research.
- ▶ Strengthen regional scientific and technological culture.
- ▶ Stimulate competition in order to generate international research.

ACTIONS:

- ▶ Competitive funding through projects.
- ▶ Research internationalization that includes the collaborative participation in European programmes.
- ▶ Creation of and participation in R&D&I networks including programmes of network research projects.
- ▶ Development of strategic research actions.
- ▶ Support programmes and participation in the National Research Plan.

▶ STRATEGIC GUIDELINE II: HUMAN AND SHARE CAPITAL

The aim is to improve human and share capital by using criteria which facilitates the continuity of training programmes and maintenance of necessary quality standards.

Moreover, the aim is to make scientific degrees more appealing, to stimulate the



permanent stay of trained researchers in the system, and to bring together both women and men researchers with wide experience and recognition.

SPECIFIC OBJECTIVES:

- ▶ Increase both human and share capital as the basis for knowledge generation.
- ▶ Improve the qualification of professionals of the Andalusian Knowledge-based System (R&D&i).
- ▶ Set up a system of promotion and incentives based on merit.
- ▶ Stimulate the research personnel's mobility within the system.
- ▶ Encourage women's participation in the research system in order to promote gender equality.
- ▶ Encourage young people to start research degrees.
- ▶ Develop training innovation-based programmes for research personnel.

ACTIONS:

- ▶ Adjust the researchers' training programmes to improve their capacities and make them more progressively adapted to the good practices of the European Union members.
- ▶ Adjust the training programmes of management staff members and company workers to improve their capabilities and adapt them to the challenges of the Knowledge-based Society.
- ▶ Set up programmes for stimulating research personnel's national and international mobility.
- ▶ Set up an incentive system to recognize and reflect on research efforts.
- ▶ Set up a programme for incorporating specialized technicians, either women or men, in research centres, technological centres and other systems.
- ▶ Incentives to incorporate both men and women high-level researchers, primarily in Andalusia.
- ▶ Incentives to incorporate women researchers to research teams.
- ▶ Incentives to incorporate young doctorates in excellence research teams.

▶ STRATEGIC GUIDELINE III: RESEARCH ABILITY

The idea is to increase both the quantity and quality of scientific production, especially in those areas or knowledge fields that are of primary concern for Andalusia. Thus, some actions will be put in motion with the aim of promoting research, which is considered the main driving force of scientific development, keeping in mind its use and development that comes about as a result. In short, the idea is to promote

basic elements involved in knowledge-based production, such as human resources, technical facilities and basic organizational structures.

SPECIFIC OBJECTIVES:

- ▶ Improve the quality and excellence of consolidated research teams.
- ▶ Foster the growth and improvement of emergent groups.
- ▶ Stimulate the development of multidisciplinary research projects in the strategic sectors of Andalusia.
- ▶ Improve research organization and management to promote interaction and multidisciplinary research.

ACTIONS:

- ▶ Creation of new research infrastructures adapted to social and productive needs.
- ▶ Setting up collaborative research guidelines adapted to environmental needs with stable financing.
- ▶ Increase of research teams' economic resources in order to stimulate their on-going growth, development and excellence and linking them to set objectives and results.
- ▶ Monitoring and evaluation of research teams' activity and production so that they can be redefined again according to their abilities and results.
- ▶ Improvement plan for scientific infrastructures.
- ▶ Programme for encouraging emergent research teams.

OBJECTIVE II: TO DEVELOP AN ENTERPRISING CULTURE AT UNIVERSITIES, RESEARCH BODIES AND ENTERPRISES

▶ STRATEGIC GUIDELINE I: DEVELOPING BOTH AN ENTREPRENEURIAL CULTURE IN ANDALUSIA AND KNOWLEDGE-BASED COMPANIES

The entrepreneurial spirit is the driving force for innovation, competitiveness and economic growth.

There is a connection between an entrepreneurial spirit and economic results in terms of growth, business strengthening, innovation, quality job creation, technological changes and increase in productivity. Therefore, the promotion of an entrepreneurial culture, spirit and activity is the basis for the Andalusian Knowledge System (R&D&i).





SPECIFIC OBJECTIVES:

- ▶ Enhance the social image of entrepreneurial men and women.
- ▶ Increase the spread of innovation and entrepreneurial policies.
- ▶ Encourage citizens' participation in entrepreneurial activities.
- ▶ Develop business training in the Andalusian R&D&I field.
- ▶ Promote quality job creation in the scope of research and knowledge-based generation.

ACTIONS:

- ▶ Programme for entrepreneurial training at research and technological centres, universities and technological parks.
- ▶ Programme for business internships at technology-based enterprises for entrepreneurial men and women of this sector.
- ▶ Programme for incubation in Technological Parks.
- ▶ Programme for generating technology-based academic and business spin-offs.
- ▶ Spreading scientific and technological good business practices, including those that have been successful within the framework of national and European entrepreneurial policies.
- ▶ Providing counseling for enterprising men and women (especially to women) so that they can participate in international networks as well as in European research programmes that support women in the technology field.
- ▶ Development of local activities requiring citizens' participation so that they can learn about entrepreneurial activity.
- ▶ Spread of national and European entrepreneurial policies.
- ▶ Business apprenticeship programmes within the Andalusian Technology Network.
- ▶ Programme for encouraging participation in European programmes for enterprising women and men.
- ▶ Creation of Andalusian awards for R&D&I entrepreneurs.

STRATEGIC GUIDELINE II: SUPPORT FOR R&D&I BUSINESS PROJECTS

Besides promoting enterprising activity, there is also the need for implementing ways to support entrepreneurs who decide to start up a new company, especially when dealing with business projects where research personnel is involved, and creating technology-based enterprises and spin-offs.

SPECIFIC OBJECTIVES:

- ▶ Ensure support for entrepreneurial infrastructures in Andalusia.
- ▶ Facilitate financial access for entrepreneurial projects which come from the Andalusian R&D&I.
- ▶ Set up networks of enterprising men and women who generate economies of scale in different fields.

ACTIONS:

- ▶ Cooperation and establishment of coordinated programmes through the Territorial Support Network for both men and women entrepreneurs who are either scientists or technology experts.
- ▶ Support for the management and commercialization of researchers' copyright.
- ▶ Creation of scientific partnerships as a tool for establishing technology-based enterprises.
- ▶ Launching programmes for university research projects as entrepreneurial initiatives.
- ▶ Campaign for contacting, promoting and connecting business angel, venture capital and seed funding investors with research personnel and experts in technology.
- ▶ Setting up cooperation programmes between Start-ups and universities aimed at transference and scientific-technological cooperation at an early stage.
- ▶ Setting up programmes between university Start-ups and spin-offs aimed at generating economies of scale in partnerships among technology-based enterprises.
- ▶ Creation of a technological cooperation platform among technology-based entrepreneurs.
- ▶ Support programmes for the internationalization and opening of new markets of Andalusian technology-based enterprises abroad.
- ▶ Creation of an entrepreneurial bank of initiatives, aimed at looking for partners and gathering entrepreneurial ideas.



OBJECTIVE III: IMPROVE KNOWLEDGE-BASED EXCHANGE CHANNELS TO HELP TECHNOLOGICAL DEVELOPMENT AND INNOVATION

▶ STRATEGIC GUIDELINE I: DEVELOPMENT OF INTEGRATED SYSTEMS FOR KNOWLEDGE-BASED MANAGEMENT (R&D&I)

The aim is to set up bases for businesses to understand how science works and for research institutes to fit in market logic and technological innovation in their operations at the same time.

SPECIFIC OBJECTIVES:

- ▶ Gear research towards the search for problem solving, especially in strategic fields or sectors for Andalusia.
- ▶ Enhance the capacity to use research results.

ACTIONS:

- ▶ Carrying out trend analysis and prospective socioeconomic studies in regional, national and international settings, which allow for defining primary guidelines and strategic sectors.
- ▶ Carrying out analysis to assess the Plan's impact on the productive sector.
- ▶ Support for production and commercialization of new products and services based on knowledge.
- ▶ Support programmes for patent generation, management and commercialization as well as the development of policies for the protection of both industrial and intellectual rights.
- ▶ Legal advice for enterprises and other Andalusian Knowledge-based System (R&D&I) agents, especially with regard to copyright protection.
- ▶ Incentives to promote the mobility of doctorates and high level technicians in the public and private sector, as well as their incorporation into Andalusian enterprises.
- ▶ Incentives for strategic management in compliance with objectives and their results in order to ensure research quality.
- ▶ Promotion of doctorate studies in which training research professionals will carry out their activities through collaborative projects between companies and universities, either part-time or full-time.
- ▶ Channel the knowledge-based process into social and economic stocks (licenses, patents, spin-offs, TBEs...), emphasizing Andalusia's cultural diversity.
- ▶ Incentives for generating ideas which can be turned into new technology-based companies.

