



CARPE DIGEM PROJECT REPORT

- 1. PEER REVIEW OF MADEIRA. PROCESS AND ACHIEVEMENTS**
- 2. DIGEMs – THE MADEIRA EXPERIENCE**

17th May 2021

SHORT NOTE

This report is the outcome of the consultancy services provided by third-party agency WOWSystems with reference to the contract number 5/2019 under the "CARPE DIGEM" project led by Instituto de Desenvolvimento Empresarial in Madeira (PT).

This report is subject to constant updates due the ongoing nature of the project and it is estimated deadline of 31st January 2023.

This report includes the collection and analysis of all surveys, feedbacks and materials collected by the partners and stakeholders involved in the project and that are suitable for the goal and outcome of the project in the Autonomous Region of Madeira.

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ABOUT THE CARPE DIGEM PROJECT

The CARPE DIGEM, titled *"Catalyzing Regions In Peripheral and Emerging Europe towards Digital Innovation Ecosystems"*, brings together 10 organizations and institutions from 7 different European countries, mostly from peripheral and emerging regions. The project's main goal is to improve the countries' selected policy instruments to become better enablers of inclusive digital innovation ecosystems in their countries. Tasks to accomplish this have included the selection, analysis and exchange of good practices within each country, bringing together stakeholders from public and private sector in order to create or improve functioning and sustainable Digital Innovation Ecosystems (DIGEMs) that are able to convert the opportunities offered by new technologies into economic and social benefits.

The project's goal divides itself into several outcomes to be met:

1. *"Accessible and wide ranging knowledge of responsible policy makers and key stakeholders to support and establish sustainable DIGEMs. DIGEMs will ensure that innovative digital products and services that lead to Improvements in Growth, employment and investment and in the quality of life will be delivered.*
2. *Significant improvement to staff, expert and stakeholder skills who integrate territorial needs and models within the wider European digital innovation networks*
3. *Well skilled and equipped digital mediators to enable rural youth, entrepreneurs and the socially/economically excluded to fully benefit from and contribute to digital innovation*

4. *6 regional DIH working in network under the CARPE DIGEM approach*
5. *15 new companies exploiting digital tools and services in the area of: Digital education; Healthcare; Creative industry; Tourism; Energy Industrial design and Media*
6. *50 SMEs supported through Digital Innovation Hubs enhanced or established through projects resulting from CARPE DIGEM*
7. *Digital Innovation projects resulting from CARPE DIGEM”.*

The project started on the 1st August 2019 and is expected to end by the 31st January 2023. CARPE DIGEM brings together ten organizations/institutions from seven different European countries:

- Digital Nièvre Joint Authority (France) – which acts as Leading Partner
- Mallorca Chamber of Commerce (Spain)
- Instituto de Desenvolvimento Empresarial da R.A.M. (Portugal)
- University of Ljubljana (Slovenia)
- Ministry of Public Administration (Slovenia)
- European Regions Network for Application of Communications Technology (Ireland)
- Business Agency Association (Bulgaria)
- Ministry of Economy (Bulgaria)
- The Region of Vasterbotten (Sweden)
- Uminova Expression (Sweden)

As the CARPE DIGEM addresses the thematic of Digital Innovation Ecosystems, how they are born and operate, how they can be efficient given the existing

capacities government-level, society-level and industry-level and how new technologies can translate into new socio-economic opportunities for the society, all these questions directly relate with the existing policies and instruments on each partner's Regions. Therefore, the CARPE DIGEM ends-up addressing policy instruments that each partner currently manages:

- Ireland's North West Strategic Growth Plan which focus on transforming five targets: advanced manufacturing, fintech, creative industries, culture & tourism and Life & Health Sciences. This Plan aims to develop, deepend, leverage and apply digital research resources across those targets in order to create enterprises, investment and jobs while configuring the base for tech parks and innovation centers to develop.
- Madeira's Regional 2014-2020 Program R&D Priority 1 Axis which aims to promote businesses investment in innovation and research by developing links and synergies between enterprises, research centers in order to enhance the development of products and services, promote technology transfer, social innovation and support for applied technology research, pilot lines and actions for early-stage product validation.
- The Swedish Regional Development Strategy (RUS) in Vasterbotten which aims to strengthen the region's focal areas "intersections", that is, areas of expertise crossing each other, which leads to innovative leaps, creating the potential for future investments, promoting meetings between different enterprises, organizations and expertise.
- Regional Programme Bourgogne ERDF/ESF 2014-2020 (Nièvre, France). This Operational Programme underlines the need to increase the research and innovation potential of the territory in order to serve the competitiveness and employments of Nièvre companies. This will be met by improving the development of the local ecosystem of innovation, a better regional integration and the stimulation of research & development activities while promoting better public-private and private-private partnerships.
- Multiregional Operational Program for Spain 2014-2020 with has the Priority on the contribution for the improvement and recovery of the competitiveness of the Spanish economy thought the promotion of a smarter growth model, supported by research, innovation and ICT, strengthening the internationalization processes of SMEs, raising R&D expenditure and supporting collaborative structures.

- Bulgaria's Operational Program for Innovation and Competitiveness 2014-2020, which aims is the achievement of dynamic and competitive economy through the development of innovations, entrepreneurship, growth capacity of SME's, energy and resource efficiency. It specifically aims at encouraging business investment in R&D and technology transfer.
- Digital Slovenia 2020 – Development Strategy for the Information Society – a commitment for a faster development of the digital society and use of opportunities enabled by ICT for general economic and social benefits. Envisioning measures that tackle major development gaps of the digital society, this strategy aims to support faster digital entrepreneurship, increase competitiveness of the ICT industry, develop digital infrastructure, strengthen cybersecurity and develop and inclusive information society with innovative data-drive economy, reinforcement of R&D activities

As one can see, all these policy instruments align with the goal and field of the CARPE DIGEM project. However, all of them still suffer from gaps or weaknesses that the CARPE DIGEM project will try to solve and amend, by improving these instruments to tackle the digital challenges that are constantly evolving.

In Madeira's case, there are several points on the M1420 Program that should be improved:

1. Needs to identify more clearly the structural constraints in the area of RTDI related to DIGEMs which are barriers to reach the Europe2020 Strategy Goals;
2. Needs to ensure a greater clarification of actions to be undertaken to reinforce the regional DIGEM and its role in reinforcing other Eps of the Regional Strategy such as the green economy, culture, energy efficiency and renewable energy sources;
3. Ensure a fair balance in project prioritization criteria within the OP Madeira 2014-202, ensuring appropriate allocation of resources to priority areas for job creation and skills/infrastructure.

The project activities have been thought on several tasks/axis, ranging from the identification of good practices from each Region based on peer reviewing and achievements, to the individual analysis of the current regional DIGEM models, their experiences, strengths and weaknesses, the establishment of a global

strategic vision for territorial DIGEMS that will in the end, translate into a project Action Plan aimed to reach the defined goals.

PART 1. PEER REVIEW OF MADEIRA.

PROCESS AND ACHIEVEMENTS

This section is intended to analyze the evolution and current status of Madeira's Digital Hub (DIH). As per definition, a DIH is organized in order to provide services to industry, by providing access to competence centers, allowing the development of an innovation ecosystem and making instruments available for stakeholders to thrive on their ideas and businesses. This includes facilitating access to finance, providing brokerage services and market intelligence, while acting as incubators and mentors for startups and entrepreneurs.

A DIH when is setup properly will eventually thrive and create socio-economic added-value around it, allowing for new companies and ideas to flourish, for R&D investment to raise, education to reach higher levels and for connected-businesses to grow and prosper in economic areas that weren't originally focused by that DIH. What this means is that a successful DIH is the one that actively contributes for the success of its own stakeholders as much as for the success of the overall economy of the Region in which it is located on, regardless it's primary focus.

This thrive and “*snow ball effect*” on society and on economy that a DIH can have, may then translate afterwards in the creation and boost of a Digital Innovation Ecosystem (DIGEM). These normally focus on inter-regional cooperation, sharing/collaboration and & economic inclusion, bringing together stakeholders from several backgrounds, sectors and regions, creating opportunities for everyone, boosting innovation and extending research to new sectors.

Of course, a successful outcome is only possible and visible several years after ideation and operationalization. It’s needed for governments to establish national policies and instruments – many times completely aligned with EU policies and frameworks – for regional authorities to create action plans, specific instruments and body entities to govern for these to apply and manage the defined strategies, grants schemes and other instruments. This implies a great level of bureaucracy jus to put in place the operation, with many laws needed to be written and approved, financial instruments settled with banking system and institutions and even, in some cases, the actual build of needed infrastructures, not only office-space/incubators-wise but the whole support infrastructure behind the economy in terms of high-speed communications/internet and access.

In the particular case of Madeira, this has happened in the last two decades and was greatly supported by EU funding but it all started late 80s, so it took almost 30 years for Madeira to have a reasonable functioning DIH that is now actively transforming into a serious DIGEM.

Therefore, let’s take a closer look on the history and evolution of Madeira’s DIH.

THE PROCESS

History and Evolution of Madeira’s DIH

The Madeira archipelago is situated in the Atlantic Ocean, distancing around 900km from Portugal’s capital, Lisbon. Historically the island has had an importance during the XV and XVI centuries in which played an important role on the Portuguese global market of sugar cane, wine and slaves as a mandatory stop between Europe, India and also Brazil. This led Madeira to attract an important

population of foreign merchants and producers as well as famous navigators as Columbus.

As the Portuguese trading empire decline, the island retained its popularity amongst Europeans specially from Great Britain, who invested in wine and sugar cane productions and exportation. As tourism began to flourish among society, Madeira suddenly became a hotspot destination as many European believed that its climate was beneficial for health, specifically, for people who suffered from respiratory conditions.

Therefore, and entering on the XXth century, Madeira was basically positioned on two fronts: primary sector dedicated to wine and sugar cane (and other smaller productions such as wicker), alongside, tourism.

However, as World Wars erupted and disrupted the World and as Portugal submerged into a dictatorial regime, Madeira's prosperity and economic development was pretty much limited.

The paradigm starts to change significantly as the 1974 revolution imposed democracy and established an autonomous regime for Madeira which translated on a democratic elected parliament and government with significant executive and legislative powers in matters such as education, health, infrastructures and many others.

As Portugal joined the European Union, the real shift began. As funding started to pour in, Madeira's strategy focused on infrastructures. Roadways were built connecting places that took 3 hours to drive into a 20 minute ride, stimulating the regional accessibilities and trade, the health care system was reinforced with the opening of health centers on each parish of the island, education was also reinforced with the opening of many kindergarten, schools and high schools along the Region. All these investments attracted more skilled workers to Madeira. Many Portuguese teachers or health staff that couldn't have a steady job on the mainland, saw the opportunity and moved to Madeira.

The increased mobility was also a result of the expansion of the infrastructures related to ports, ships and airports. Specific cargo areas and procedures were put in place while dedicated terminals for passengers were built and modernized allowing an influx of cargo and tourists.

As Madeira opened itself completely to the world, tourism continued to grow steadily and more foreigners started to move to Madeira and invest on the Region.

In order to attract investment, a major step was given with the creation of Madeira's International Business Center (Madeira's Offshore), a EU-regulated trade zone that offers very reduced corporate taxes and other fiscal benefits for companies who wish to establish their international operations in Madeira. Currently, Madeira's International Business Center accounts for about 15% of all the fiscal revenue of the Region, with more than 2300 registered companies.

As the infrastructure and basic problems were addressed, authorities started to position a strategy to enhance regional knowledge and develop innovation and R&D processes on the Region.

The first step was the formal foundation in 1989 of the University of Madeira (although there were already some minor courses degrees from other institutions and mainland universities offered in Madeira). At the time, the majority of residents who wished to pursue a higher degree of education were forced to move to Portugal's mainland. This represented, obviously, a huge economic effort for families and it wasn't sure the students would come back to live and work in Madeira given been an outermost region and at the time with a higher poverty level in comparison with the mainland.

Therefore, the foundation of the University of Madeira was a critical point to start to form and educate a new generation of highly qualified madeiran.

The government vision at the time was then to uptake education in the Region as primary and high schools were opened in every council and a envigored political sensibility for qualifying human resources for the Region was put in place. This led to eventually a broader vision of the role that the University could take, not only to form qualified human resources but also to implement a research and development mentality in the Region, with science, innovation and entrepreneurship as principles, basically, to create a regional ecosystem that could bring Madeira, it's population and economy closer to the remaining EU countries.

The vision included the building of 'Campus da Penteadá'. This would include a new structure for all University classes and research activities coupled to 'Madeira

Tecnopolo' a new infrastructure aimed for tradeshows, modular spaces, companies and startup incubators. All of this infrastructure would then connect with an Olympic Pool and Sports complex as well as the Regional Archive and Library. Renewable energies would be mostly present with nature and eco-preoccupation in place. A modern infrastructure that would give all the conditions for locals and foreigners come, study, research and do business.

