



CASE STUDIES

University of Aveiro, Portugal:

**THE INSTITUTION'S ENTREPRENEURSHIP
STRUCTURE AND HEINNOVATE APPLIED TO
MECHANICAL ENGINEERING¹**

PATHWAYS FOR ENTREPRENEURS

**HEI-BUSINESS EXTERNAL RELATIONSHIPS
FOR KNOWLEDGE EXCHANGE**

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INTRODUCTION

University of Aveiro (UA) is a young innovative university that was founded in 1973 and soon after assumed the leadership in the teaching/learning and research in technical areas. The focus is on science and technology, particularly applied research that lends itself to technology transfer into the region. The university's strap line is "*Um Campus que pensa – A Campus that thinks*". Everything about the university's set-up, structure and communication with the ecosystem surrounding the university demonstrates active integration and collaboration with local industry and the regional economy. Co-operation with the local economy is central to the philosophy of UA. There has been a clear and consistent strategy to establish the university as an approachable "go-to" institution in the local community.

This case study presents how UA organises its innovation-driven activities, particularly those related to the HEInnovate dimensions "*Pathways for Entrepreneurs*" and "*HEI-Business External Relationships for Knowledge Exchange*". Also, The HEInnovate platform, with its seven dimensions, was used as an experimental tool to assess and understand the relevance of entrepreneurship within the Department of Mechanical Engineering. In a completely unusual way, this test case within the Department of Mechanical Engineering was carried out in a "bottom-up" fashion, even involving and giving voice to the Department's students and general staff. Doing so, HEInnovate provided a powerful platform to assess the perceptions of all relevant and involved stakeholders.

The University of Aveiro (UA) is located in Portugal's central region, next to the Atlantic Ocean and an extensive, environmentally sensitive natural aquatic ecosystem with rich bio-diversity, the Ria de Aveiro lagoon. The region is composed of 11 municipalities.

When UA was established in the early 1970's, the Aveiro economy was based on agriculture, fisheries and labour intensive industries such as ceramics, agri-food, forest based and chemical industries. Two major national initiatives, launched at this time, strongly influenced the development of this region. The first was the establishment of the Innovation Center of Portugal Telecom in Aveiro City and the second was the creation of UA. The creation of UA was driven by a need, nationally, to improve the qualifications of the Portuguese population and support for the regional economy.

Today, the Aveiro region is recognised as one of the most innovative regions in Portugal and is a good example of the triple helix innovation model. UA is at the heart of this success, due to the active, committed and strategic partnership between the university, economy stakeholders and public administration. The University of Aveiro was involved in Centro's Smart Specialisation Strategy; directly through academic entrepreneurship and indirectly through collaboration in joint structures. The collaboration with the region was strategically driven from top management level rather than by individual researchers. This strategy was implemented through establishing joint responsibility for projects with intermediate organisations (networks, clusters, TTOs, etc.), with the chosen projects being focused on innovation and education.

UA is in the list of the top 100 best young universities and in the top 500 best world universities (NTU ranking) namely on engineering, materials, maths, environment/ecology, physics and chemistry curricula. UA has 15 000 students, 1 000 teaching staff, 100 researchers, 260 post docs and 1 300 PhD

students. UA is very highly rated by students in all aspects of university life and particularly highly ranked in terms of academic support and processes and services. In 2014, its annual operational budget was EUR 100 million.