- ▶ Promotion of agreements between research teams and enterprises to carry out development and innovation projects.
- ▶ Incentives for companies which include R&D&I in their management and production policies.
- ▶ Continue with and carry out the Scientific Dissemination Programme which is geared towards promoting science and making citizens aware of the importance of research, technology and innovation as the base for change and development.
- ▶ Support for displaying and carrying out correct management activities in science and technology museums, through the Andalusian Technology Network (RECTA) with the aim of promoting culture-based knowledge research and diffusion.
- ▶ Carry out scientific and technological awareness projects at schools, small and medium-sized enterprises and society in general.
- ▶ Creation of an R&D&I technological website as a reference point for Knowledge-based Agents in Andalusia.

▶ STRATEGIC GUIDELINE II: PROMOTING INTERFACE AND NETWORK STRUCTURES

The aim is to stimulate the creation of multidisciplinary teams for collaborative work in which universities, public and private research institutions and companies from a particular sector work together in joint projects.

SPECIFIC OBJECTIVES:

- ▶ Promote the development of multidisciplinary research guidelines.
- ▶ Promote "alliances", cooperation and development of synergies between various Andalusian Knowledge-based System agents (R&D&I).

ACTIONS:

- ▶ Measures for promoting multiple activities and disciplines in the research field.
- ▶ Supporting measures for Andalusian OTRIs
- ▶ Promotion for the creation of, and participation in, R&D&I networks.
- ▶ Promotion of a joint public and private development of patents and R&D&I projects in general.
- ▶ Promotion for the creation of Technological Centres, especially in strategic sectors in Andalusia.
- ▶ Support for the creation of partnerships of small and medium-sized





enterprises which interact with scientific-technical sector-based areas, with common R&D&I objectives.

- ▶ Trigger computer data networks between universities, research centres and enterprises dedicated to innovation.
- ▶ Encourage Andalusian men and women researchers to participate in R&D&I projects in Andalusian, national or European Technological Platforms and in strategic sectors where enterprises, universities and other research centres take part. Monitor and assess R&D&I activities to enhance their competitiveness and continuous learning.

Creation of synergies that forms a balance between initiatives and sectoral, national and European plans concerned with R&D&I.

Coordination of Andalusian Knowledge-based System resources (R&D&I) within a managing entity or body.

OBJECTIVE IV: APPLYING THE PARTICIPATION OF PRIVATE INITIATIVE IN THE ANDALUSIAN KNOWLEDGE-BASED SYSTEM (R&D&I) THROUGH RESEARCH, TECHNOLOGICAL DEVELOPMENT AND INNOVATION

▶ STRATEGIC GUIDELINE I: INNOVATION AS THE BASE FOR SOCIAL AND ECONOMIC PROGRESS

The first step in involving the Andalusian enterprise in the knowledge-based system is to make it aware of the importance innovation has as a driving force for economic and social progress and, its resulting increase of regional welfare.

SPECIFIC OBJECTIVES:

- ▶ Make enterprises aware of innovation's role in social and economic progress.
- ▶ Foster the interaction of Andalusian companies with foreign enterprises belonging to the same economic sector, in order to learn from their successful practices.
- ▶ Facilitate the existing state of the art technologies for companies.

ACTIONS:

- ▶ Awareness programme to value innovation.
- ▶ Programme to exchange good innovation practices with enterprises of nearby regions and countries.
- ▶ Programme for stays for business men and women at foreign enterprises within their sector.

- ▶ Training programmes for business innovation.
- ▶ Disclosures from technological observatory services among enterprises so that they can have access to the existing state of the art technologies.
- ▶ Connect companies with the Andalusian Technology Network information services (RETA).

▶ STRATEGIC GUIDELINE II: PROMOTION OF BUSINESS PARTICIPATION IN THE ANDALUSIAN KNOWLEDGE-BASED SYSTEM (R&D&I).

Private businesses should have access to structural management systems in order to effectively participate in the Andalusian Knowledge-based System (R&D&I). They should also know about existing funding opportunities, and scientific and technological tools and infrastructures that are available. Creating technology-based enterprises in response to business or social requests will enable their participation in the Andalusian Knowledge System (R&D&I).

SPECIFIC OBJECTIVES:

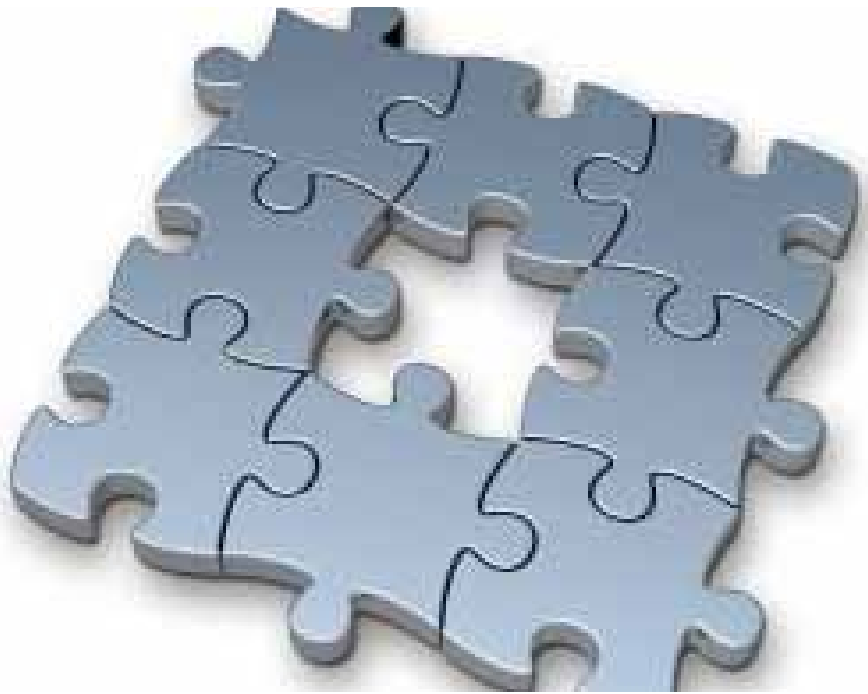
- ▶ Increase Andalusian business investment in R&D&I projects.
- ▶ Create technology-based enterprises.
- ▶ Increase productivity in Andalusian enterprises.

ACTIONS:

- ▶ Facilitate business participation in managing Andalusian Knowledge-based agents (R&D&I) through: Dissemination of both official incentive lines and opportunities in current tax and financial systems; promotion of business awards for innovation and attention to business technology needs in public research programmes.
- ▶ Incentives for establishing R&D&I departments in companies and encouraging experienced doctors who introduce innovation and knowledge-based interaction for companies to stay for periods of time.
- ▶ Programme for the creation of knowledge-based enterprises which stem from business opportunities from thriving companies. The creation of an "Office of Ideas" which ensures project confidentiality for those that are waiting for an official patent.
- ▶ Promote business cooperation for R&D&I projects, facilitate the collaboration between public research personnel and companies and foster their participation in the Technical Corporation of Andalusia.
- ▶ Encourage and promote the creation and training of a company innovation Manager.



X. Organizational structure



PAIDI's structure is a set of elements and strategies used to ensure that the proposed goals are achieved.

The PAIDI structure will have to respond to the following needs or obligations:

1. Ensure fast and efficient management.
2. Promote the participation of Andalusian Knowledge-based public and private agents System (R&D&i) in decision making.
3. Facilitate coordination between various proceedings which may take place during PAIDI development and the bodies, agents or institutions involved.
4. Ensure procedure follow-up, assessment and results.
5. Ensure an equal number of men and women in the organizational structure.

The **PAIDI Administration** will be chaired by the General Director of Research, Technology and Enterprise, which will be the body in charge of managing the various PAIDI programmes and procedures. It will be supported by the Knowledge-based Generation Bodies (Universities, Research Centres, and Research Teams), the Andalusian Technology Network, the Technical Corporation of Andalusia and the Andalusian Agency for Quality Assessment and University Accreditation.