As the infrastructure was being built and the vision started to materialize, other actions and entities were created to enhance it. The "Center of Science and Technology of Madeira (CITMA)" was founded in order to support students with research scholarships and grants, increasing the amount of PhD students, research and science projects. CITMA was later on transformed into "CEIM – Center of Businesses and Innovation of Madeira" which more recently gave place to "Startup Madeira".

This change reflected the evolution of Madeira's socio-economic ambience. With highways crossing the island and make it accessible, with a growing international airport and commercial port, with home computers and internet rate growing and becoming common, new companies started to flourish, especially on the ICT sector and engineering (due to high demand given construction sector boost and major public projects).

Therefore, the focus started to shift also into supporting new companies, new entrepreneurs and innovative processes. Madeira Tecnopolo centralized this vision serving as incubator with Startup Madeira dynamizing several entrepreneurship programs for students and companies.

Obviously, benefiting for a large sum of EU-funding schemes made it all easier and possible but having enough funding is just part of the equation.

In accordance to the European rules, Madeira established two separate entities to manage EU-funding schemes and funding: the "Instituto de Desenvolvimento Regional" (IDR) which acts as top entity managing schemes, programs and grants on a top-level and with a specific focus for public entities and the "Instituto de Desenvolvimento Empresarial da Madeira" (IDERAM) that manages the same

funding schemes and grants for the private sector. Together with the Government, these entities established and put in place many regional funding schemes that help the regional economy to grow, creating new jobs, diversifying itself and modernizing more traditional sectors.

Another component of this whole “puzzle” is important to mention. Since late 80s, the Region also benefited from the creation of a Special Economic Tradezone strictly regulated by the European Union and commonly known as Madeira’s International Business Center (IBC).

The IBC provides reduced rates for companies which establish, invest and create job posts in Madeira with reduced corporate rates and withholding taxes applied to exports only. The basis idea was given the Region’s outermost location, it was quite harder to attract foreign investment. Without access to these investors, it would be much more difficult to support all the strategy on qualification, R&D, economy and entrepreneurship.

As years gone by and as the University expanded into more areas and R&D activities were on a rise, other problems started to rise. The main one being how to make the academic and scientific ambience more competitive. In fact, although Madeira’s entities started to participate in joint-calls with European peers for R&D scientific schemes and projects, it was mostly within the Macaronesia/Outermost areas and funding schemes (Madeira, Azores, Canary Islands, Martinique, Mayotte, Guadeloupe, French Guiana and Réunion, Saint-Martin). Also, regional companies were still starting to comprehend and benefit from closer ties and common projects with the University and regional labs and although the Region was able to attract many foreign top-talent (from digital nomads to world-known academics) it was proving hard to really take the whole ecosystem to a whole new level.

This ‘struggle’ is still ongoing but some interesting steps have been taken place. Before the 2014-2020 EU framework establishment, the government and many regional stakeholders came together to define “RIS3”, the Regional Smart Specialization Strategy.

The RIS3 strategy aims by 2020 to make Madeira converge as a “innovation follower” positioning itself among the four main regions of Portugal in terms of innovation performance and for being recognized as one of the main regions in Europe in knowledge creation in the areas of tourism, bio-sustainability and marine resources and technologies. The RIS3 strategy is led in Madeira by ARDITI, the Regional Agency for the Development of Research. This strategy is now being reviewed and updated in order to face the new challenges and EU framework for the 2021-2027 period.

This vision would be achieved through: i) strengthening and training endogenous resources, existing infrastructures and regional agents with competences in the areas of specialization identified through the creation of critical mass and the reorientation of existing resources around the thematic areas of specialization of RIS3; ii) attraction, retention and training of highly qualified human resources in the thematic areas identified through partnerships with leading international institutions and taking advantage of the region's cosmopolitan culture and quality of life to make it the preferred location for the creation and exploitation of knowledge in these areas; iii) development of an innovative, open, mobilizing and liberating culture of individual and collective potential oriented towards job creation, economic, social and territorial value; iv) reinforcement of technological intensity in the production of goods and services oriented towards global value chains and bringing the scientific system closer to economic, social and creative activities and providing an efficient transition from ideas to the market; v) reinforcement of productivity, territorial cohesion and the affirmation of responsible, structural and resilient competitiveness as a true central design supported by the RIS3 dynamics.

Born from this - at the time - future RIS3 Strategy and spinning off directly from the University was the Madeira Interactive Technologies Institute (M-ITI).

M-ITI is an innovation institute, established as an independent, non-profit association, driven by R&D and whose founding members are the University of Madeira, Madeira Tecnopolo SA and the prestigious Carnegie Mellon University. M-ITI operates in the interdisciplinary domain of human-computer interaction encapsulating contributions from computer science, psychology and design, in

order to address / engage in important scientific and technological challenges that are relevant to society and have an economic impact significant.

The Institute has been able to thrive and create several co-labs, giving facilities and scientific support to many pos-doc and doctoral students. M-ITI was even awarded one of the few available ERA Chairs securing more than 2M€ from the European Union to support its activities. In the last year, M-ITI has been transformed and absorbed by ARDITI - the Regional Agency for the Development of Research - Technology and Innovation, which manages under its hood many of the main R&D Centers and Labs of Madeira, making the whole system more cost-efficient.

Other actions included the reinforcement of innovation-driven schemes such as "Empreender2020" that aims to support new innovative startups or "Prociência2020" which main goal is to enhance R&D activities within businesses and promote a closer interaction and liaison of those with the academic scene, universities and R&D labs but also schemes like "Inovar2020" which goal is to promote productive innovation projects, of national or international scope, aimed at the introduction of new activities, products or services or the significant improvement of technological processes through the transfer and application of knowledge, contributing to the modernization and innovation of the business fabric and strengthening the tradable productive base of Madeira and "Valorizar2020" that aims to develop actions for improving the competitive capacity of regional companies with the objective of consolidating economic growth and adding value to processes, goods and services, as well as supporting the implementation of energy efficiency measures and the use of renewable energy in companies.

This Incentive System includes a set of actions aligned with the objectives and priorities defined in the Regional Strategy for Intelligent Specialization (RIS 3) and aimed at reinforcing innovative investments.

More recently, the government took a step to extend the Campus da Penteada site and promote a new site in Ribeira Brava, naming it "Brava Valley" and supporting mostly established ICT businesses and Telecom, as well as opening a

branch of Startup Madeira. The idea is to make the regional DIH more accessible to people living outside Funchal (which concentrates most population).

At last, the Region was able to be included on the new submarine fiber cable that will connect Brasil to Portugal, providing much more bandwidth and vital speed on a very large scale. This new “digital data highway” allows Madeira to position itself on the European market to offer top facilities for researchers and companies to establish themselves in the Region.

Also there has been a significant raise of awareness by the government, authorities and general society for the need to take action on climate change, renewable energies, electric mobility and digital transformation of public services. This has led for the creation of specific grant schemes like the already mentioned “Valorizar2020” that supports companies to invest on renewable energies but also grants that support the buying of electric-powered cars by the population with tax incentives and event money support.

On the digital transformation of the public administration services, Madeira has been following the European trend on providing paperless online services with citizens being able to register themselves and access documentation, make appointments and even renew identification cards all online. This is an ongoing process that has also taken a new impulse thanks to the urgency created by the Covid19 pandemic and it’s a process that can be seen across all the sectors of public administration, from local level at city councils to the management of grant schemes or the regional health sector in which patients can book appointments online and admit themselves for the consultations through QRcodes at the health centers.

In sum, Madeira’s DIH is still a work-in-progress with constant revision and policy adjustments. However, the most difficult and fulcral steps have already been taken. The Region is now well quite well-equipped in terms of infrastructure, digital resources and communications and funding-access, providing also a competitive fiscal regime to attract foreign investments.

The Current Structure and Stakeholders

As mentioned, Madeira's DIH is the outcome of a strategy that brings together actors and entities from the public, private and scientific sectors. Although it's not yet formally established, it is possible to speak about an established Digital Innovation Hub in Madeira.

Therefore, let's take a closer look at the entities that make Madeira's DIH happen.

Starting with the **public entities** – please note that this list includes the main/relevant entities for the purpose of CarpeDigem and not all existing entities - we have:

- **IDR – Instituto de Desenvolvimento Regional**

A top-level entity responsible for the coordination, planning and monitoring activities of the regional development model as well as the coordination and management of the intervention of EU funding in Madeira. It analyzes the global economic-social evolution, in general, and European and national, in particular. The IDR is responsible for the formulation of proposals related to the main lines of development strategy, integrating and articulating sectoral policies in Madeira; prepare the technical proposal for the Regional Administration Development Investment and Expenditure Plan (PIDDAR) and proceed with the monitoring and evaluation of its execution; ensure correct articulation in the application of European funds in Madeira; perform the technical-administrative functions inherent to the coordination of management, monitoring and evaluation of operational programs; and much more.

- **IDERAM – Instituto de Desenvolvimento Empresarial da Madeira**

IDERAM's mission is to promote the development, competitiveness and modernization of companies in the secondary and tertiary sector of the Autonomous Region of Madeira, especially micro, small and medium-sized companies, aiming at strengthening innovation, entrepreneurship and the business investment.

IDERAM issues an opinion and monitors the various public initiatives and policies with the scope of strengthening the competitiveness of companies, especially

SMEs, ensuring the uniformity of their criteria; it also ensures the management and coordination of all instruments to support investment, financing and operations for companies in the Region and promotes measures to support business development, namely in the areas of entrepreneurship, business innovation, research and technological development (I&DT), knowledge society, information and communication technologies, quality, environment and energy, business expansion into new markets, attracting investment structuring direct, business revitalization and offsetting permanent overheads of the regional economy; promotes the insertion of qualified staff in companies and the conditions to attracting, carrying out and monitoring structural investment projects for the Region among many other goals.

- **SREM – Regional Economy Secretariat**

SREM's is the main government body that manages and defines the guidelines for all activities in Madeira, promoting investments, providing regulation for industrial and commercial activities and boosting the growth of the regional economy. It coordinates several entities under its hood.

- **StartupMadeira**

Startup Madeira aims to support the implementation of business projects, serving as a mechanism to stimulate entrepreneurship, innovation and the protection of intellectual property. It intends to assist companies in the initial start-up phase and in adding value, contributing to the dynamism of the business fabric of the Autonomous Region of Madeira. It is the entity responsible in Madeira for the application of the "European Innovation and Business Centers Program - Business Innovation Centers" (EC BIC's).

- **InvestMadeira**

Invest Madeira is the Front Office for diplomacy and external economic policy in order to attract investors foreigners and internationalization of local companies. Invest Madeira's main objective is to materialize and strength Madeira's external diplomacy, in line with the national bodies, acting as a contact point and facilitator for foreign investment projects, for foreign initiatives and for the development of external business relationships.

- **Madeira International Business Centre**

Also known as Madeira Free Trade Zone, it was created formally in the 80's as a tool for regional economic policy. It consists of a set of incentives, mainly of a tax nature, granted with the objective of attracting inward investment into Madeira, recognized as the most efficient mechanism to modernize, diversify and internationalize the regional economy. The International Business Center of Madeira presently comprises three sectors of investment: the Industrial Free Trade Zone, the International Shipping Register - MAR and the International Services.

- **CFE – Corporate Formalities Center**

The Corporate Formalities Center is an entity created with the objective of facilitating and providing the realization, in a single place, of the processes of constitution, alteration or extinction of companies and similar acts. It simplifies all the processes making it easier and quicker for anyone to register and open a business in Madeira.

- **PRODREAM2020**

PRODREAM is a regional EU-funding Program (not an entity by itself but we find it relevant to mention in this report) aimed to promote the rural development policy, improving the level of sustainability and competitiveness of the agricultural and agroforestry sector, encouraging regional, local and traditional production, and contributing to an environmental sustainability and the traditional landscape. It ends-up being managed by a Management Authority which then connects and delegates to two public local-level associations which verify and accompany the execution within each of Madeira's councils.

As for the main **academic and scientific entities**:

- **University of Madeira**

The University of Madeira focuses on different areas of knowledge and is currently divided into four Faculties and two Higher Schools. From Arts/Humanities, to Math's, Science and Engineering as well as Technology, Health Care and Education.

- **ARDITI – Regional Agency for the Development of Research, Technology and Innovation**

ARDITI aims to support research and experimental development activities, promoting technological diffusion, training and scientific and technical information, as well as actions that contribute to the modernization and development of the Autonomous Region of Madeira. Nowadays it acts as an ‘umbrella’ entity for all the main R&D Labs in Madeira (among other labs and projects):

- **ITI – Interactive Technologies Institute (part of the former M-ITI)**

ITI is dedicated to the interdisciplinary field of Human-computer Interaction and explores Psychology and Social Sciences, Computer Science, Creativity and Design.

