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**INCUBATION AND GROWTH AT TECHNOLOGY PARK
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EXECUTIVE SUMMARY

Over the years, the Technology Park of Andalucía has become a point of international reference in terms of science and technology parks where the IT technologies and energy sector dominates, both in Research and Development, and the manufacture of equipment and services, with an innovative and environmentally friendly approach. With over 600 businesses, and a number of key agents in the Andalusian knowledge system, such as the University and its research groups, over 14.500 employees, an area of 186 hectares with an expansion project in progress, the PTA can be considered one of the main focuses for innovation and economic development in Andalucía.

One of the PTA's and its companies' ingredients for success is the business development model that has been applied at the Park since it opened. An entrepreneurial culture and a tradition of ongoing enterprise are fundamental to the sustainability of the business development model that has been created at the PTA; the entrepreneurs that started off in the business incubators and pre-incubators have become, in many cases, much larger companies who continue to carry out their activity at the PTA. The constant evolution of the number of companies and institutions within the park consolidates the Park's goal of increasing the technological and economic competitiveness of Málaga and Andalucía.

Indeed, the economic impact made by the PTA on a provincial and regional level has been assessed in a study carried out by an international consulting firm which reveals that the PTA has an extremely strong presence in the Andalusian Science and Technology Network, proving it to be one of Andalucía's greatest assets in terms of technology transfer to the region, as well as a springboard for value creation in its surroundings with a contribution to Málaga province's GDP of 6.5%, whilst on an Andalucía-wide level it sits at around 1,5% approximately. In relation to the creation and maintenance of jobs, the PTA's contribution to Málaga province's population is between 7.04% and 10.05%, whilst on an Andalucía-wide level the park's contribution sits at around 1.33% and 1.90% of all employment in the region.

The new strategy of the Technology Park of Andalucía (PTA) and the University (UMA) is to connect more students and companies, attracting foreign talent to generate new local companies that operate around the world.

Entrepreneurs in the PTA

One of the ingredients of the success of the PTA and its companies is without doubt, the business development model which has been implemented in the Park since its beginning. An entrepreneurial culture and a tradition of continuing entrepreneurship are essential for the sustainability of the business development model generated within the PTA, as the entrepreneurs born in incubators and pre incubators from the park are in many cases larger enterprises which are still developing their activity in the PTA.

With the model of business development generated in the Park, on one side, the creation and consolidation of new companies are facilitated with the support of the various institutions that promote entrepreneurial activity in the Park, and on the other side, different types of installation are provided to existing entities that want to have presence in the technological complex from Malaga.

There are numerous institutions or entities that support through various centers, the creation and growth of innovative enterprises, being its primary mission to contribute to the creation of companies of innovating character (pre-incubations) and to promote their development and consolidation (incubators). Currently around 17,800 square meters in the park are dedicated to the promotion of entrepreneurial activity through the following centers:

BIC Euronova, European Business and Innovation Centre of Málaga whose presidency is held by the Regional Ministry of economy, innovation, science and employment, CADE which belonging also to the Regional Ministry, Promalaga CW and PromalagaCentiex which belongs to the city of Malaga, the University of Málaga which hosts the spin-off projects and the Training and Incubation Center of the PTA itself host the 145 companies led by entrepreneurs currently installed in the PTA.

Open to everyone with innovative ideas and entrepreneurial spirit, the PTA is the perfect setting for any person or team who want to launch onto the development of an innovative business project. To do this, a number of key agents focusing precisely on supporting entrepreneurs to start their career in the business world exist.

Preincubators

It's the first step in the model of business development of the PTA. The mission of the preincubators is to help entrepreneurs with innovative ideas to launch onto the adventure of setting up their company and starting to operate. There are two main preincubators in the park:

The Support Centre for Business Development belonging to the Regional Ministry of Economy, Innovation, Science and Employment, has a qualified team of specialists in creation and business development providing support services to all types of entrepreneurs and company, offering services of information, training, specialized technical advice, search for financing funds and business accommodation in industrial buildings and offices for innovative projects and/or employment generators.

The University of Malaga through the Vice-rector University - Enterprises encourages entrepreneurial activity of their university students, promoting the creation of new innovative companies that's translated into products or processes really competitive with the consequent generation of employment and the expansion and modernization of the productive structure existing in our province.

From the creation of business Unit a SPIN-OFF program has been developed to supports initiatives of professors, researchers and students, which, individually or in group, decide to create a company applying its developments into the market. In this unit the necessary advice on issues of business management, constitution of the company, financing and all necessary assistance for the development of these business projects are offered.

Incubators

Within the park several services of incubation are provided, mainly:

The European Business and Innovation Centre of Málaga, Bic Euronova, pioneer in the PTA, supports the creation of innovative SMEs, promote the implementation of new innovative activities in existing SMEs and public administrations developing with and for the entrepreneur, company creation, incubation and consulting areas.