The **R&D&I Interdepartmental Commission** will carry out tasks concerning PAIDI's planning, coordination and monitoring. It will be chaired by the Secretary General of Universities, Research and Technology and the General Director of Research, Technology and Enterprise, who will chair the Secretariat, and by one representative who holds the rank of General Director from each Ministry from the Andalusian Regional Government. They will all be appointed by those in charge of each Regional Ministry.

The **Andalusian Committee for a Knowledge-based Society**, created by Law 8/2005, on 9 May, is responsible for the development of a Knowledge-based Society in Andalusia for the future. It will also take part in its follow-up, especially with assessing the Plan's economic and social impacts. It will issue as many reports and certificates as needed by the Interdepartmental Commission or PAIDI Administration.

A **follow-up Committee** is specifically created within the framework of Collaboration Agreements for monitoring PAIDI implementation. The Committee will be chaired by the General Director for Technological Research and Enterprise and made up of economic and social agents, who will have the same participation and representation that they have while monitoring Social Collaboration.



XI. Sectoral programmes

The President's Decree 1/2004 of 24 April assigns the Regional Ministry of Innovation, Science and Enterprise the areas of responsibility assumed by the Autonomous Community of Andalusia with regard to the coordination and promotion of scientific and technical research, innovation and technology transfer in the Andalusian System of Science, Technology and Enterprise.

Various Regional Ministries of Andalusia encourage and carry out many research and innovation proceedings related to competence and performance. In order to support these actions, The Regional Ministry of Innovation, Science and Enterprise have signed Cooperation Agreements with other Regional Ministries with the aim of promoting the development of research and innovation projects in fields that affect them.

Such agreements consider PAIDI to be the framework which controls research, technology and innovation policies in Andalusia, and it must also be the tool that articulates and coordinates these proceedings, which are known as Sectoral Programmes.

Therefore, Sectoral Programmes are defined as those plans, projects and proceedings within the R&D&I field which are devised, designed, managed, implemented and financed - either totally or partially- by the different Regional Ministries and their dependent public bodies.

Introducing these Programmes within the PAIDI plan should contribute to greater support and acknowledgement of the R&D&I initiatives which the various departments from the Regional Government of Andalusia could promote. At the same time they provide common research strategies and guidelines, channel efforts, and take advantage of the benefits from synergies created by the participation of various institutions from the Regional Government in related proceedings.

Sectoral Programmes are a flexible and dynamic planning tool within the PAIDI framework. They will contribute to developing PAIDI's specific short and mid-term goals. The Sectoral Programmes will set up the knowledge and innovation research strategic guidelines that need to be promoted, and their follow-up procedures.

Sectoral Programmes will also include the technical projects which are services directed towards citizens that fall within the Regional Government's Second Modernization Plan and the Plan for Innovation and Modernization of Andalusia.



The Regional Ministry of Innovation, Science and Enterprise's R&D&I Interdepartmental Commission organize, design, and implement the various PAIDI Sectoral Programmes.

The various Regional Ministries from the Regional Government of Andalusia will adjust their Sectoral research, technological development and innovation Programmes to be included immediately in the PAIDI plan.

▶ SECTORAL PROGRAMME FOR RESEARCH IN THE REGIONAL MINISTRY OF PRESIDENCY

OBJECTIVES:

The Regional Ministry of Presidency promotes and carries out research and innovation activities through the Andalusian Agency for International Cooperation and the Foundation Centre for Andalusian Studies.

STRATEGIC GUIDELINES

Every year the [Andalusian Agency for International Cooperation](#) awards research and support scholarships related to international cooperation development. It also promotes awareness procedures, education development, training and research. Specifically, the Agency carries out procedures such as studies and research through incentives to NGOs, research and support grants to Universities and other agents with regards to international cooperation.

The General Director from the [Centre for Andalusian Studies](#) is in charge of the study programme's design and development, research projects, symposiums, seminars, courses, publications and any other procedures which contribute to better scientific and economic know-how in Andalusia. It also has a specific research line for recovering the historical memory regarding biographies of political and social leaders affected by the coup d'état, the Civil War and Franco's dictatorship; political parties and trade union movements during the Republic and Franco's dictatorship, and activities related to memoirs located in the municipalities of Coria and Puebla del Río (Seville).

▶ SECTORAL RESEARCH PROGRAMME IN THE REGIONAL MINISTRY OF THE REGIONAL GOVERNMENT OF ANDALUSIA

OBJECTIVES:

The Regional Ministry carries out research and study guidelines on Immigration, Security, Volunteering and Consumer Affairs.

STRATEGIC GUIDELINES

With respect to immigration, the Regional Ministry of the Regional Government encourages the development of research and studies which recognize professional jobs that promote respect for cultural and ethnic diversity. Also, they promote those studies which favour the incorporation and social promotion of both emigrants and immigrants in Andalusia, and those that make our society aware of the migratory

phenomenon in a positive way. All of it is channelled through the Andalusia Awards on Migrations.

Among its general objectives, the [Second Plan for Immigration in Andalusia](#) has to permanently improve know-how through strategic changes, as well as analyze the achieved objectives by keeping in mind the research based on immigration in Andalusia.

With regard to security and emergencies, the following action guidelines are under development:

- ▶ Carrying out risk studies of applied emergency plans from technical bodies and universities.
- ▶ The R&D&I's information and communication methods in emergency cases, through the 112-Andalusia emergency system.
- ▶ The development of instruments and techniques applied to emergency services in general, and particularly, to Fire Prevention and Extinction Services and Rescue, as set up by the Andalusian Council of Fire.
- ▶ The development of training courses for emergency personnel which is run by the Public Security School of Andalusia.

With regard to volunteering, the [2nd Andalusian Volunteering Plan 2006-2009](#) includes a specific "Research and Training" area which focuses on the sector's needs and measures that both Public Administrations and other Institutions can carry out in order to favour not only the volunteering plan in Andalusia but also management and quality training.

As for Consumer Affairs, the Regional Ministry has signed an agreement with the Institute for Social Studies from the Andalusia-Higher Council for Scientific Research, to conduct a study about the public opinion on the consumption of goods and services in Andalusia. This initiative has given rise to the creation of an [Andalusian consumption barometer \(barómetro andaluz de consumo, BACO\)](#), which deals with the perception, values and attitudes of both Andalusian men and women on topics related to the consumption of goods and services. It also carries out a qualitative research study on the consumers and customers' protection of rights, the business sector, consumer associations and Public Administrations. This activity will run from 2006 to 2008.





▶ **SECTORAL PROGRAMME FOR RESEARCH IN THE REGIONAL MINISTRY OF ECONOMY AND TREASURY**

OBJECTIVES:

The research field within the Economy and Treasury Framework is focused on statistical research, which is carried out by the Andalusian Institute of Statistics in the Andalusian Statistical Plan.

STRATEGIC GUIDELINES:

The research activities from 2007-2010 from the Andalusia Institute of Statistics are within the Statistical Plan of Andalusia. The Plan's aim is to possibly answer and anticipate the needs and requests for statistical information coming from the economic, social and demographic changes which currently take place in Andalusia. In this sense, the Statistic Plan of Andalusia 2007-2010 responds to current information needs. It includes a mid-term research exercise to identify any statistical information which the emergent economic and social phenomena may need in the future.

The Statistic Plan of Andalusia 2007-2010 is made up of a set of specific and general objectives which are a result of the needs stemming from statistical information and covers the various economic and social areas in Andalusia.

In order to carry out these statistical and instrumental objectives set by the Statistical Plan of Andalusia 2007-2010, some activities will be drawn up and classified within the following categories: statistical projects and operations, diffusion activities and instrumental activities.

The Andalusia Institute of Statistics generates a third of the statistical production in the Autonomous Region as well as promotes and coordinates public statistics in this area.

Both Universities and Research Institutions need to work together in the fields of coordination and statistical production. They need to discover new information necessities, set new methodologies, find feasible statistical sources, improve data collection procedures, look for and find administrative registers or use techniques for merging files.

Besides this research activity, the Andalusia Institute of Statistics proposes a series of activities for sharing research, technological development and innovation

outcomes in the Autonomous Region. These activities, which will be included in the statistical programmes developed in the Statistical Plan of Andalusia 2007-2010, are called: "Survey on technological innovation in enterprises- Results for Andalusia" and "Statistics on commerce and services through networks in Andalusia."

▶ **SECTORAL PROGRAMME FOR RESEARCH IN THE REGIONAL MINISTRY OF JUSTICE AND PUBLIC ADMINISTRATION**

OBJECTIVES:

The Regional Ministry of Justice and Public Administration shows a twofold aspect with regard to research, development and innovation. On the one hand, it encourages the practical use of Public Administration research through the technological transfer of innovation structures and plans addressed to Public Services. On the other hand, it stimulates research activities carried out in the fields of legal medicine, gender violence or historical memoirs.