- **Center for Marine and Environmental Sciences (MARE)**

MARE is one of the largest national research units and was rated as excellent by the FCT. MARE has 7 centers across the country, one of which is Madeira, hosted by ARDITI. MARE-Madeira currently has several projects underway in the most diverse areas of research, such as coastal ecology, marine litter, fisheries, climate change and stress factors related to man and impacts on coastal ecosystems.

- **Madeira Ocean Observatory (OOM)**

Although the Ocean constitutes a large portion of the surface of our planet, society's knowledge of it is quite limited. Therefore, the promotion of ocean literacy and public awareness of the value and preservation of marine resources is of the utmost importance. With this goal in mind, the Oceanic Observatory of Madeira promotes the public outreach of the multidisciplinary research undertaken within the consortium, emphasizing the contact between its researchers and the public.

- **Madeira Chemistry Research Center (CQM)**

Albeit under ARDITI's hood for projects, CQM comes directly from the University. Its mission is to promote, side by side, postgraduate education, interaction with other National and International R&D

Units and supplying services to the scientific and industrial communities.

Currently, CQM develops its R&D activities in the areas of Natural Products and Materials, each with its own dedicated and multidisciplinary research group across five laboratories.

- **Agricultural School of Madeira**

The Regional Government of Madeira created the Agricultural School with the objective of boosting the regional agricultural and agro-food sectors, enabling them to promote sustainability and respond to future challenges, providing, among others, vocational courses in agricultural activities, professional technical courses and technological specialization courses. The “Escola Agrícola da Madeira” has the mission of promoting the pursuit of the objectives of increasing regional competitiveness, acting in the structures of production, transformation and commercialization and, on the other hand, of the protection and improvement of agriculture, food security consequently, the living conditions of rural populations in the Autonomous Region of Madeira, with positive effects on the regional economy.

At last, Madeira’s **private sector** which brings together companies and entities from many diverse sectors. Again, for the purpose of Carpe Digem and Madeira’s DIH we are only referencing companies who play a role on ICT and/or digitalization. Many of these companies are active in the international markets with some being founded for more than 10 or 20 years and many others just coming out as startups that flourish from directly from the DIH

- **ACIF- CCIM – Commerce and Industry Chamber of Funchal**

ACIF is a private association that represents companies which trade on commerce, services, industry and tourism, bringing together more than 800 businesses in Madeira. It’s mission is to provide support to it’s associates and collaborate with the Government on regulation and policy definition while promoting Madeira’s economy outside the Region too.

- **Private-held companies on the ICT/innovation sector**

There is an interesting number of companies based in Madeira that work on innovation and ICT. The vast majority are SMEs with many startups although there are some larger companies with more than 100 employees. These companies operate in diverse sectors and casually work together. Sectors include software development, mobile app development, finance, electronic procurement, gaming, tourism, sustainability and energy.

Below we've compiled a short-list of some of these companies:

- ASSECO
- ACINGOV
- ALTICE
- AWAIBA
- BUGGYPOWER
- DTWAY
- EXPEDITA
- FACTORENERGIA
- FN-HOTELARIA
- GRUPO XIS (includes FloatingParticle and ElementalParticle cos.)
- MADEBIOTECH
- MADEIRA.BEST
- MADEIRA WINE COMPANY S.A.
- MAKETHE.APP
- MC COMPUTADORES LDA
- MONTEPIO GERAL
- NEARSOFT SOLUTIONS
- PRESSPOWER
- TRAVELCENTRAL24
- VDROOM
- WALKME MOBILE SOLUTIONS
- WOWSYSTEMS
- XGT-GROUP
- XPLORE-IT MADEIRA
- YACOOBA

THE ACHIEVEMENTS

As seen, the Madeira Digital Innovation Hub has come a long way since the first vision almost 30 years ago. Today, despite still being informal, Madeira's DIH has been take serious and solid steps towards diversifying the Region's economy, making it closer to its European peers and level and supporting the regional economy into the 21st century.

Of course, there are still many steps to take and the path hasn't been always straightforward. Missteps have happened and will happen as setting up a successful DIH is very variable. The economy ends-up being exposed to macro-economy scenarios nationally and internationally, politicians and governments have limited cycles and orientations can always shift from one to another, even pandemics and other unforeseen events can take a real toll on economy and entrepreneurship.

Nevertheless, it is important to see what has been achieved in Madeira thanks to its DIH (directly or indirectly).

Indicators

For our analysis we've gathered metrics from several indicators in order to obtain a better view of what's been currently achieved. These metrics have been taken from official public sources.

1. Schooling

The level of schooling, dropouts and illiteracy is commonly used to check the socio-economic evolution of a given region. Due to the large effort done on the past decade, Madeira shows a very high index and aligned with the national and European levels despite there is still a margin to improve.

	Gross rate pre-schooling Tax	Basic Schooling Raw Tax	Highschool Raw Tax Total
Portugal	96,2%	108,5%	124,6%
Madeira	101,9%	113,4%	116,0%
EU (28 countries in '18)	95,3%	101,4%	110,5%

Sources: INE and EUROSTAT 2019

	Dropout Rate Basic 1 st Schooling	Dropout Rate 2 nd Schooling	Dropout Rate 3 rd Schooling
Portugal	2,1%	3,8%	5,8%
Madeira	2,6%	3,0%	6,0%

Sources: INE and EUROSTAT 2019

Y 2019	Early School Leaving Rate (Percentage of the population aged 18 to 24 without secondary education and who are in a situation of early abandonment of education and training)
Portugal	8,9%
Madeira	13,7%
EU (28 countries in '18)	10,2%

Sources: INE and EUROSTAT 2019

	Transition and conclusion rate Highschool	Transition and conclusion rate Technical and Professional
Portugal	85,4%	89,7%
Madeira	84,8%	85,3%

Sources: INE 2019

ON YEAR 2019 DATA	Graduates from tertiary education institutions by area in Madeira	Transition and conclusion rate Technical and Professional in Madeira	
	<i>Male</i>	<i>Female</i>	<i>Total</i>
Education	27	94	121
Arts	30	44	74
Humanities	0	1	1
Languages	19	21	40
Social Sciences	30	68	98

Management	41	61	102
Biology	11	18	29
Sciences	2	5	7
Math	0	4	4
ICT	34	2	36
Engineering	68	5	73
Architecture	8	1	9
Health	16	55	71
Social Services	26	38	64
Security	70	0	70

Sources: INE 2019

2. R&D Growth

Innovation and R&D indicators are often used to give a short and easy comprehensible status of local, national or supra national innovation systems, i.e. conditions and development of society towards a knowledge based innovation society but it also includes frame work indicators that describes or measure the innovation system at hand.

R&D investment has been increasing in Madeira and shortening the distance to the Portuguese mainland and European counterparts. We've added Azores islands to help the comparison, given that is another Portuguese archipelago in an Outermost Region with similar economic conditions and population.

	GERD as % of GDP	Repartition of R&D expense: enterprises	Repartition of R&D expense: State	Repartition of R&D expense: Tertiary education	Repartition of R&D expense: non-profit organizations
Portugal	1,40%	51,8%	5,2%	41,4%%	1,6%
Madeira	0,38%	32,1%	23,8%	43,7%	0,4%
Azores	0,32%	13,8%	8,8%	76,9%	0,5%
EU	2,2%	-	-	-	-

Sources: INE and EUROSTAT 2018-2020

	R&D personnel in active population	R&D researchers in active pop.	Average expenditure on R&D per unit (thousand euros)	PhD in S&T areas per 1000 inhabitants
Portugal	11,5%	0,90%	660,70	0,8%
Madeira	4,0%	0,30%	316,80	0,1%
Azores	2,9%	0,2%	375,50	0,1%
EU	-	1,45%	660,00	-

Sources: INE and EUROSTAT 2018-2020

3. Information Society

Information Society metrics can show how much the digitalization process and ICT are now present in Madeira's society. Data from 2017 and 2019 is compared and keeps showing a quite high rate.

	Households with computer	Internet access at home	High-speed internet access at home
2017	74,3%	76,6%	70,1%
2019	86,9%	86,1%	83,3%
2019 avg EU	91,7%	90,0%	-

Sources: DREM 2017-2019

4. Economic Index, Exports and Madeira IBC

As one can see, Madeira's companies are in-line with the actual evolution in the mainland and characterization is similar. The vast majority of companies are SMEs, many times family-based business and with 1-2 employees. This results in a very fragmented and fragile economy, that can't be very competitive yet. On the upside, these indicators translate that unemployment ends up being relatively low as many become self-employed.

The difference between imports and exports is still quite high but given Madeira is a small archipelago in an Outermost Region, a vast majority of goods will always need to be imported.

	Company density by n°/km2	Proportion of individual companies	Companies with less than 250 employees	Companies with less than 10 employees
Portugal	13,7	67,32%	99,9%	96,2%
Madeira	34,8	67,46%	99,9%	96,3%

Source: INE 2019

	Company Birth rate	Survival rate (2 years)	Mortality Rate	Average number of persons employed in company births
Portugal	15,24	56,07%	12,22%	1,20
Madeira	16,15	57,89%	11,31%	1,20
EU	9,3%	57,96%*		

Sources: INE and EUROSTAT 2017*- 2019

International Trade	Coverage rate of imports by exports	Export intensity	Degree of Openness	Companies with less than 10 employees
Portugal	78,86	67,32%	28,05	64
Madeira	158,12	67,46%	5,37	9
EU	90,75			

Sources: INE and EUROSTAT 2019

International Trade	Exports (in thousand euros)	Imports (in thousand euros)
Madeira	272.057 M€	172.054M€
EU	2.131bn€	1.897bn€

Sources: INE, INTRASTAT 2017-2019

As one can see, these indicators show that the Region has slowly but steadily started to approach EU-indicators despite there's still a significant margin. One need to bear in mind that the majority of these metrics – specially on R&D, schooling and ICT – were very low in early 90s, late 80s. There are obviously other factors that still contribute to this gap. For instance, Portugal mainland has much more Universities and R&D Centers that cover most scientific areas, which opens much more opportunities and positions for students and graduates. Madeira's capacity is inherently limited, therefore the Region needs to bet on niche sectors/markets.

New initiatives are continuously springing out in Madeira related to innovation and the scientific world, bringing together companies and academics. These efforts will, for sure, keep increasing the R&D investment rate of businesses and the mobility between academics to companies. One of the latest initiatives is the creation of the Madeira Fiware Hub that is part of the European Fiware Hub. This initiative aims to promote the adoption of digital solutions by companies and digitalization of the public administration. The Hub will establish specific partnerships between institutions and local partners to help educate and form human resources for companies that are internet-based, raise their competitiveness – specially on SMES – and diversify their internationalization business models. Basically, the FiwareHub will work as an intermediary between entities that need to improve or digitalize their processes and suppliers who can help them.

The international business center has been an interesting tool to attract foreign investment which has led – according to latest data – to the creation of more than 6.000 job posts. Paired with EU-regional funding schemes, many international companies have established in Madeira and are also starting to invest on R&D activities and new products (e.g. Eutelsat).

Identified Good Practices

As per projects activities, Madeira has already identified several Good Practices which have been shared with all Carpe Digem's partners.