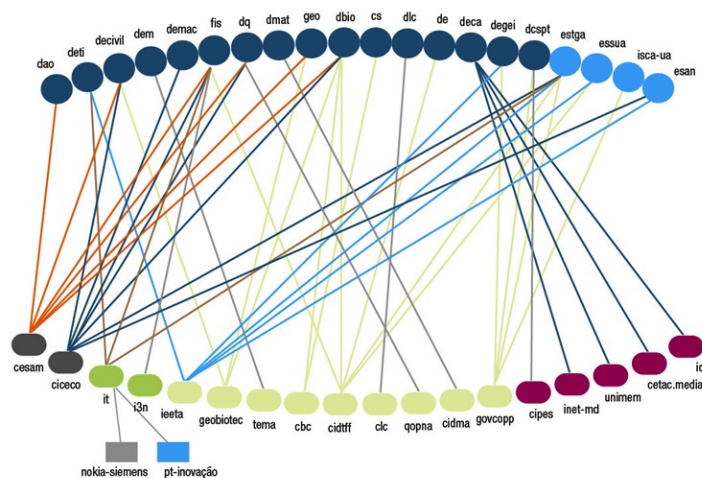
An unusual structure

UA is a pioneer in promoting entrepreneurship and competence building in real economic and technically challenging contexts. It focuses on activities that convert knowledge into economic value, e.g., creating innovative products and solutions that contribute to technological and scientific progress and creating value for society.

The university structure is designed to support local collaboration and to facilitate interdisciplinary research. At the heart of the university lies a matrix structure, which underpins the universities responsiveness to the academic and research needs of the region and its local industry. The university has no faculties but instead 18 research units and four associate laboratories. Additionally, the Campus houses two major R&D companies (PT Communications and Nokia Siemens). The research units, which between them offer a comprehensive range of degree programmes from science and engineering to language and education, deliver their programmes through expertise provided by the research centres. Teaching is delivered by academics from the research units; within a structure that is able to create active interdisciplinary contact and a real collaborative spirit. Figure 1 shows the links between the teaching programmes in blue and the research centres (grey, green and pink).

The research units are highly rated at international level, with 83% of the research units scored as excellent or very good. UA's top research areas are materials, environment and marine sciences, electronics and communications, natural and agri-food products, education and, of course, engineering. Drawing on the expertise in the different research units, alumni, staffs degree courses and researchers are actively involved both in the applied research and teaching activities. All research areas are aligned with the needs of the regional and national industry sector, with the University of Aveiro's commitment to serving the needs of those industries. Part of this is a single multi-polar incubator, with incubator nodes in nine locations in the different municipalities close to UA. This was established through working closely with the Aveiro Municipalities Council and the Aveiro Industrial Association.

Figure 1. Teaching research interlinkages



Source: University of Aveiro.

The research faculty at UA forms a very international community with 76 countries represented on Campus. UA offers industrial researchers an excellent place to live and work. Research staff tend to come to Aveiro attracted by the research potential facilitated by the close proximity to industry which is especially valuable for applied research. They also stay because of the favourable conditions for family living.

A live and real time experiment: using HEInnovate at the Department of Mechanical Engineering

Being one of the its most active, engaging and prominent Departments, the Department of Mechanical Engineering was the natural choice for the first implementation of HEInnovate at University of Aveiro.

From its beginning, UA recognises that communication is crucial and at the core of an innovative and entrepreneurial higher education institution. This means that human capital must be considered in any strategic or decision process, listening the expectations of all involved stakeholders, with their inputs being considered in order to leverage their competencies and skills, adjusting them to the labour market. Also, it is well known that although scientific excellence is important, the best way to capitalize on it is by having an effective and comprehensive knowledge transfer between academic, scientific and industrial communities. Within this framework, HEInnovate was used as an experimental tool to assess and understand the relevance of entrepreneurship within the Department of Mechanical Engineering, as well as the relevant stakeholders' perception about the UA ecosystem, regarding innovation and entrepreneurship within UA. To achieve this, it was assumed from the beginning the importance of creating a consistent and systematic operational path. The following steps were adopted:

1. Following the "HEInnovate workshop: Entrepreneurial University Good Practice Exchange", presented in Lisbon in November 2014, a preliminary study was undertaken to collect information regarding HEInnovate platform: its potential, objectives, functionalities and expected impact.
2. The primary target audience was defined and engaged, with the support of the Director of the Department of Mechanical Engineering. The chosen target audience, was represented by: Scholars; Post-Doc and PhD students; researchers; higher education teachers.
3. Personal invitations were sent to each person within the target group, using official/formal email communications through the HEInnovate platform, creating thus a HEInnovate work group in UA. The process covered the following steps:
 - Definition of a period for the HEInnovate assessment fulfilment;
 - Data and results analysis;
 - Personal invitations, using the email official/formal communication channels, to invite the chosen audience to a “person to person” debate regarding HEInnovate results and individual perceptions of the participants.
 - Person-to-person open debate and discussion.