STRATEGIC GUIDELINES

Within the Andalusian Public Administration, innovation is present in PLADOCS 2002-2005, which is currently compiled in the Strategy for the modernization of public services in the Regional Ministry of Andalusia 2006-2010. Its main goals are knowledge-based generation aimed at improving state-of-the-art processes in the Regional Ministry Administration as well as the achievement of an innovative Administration. Some technological projects that could be highlighted, are the creation of ad hoc research groups, the creation of a technical website for the management of knowledge-based generation, the development of collaborative work with universities and other institutions aimed at knowledge-based generation, and the creation of an experts committee for state-of-the-art administration.

Research guidelines concerning gender violence are carried out comprehensively, where research is essential to learning more about it and also contributing to the specialization of those who face gender violence from a critical point of view.

Another research guideline is carried out through the Institutes of Legal Medicine in which the Andalusian Council for Legal and Forensic Medicine is the highest advisory body in charge of the planning of each activity related to research on Forensic Medicine in the Andalusian Community.



As for Historical Memoirs, the Regional Government of Andalusia is the first institution at the national level which approaches the promise of recovering and dignifying Historical Memoirs. Therefore, specific research grants will be given for the research development in the Andalusian Universities.

▶ RESEARCH SECTORAL PROGRAMMES IN THE REGIONAL MINISTRY OF PUBLIC WORKS AND TRANSPORT

OBJECTIVES:

The Regional Ministry of Public Works and Transport has the authority in urban planning, town planning, strategic infrastructure planning, transport infrastructures and services, architecture and housing.

STRATEGIC GUIDELINES:

Research on these subjects is organized around seven strategic fields:

- ▶ Land and housing, which focuses on historical centres and districts, housing restoration and sustainable building and construction.
- ▶ Logistics, giving priority to the studies on new technology applications geared towards the design and management of Logistic Activities Zones (ZAL), the improvement of sea-land transport, use of ITC for goods transport, and the development of the Autopistas del Mar and Short Sea Shipping (SSS).
- ▶ Transport and Mobility, focusing special attention on the design and management of Metropolitan Transport Plans, the improvement of safety regarding transport infrastructures in Andalusia, accessibility to transport services, use of new fuel options for transport networks and the use of ICT for the management of transport services.
- ▶ Infrastructures, giving priority to intermodality between train/road and train/ports, the use of new technologies in road management and maintenance, the sustainability, reuse and recycling of building materials; techniques for intergrating scenic and environmental infrastructures, and promoting public works in Andalusia.
- ▶ Urban Planning and Town Planning, providing information about participation in coastal areas, implementing criteria for environmental and urban sustainability in urban and town planning, design and development of new planning mechanisms and intervention methods in areas with new urban growth.
- ▶ Scenery, promoting this resources' s recovery, restoration and worth, adding scenery as part of sectoral and urban plannings, and promoting Andalusian scenery through the Centre for Scenic Studies and Territory.

- ▶ Cartography Information Systems, through the Andalusian Positioning Network, new vectorial cartography, the participation in national programmes dealing with geographical information systems, the development of infrastructures of spatial data and the modernization of mapping techniques in Andalusia.

▶ SECTORAL PROGRAMMES FOR RESEARCH IN THE REGIONAL MINISTRY OF EMPLOYMENT

OBJECTIVES:

The Regional Ministry of Employment deals with two basic lines of research. The first is research included in the General Plan for Occupational Risk Prevention of Andalusia (Plan General de Prevención de Riesgos Laborales), passed by Decree 313/2003 on 11 November 2003-2008; and the second is the study on Corporate Social Responsibility, which is handled by the working team in the VI Consensus on Social Agreement of Andalusia (Acuerdo de Concertación Social).

STRATEGIC GUIDELINES:

With regard to occupational risk Prevention, the General Plan for Occupational Risk Prevention of Andalusia foresees the following actions:

- ▶ Reinforce R&D&I and advice networks with issues concerning occupational risk prevention (Actions 73-75). This includes creating a network for legal, technical and scientific advice and for any questions which may come up regarding occupational risk prevention. It also includes creating a permanent research and analysis observatory aimed at ensuring a continuous monitoring of preventive-labor aspects in Andalusian companies and working as a "prevention guard". An R&D&i network made up of each Institution related to occupational risk prevention will also be set up.
- ▶ Promote research and study on specific prevention programmes (Action 109), by offering research and study grants on occupational risk prevention every year.
- ▶ Also, laboratories will be set up that deal with specific study and research related to emerging risks.

The Corporate Social Responsibility group works on the creation, study and research attributed to working teams and envisaged in the Axe III.4 of the VI Consensus on Social Agreement and with the Parliament working team set in the Employment Commission about this area.





RESEARCH SECTORAL PROGRAMMES IN THE REGIONAL MINISTRY OF TOURISM, COMMERCE AND SPORTS

OBJECTIVES:

The Regional Ministry of Tourism, Commerce and Sports deals with research in these three areas, with the idea of increasing know-how and interest.

STRATEGIC GUIDELINES:

In the realm of Tourism, the General Plan for Tourism defines an R&D&I strategy which shows that "within the field of technology geared towards tourism, there are growth opportunities for Andalusia, but a greater effort is needed on the part of public administration, universities and enterprises to achieve technological leadership and competitiveness in tourism. In this sense, tourism research will have to be organized according to the needs posed by the Andalusian tourist system. Furthermore, the creation of operational innovation infrastructures, the organization of systems aimed at guaranteeing a greater spread of R&D procedures and a constant collaboration between business and society in general, are essential for its success. The specific guidelines included are the notification of grants for developing doctoral theses and specific publications related to studies and workshops which study tourism in depth. Establishing helplines for multidisciplinary research groups, either in their own settings or at universities, are aimed at promoting, developing and conducting in-depth tourist research from all points of view. They will take advantage of the synergies that multidisciplinary training produces, highlighting Order 10 from February 2006. It is aimed at raising quality culture awareness through research projects based on statistical and prospective analysis for enhancing supply, demand and tourist trends.

The creation of the Andalusian Research Centre for Tourism Innovation (Centro de Innovación Turística de Andalucía, CINNTA) promotes and acts as a discussion forum to analyze and coordinate strategic tourism research in all its facets, but especially those devoted to technology-based modernization. The programme for the promotion of the SAETA project (System of Analysis and Statistics of Andalusian Tourism, Sistema de Análisis y Estadísticas del Turismo Andaluz), serves as a basis for more precise decision-making in this sector. This framework is currently compiled in the General Plan for Sustainable Tourism.

In the area of Commerce, the Andalusian Plan for Commerce Guidance (Plan Andaluz de Orientación Comercial), passed by Decree 182/2003 on 24 June, is in itself a tool for planning, analyzing and researching Commerce. It is based on

interesting aspects concerning commercial structure, supply and demand, analysis of trade imbalances and integration measures.

In the area of Sports, the General Plan for Sports in Andalusia passed an Agreement by the Government Council of the Andalusian Institute of Sports and the Andalusian Centre of Sports Medicine on 27 January 2004. It carries out research and research promotion of by developing Seminars and participating in collaborative research projects with Universities in Andalusia.

SECTORAL PROGRAMMES FOR RESEARCH IN THE REGIONAL MINISTRY OF AGRICULTURE AND FISHERIES

OBJECTIVES:

IFAPA, which belongs to the Regional Ministry of Agriculture, was in charge of the great majority of research objectives and guidelines which are now in the hands of the Regional Ministry of Innovation. Now, it carries out Knowledge-based innovation and application procedures instead of those based on Research.

STRATEGIC GUIDELINES:

Agri-food laboratory networks, enology stations and agricultural and livestock laboratory networks apply knowledge, techniques and innovation to agriculture, fishing and livestock. The Regional Ministry tries to put it into practice through the monitoring, carrying out and prevention of agricultural policies.

As for Cartography and crop identification, the Regional Ministry has applied the main research techniques to digital cartography and information access, and has developed its own research guidelines as well.

Finally, it carries out these tasks both directly and through the Public Enterprise for Agriculture and Fishing Development and even through new information channels like the Besana project.