Below is a short resume of the practices:

- **MITIEXCELL**
 - *The Madeira Interactive Technologies Institute (M-ITI) is located on one of Europe's Outermost Regions and operates in the interdisciplinary domain of Human-Computer Interaction, Computer Science, Design and Social Sciences. This good practice aimed at stimulate R&D activities by establishing partnerships with global top Universities*
- **YouGoTo**
 - *This is a marketplace for tourism activities that measures customer behavior through a mobile app. The solution involves different stakeholders in a digital ecosystem for booking activities, restaurants, places to visit and transportation,*

according entirely to the traveler: profile, preferences, behaviors, location. This means that, acknowledging who the customer is, to tailor the destination

- **Madeira SafeToDiscover**

- *Travelers who arrive in Madeira download an app that allows authorities to track their travel history, symptoms and whereabouts in Madeira and test result notification. As tourists keep using the app, they can browse available tourist experiences, gaining points by using it everyday and inputting symptoms, etc. The points are converted into promocodes that allow users to book experiences for free!*

- **Floating Particle**

- *FLOATINGPARTICLE focuses its development strategy on developing breakthrough technology to provide solutions to one of mankind's most urgent challenges: fresh water scarcity on a global scale. SiTAPE is our smart and integrated solution that allows for reduction water losses from the water grid while simultaneously producing clean hydroelectric energy as a by-product*

- **M-ITI**

- *Is a non-profit innovation institute of the University of Madeira, the youngest and smallest public university in Portugal. Operates in the interdisciplinary domain of Human-Computer Interaction (HCI) encapsulating contributions from the disciplines of Computer Science, Psychology and Social Sciences, and Design, with the goal of engaging in important scientific and technological challenges.*

- **StartupMadeira European Network**

- *Startup Madeira aims to support the implementation of business initiatives by acting as a mechanism to encourage entrepreneurship, innovation and the protection of knowledge and assisting companies from the start-up phase and adding value, which contributes to boost the business sector of Madeira.*

- **SICO**

- *In the age of energy conservation, we at Elemental Particle have focused all our efforts on contributing to the reduction of waste of this precious resource. Our challenge was simple: Improve solid fuel combustion efficiency, and consequently reduce fuel consumption and combustion emissions. Our solution is the SiCO system.*

- **DTWay**

- *DTWay is a company focused in the digitalization of buildings and generating value from it's data to their owners and users. We use IoT technology and big data tools to find insights from the data, increasing the sustainability of the building and related business and preparing the infrastructure that will enable future digital processes to occur.*

- **Grassroot**

- *The Grassroot Wavelengths project will create a game changing network of inclusive digital platforms for citizen engagement, community deliberation, and the free flow of information within, into, and out of discrete geographic communities*

by piloting solutions for connected, inexpensive, community owned and operated radio across Europe.

- **SMILE**

- The development of Smart grids are an important prerequisite for the transition towards a clean, affordable and reliable energy system. The Smart Islands Energy System (SMILE) project will demonstrate nine different smart grid technologies on three different islands. The end goal of the project is to foster the market introduction of these nine technologies.

Peer Review By Partner's

This section gives an outcome of the peer review made by project's stakeholders regarding the current Madeira DIGEM.

The methodology was the same as used on other Regions/partners reviewing process on the CARPE DIGEM project, with stakeholders being told to brainstorm and fill three matrix/forms (templates below):

1a. MADEIRA DIGEM goals:

1. Madeira DIGEM goals

	DIGEM goal 1	DIGEM goal 2	DIGEM Goal 3	DIGEM Goal 4
WHAT Problem /Opportunity /Need (P/O/N) is Madeira and its stakeholders trying to solve, exploit or meet				
WHY Do they want to solve, exploit or meet the P/O/N				
WHO has the P/O/N				
WHERE (physical location or part of a process) is the P/O/N				
WHEN does the P/O/N need to be solved, exploited or met				



AN DIGEM Peer Review

<p>What's there?</p> <div style="border: 1px solid #ccc; height: 40px; margin-bottom: 10px;"></div> <p>What wowed?</p> <div style="border: 1px solid #ccc; height: 40px; margin-bottom: 10px;"></div> <p>What do you share with AN?</p> <div style="border: 1px solid #ccc; height: 40px;"></div>	<p>What's not?</p> <div style="border: 1px solid #ccc; height: 40px; margin-bottom: 10px;"></div> <p>What will work</p> <div style="border: 1px solid #ccc; height: 40px; margin-bottom: 10px;"></div> <p>What can you contribute to AN?</p> <div style="border: 1px solid #ccc; height: 40px;"></div>
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Stakeholder* map

STAKEHOLDERS	Interests they have and benefits they can get from the action	Contributions and resources they can provide	Expectations and requirements	Interests that could conflict with the action

* Remember stakeholders could come from other regions or countries if they can contribute to or benefit/be impacted (+ or -) by the actions



The contributions were collected from the several stakeholders and the two main goals and needs are summarized below (the most relevant).

Goal 1

Problem: Lack of enough qualified human resources to deal with the demand on several sectors;

Opportunity: Madeira is a popular tourism destination with good airline connections to many major cities and a great broadband network, which makes it attractive for remote digital nomads to move here;

Need: Attract more qualified human resources to help the digitalization process of Madeira and keep the DIGEM evolution;

Why: Despite the regional University offer of specific computer and software engineering degrees, the expansion of ICT in Madeira and the sprout of many new regional startups as well as the growth of the R&D activities in the Region, translates into a lack of enough qualified human-resources in the areas of engineering, digital marketing, software development and cybersecurity. Salaries in Portugal aren't competitive enough and scholarships (even for PhD) have financial limits. This makes it difficult to attract foreign talent to work on regional projects. Also, this leads to a heavy emigration of local resources that receive better job proposals from abroad.

Who has this Need/Problem: The need is felt by regional companies and startups and by the regional R&D Labs and University. It's felt in whole Madeiran ecosystem.

When should it be solved and why? This problem should be addressed and solved in the next 2-3 years to keep Madeira's DIGEM evolution and growth. It's important to solve this issue otherwise the DIGEM will become stranded and many projects may "die" because they won't be able to cope with their own growth quickly enough. They will lose competitiveness.

Possible solution and Carpe Digem stakeholders involved: A possible solution would be to create a database of qualified human resources in moving to other Regions for a mid-period (1-2 years). These would be identified by the main incubators existent on the Carpe Digem project and financial support would be available for that kind of move. There's already a similar program financed by the EU, the Erasmus+ for companies but it's aimed for short-term periods.

Goal 2

Problem: Not enough digitalization on rural areas/primary sector;

Opportunity: Madeira has a major urban center that centralizes most of the population and services. The rural areas are dedicated to many farms and primary activities. However, as in many developed countries, these are becoming more abandoned, with youngsters moving to the urban area and not being interested on such physical jobs that farming has;

Need: Make rural areas more compelling for youngsters in order to retain them on those locations and develop innovative ideas either connected to primary sector or not;

Why: Desertification of rural areas is a common problem in Europe. Despite the small size of Madeira, this problem is also common. There are even very traditional industries – like wicker craftsmanship – that are in risk of disappearing because no new human resources have been trained or are interested in working on those areas/sectors.

Who has this Need/Problem: The problem is felt by the Region as a whole.

When should it be solved and why? If this problem isn't properly addressed in a 5-year framework, several traditional crafts will disappear making it a very significant heritage lost. Also, primary activities will continue to decay if they don't update themselves and start innovating and attracting young farmers.

Possible solution and Carpe Digem stakeholders involved: Madeira would benefit from the experience of others partner's stakeholders on this sector, such as Slovenia (SmartViticulture) or even Ireland and their digital ecosystems. However, the main solution would probably be to form some sort of lobbying (an association of all the stakeholders) that would push for more effective policies for digitalization and innovation in the rural areas, authorizing for instance, tax benefits and offering specific grants for settling on those areas and promoting innovative long-term projects (more than 3 years at least).

PART 2. DIGEM's – THE MADEIRA EXPERIENCE

OVERVIEW

As with many other Regions, Madeira's efforts to create a proper Digital Innovation Ecosystem has taken many turns and took a trial-error approach.

This is due to the nature itself of the construction of an ecosystem, the barriers one has to overcome, the time to overlap bureaucracy, getting the necessary funding to support the activities and promotion, establishing needed infrastructure and entities. Also, one can you foresee actual results after at least 3-5 years as the outcome of visions, policies and it's impact on economy and society isn't automatic.

On Part 1 we have seen how Madeira's Digital Innovation Hub started, evolved and it's current status and metrics. On this second part, we will try to come to a conclusion on several questions:

- a) Can we actually say there's a Madeira DIGEM or it's still brewing?
- b) What the figures and stakeholders say?
- c) SWOT analysis?
- d) Instruments that contribute for Madeira's DIGEM?
- e) Next steps to push forward Madeira's DIGEM?

For that, the consultancy team has inquired closely regional stakeholders with surveys, matrix and other tools, in order to have a broader view of the current situation.

CAN WE SPEAK ON THE EXISTENCE OF A MADEIRA DIGEM?

First, we need to define the essence of a DIGEM – a Digital Innovation Ecosystems. Around the world, organizations, and institutions like governments, universities, investors, and corporates are looking to develop or be part of innovation ecosystems. There has been a lot of conversation around creating innovation ecosystems, and now the talks are shifting toward how to improve these ecosystems and how to make them more effective and efficient. The CARPE DIGEM project focus specifically on this matter.

“Ecosystem” is commonly described as the complex of a community of organisms and its environment functioning as an ecological unit.

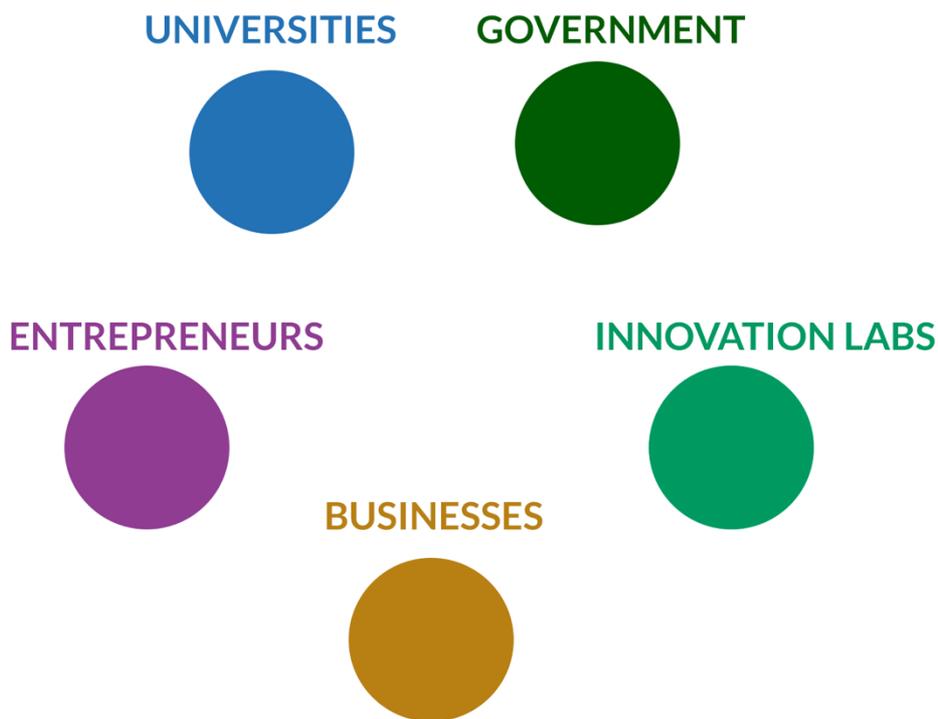
Therefore, an “innovation ecosystem” is can then be used to describe the various players, stakeholders, and community members that are critical for innovation.

An innovation ecosystem includes universities, government, corporations, startup accelerators, venture capitalists, private investors, foundations, entrepreneurs, mentors, and the media. Each of these stakeholders plays a significant role in creating value in the larger ecosystem by transforming new ideas into reality through access and financial investment. Local, regional, national and European entities can and should play a part in developing the ecosystem.

As Mike Millard from “Masschallenge” states, *“Innovation ecosystems create an active flow of information and resources for ideas to transform into reality. Through these ecosystems, we are building a process by which more innovators and entrepreneurs can develop and launch solutions to solve real-world problems, faster. This process creates expertise in new areas, helps to diversify the economy, and allows businesses to meet their customers where they are. Additionally, an innovation ecosystem provides the means to create economic stability and resource sharing.”*

You have to bear in mind that all these startups, new ideas, products and services are also creating new jobs and new opportunities. Nevertheless, we cannot forget that they are also busy building new technologies and digital process that apply across a broader spectrum of industries and audiences besides the ones they operate in. They are in permanent communication with everyone within the ecosystem, identifying key partners, and turning these in-kind and financial investments into tangible products that impact the way we all live, work, and play.

The value of an innovation ecosystem lies in the access to resources for the startups and the flow of information for the ecosystem's stakeholders. This information flow creates more investment opportunities for the right institutions to connect with the right ideas for their businesses and portfolios, at the right time, for the right reasons.



An overall scheme of how a DIGEM looks

As we can see, a DIGEM brings together stakeholders from several quadrants, in fact, it makes use of a similar to quadruple-helix approach, bringing together actors from the public sector, the private sector, the academic and scientific sector.

As we've seen on Part 1, Madeira's institutions have already put in place an informal digital innovation hub. The University keeps growing, startups in Madeira have flourished thanks to the support of EU grants and mentoring of entities such as Startup Madeira. The internationalization process of these companies and of the regional economy has also been supported by instruments such as the Madeira International Business Centre, attracting talent and investment into the archipelago.

At last, the number of patents, registered designs, published papers keeps growing and new regional-based R&D Labs have started to sprout, collaborating with international peers and increasing Madeira's global exposure on this field. In 2020, entities and companies in Madeira submitted 6 patents to the European Patent Office (EPO) which accounted for 2,2% of all patents submitted in Portugal. This number grew to 7 submitted patents during 2021 (2,8% of the country's total).