The Local Enterprise of Initiatives and Business Activities of Malaga (PROMALAGA CW): established by the Malaga City Council, develops activities of promotion, implementation and business development that promotes social and economic activity through its network of incubators providing business management services and offering accommodation and services of incubation to the entrepreneurs.

The Training and Incubation Center of PTA belonging to the Technology Park of Andalucía offers a range of services related to incubation and training in new technologies, offering training programs for national and international entrepreneurs and subsequent installation in the Centre. This Center also allows the installation of entrepreneurs from other international parks, by means of the signature of a collaboration agreement between both parks and special facilities for companies that develop innovative activities in the biotechnology and industrial sector.

The model of business development stated in previous paragraphs continues for already established companies which are finalizing their stay in the incubators and for existing companies searching for a space in the PTA through their installation in buildings NESTS, renting an office or a warehouse in one of the business centers or building of the PTA, in containers within multiple use buildings (either offices or warehouses) which are built with or without interior furniture. These containers are offered with the common areas already built up and connection to the services close to the room. The promoter of the containers is the PTA or through the acquisition of plots for the construction of its own building.

The most valuable of this model is that it has changed the culture of innovation within the Park. Entrepreneurs dare to innovate and to fail. Failure is part of the path to success. The Park creates 100 companies a year and 80 die and with this model every year a fast growing company appears, which is a company that manages to have 100 engineers and billing tens of millions of euros annually. In 20 years we have obtained 20 fast growing companies from local entrepreneurs which are the symbol of identity of the Park.

In all the activities of incubation and pre-incubation which are conducted in the PTA stand out the creation of the building PTA-UMA in the area of expansion of the teatinos campus of the University of Malaga. Conceived from the beginning as an extension of the PTA in the campus, the building which is managed by the Park, will be the place hosting businesses and entrepreneurs that arise from the University of Malaga



(through research groups and entrepreneurs) and the installation of companies coming from universities and international research groups.

The Green Ray

The Technology Park of Andalucía (PTA) has established within the Campus of the University of Malaga (UMA) a building called 'The Green Ray' with the aim of developing a common strategy between the PTA and the UMA in the field of knowledge and support to entrepreneurs. 'The Green Ray' is the name of the building where are located entrepreneurs who want to be global'. Julio Verne wrote a novel in 1882 with the same name. In this novel he described 'The Green Ray' as the last beam of light that launches the Sun when it sets in the horizon of the sea with a clean clouds sky and which results in a wonderful green ray. 'The Green Ray' is not an illusion, it's real, it's a physical phenomenon, but is very difficult to see, and if you are looking for it with yearning you can find it. 'The Green Ray' attributes are very similar to the entrepreneurs' ones who have achieved successful companies:

- a) They are real, no illusion
- b) They are hard to find but achievable
- c) And they are extraordinary

Two vectors are developing this strategy, as well as innovation. 'The Green Ray' Entrepreneurs must use science and knowledge developed at the university and furthermore, must have the ambition of global entrepreneurs.

In The Green Ray we are searching for projects of entrepreneurs just like 'The Green Ray', which are extraordinary, using University knowledge, global and which transform society, coming out from the a dream of the entrepreneur, real... and as we are aware of difficulties to implement such initiatives, the best teams and companies are available to help them to get it.

Several multinational companies help already these entrepreneurs to develop their projects from these facilities.

These activities are also performed in the building by the University through the Project LINK by UMA - ATECH, which is configured as platform support for global entrepreneurs and a space connector between UMA and the PTA.

In this sense, within the Green Ray multiple actions are being developed to promote global entrepreneurship, and to approach the business environment to the University.

To achieve these objectives, in addition to creating a common project, with the Green Ray, PTA and UMA seek the complicity of multinational corporations that can help entrepreneurs in many ways to achieve their dreams and international ambition. Until now, some of the actions that carry out these multinationals in The Green Ray are:

PricewaterhouseCoopers (PwC) and Harvard University have developed The Green Ray Technology Center of sustainability of Málaga, an environment for internationalization, sustainability and innovation of SMEs of Malaga, through the Green Economy.

For its part, Samsung has installed in The Green Ray the first headquarters in Andalusia of the Samsung Tech Institute Program, to give training to young talents with a technological vocation who wish to develop

their careers in the new digital economy.

IBM is also present in The Green Ray, where the presentation of IBM Global Entrepreneur Program took place, a program aiming to help the next generation of enterprises and entrepreneurs to take advantage of opportunities in growth sectors such as energy, health care, telecommunications, consumer goods and public administration.

REPSOL collaborates through its foundation with its program to support innovative business initiatives, and the Santander Bank through Santander Entrepreneurship International Center with the 5th Edition of the YUZZ program located in building The Green Ray.