▶ SECTORAL PROGRAMMES FOR RESEARCH IN THE REGIONAL MINISTRY OF HEALTH

OBJECTIVES:

The main goal for health research for the Regional Ministry of Health is compiled in the Andalusian Plan for Health and in the Strategic Plan for Health Research, Development and Innovation 2006-2010. It is a research programme for improving the Andalusian citizens' health.

The objectives are the following: promote research, use existing resources for research, identify priorities in Health research that are in accordance with the needs and health problems within Spain and Europe, promote research initiatives in conjunction with other Autonomous Communities, Spain and E.U. that have an international impact, provide a legal and scientific framework for developing research in the field of cell therapy, and promote research, technological development, innovation and technological assessment.

STRATEGIC GUIDELINES:

- ▶ Develop guidelines for Health research geared towards the scientific network in Andalusia, especially for: biomedical research, stem cell research, research on regenerative therapy for neurodegenerative diseases, research on bone tissue regeneration for the treatment of osteoarticular disorders, network project on transplants from regenerated tissues, research on food, nutrition and health, research on people with needs and case management results, research on public health, research on health services and social and economic factors connected with health discrepancies. That is why professionals are involved in clinical problem-solving based on research of local needs and services.
- ▶ Promote research quantity and quality and technological innovation results.
- ▶ Place research in the future of scientific and technological development in Andalusia.
- ▶ Provide the Andalusian Health Care System with a permanent centre to be used for suggesting necessary updates and revising research guidelines.
- ▶ Stimulate the participation of private companies in common research projects.
- ▶ Improve and encourage both continuous and postgraduate training in research methodology.
- ▶ Incorporate research personnel in the Andalusian Public Healthcare System in order to improve clinical practice that is aimed at:
 - Check to see if clinical practices reach scientific standards.
 - Solve doubts about diagnostic and therapeutic decisions.

- Locate the most effective contributions in our healthcare system.
- Measure health results.

- ▶ Define a useful research process for the Andalusian Public Healthcare System.
- ▶ Provide necessary structures to manage and increase scientific production.
- ▶ Unify and speed up clinical trial processes and post-authorization studies, and redirect them towards better attention and health improvement. Guarantee the respect of everyone's fundamental rights at all times and for the ethical principles which affect the biomedical research with human beings.
- ▶ Promote the accreditation process of everyone that takes part in the research process.
- ▶ Identify excellence criteria for research internships.
- ▶ Promote interdisciplinary, inter-level and multicenter research.
- ▶ Coordinate technology assessment with research planning.
- ▶ Promote research measures as a tool to improve services offered by health professionals.

▶ SECTORAL RESEARCH PROGRAMME IN THE REGIONAL MINISTRY OF EDUCATION

OBJECTIVES:

The Regional Ministry of Education carries out R&D&I tasks aimed at improving the Andalusian educational system through research and innovation.

STRATEGIC GUIDELINES:

With this aim in mind, these are the short-term priorities:

- ▶ The autonomous Administration, Andalusian Universities and national or international bodies and research centres carry out research, studies and assessments of the educational system. Special attention will be paid to secondary education and how their centres are run.
- ▶ Support for and promotion of educational research and innovation. Grants and awards for projects and educational research teams especially addressed towards non-university levels of education. This includes resource development for educational research via information and communication technologies.
- ▶ Incorporation of teachers' training in educational research. Development of specific training actions through the Andalusian system for teachers' training.





▶ SECTORAL PROGRAMMES FOR RESEARCH IN THE REGIONAL MINISTRY OF EQUALITY AND SOCIAL WELFARE

OBJECTIVES:

The Regional Ministry of Equality and Social Welfare's main objectives are incorporating research and innovation processes to areas concerning welfare and equality for each jurisdiction in the Andalusian Community.

STRATEGIC GUIDELINES:

In terms of welfare and equality, technological research and innovation emphasize the following:

- ▶ Carry out research projects to find alternatives for socio-economic and demographic changes so that the Andalusian System of Social Services can be strengthened.
- ▶ Carry out research studies in New Technologies applied to Social Services, especially for public administration.
- ▶ Deal with requests from special needs groups or groups with difficulties (elderly people, children, disabled people, immigrants, drug-addicts with/without substance dependence, etc.).

This is carried out through:

- ▶ Technological innovation projects for promoting personal autonomy.
- ▶ Training platforms based on New Information and Communication technologies in the field of Social Services.
- ▶ Technological support and information system research studies aimed at incorporating a model for the Integral Attention of Social Services.
- ▶ Research and innovation in areas where there is a need for social change.
- ▶ Technological research for the advancement of the Andalusian Teleassistance Service for ageing or disabled people.
- ▶ Research for developing IT applications and their use by ageing and disabled people.
- ▶ Specific programmes for research, study, socio-economic and socio-demographic analysis, and pilot experiences for each social group in its jurisdiction. The aim is to carry out policies for preventing difficult situations and for applying innovation and technology to remove the existing barriers these groups may encounter.

Finally, this Regional Ministry carries out gender and violence research through the Andalusian Institute for Women's Issues (Instituto Andaluz de la Mujer). This Institute studies women's situations in Andalusia. The Institute carries out this research through scholarships and research grants, for its later edition and circulation.

▶ SECTORAL PROGRAMMES FOR RESEARCH IN THE REGIONAL MINISTRY OF CULTURE

OBJECTIVES:

The objectives for enhancing and promoting research in the Regional Ministry of Culture are carried out through its planning tools: the Strategic Plan for Culture in Andalusia and the General Plan of Cultural Goods.

STRATEGIC GUIDELINES:

Scientific cultural research promotes the conceptual, methodological and technical tools used in managing, circulating, and promoting the following strategic guidelines. The Regional Ministry of Culture and its Service for Heritage Research and Circulation coordinate and promote these guidelines, which are then applied to the Andalusian Institute of Heritage (IAPH).

- ▶ Emerging patrimonies. Once the traditional concept of a heritage is updated, then research guidelines are needed to study new patrimonies such as abstract, underwater, industrial and contemporary ones.
- ▶ Specialized information and documentation. This is using information and communication technology to apply knowledge-based management and transfer to cultural heritage. The development of an IT System for cultural heritage contributes to more efficient protection and favours standardization and quality control. It also includes methods for analyzing scientific information and documentation, mapping techniques and innovative services and products aimed at bringing patrimony closer to society.
- ▶ Knowledge. This is the development of methodologies, techniques, projects and procedures geared towards interpreting, locating, defining and assessing historical preservation and developing methods to analyze cultural heritage. Diagnosis and intervention. This is new technology used for cultural heritage, focusing on research techniques and methods for the physicochemical description of materials, especially with techniques that are not damaging. It also develops patrimony conservation, restoration and preservation processes and techniques.
- ▶ Appraisal. This refers to communicating a heritage's worth as a tool for protecting cultural assets. The growing social use of a heritage means using new tools, methods and techniques for its better understanding. The aim is to establish communication channels between a heritage and the society where it is found.
- ▶ Culture: Resource and sustainability. This refers to researching the impact heritage has as a natural, social and economic resource. It also involves developing criteria for other government sectoral policies (Environment,



Public Works, Tourism...) by developing cultural heritage and historical cities. The cultural Landscape Laboratory stimulates interdisciplinary and interinstitutional relations and the research and investigation methods for the treatment, analysis, intervention and social participation in specific patrimonial areas which are valuable to the Community.

- ▶ Archives and Libraries: Innovative services and techniques are promoted in archives and libraries so that they become known as knowledge-based research centres.

▶ **SECTORAL PROGRAMMES FOR RESEARCH IN THE REGIONAL MINISTRY OF ENVIRONMENT**

OBJECTIVES:

In the Regional Ministry of Environment, the objectives for research in this area are compiled in the Andalusian Environmental Plan. These objectives are: the promotion of technological development and innovation within the knowledge-based society, the incorporation of research as a supporting tool for environmental management, the use of new technologies for environmental management and a thorough knowledge of ecosystems, species, impacts and processes which affect the Andalusian environment.

STRATEGIC GUIDELINES:

The Plan establishes the following environmental R&D&I strategies:

- ▶ Promotion of technology development geared towards preventing and changing the environmental problems of Andalusia.
- ▶ Encourage technological innovation and development in those economic sectors which may have an environmental impact.
- ▶ Use of R&D&I funding tools to develop specific environmental projects focused on all territorial fields.
- ▶ Research investment trends towards innovation and technology projects for the environmental sector.
- ▶ Promotion of new public tender formulas to carry out R&D&I environmental projects.
- ▶ Development of research projects with special interest for environmental management in Andalusia.
- ▶ Promotion of social research on citizens' environmental perceptions, attitudes and behaviour.
- ▶ Circulation of research information and results.