Therefore, yes, we can say that Madeira currently holds and nurtures a DIGEM. Nevertheless, it's still giving the first steps of a much long way and many challenges lay ahead as we can see from the feedback provided by the different stakeholders.

STATISTICAL ANALYSIS BY STAKEHOLDERS

In order to better analyze the current status and position of Madeira's DIGEM, the team as prepared two separate documents that collect feedback from the regional stakeholders:

- a) A matrix document for the main stakeholders
- b) An online survey for the whole community

Starting with the matrix document, it was divided on two different sections. The first asked the stakeholders to analyze and give feedback on what they think is the current status of Madeira's DIGEM, identifying problems, opportunities and actions that should take place.

The second part was a self-evaluation board, stakeholders were invited to look to themselves, describe their business, how digitalization is working (or not) for them, if they find themselves innovative, what are their specific needs and challenges and what has been the outcome for them of participating and benefiting from Madeira's DIGEM.

ANALYSIS OF THE **CURRENT STATE OF THE DIGITAL AND INNOVATION ECOSYSTEM** IN MADEIRA



The stakeholder is requested to complete the following document, in order to express his opinion and vision on the current state of the innovation, technological and digital system of the Autonomous Region of Madeira. We appreciate your contribution and sharing your experience.

- 1** **How do you evaluate the current state of Madeira's digital and innovation ecosystem?**
(eg: good involvement between companies and the University; companies in general with little focus on innovation, insufficient public incentives)

- 2** **Specific problems you identify:**
(eg: current incentive systems involve too much bureaucracy; lack of skilled human resources in the Region, etc.)

The stakeholder is requested to complete the following document, in order to express his opinion and vision on the current state of the innovation, technological and digital system of the Autonomous Region of Madeira. We appreciate your contribution and sharing your experience.

3 Suggestion for solving the identified problems:

(eg: tax benefits for hiring doctorates by companies, improving telecommunications infrastructure in rural areas, etc.)

4 Opportunities that you foresee or that should be better explored

(ex: Brexit can capture foreign investment in the Region [relocation]; New EU Framework should reinforce support for innovation, etc.)

SELF-EVALUATION OF INNOVATION / DIGITALIZATION OF YOUR BUSINESS / PROJECT



The stakeholder is requested to complete the following document, in order to reflect the presentation of his own business or project, innovations that may end, problems it faces, validation if it corresponds to a good practice, with a view to presenting the same international partners

- 3** **What problems have you faced and how have you overcome them?**
(ex: lack of qualified labor to respond to immediate needs, forcing me to subcontract abroad, etc.)

- 4** **What results has your business / project generated thanks to innovation / digitalization? Do you condeir that the digital ecosystem and regional innovation could help you? If so, to what extent?**
(ex: the digital transformation of my business has saved significant costs in labor, paper and consumables; the ecosystem can help me find new forms of marketing or international commercial exploitation / new business partners, etc.)

SELF-EVALUATION OF INNOVATION / DIGITALIZATION OF YOUR BUSINESS / PROJECT



The stakeholder is requested to complete the following document, in order to reflect the presentation of his own business or project, innovations that may end, problems it faces, validation if it corresponds to a good practice, with a view to presenting the same international partners

- 1** **Brief description of the company / project**
(eg: name, what you do / intend, areas in which you operate, etc.)

- 2** **Is your business / project innovative? Does your business / project enhance the regional digital ecosystem?**
(eg we apply an innovative packaging labeling method; we work together with the University, etc.)

The matrix questionnaire for regional stakeholders

As the matrix was done in a form of a questionnaire with many subjective questions, the analysis can't be done in statistical terms. Therefore, we have proceeded with affinity diagrams by recording each idea on a note and then lookup for ideas that were related. This also allowed us to get a broader clear picture of what are the main benefits, problems and challenges that Madeira's DIGEM face.

Stakeholders confirm that the regional DIGEM has taken solid steps over the years, but the innovation processes and mindset is still not very strong among the economic agents. The majority points out common problems with too much bureaucracy for the submission and execution of the projects – grants schemes wise – and the lack of enough qualified human resources, not only people that are dedicated to R&D and innovation but also consultants that can help entrepreneurs and businessmen manage these complex schemes, making it easier to submit, control and achieve the goals.

Some stakeholders also took notice of the available fiscal benefits for companies that promote R&D. Nowadays they seem to be too much focused on R&D resources and should be more focused and benefit ideas and projects that contribute to the economic political defined strategy for Madeira. This idea should be contested, as by reviewing the evaluation criteria of the available schemes, the alignment of the project idea with the regional strategy is a must. However, we assume that these kind of answers and feedback is driven from the lack of more specific knowledge from the stakeholders on what's is available, how and why.

Stakeholders also reinforced the need to look after the remote areas and primary sector in Madeira. Despite – as they recognize- there has been a great work on infrastructures and funding for this area, there's still a considerable lack of knowledge and innovation on this area and even telecommunications infrastructure has still a great margin to improve on the most remote parts of the islands.

It was interesting to note that academic stakeholders find it a struggle to cooperate with the private sector in an efficient way. Although the number of common projects between the parties keeps rising and that the private sector has a better awareness of the benefits in collaborating with Universities and R&D Labs, there are still several hurdles to overcome. Both sides say that projects as being financed by grant schemes limits the execution timeframe to 18-24 months which is too little. Also, reprogramming requests, payment requests, scholarships contests take too much time to make the project run smoothly. This short timeframe also translated in a larger difficulty to hire researchers as they aren't very keen to commit to such temporary projects.

As suggestions for a better DIGEM, the stakeholders seemed to have focused too much on the available schemes but there are several common points that should be highlighted:

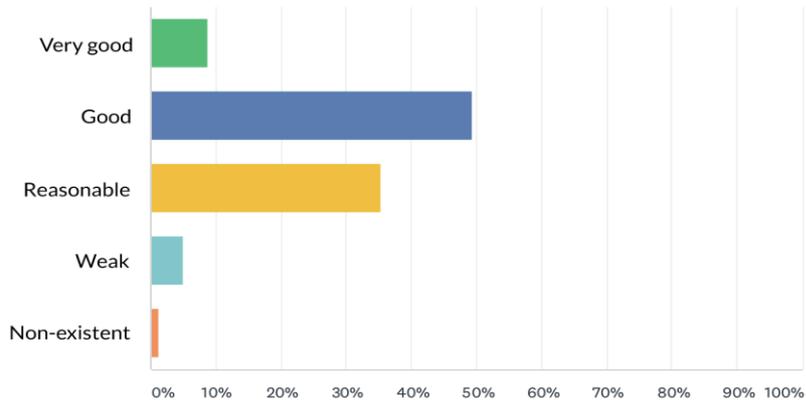
- All stakeholders must cooperate more and in a more positive and open mindset as of today, specially between businesses, it seems that cooperation is a bad thing and the parties are there to try to get business secrets from one and another. This is particularly valid if you look at the submitted projects. There are very few that involve strict cooperation between two private companies. The majority are individual projects or projects done in co-promotion with R&D Labs or Universities.
- Bureaucracy seems to still be a problem for every stakeholder. From our analysis this seems to be more of a national mindset that overlaps from other areas of the society and not specifically caused by the DIGEM. Yes, the grant schemes can be quite complex – specially the innovation and R&D schemes – but this complexity is needed for transparency and good evaluation, so it should be considered as a good thing and not a bad thing. Stakeholders should be better prepared and informed on how to handle and manage these processes and for that, the Madeira DIGEM should create a stronger network of specialized consultants to help companies and researches cope with this matter;
- Covid19 pandemic can be an opportunity to accelerate the digitalization of the economy but also to reduce the previous problem;

- The new EU framework should take in consideration all the negative feedback that stakeholders have provided during the last years, namely, the duration of projects, better grant taxes for R&D Labs and academics, the scholarships grants regulations should be revised to make it more flexible and quicker to hire, Madeira's Outermost location should be considered on the budget allocated to private and public Universities and private R&D labs established here;
- The mindset of the private sector for the importance of R&D is still very limited. There are very few companies that have implemented proper R&D projects with positive material outcome. Businessmen seem more focused on investment schemes that help their activity survive;
- International investment attraction and the internationalization process of the Madeiran companies should continue to be a priority.

Alongside the matrix, the team setup an online survey for a broader audience, trying to reach the whole community. This survey focused, again, on trying to perceive the community's opinion about Madeira's DIGEM, how the ecosystem is rated, how cooperation between private, public and academic sector is working, what are the strengths, opportunities and risks, upcoming challenges, what does the community think about the current grant schemes that are offered, how stakeholders are using ICT for their projects and activities.

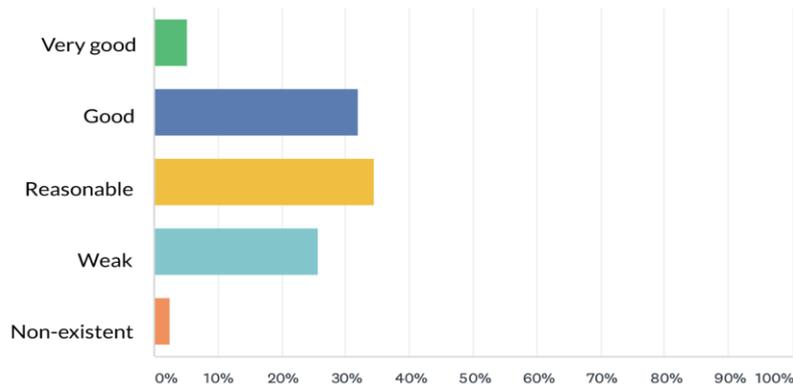
Below we transcribe the questions, answers and results. A total of 79 stakeholders replied.

Q1: How do you rate the regional Information and Communication Technologies (ICT) ecosystem and innovation environment?



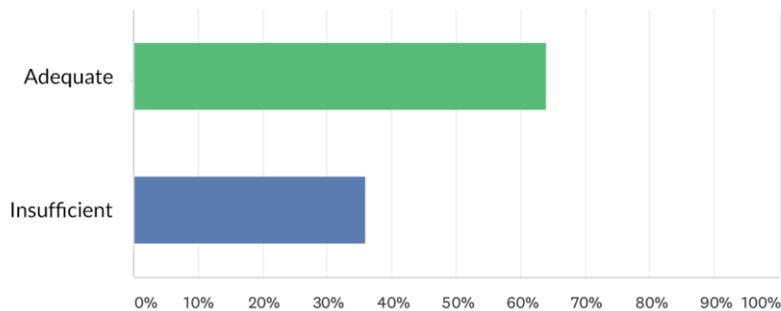
Very good	8.86%	7
Good	49.37%	39
Reasonable	35.44%	28
Weak	5.06%	4
Non-existent	1.27%	1
TOTAL		79

Q2: How do you rate the cooperation between companies and the University, Research Centers and other scientific or academic entities in R.A.M. is?



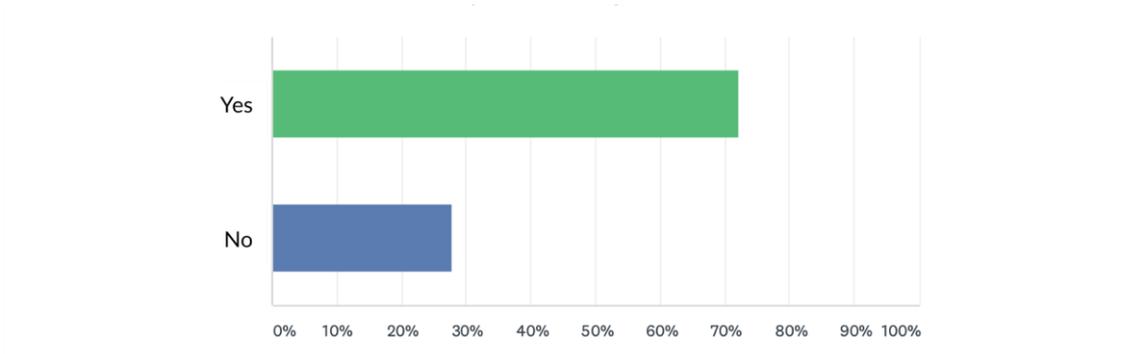
Very good	5.13%	4
Good	32.05%	25
Reasonable	34.62%	27
Weak	25.64%	20
Non-existent	2.56%	2
TOTAL		78

Q3: How do you rate the existing public support for the different business sectors (incentive systems and financial instruments)?