Through all these actions, PTA, along with UMA and using the strategy that marks The Green Ray look for those entrepreneurs able to develop successful companies overall with the hope of changing the world and that failure do not discouraged them to achieve their dream.

The Green Ray is an innovative project born with the signature of a collaboration agreement between PTA and UMA for the realization of joint projects of R&D and entrepreneurship to develop the spaces within the building The Green Ray. It is a pioneering activity due to the fact that it is not an incubator, nor an Accelerator, it is a space created by a park and a University to foster global entrepreneurs in a place of encounters, a place of crossbreeding.

The primary objective of this project is to promote cooperation among the business sector of the Park and the field of knowledge of the University focusing on the development of actions by and for entrepreneurship carried out by multinationals, local companies or research groups of the University of Málaga (UMA).

We believe that the project we are developing in this building in a second enclave of Park, outside their usual area, is an innovative bet that represents a breakthrough in the relationship that the PTA had with the University, and has distinguishing elements with other initiatives in other PCTs. The pioneer of this initiative focuses on a common strategy between the Park and the University global entrepreneurship-oriented.

The city of Malaga has developed an excellent habitat for the development of entrepreneurs; only in the PTA there are seven incubation centers and two accelerators with nearly two hundred entrepreneurs and a great activity, creating more than a hundred new companies every year in the Park; however the majority of these entrepreneurs have a local scope and ambition. However the future of the PTA and the UMA in relation to entrepreneurship is linked to a greater internationalization of enterprises and a more intensive use of the knowledge generated in the University. For these reasons the UMA and the PTA have joined forces to work together to help create global entrepreneurs, entrepreneurs who see their future linked to international markets.

The University has launched The Green Ray space called LINK By UMA, a real meeting point between the educational and the business world. A place where students have the opportunity to experiment with the labor market, at the same time the companies discover great professionals. Potential Entrepreneurs, established companies, associations, students who still have not started in the business world or experts in different subjects gather in this space to share ideas, to learn, to grow and to undertake.

The use of ICT tools is very present in the functioning of the initiative The Green Ray, mainly using these tools as a form of communication and dissemination of the activities. In addition, activities directly related to ICT are carried out in The Green Ray, such as the development of the program of excellence in digital content and Digital economy, performed within the Green Ray by PwC, the city of Malaga and the school of

Industrial Organization and which is a program designed to help SMEs and freelancers in the sector of the digital economy to enhance its competitiveness.

In terms of contribution to the objectives of the European policies and Horizon 2020, the activity that is being developed in The Green Ray and the sectors that will be supported from there are perfectly in line with the priority areas of the RIS3, and is closely related to the objectives of the European calls for the programming period 2014-2020. In fact two of the programs that are currently underway in The Green Ray are linked to the priorities of the RIS3 Andalusia, such as ICT and digital economy through the program of excellence in digital content and digital economy, renewable energy, and energy efficiency through the 'sustainability Centre' within the framework of the program Green Economy. Additionally the H2020 topics have been analyzed and it has been observed that there are European calls available for the presentation of projects related to the themes developed by the global entrepreneurs of The Green Ray. From the park and the university, the UMA LINK A-Tech platform with support the presentation of European projects in this regard.

CONCLUSION

The importance of science and technology parks, universities and networks for innovation and competitiveness is increasingly recognized by policy-makers. Accordingly, the apparent vitality of small firm agglomerations has resulted in SMEs and networking being one of the main targets of various policies, e.g. industrial, regional, innovation and technology, in many industrialized countries since 1980s.

The first science and technology park was created on the campus of Stanford University more than 50 year ago. It has transformed the Silicon Valley area from one of the poorest regions in the USA into a global center of technology, finance, education and research.

Since the conception of Silicon Valley, the high-tech cluster phenomenon has seized the imagination of public policy makers. Hundreds of similar high-tech clusters have been created in various parts of the world, and their numbers continue to grow as the cluster formation is increasingly adopted as an important economic development tool and as an integrated part of the national or regional innovation system.

The cooperation between the Technology Park of Malaga (PTA) and the University of Malaga (UMA) have emerged as transformational entrepreneurship, ie, by analyzing the talent that impacts on the economic but also in social innovation ecosystems that are created when there is a connection between university science and technology park and company and the importance of inclusion in the training plans of the university courses on innovative culture.

Also, another point was the definition of entrepreneurial university as one that has an entrepreneurial attitude in its ecosystem and how that attitude contributes to the diversification of the income of universities. The PTA and the UMA pay particular attention to the roles of an entrepreneurial university and science-technology park in the development of the region of Malaga but with a huge impact ant national and international level.

The confrontation of academic knowledge with practitioners' experiences will help identify the best practices and achieve common solutions which may enable the further improvement of the cross-sectorial cooperation system and of education in universities. Such activity will also support entrepreneurial attitudes among university employees and students.