- ▶ Verification of an environmental information network for the Environmental Regional Government of Andalusia.
- ▶ Environmental cooperation and exchange of management, information and research experiences with third-world countries. Also, the promotion of clean technology research and transfer between Andalusia and Latin America, and between Andalusia, Maghreb and the Euromediterranean area.
- ▶ Developing communication networks in order to set up information channels based on knowledge-based management methodologies.
- ▶ Applying technology to alternative renewable energy sources, as well as promoting, producing and using environmentally-friendly products and services.
- ▶ Improving information systems that work with environmental integration in different economic sectors.
- ▶ Promotion of research, technological development and innovation in Andalusian environmental companies.
- ▶ Development of technologies targeted at increasing resource efficiency and optimizing the joint management of surface and subterranean resources.
- ▶ Use of technological innovation targeted at ensuring risk control (floods and droughts) in all river basins.
- ▶ Innovation and technological development to protect available hydrological resources through quality water management (storage and collection, distribution and consumption, clean-up and treatment, recycling or final spill).
- ▶ Innovation research in sustainable urban management, in order to develop new and more efficient policies, structures and tools.
- ▶ Innovation, development and circulation of the Best Available Technologies for productive and transport processes which target efficient minimization of waste management, air quality, protection against noise pollution and urban landscape improvement.
- ▶ Forest fire prevention research and technological improvements of warning and extinction mechanisms.
- ▶ Promotion of information and communication projects for efficient environmental projects such as vegetation inventory and cartography, mapping forest fires and a system analysis of protected landscape, livestock routes, forests and vegetation hedges in farming areas, etc.
- ▶ Technological development aimed at recovering degraded coastal ecosystems which are considered of special interest.
- ▶ Developing an information system for coastal areas ensuring the compilation, accessibility and information transfer for decision making and social participation.



XII. Organizational structure

The following table shows the allocated expenses in R&D&i activities, estimated by sectors and years, for the indicated period.

ESTIMATED EXPENSES IN R&D&i ACTIVITIES IN ANDALUSIA, BY SECTORS AND YEARS (MILLION €)							
PAIDI	2007	2008	2009	2010*	2011	2012	2013
Regional Ministry of Innovation, Science and Enterprise (U.M)	576	616	658	704	752	804	860
Regional Ministry of Innovation, Science and Enterprise (rest)	248	265	283	303	324	346	370
TOTAL CICE	824	881	942	1.007	1.076	1.150	1.230
Other Regional Ministries.	260	277	296	316	338	361	386
Total Budget Expenditure of the Regional Government of Andalusia	1.084	1.158	1.238	1.323	1.414	1.511	1.616

The following table shows the forecast of financial resources at PAIDI's disposal outside of the Regional Government's budget:

	2007	2008	2009	2010	2011	2012	2013
General National Administration	602	799	972	1.179	1.426	1.720	2.071
European Union	78	80	82	85	87	90	93
University Funds	64	104	145	192	250	264	278
Enterprises and Nonprofit Public Institutions	390	490	604	749	897	1.054	1.214
Total of Other Resources	1.134	1.473	1.803	2.205	2.660	3.128	3.656
Total	2.218	2.631	3.041	3.528	4.074	4.639	5.272

- ▶ In 2010, the investment numbers submitted to the Andalusian Plan for Research Development and Innovation will be revised.

The economic forecast for carrying out objectives and actions in this Andalusian Plan for Research are established by the following financial frameworks:

- ▶ The Operational Structural Funds Programme 2007-2013, in which the allocated budget for Andalusia comes from the Technology Fund and priority axes 1 and 2 (Development of the Knowledge-based economy and business Development).
- ▶ The resources passed by the European Parliament on 13 November 2006 for The Seventh Framework Programme.
- ▶ Competitiveness and Innovation Programme.
- ▶ The Funding Model for Andalusian Universities passed its incorporation into the framework 2007-2011.
- ▶ The Ingenio Plan's objective was updated in the presidents conference held on 11 January 2007.



Budget allocation of the regional government of andalusia through strategic guidelines

OBJECTIVE I: TO CREATE EXPERTISE AND MAKE IT WORTHWHILE	2007	2008	2009	2010	2011	2012	2013
* STRATEGIC GUIDELINE I: PROMOTE COMPETITIVE RESEARCH	45.579	48.724	52.086	55.680	59.522	83.629	68.019
* STRATEGIC GUIDELINE II: HUMAN AND SHARE CAPITAL	68.339	70.916	75.810	81.040	86.632	92.610	99.000
* STRATEGIC GUIDELINE III: RESEARCH ABILITY	250.722	268.022	286.515	306.285	327.419	350.010	374.161
OBJECTIVE II: TO DEVELOP AN ENTERPRISING CULTURE AT UNIVERSITIES, RESEARCH BODIES AND ENTERPRISES							
* STRATEGIC GUIDELINE I: DEVELOPMENT OF AN ANDALUSIAN ENTERPRISING CULTURE	30.075	39.419	42.109	45.047	46.155	51.470	55.030
* STRATEGIC GUIDELINE II: SUPPORT FOR R&D&I BUSINESS PROJECTS	50.000	53.459	57.147	61.090	65.306	69.012	74.629
OBJECTIVE III: IMPROVE KNOWLEDGE-BASED EXCHANGE CHANNELS: TO IMPROVE KNOWLEDGE-BASED EXCHANGE CHANNELS							
* STRATEGIC GUIDELINE I: INTEGRATED SYSTEMS FOR KNOWLEDGE-BASED MANAGEMENT	22.269	23.627	25.471	27.226	29.107	31.116	33.263
* STRATEGIC GUIDELINE II: PROMOTION OF INTERFACE AND NETWORK STRUCTURES	48.552	51.902	55.483	59.312	63.404	67.779	72.456
OBJECTIVE IV: TO APPLY THE PARTICIPATION OF PRIVATE INITIATIVE IN THE ANDALUSIAN KNOWLEDGE-BASED SYSTEM							
* STRATEGIC GUIDELINE I: INNOVATION AS THE BASE FOR SOCIAL AND ECONOMIC PROGRESS	26.540	28.381	30.339	32.433	34.670	37.063	39.620
* STRATEGIC GUIDELINE II: PROMOTION OF BUSINESS PARTICIPATION IN THE AK-BS	24.419	26.104	27.905	29.831	31.889	34.089	36.441
OTHER BUDGETED EXPENSES REGIONAL GOVERNMENT OF ANDALUSIA							
* SECTORAL PROGRAMMES	259.768	276.939	295.909	316.179	337.679	360.979	385.706
* R&D ANDALUSIAN UNIVERSITIES	247.577	264.675	282.940	302.466	323.342	345.653	369.821
* TOTAL COST	1.083.769	1.157.796	1.237.545	1.322.788	1.413.744	1.511.292	1.615.706

PAIDI is supported by the Lisbon strategies and fits in with the new policies for European development and coherence. Likewise, it completes the action guidelines which were established by the General National Administration within the National Strategic Reference Framework without giving up its own objectives.

It is necessary to consider Knowledge as a great investment for Andalusia. And that means not only obtaining as many economic resources as possible but also applying them effectively in order to produce the best economic and productive results. The final objective regarding technological effort is to reach 2% of the Andalusian GNP in 2013.



XIII. Follow up and assessment



PAIDI will establish the mechanisms for carrying out the assessment and follow up of all planned procedures and of the whole Plan as well. The aim of both the follow up and assessment is to improve research, technology and innovation policies developed by the Regional Government of Andalusia.

This process evaluates production resources to see if they are meeting society's needs and interests and if they can be effectively reinvested. The conclusion and results offered by PAIDI assessment should be geared towards improving Andalusian scientific and technological policies, by either redirecting or changing those aspects that can be improved or seem to be inefficient or strengthening the successful ones.

PAIDI's own complexity is proof of the need to set up different follow-up and assessment levels. These are understood to be procedures, tools, programmes and the Plan as a whole.

There will be a diagnostic evaluation aimed at setting up starting levels and a process evaluation that is associated with developing different procedures or programmes.

It will be used to measure their effectiveness and make any necessary adjustments as need be. There will also be a final evaluation, to measure the outcomes achieved at the end of a pre-established period of time.

The follow up and assessment results will be recorded in PAIDI's Annual Report. The Report will be submitted to the Interdepartmental Commission for R&D&I, the Andalusian Committee for a Knowledge-based Society and the Follow-up Committee. It will include information from each of the programme's established indicators in the Plan and will offer both a general view about its development and a more specific one about how efficient each programme is.