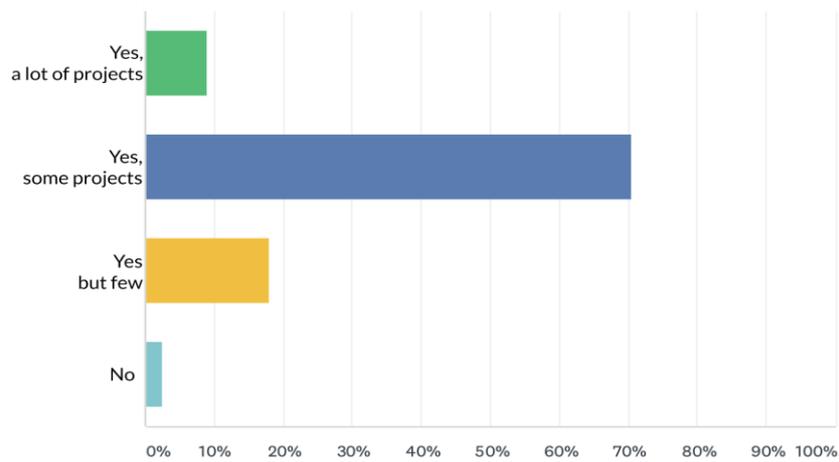
Adequate	64.10%	50
Insufficient	35.90%	28
TOTAL		78

Q4: Has your company / entity previously used any of these types of support schemes?



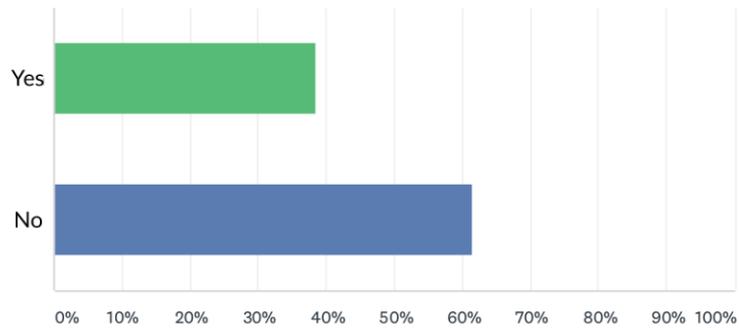
Yes	72.15%	57
No	27.85%	22
TOTAL		79

Q5: Do you think that there are in Madeira companies or projects that make a good application of ICT / digitization processes in their activity (regardless of the sector of activity)?



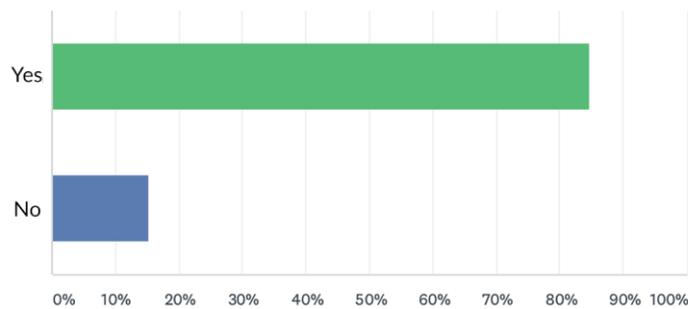
Yes, a lot of projects	8.97%	7
Yes, some projects	70.51%	55
Yes but few	17.95%	14
No	2.56%	2
TOTAL		78

Q6: Are there human resources within your company / organization dedicated to ICT or to innovation and digitalization processes?



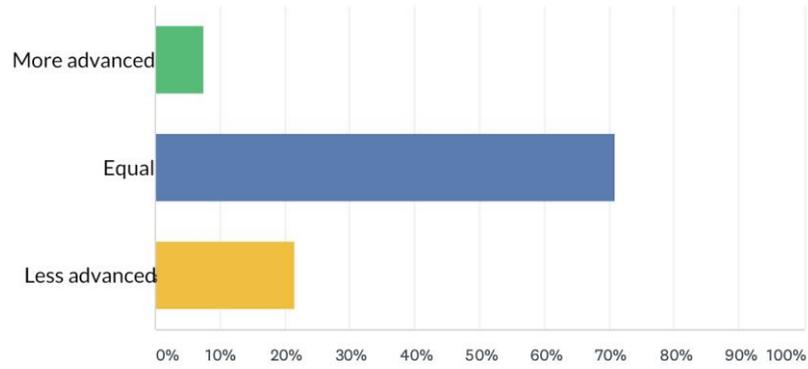
Yes	38.46%	30
No	61.54%	48
TOTAL		78

Q7: Does your company/entity considers to invest in ICT in the next upcoming years?



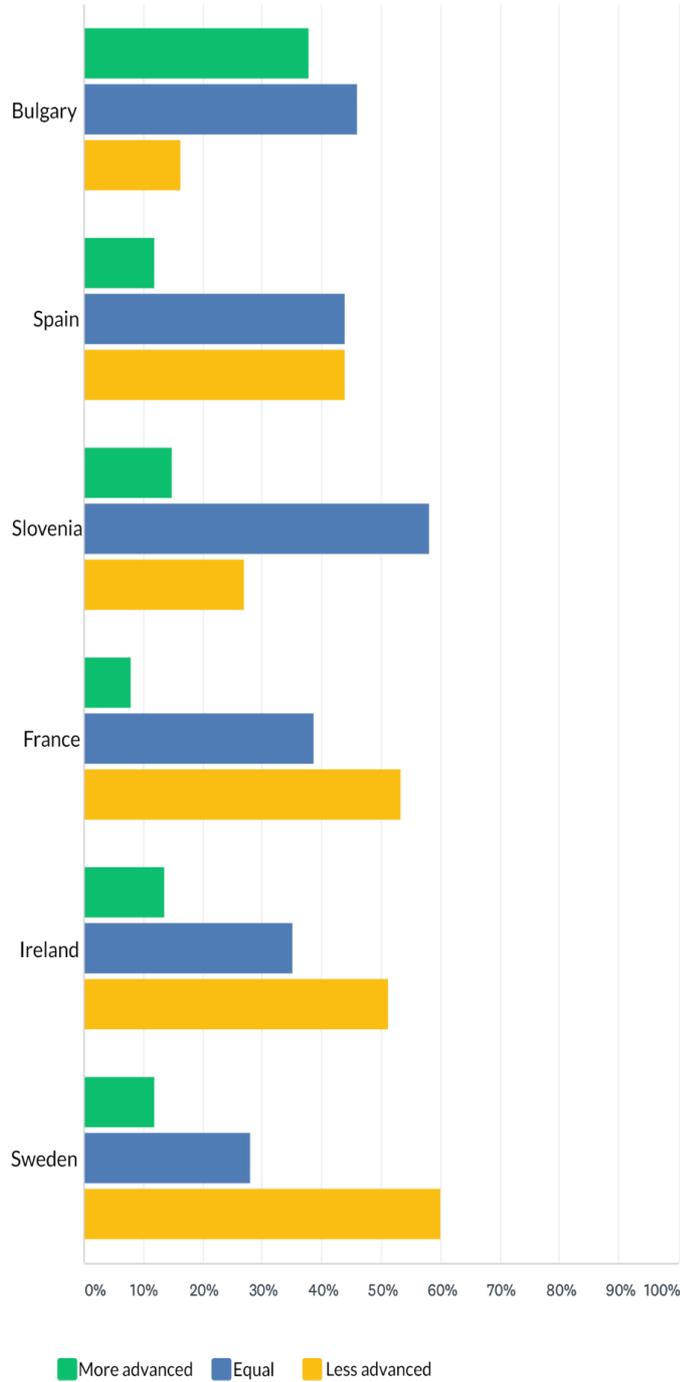
Yes	84.81%	67
No	15.19%	12
TOTAL		79

Q8: In terms of innovation and digitalization, do you consider that the companies and entities in Madeira are more or less advanced in relation to their peers in mainland Portugal?

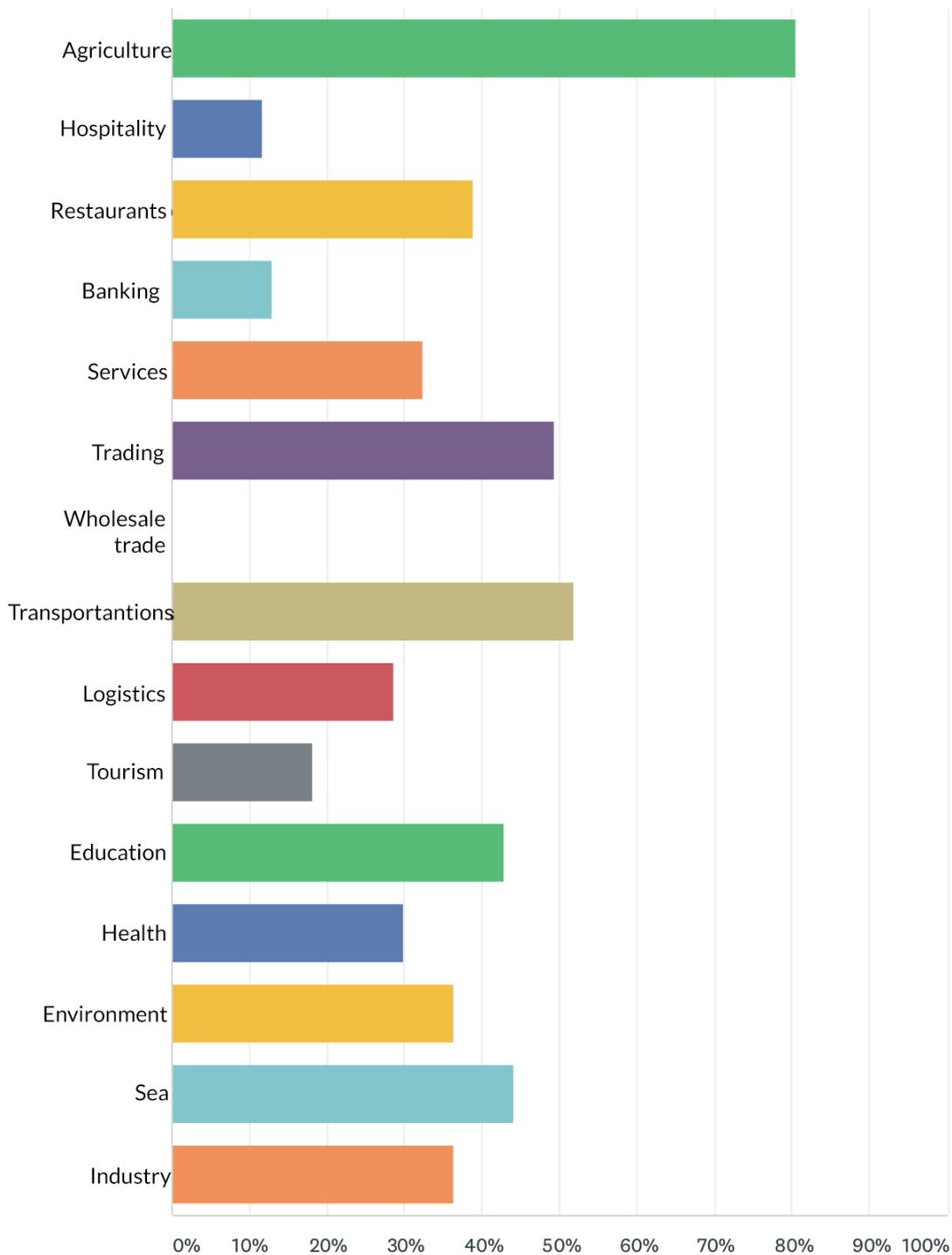


More advanced	7.59%	6
Equal	70.89%	56
Less advanced	21.52%	17
TOTAL		79

Q9: In terms of innovation and digitalization, do you consider that the companies and entities in Madeira are more or less advanced in relation to the following European peers



Q10: Which sectors of activity do you consider to be less advanced in the use of ICT, innovation and digitalization activities and processes?



Looking at the survey, the answers come in line with our previous analysis. Madeira's DIGEM is taking good steps but there are still work to do to become a proper strong DIGEM.

It seems that Madeiran companies aren't yet much positioned for R&D and innovation despite their sensibility towards it is growing with many stating they will definitely allocate resources to these activities in the upcoming years.

Grant schemes availability seems to be proper although there is still a significant margin of stakeholders that consider them insufficient. This may be directly related to the fact that there are still several stakeholders which never benefited from these schemes. The reasons for them not to benefit seems to be divided both on too much bureaucracy and not knowing in depth how they work or assume they are too much complicated (these assumptions can be inferred from the matrix answers).

In the last few months IDE has been taking steps to approach these companies and stakeholders, promoting webinars in which the schemes are better explained alongside QA sessions. Nevertheless it seems that it might also be a combination of traditional generation mindset, that is, businessmen that don't accept much innovation on their business and rather look into playing safe because that is what has always worked for them and a poor business management education of these businessmen, which is common problem in Portuguese SMEs.

GRANT SCHEMES AND FINANCIAL INSTRUMENTS AVAILABLE FOR THE REGIONAL DIGEM STAKEHOLDERS

In Madeira, the European framework is managed by two main entities: the "Instituto de Desenvolvimento Regional" (IDR) and the "Instituto de Desenvolvimento Empresarial" (IDE). While IDE is under IDR's umbrella, they are still both autonomous entities with IDR managing the support and grants for the public sector while IDE manages for the private and business sector.

For our analysis, we will focus solely on the private sector and on the grants managed by IDE, since many of these intersect with the public actors, especially

with R&D and Universities and therefore reflect a better vision of the instruments available, some of which were even created with the regional DIGEM in mind.

Therefore, IDE's mission is to promote the development, competitiveness and modernization of companies in the secondary and tertiary sector of the Autonomous Region of Madeira, especially micro, small and medium-sized companies, aiming at strengthening innovation, entrepreneurship and business investment.

In accordance with the Regional Socio-Economic Development Plan of Madeira, several grants schemes were created to cover many different areas of activity and needs.

It's important to note that the several schemes are divided by axis and either included within the Madeira2014-2020 Operational Program or not. Some of these schemes are specifically aimed for Innovation. Therefore, the current listing translated which grants and instruments exist and how they are distributed by Axis and framework:

Available support instruments and schemes within the OP Madeira14-20:

- Axis 1 (Strengthening Research, Technological Development and Innovation):
 - Prociência2020;
 - Inovar2020.
- Axis 3:(Strengthen the Competitiveness of Companies):
 - Empreender2020;
 - Internacionalizar2020;
 - Valorizar2020;
 - Adaptar-RAM.
- Axis 4: (Energy efficiency for companies):
 - Valorizar2020.
- Axis 11: (Operating aid and expenditure related to public service contracts and obligations in the outermost regions):
 - Funcionamento2020.

Available support instruments and schemes outside the OP Madeira14-20 framework:

- INICIE+
- Credit-Line INVEST RAM (it offers better conditions for projects considered as innovative)
- Credit-Line INVEST RAM Covid-19
- Credit-Line Apoiar Madeira
- Guarantee Issuance Line
- Garantir+
- MeP RAM Financial Support

We will now take a closer look on the schemes and instruments that are innovation-related or directly aimed for companies

- **Empreender2020**

- EMPREENDER 2020 aims to support the boosting of private investment and job creation materialized in product-innovation projects. It intends to renew the regional economic base by stimulating innovation and entrepreneurial initiatives, preferably aligned with the Intelligent Specialization Strategy (Regional RIS3), capable of providing creative and innovative businesses focused on renewing the offer of tradable goods and services with high added value. and that make it possible to boost job creation and mobilize specialized technical skills.

The scheme supports individual projects in the area of qualified and creative entrepreneurship in diversified domains and with strong growth dynamics, including those integrated in creative and cultural industries, web and digital entrepreneurship, and / or sectors with greater intensity of technology and knowledge or in which the the application of R&D results is valued in the production of new goods and services, valuing the articulation with the entrepreneurship ecosystem.

The support to be granted under this system takes the form of a refundable incentive, with a limit of € 500,000.

Depending on the evaluation of the results of the project, an exemption from a portion of the refundable incentive can be granted, with the respective readjustment of the repayment plan, up to a maximum limit of 60%, depending on the degree of compliance with the goals set by the beneficiary duly approved, regarding the indicators "gross added value" and "creation of qualified employment".

More recently this grant scheme was revised to finance projects in the area of qualified and creative entrepreneurship in diversified domains of economic activity with strong growth dynamics, including those integrated in creative and cultural industries, web and digital entrepreneurship, and / or sectors with greater technology and knowledge intensity or that value the application of R&D results in the production of new goods and services, valuing the articulation with the entrepreneurship ecosystem. High value-added activities are also supported, with inducing effects on the business profile and the diversification of the regional productive base, namely through the creation of companies with qualified human resources and the implementation of projects, preferably in strategic areas of regional development identified by the Strategy Intelligent Specialization (Regional RIS3). For this purpose, investments of an innovative nature, related to the creation of a new establishment, which translate into the production of tradable goods and services with a high level of regional incorporation and which correspond to an initial investment, translating into an the following types of innovation: «Product / service innovation» or «Process innovation».

The support to be granted under this Notice, up to a limit of € 75,000 per project from which 60% corresponds to a refundable incentive and 40% corresponds to a non-refundable incentive.

- **Inovar2020**

- INOVAR2020 - Incentive System for Business Innovation in the Autonomous Region of Madeira - is aimed directly at companies (SMEs and Non-SMEs) with the goal of promoting productive innovation projects, national or international, aimed at the introduction of new activities, products or services or the significant improvement of technological processes through the transfer and application of knowledge, contributing to the modernization and innovation of the business fabric and reinforcing the tradable productive base of RAM, thus allowing an improvement of Madeira's positioning in international value chains.

This Incentive System includes a set of actions aligned with the objectives and priorities defined in the Regional Strategy for Intelligent Specialization (RIS 3) and aimed at reinforcing innovative investments.

The incentive to be granted is calculated by applying a 35% base rate to eligible expenses, which may be increased by the following increases:

"Type of company" bonus: 10% for projects submitted by micro, small and medium-sized companies;

Increase in "Cooperation with non-corporate entities of the regional scientific and technological sector (SRDITI)": 10% to be attributed to projects that present a cooperation action plan with non-corporate entities of SRDITI.

- **Prociência2020**

- PROCiência 2020 - Incentive System for the Production of Scientific and Technological Knowledge of the Autonomous Region of Madeira - is aimed directly at companies (SMEs and Non-SMEs) with the objective of strengthening the competitive capacity of the regional economy by boosting projects in strategic areas of Research, Development and Innovation (R&D) in companies, between companies and the entities that make up the Regional System for the Development of Research, Technology and Innovation (SRDITI) and Higher Education institutions, fully aligned with the objectives and priorities defined within the scope of the

regional RIS3, in order to ensure a threshold of technological skills that allow the transformation of the knowledge generated into new products and services.

Projects that fall into the following types are eligible for financing: R&D projects promoted by companies, comprising industrial research and experimental development activities, leading to the creation of new products, processes or systems or the introduction of significant improvements in existing products, processes or systems - projects of proof of concept can be supported;

Projects demonstrating advanced technologies and pilot lines, which, starting from R&D activities successfully concluded, aim to show, before a specialized public and in a real situation, the economic and technical advantages of the new technological solutions that are not sufficiently validated from the technological point of view for commercial use.

The incentive to be granted is calculated by applying to the eligible expenses a base rate of 25%, which can be added by the following increases:

“Industrial Research” bonus: 25 p.p. to be allocated to R&D activities classified as such;

“Type of company”: 10 p.p. to be attributed to medium-sized companies or 20 p.p. to be attributed to micro and small companies; Increase of 15 p.p. when at least one of the following situations occurs:

“Cooperation between companies”, to be awarded when the project cumulatively checks the following conditions:

- a. Involve effective cooperation between autonomous companies from each other;
- b. No company supports more than 70% of the project's eligible expenses;
- c. Involve cooperation with at least one SME or involve R&D activities in at least two member states;

“Cooperation with SRDITI non-business entities” mark-up, to be awarded when the following conditions are cumulatively met:

- a. The participation of SRDITI non-corporate entities represents at least 10% of the project's eligible expenses;
- b. SRDITI non-business entities have the right to publish the results of the project resulting from the R&D carried out by that entity;
- c. Increase in "Wide dissemination of results", provided that the results of the project are subject to wide dissemination through technical and scientific conferences or publication in scientific or technical journals or stored in free access databases, that is, to which the access to raw research data or through free or public software.

PROCiência2020 is one of the main funding schemes that is actually designed specifically for Madeira's DIGEM, boosting cooperation between public and private sector, between companies and between companies and Universities and R&D Centers.

- **Valorizar2020**

- The Incentive System for the Valorization and Business Qualification of the Autonomous Region of Madeira - "Valorizar 2020", aims to develop actions which have the goal to improve the competitive capacity of regional companies in order to consolidate economic growth and add value to processes and processes. goods and services, as well as supporting the implementation of energy efficiency measures and the use of renewable energy in companies. Projects that contribute to ensure the transition to a low-carbon economy, through investments in the priority areas of energy efficiency and the use of renewable energy in companies, are also eligible for financing, including operations under the "Smart Fossil Free Island" initiative.

- **Internacionalizar2020**

- This grant scheme aims to consolidate the presence of regional companies in international markets through measures that facilitate the identification of new markets and new businesses, which allow to strengthen local business capacity, namely through the enhancement of immaterial factors of competitiveness.

Beneficiaries are companies of any nature and in any legal form, existing at the date of application for more than 24 months since the date of activity start, operating in the secondary and tertiary sectors and that promote projects aimed at the production of goods and internationalizable services.

The support to be granted under this system takes the form of a non-refundable incentive and cannot exceed € 50,000 per project.

Projects need to aim one or several of the following actions/needs:

- Knowledge of foreign markets;
- The presence on the web, through the digital economy, including the launch of virtual catalogs of goods and services;
- The development and international promotion of brands;
- Prospecting and presence in international markets;
- International marketing;
- The introduction of a new method of organization in commercial practices or in external relations;
- Specific certifications for foreign markets.

- **Adaptar-RAM**

- This is a more recent scheme that was created due Covid19 pandemic. Adaptar-RAM consists of supporting SME projects (micro, small and medium-sized companies) in adapting their establishments to the new conditions of physical distance and hygiene in the context of the COVID-19 pandemic, ensuring compliance with established standards and recommendations competent authorities.

Eligible projects that aim to adapt their establishments in the face of new conditions of physical distance and hygiene in the context of the pandemic COVID-19 are susceptible of financing, the purchase of personal protective equipment for workers and users, equipment and cleaning materials, disinfection contracts of workplaces, costs with altering the operating layout of establishments and reorganizing workplaces, new methods of organizing work and relationships with customers and suppliers, in

compliance with the established rules and recommendations of the competent health authorities. health, in order to ensure a safe resumption of business activity.

- **Funcionamento2020**

- Funcionamento2020 is one of the most popular schemes in Madeira. It consists on supporting projects that aim to reduce the permanent and structural difficulties of companies, through a regional operating aid aimed at reducing current expenses of companies, in order to mitigate difficulties in the business which were now aggravated by the disease of COVID-19. Several expenses are eligible according defined limits and take into account that Madeira is an Outermost Region very dependent on import of goods:

- i) Gross salary or workers;
- ii) Social security contributions;
- iii) Rent from installations;
- iv) Electricity consumption costs and respective fees;
- v) Water consumption costs and respective fees;
- vi) Costs for providing accounting services up to the limit of € 2,000.

The above are investment-support schemes that are mostly based on innovation projects, internationalization and cooperation. These schemes offer a mix of non-reimbursement grants and reimbursement grants according the scheme, project goals, job creation, location, sales and other variables.

Parallel to these schemes, businesses are also offered financial instruments specifically created and managed by IDE in order to boost economy and ideas. The main instrument is **INVESTE RAM 2020** which aims to support companies in the secondary and tertiary sectors of the economy that want to boost productive investments in RAM.

Investe RAM aims at financing operations for tangible and / or intangible investments, as well as working capital, which is limited to a maximum of 10% of the total investment; operations whose purpose is the acquisition of real estate,

provided that they are related to business activity and operations whose purpose is the acquisition of land, with or without buildings, provided that they are used for the exercise of business activity, with this portion of financing limited to a maximum of 10% of the total expenditure eligible for the operation. The investment must be made within the limit up to 24 months after the date of the contracting of the operations, with a maximum of 5 uses and with the limit of the capital grace period.

In terms of bonuses, the Line Management Entity (IDE) will grant:

- Full bonus of the applicable guarantee fee by SGM, which will be a maximum of 1,600%;
- Interest rate bonus at 60% of the contracted spread (the maximum spread to be applied by the bank will be 3.40%), with the possibility of this bonus being increased by:
 - 20% when the company creates or maintains the volume of employment;
 - 20% when the project meets the innovation criteria defined by the Line Management Entity.

So, a project can give a 0% spread as well as needed guarantee covered in 80%. This is important and quite useful for large investments that need a robust funding and financing. Investe RAM offers a maximum amount of funding per project up to EUR 4 250 000.

More recently, IDE has launched two phases of a new line of Investe RAM to fight the economic impact of Covid19. The Investe RAM Covid 19 financial instrument aims to help companies to maintain jobs during these troublesome times. The financing amount may be converted, in part or in whole, into a non-refundable amount if job posts are maintained during 18 months and if there was a proven reduction of more than 40% in sales volume, between the months of March to May 2020, compared to the previous 90 days.