It is the Andalusian Agency for quality Assessment and University Accreditation which establishes and manages follow up and assessment criteria, indicators and processes in agreement with the decisions which will be made by PAIDI's Administration, without disregarding the competences which other PAIDI's direction, coordination and managing bodies may have.



PAIDI INDICATORS**GENERAL INDICATORS**

GNP mp at current prices (in euros).

Population by gender.

Population with university degree by gender.

Total expenditure in R&D in Andalusia by public and private sectors.

R&D expenses in Andalusia over the regional GNP.

Percentage of the Regional Government of Andalusia's R&D investment over the Total R&D Investment in Andalusia.

GENDER INDICATORS

University professors by gender and category.

Students registered in Andalusian Universities depending on fields, course and sex by University.

Graduate students in Andalusian Universities depending on course and sex by University.

Total number of researchers by gender, Public and Private sector.

Total number of Postgraduate researchers by gender.

Total number of personnel in Knowledge-based Agents by gender and category.

Total number of people in Teams and projects by gender.

Percentage of women profesors total/cost.

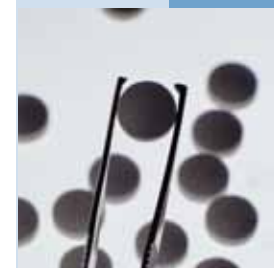
Rate of women receiving direct incentives from the Regional Ministry of Innovation.

STRATEGIC GUIDELINES INDICATORS**A) COMPETITIVE RESEARCH**

- ▶ Number of excellence projects with incentives.
- ▶ Amount of arranged expenses for projects with incentives.
- ▶ Number of research teams.
- ▶ Number of research teams with incentives.
- ▶ Total number of EDP researchers (Equivalent to main occupation).
- ▶ Average evaluation of research teams by areas B) Human and share capital
- ▶ Number of incentives for researchers' mobility and skills improvement.
- ▶ Total cost of researchers' incorporation into research and technological centres.

B) RELATIVE GROWTH OF RESEARCH PERSONNEL BY CATEGORIES.

- ▶ Percentage of personnel devoted to R&D in E.J.C (equivalence to full-time job) in public and private sectors over the personnel devoted to R&D.
- ▶ Personnel devoted to R&D in E.J.C. (Equivalence to full-time job) in Andalusia per thousand of active population.
- ▶ Number of Researchers in E.J.C. in the Public Sector per number of Researchers in E.J.C. in the private sector.
- ▶ Number of technicians and assistants per researcher.
- ▶ Number of Ph.Ds who belong to R&D Teams.
- ▶ Number of Ph.Ds who signed a contract with Public Centres of R&D by gender.
- ▶ Number of doctorate students by gender.
- ▶ Number of technical personnel who signed a contract with public R&D centres by gender.



**PAIDI INDICATORS****STRATEGIC GUIDELINES INDICATORS****C) RESEARCH CAPACITY**

- Resource Growth used as incentives for excellence research activity.
- Patent research productivity + u.m. (utility model)/research teams.
- Research productivity in copyright results/research teams.
- Number of scientific infrastructure centres.
- Number of emerging research teams -total cost.
- Patent applications per million inhabitants and total national cost.
- Granting of patents.
- Utility model applications per million inhabitants and total national cost.
- Number of publications in international journals.
- Number of documents published by EDP researchers (Equivalence to main occupation) in international journals.
- Funding granted to PN projects (National Plan) (euros).
- Funding granted to projects from the EU's Framework Programme (euros).
- Percentage of returns rates from the UE's Framework Programme.

D) ENTREPRENEURIAL CULTURE IN TECHNOLOGY-BASED ENTERPRISES

- Number of Technology-based Enterprises, spin offs, Universities and Research Centres.
- Number of Technology-based business start-ups with accredited Knowledge-based Agents.
- Total number of students with apprenticeships in Technology-based Enterprises.

E) SUPPORT FOR R&D&I BUSINESS PROJECTS.

- Number of companies which are targeted towards R&D&I incentives - total cost.
- Number of companies supported by Risk Capital societies.
- Total expenses for private incentives in R&D&I.

F) INTEGRAL KNOWLEDGE-BASED MANAGEMENT SYSTEMS.

- Number of companies with R&D&I managing policies.
- Number of companies with ISO certifications in R&D&I (International Organization for Standardization).
- Number of targeted companies with Knowledge-based Agents' support.

G) PROMOTING INTERFACE AND NETWORK STRUCTURES.

- Number of companies supported by and integrated in RETA.
- Number of finished offer-demand technological transactions- total cost.
- Number of Knowledge-based Agents working.
- Number of researchers who collaborate with companies.

H) INNOVATION

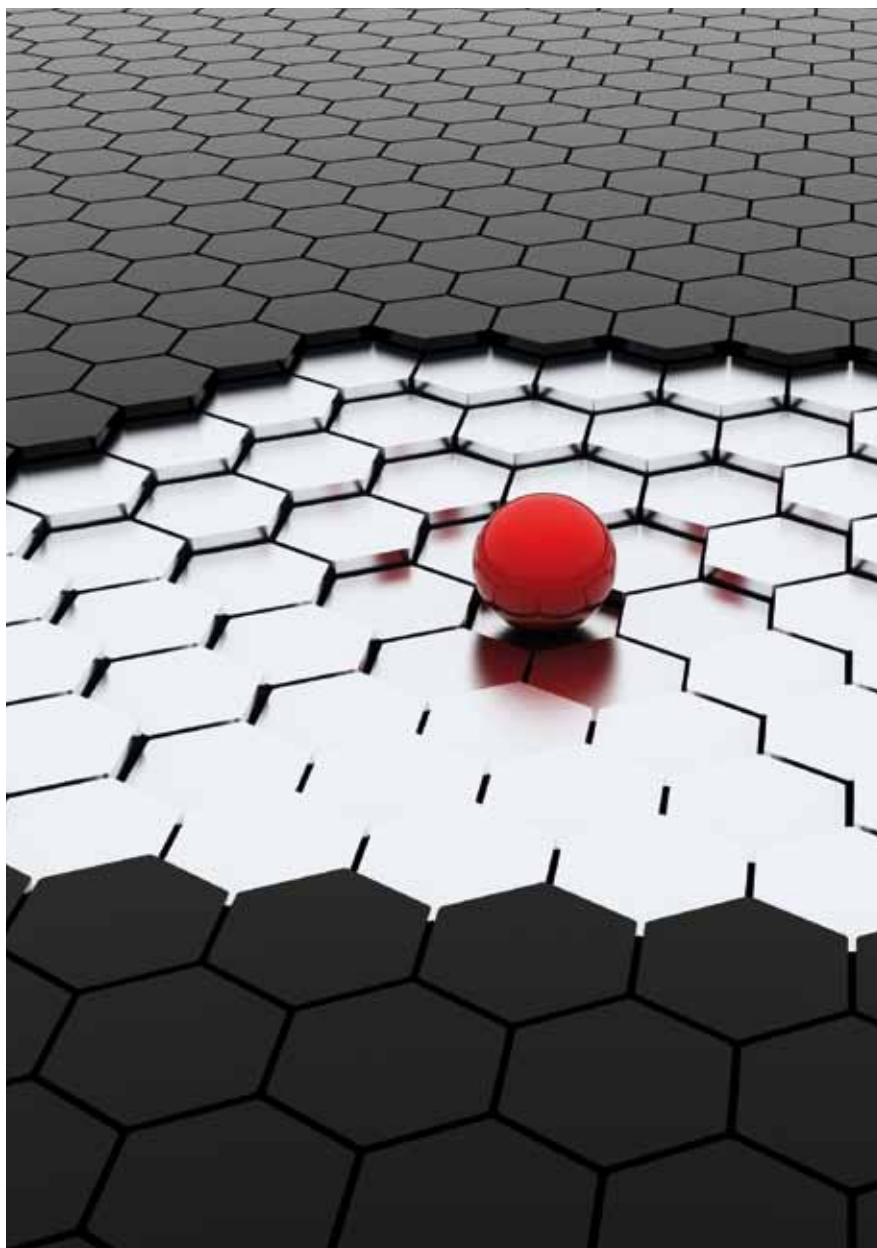
- Total number of companies which carry out R&D. Total number of companies with innovative procedures. Number of innovative companies in public and private sectors and national or multinational levels.
- Number of non-innovative companies with either current or unsuccessful innovations.
- Total expenses of innovative activities in companies.