Execution-wise, the grants schemes available on Madeira's OP 2014-2020 already show a very high approval and execution rates as per the table below:

Scheme	Submitted projects	Approved projects
PROCiência2020	39	22
Inovar2020	19	7
Empreender2020	81	40
Internacionalizar2020	81	53
Valorizar2020	176	94
Adaptar-RAM	1.123	1.034
Energy Efficiency	13	4
Funcionamento2020*	5.230	3.908
Total:	6762	5162

Source: IDERAM, 2021

Scheme	Public Expense (in M€)	Commitment Tax	Execution Tax
PROCiência2020	13.072.000€	91%	38%
Inovar2020	2.891.000€	99%	31%
Empreender2020	9.992.000€	82%	53%
Internacionalizar2020	5.191.000€	77%	49%
Valorizar2020	28.669.000€	96%	63%
Adaptar-RAM	3.343.000€	134%	0%
Energy Efficiency	1.072.000€	31%	4%
Funcionamento2020*	82.846.000€	121%	98%
Total:	147.075.000€	105%	73%

Source: IDERAM, 2021

SWOT ANALYSIS

The SWOT Analysis of Madeira's DIGEM is useful to assess its current position in order to better define next steps and strategy.

Strengths

- S1.** Good infrastructure and accessibility with high speed internet available and high internet/mobile rate penetration;
- S2.** Grant schemes in place and available, directly connected with the regional DIGEM;
- S3.** Diversity of companies that are boosting innovative products and services on several sectors;

- S4.** Competitive fiscal regime for international investors due to the Madeira International Business Center;
- S5.** Experienced entities in the area with good international network;
- S6.** Political sensibility to boost innovation, digitalization and cooperation in Madeira;
- S7.** R&D Centers and Labs created to support the DIGEM

Weaknesses

- W.1** Despite having a good accessibility, Madeira is still an Outermost Region in Europe and is nested away from the main political deciding centers;
- W2.** Difficulty in attracting talented foreign human resources for long-term. The majority stays for less than 2 years;
- W3.** Despite all efforts, companies and academics/researchers still don't cooperate enough or benefit each other to reach better overall results (good steps are being taken to mitigate this however);

Opportunities

- O1.** Being an Outermost Region has the good side of providing better European Funding with markups and access to specific public and private grants schemes;
- O2.** The REACT-Plan that is emerging as a reply to the Covid19 pandemic and the new EU framework for 2021-2027 will specifically address DIGEM's issues promoting digitalization, new ideas, innovation and cooperation making available an unprecedented amount of funding that Madeira needs to make the best use;
- O3.** The better organization of the regional Labs and R&D Centers under a unique umbrella-entity will make processes easier, know-how transfer quicker and create better opportunities regionally and abroad, while boosting efficiency.

Threats

- T1.** The global economic crisis that has been caused by the Covid19 pandemic will make it difficult for businesses owners and startups to go ahead with new investments or for current businesses to stay afloat if the crisis keeps going for more months;
- T2.** DIGEMs need clear political vision. The vision can be changed every year an election goes on which may cause reshifting strategies and policies making it

difficult to obtain outcome of the current policies as not enough time was provided for it;

T3. Mindset of all actors involved may not change enough to increase cooperation between all agents on a sufficient degree. This seems to be more a cultural-native issue that will take time to shift.

STEPS TOWARDS A REGIONAL DIGEM

Taken from the above and given the collected information – which is still an ongoing process - it is clear that the Madeira's DIGEM is still young, informal but has already given good solid steps that allows us to envision a brighter future for it.

There are very positive points that stand out. Madeira's DIGEM already involves stakeholders from several different sectors of activity and more importantly, covering all the specific areas a proper DIGEM should have and making cooperation between private and public agents a reality.

The DIGEM that has sprung out in Madeira is the outcome of a political strategy that is aligned with EU's vision and benefits substantially from its funding.

There has been a sensibility from the EU in supporting Outermost Regions and Madeira has greatly benefit from this fact and extra funding but it has also worked intensively to attract international investment, either through the creation and management of Madeira's International Business Center or through the R&D and Internationalization available grant schemes that has been attracting foreign researches and companies and keeping madeiran exports on a rise.

One interesting fact is that the DIGEM is informal. That is, officially it is not recognized or constituted in any way like the Regional Scientific System (SRDITI) is for instance but it is a fact that it exists and many entities contribute actively for it.

However, we can start seeing some more proactive changes that will lead to a transition into a formal DIGEM. In fact, the main entity ARDITI has now embraced several Labs and regional R&D Centers in order to become an 'umbrella-entity' that centralizes the majority of the R&D activities done by the public-sector in Madeira in close cooperation with private sector.

With this new position and strategy, we can say that ARDITI is now leading the way to the formal implementation of a Digital Innovation Hub in Madeira. In fact, the entity has recently submitted a proposal to the EDIH (European Digital Innovation Hub Programme).

These steps are also being enhanced by other initiatives that co-relate with ARDITI and the regional DIGEM, such as the mentioned Fiware Hub or the several actions that Startup Madeira takes – most recently, the promotion of the Region as a Digital Nomads destination or the Roadshow for Entrepreneurship – and other private-related initiatives, such as the one led by the Chamber of Commerce of Funchal (ACIF) with its project on Digital Innovation for their stakeholders.

As this report is on its first version, more feedback will be collected and generated by the Carpe Digem project, as it will be quite interesting to see the project's partners' feedback on Madeira's DIGEM. Unfortunately, this feedback will probably only be collected when Madeira's event and visit occur in late June-July 2021 and if the pandemic allows it.

As consultant team, we have identified several steps that align themselves with the Carpe Digem project goal on enhancing the regional DIGEM, although these will work as mere starting point for the Action Plan to be defined along the project and which will be specifically created

1. It should be created a non-profit association to formalize Madeira's Carpe Digem. Founding members should be a mix of public, private entities, academic, etc. in a quadruple-helix approach;

2. Some of the madeiran companies that have been driven by R&D and innovation should act as anchor-entities, promoting the benefits and stimulating other businesses to join. In alternative, this could be done by the Funchal Chamber of Commerce "ACIF";
3. Positioning itself as an association would imply the need for everyone to define a common strategy and goals within a time-frame, it will also help finance the needed activities through EU-level public schemes calls;
4. At last, the association would raise the awareness and present itself with the needed credibility regionally and internationally;
5. An online repository should be properly maintained with all the stakeholders project's and information's, categorized to help the search. Nowadays it is still difficult to easily obtain info on how many projects are being developed in Madeira innovation-wise, apart from the ones that IDE and IDR manage which are publicly disclosed;
6. There should be more actions to promote cooperation between stakeholders. Probably the creation of markups on the grant schemes for this specific purpose or the creation of fiscal tax benefits would make stakeholders speak more to each other;
7. Bureaucracy will always exist but an online platform that could aggregate all questions and answers and provide real-time replies to the stakeholders and consultants might ease this burden
8. Grants schemes should keep innovation, R&D activities, internationalization actions as priorities with the new EU framework. Markups should be given to projects that cooperate not only between regional stakeholders but also with international stakeholders or within Macaronesia region.
9. A special focus-group should be created to address the needs of the primary sector and the remote areas in Madeira. Despite existing good programs that support innovation, usage of clean energy and investment, it seems that there is still a lack of more specific programs that can revitalize these areas in Madeira and create new opportunities and new jobs. This is not an easy task and ends-up being a EU common problem that should be addressed by the whole community.

To help achieve these steps and given the spirit and goals of the CARPE DIGEM projet, Madeira/IDERAM has already started to identify project partner's Good Practices that might be imported to Madeira or that seem interesting to apply in the Region.

Below is a short table summary of the Good Practices chosen to the date:

Good Practice	Country	Institutions/Companies interested in Madeira
Smart Viticulture for Rural Areas	Slovenia	Secretaria Regional da Agricultura e Desenvolvimento Rural
C-TRIC Healthcare Innovation Hub in Derry	Irlanda	Escola Superior de Enfermagem S. José de Cluny ARDITI
4PDIH	Slovenia	ARTIDI Universidade da Madeira
Donegal Digital Transformation Ecosystem	Irlanda	ARTIDI Universidade da Madeira
Aislann – supporting innovation in Gaeltacht	Irlanda	ARTIDI Universidade da Madeira
Port Authority of Balearic APB	Espanha	Grupo Sousa
Participative GIS Tools	Irlanda	Secretaria Regional de Turismo e Cultura
Balearic Islands Innov. Ecosystem DIHBAI-TUR	Espanha	Secretaria Regional de Turismo e Cultura
Incubator Parcbit-Emprenbit	Espanha	Startup Madeira
L'INKUB and Le Village CA Nevers	França	Startup Madeira
Digital Transformation of Derry	Irlanda	Startup Madeira

TIRME – Circular Hotels	Espanha	ACIF – Mesa de Turismo e Hotelaria
The Innovation Loop	Suécia	Startup Madeira
Safe Beach	Espanha	Direcção Regional do Ambiente e Alterações Climáticas (DRAAC)

Apart from this first approach and list, it should be noticed that the CARPE DIGEM project already has put in contact the ARDITY entity (Madeira) with Mallorca partner in order for the entities to submit together a proposal for the DIGEM HUB implementation – with a close attention from Madeira’s side on the DIHBAI-TUR good practice in which also the parties are signing a Bilateral Cooperation Agreement - so the project is already generating know-how transference and promoting new initiatives between entities from each partner’s Regions.

IDERAM will now start to contact the regional companies and entities in order to present them these Good Practices and evaluate their interest and viability.

In the cases of positive feedback, IDERAM will then continue the liaison with the partner’s institutions responsible for the chosen Good Practice.

A final word should be given – still related with the next steps – as the Madeira Government has now concluded and released the “The 2030 Economic and Social Development Plan (PEDS230)”. This document defines the main axis, areas and strategy for the 2020-2030 frame and therefore, the definition of the Action Plan should really interconnect with the policies defined on the Plan.

The PDES sets several strategic goals for Madeira:

“1. Reinforce the regional smart specialization around Madeira's areas of excellence, always with the concern of promoting the transfer of knowledge to the business sector, stimulating the demand of companies with support to innovation and the establishment of supra-regional partnerships.” – As one can see, this perfectly fits with the need of a formal and proper established DIGEM in Madeira which reinforces the usefulness of the CARPEDIGEM project too.

"2. Consolidation of regional value chains. In view of the risks of fragmentation of value chains, Madeira needs to explore opportunities for diversification by taking advantage of innovative critical masses of resources with greater potential, guiding the analysis around various sectors, specifically Tourism / Leisure; Heritage and Culture; Agri-food; Blue Economy; Digital Economy Services; Energy and Mobility; and Urban Rehabilitation." - Again, this strategy correlates perfectly with the whole idea on how a proper DIGEM works and how it should put together several types of stakeholders from public and private sectors;

"3. Formation of new competences, combining classic school and professional training modalities with new approaches appropriate to transformative changes, which demand solutions for professional retraining and learning new skills." - The PDES gives great focus on education and reformation of competences. The DIGEM could explore this need and provide tools and human resources to create new competences on the social and economic stakeholders of Madeira;

"4. Fostering innovative experiences in adapting to Climate Change and Energy Transition, implementing the constant proposals for regional planning and sector planning instruments in the areas of Transport, Sustainable Urban Mobility, Circular Economy, CLIMA Madeira, Sustainable Energy, Waste Management and PROTRAM, among others." – The actual informal DIGEM is already addressing these topics and therefore it should be reinforced and underlined on the Action Plan this need.

"5. Combat poverty and social exclusion, mobilizing a wide range of social policies and interventions (housing, health, social benefits, active employment policy measures, ...)." - It is a known fact that knowledge and economic development generates increased revenue and income, therefore the society around a good DIGEM benefits and the overall citizens win too.

"6. Encouraging Recovery and Resilience, a challenge that has an ambivalent status: Transversality in the relationship with the various strategic challenges; and Transition, which generates conditions for relaunching economic dynamics and social capital, which are indispensable for taking advantage of opportunities to leverage the necessary changes". We believe the Action Plan may also take an

approach on this resilience issue. Entrepreneurship, venture capital, specific credit-lines are all tools that can help the recovery and resilience the Economy will face on a post-Covid19 era.

TECHNICAL SHEET

Title:

CARPE DIGEM PROJECT REPORT: Peer Review of Madeira (Process and Achievements) and the Madeira DIGEM Experience

Ownership/Client:

IDE, IP-RAM | Instituto de Desenvolvimento Empresarial da Região Autónoma da Madeira

Author:

WOW SYSTEMS

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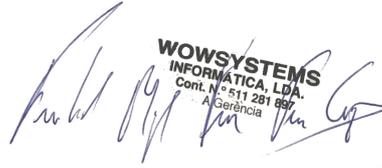
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