I) COMPANIES' PARTICIPATION IN SAC (ANDALUSIAN KNOWLEDGE-BASED SYSTEM)

- Number of companies working as Knowledge-based Agents by categories.
- Number of Ph.Ds and technicians in company R&D departments.
- Total expenses of circulation and promotion innovation Managers.



XIV. Communication plan



PAIDI is an essential component in the Andalusian Innovation System for planning the Andalusian Knowledge-based System. Therefore, it is essential for reaching the required economic development and welfare levels in Andalusia.

With the aim of revealing and circulating PAIDI contents, the Regional Ministry of Innovation, Science and Enterprise will carry out the following actions:

- ▶ The Plan's application monitoring, legal framework, action indicators and strategic guidelines will be transferred to the Internet.
- ▶ Massive campaigns to circulate information and specific campaigns addressed to Knowledge-based Agents will be carried out.
- ▶ Sessions, conferences and meetings will be held with the aim of learning about the model in depth and effectively applying it in order to reach PAIDI's set goals.





Abbreviations and acronyms

ADESVA	Productive System Association linked to Agriculture in Huelva	CEAMA	Andalusian Environmental Centre
ADMÓN	Administration	CEASA	Andalusian Experimental Centre for Animal Health
AGAE	Andalusian Agency for Quality Assessment and University Accreditation	CEMER	Wood School Consortium of Encinas Reales
AGR	Agrifood	CENTA	New Water Technologies Centre
AICIA	Andalusian Association for Research and Industrial Cooperation	CENTER	Centre for New Energy Technologies
AICT	Areas for Technical and Scientific Research	CESEAND	Centre of Services for European Affairs in Andalusia
APTE	Association of Science and Technology Parks of Spain	CETECOM	Centre for Communication Technology
BACO	Andalusian Barometer of Consumption	CICA	Computer and Scientific Centre of Andalusia
BIC	Business Incubation Centre	CICE	Regional Ministry of Innovation, Science and Enterprise
BOJA	Official Bulletin from the Regional Government of Andalusia	CICEM	Research and Sea Farming Centre
CA	Autonomous Community	CIECEMA	International Centre of Studies and Environmental Ecologic Agreements
CAAE	Andalusian Committee of Ecological Agrifood Association	CIFA	Centre for Agricultural Research and Training
CAAI	Andalusian Centre of Iberian Archaeology	CIP	International Patent Classification
CAAS	Andalusian Centre for the Advancement of Sustainable Agriculture	CITAGRO	Agri-food Innovation and Technology Centre
CABD	Andalusian Centre for Developmental Biology	CITANDALUCIA	Andalusian Centre of Innovation and Technology Transfer S.A.U.
CABIMER	Andalusian Centre for Molecular Biology and Regenerative Medicine	CITIC	Andalusian Centre of Innovation, Communication and Information Technologies
CACYTMAR	Andalusian Centre for Marine Science and Technology	CITOLIVA	Olive Oil Innovation and Technology Centre
CAFPE	Andalusian Centre for Elementary Particle Physics	CNA	National Accelerator Centre
CAIV	Andalusian Centre for Wine Research	CNM	National Microelectronics Centre
CAM	Andalusian Metrology Centre	COEXPHAL	Association of Fruit and Vegetables Growers And Exporters in Almería
CANP	Andalusian Prospective Centre	CONSORTEC	Cádiz Technological Consortium
CAS	Underwater Archaeology Centre	CSEA	Andalusian Network of Advanced Services for Enterprises
CC	Sciences	CSIC	National Research Council
CDTI	Centre for the Development of Industrial Technology	CTA	Technological Corporation of Andalusia
CEA	Andalusian Entrepreneurial Confederation	CTAP	Andalusian Stone Technology Centre





C-T-E	Science-Technology-Enterprise	FUECA	University-Enterprise Foundation of the Province of Cádiz
CTS	Health Sciences and Technologies	FUNDECOR	University Foundation for the Development of the Province of Córdoba
CVI	Life Sciences	GEOELIT	Scientific and Technological Park of olive oil and olive groves
DESADOS	Society of Local Economic Development of Dos Hermanas	HUM	Humanities
DGITE	Directorate General for Research, Technology and Enterprise	I&D&i	Research, Development and Innovation
EBD	Doñana Biological Station	IAA	Institute of Astrophysics of Andalusia
EBT	Technology-Based Enterprises	IAB	Andalusian Institute of Biotechnology
EDP	Equivalence to Full-time Job	IACT	Andalusian Institute of Earth Sciences
EEA	School of Arabic Studies	IAER	Andalusian Institute of Renewable Energy
EEHA	School of Latin American Studies	IAPH	Andalusian Historical Heritage Institute
EELM	Experimental Station "La Mayora"	IAQF	Andalusian Institute of Fine Chemistry
EEZ	Zaidín Experimental Station	IAS	Institute for Sustainable Agriculture
EEZA	Experimental Station of Arid Zones	IAT	Andalusian Institute of Technology
EGMASA	Environmental Management Public Enterprise	IBVF	Institute of Plant Biochemistry and Photosynthesis
EJC	Equivalence to Full-time Job	ICMAN	Sea Life Sciences Institute of Andalusia
ETIFA	Technological School of Agricultural Research and Training	ICMSE	Institute of Materials Science of Seville
FAICO	Innovation and Technology Center for Image, Color and Optics of Andalusia	IDEA	Agency for Innovation and Development of Andalusia
FEUGR	Granada University-Enterprise Foundation	IEO	National Institute of Oceanography
FGUM	Observatory Foundation University-Enterprise of Málaga	IESAA	Institute for Advanced Social Studies of Andalusia
FIAPA	Foundation for Agricultural Research in the Province of Almería	IFAPA	Centre for Agricultural Research and Training
FIDETIA	Foundation for the Research and Development of Information Technology in Andalusia	IG	Institute of Fat Research
FIS	Health Research Fund	IGME	Geological and Mining Institute of Spain
FMDITE	Mediterranean Foundation University-Enterprise of Almería	IIBIS	Biomedical and Health Research Institute
FPI	Research Personnel Training	IIQ	Chemical Research Institute
FQM	Physics, Chemistry and Mathematics	IMSE	Microelectronics Institute of Seville
		INE	National Statistics Institute



INIA	National Institute for Agricultural and Food Research and Technology	PLADIT	Guideline Plan for Innovation and Technological Development
INTA	National Institute for Aerospace Technology	PLADOCS	Organisational Guideline Plan for Service Quality
IPB	Parasitology and Biomedicine Institute “López Neyra	PLEAN	Andalusian Energy Plan
IPSFL	Private Non-Profit Institutions	PM	Framework Programme
IRCS	Innovation Relay Centres	PSA	Almería Solar Platform
IRNASE	Natural Resources and Agrobiology Institute	PTA	Technological Park of Andalusia
ISI	Institute for Scientific Information (Philadelphia)	PTS	Health Sciences Technological Park
LOU	University Fundamental Law	PYME	Small and Medium-sized Enterprise
MALATAO	Innovation and Technology Centre for Sustainable Agricultural Development	RETA	Andalusian Technology Network
MASTRIX	Matching Andalusian Science & Technology Resources Innovation Matrix	RICA	Computer-Science Network of Andalusia
NEST	Future Science and Technology Needs	RNM	Natural Resources and Environment
OEPM	Spanish Office for Patents and Brand names	SAC	Andalusian Knowledge-based System
OI	Research Body	SAETA	System of Tourist Analysis and Statistics in Andalusia
ONG	Non-Governmental Organization	SEIRC	Southern Europe Innovation Relay Centre
OPI	Public Research Body	SEJ	Social, Economic and Legal Sciences
OTRI	Office for the Transfer of Research Results	SET	Technological Strategies System
PAI	Andalusian Research Plan	SGUIT	Secretary General of Universities, Research and Technology
PAIDI	The Andalusian Plan for Research, Development and Innovation	SICA	Scientific Information System of Andalusia
PCT	Scientific and Technological Park	SSCC	Central Services
PCT	Patent Cooperation Treaty	TEP	Production Technologies
PIB	Gross National Product	TIC	Information and Communication Technologies
PIE	Business Innovation Park	TTT	Technology Transfer Transformation
PIMA	Innovation and Modernization Plan for Andalusia	EU	European Union
PITA	Innovation and Technology Park of Almería	UNESCO	United Nations Educational, Scientific and Cultural Organization
		Univ.	University





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