The debate on HEInnovate and its dimensions was seen as a rich experience with the participants having the opportunity to freely talk about their experience with HEInnovate. This led to a profound

discussion of each person's perspective towards entrepreneurship. Above all, HEInnovate provided a tool for reflection about entrepreneurship and an opportunity for personal fulfilment for every participant to be actively considered.

One of the most important results of this exercise was the commitment of all participants to a greater involvement in their ecosystem. This reinforced the relevance of entrepreneurship as a vehicle for personal satisfaction as well as a tool for increasing the scientific knowledge taught in Mechanical Engineering at UA. Specific aspects relating to the value of entrepreneurship that emerged from this discussion included:

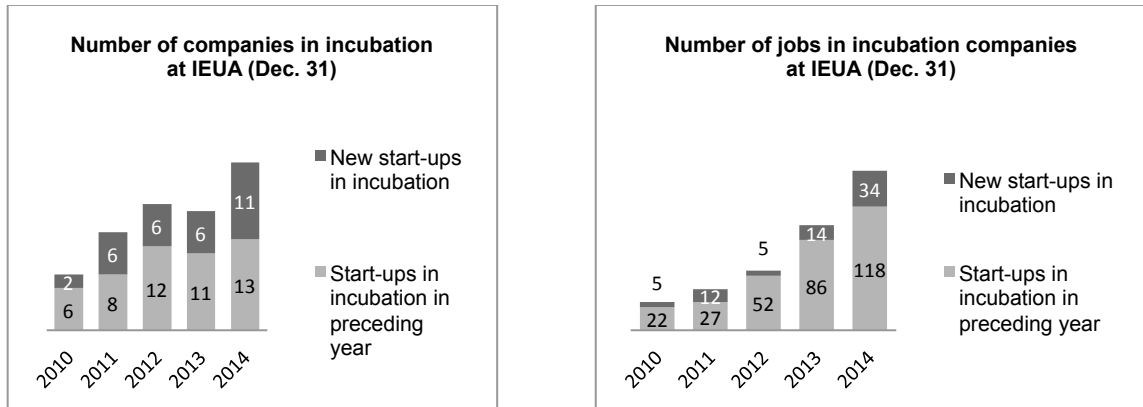
- A wider perception of the range of instruments that exist in University which can be used to reinforce student's potentialities;
- A deeper involvement of different stakeholders in pursuing learning and teaching methodologies towards entrepreneurship as a mechanism for delivering excellence and student engagement;
- Recognition of "intrapreneurship" as a mechanism for the support of individual growth and team work enrichment values;
- The recognition that communication is critical in developing awareness of entrepreneurship in HEI's.

PATHWAYS FOR ENTREPRENEURS

UA tracks the impact of its research and education programmes in terms of growth in the local economy, employment, turnover and creation of new business and makes this information widely available on Campus. Since 1997, 35 companies have been started by UA staff and students. From those, 63% are still economically active in 2015. These new companies are now creating a significant contribution to the local economy. Over 50% of the business ideas and start-ups are in the area of ICT, with a further 11% in the creative industries and still further 11% in health related areas.

In the period 2011 to 2014, the number of graduate-based jobs in the region has quadrupled, the number of companies doubled and regional turnover has tripled, despite the prevailing economic recession (Figure 2).

Figure 2. UA start-ups 2010-2014



Source: University of Aveiro.

The higher education institution raises awareness of the value/importance of developing entrepreneurial abilities among staff and students.

UA is structured to actively develop and support entrepreneurship. Collaboration with industry and a focus on promoting co-operation with society is at the heart of UA's positioning. This is the first statement by the Rector on the first page of the university prospectus. Cooperation with companies, and the importance of this to UA's identity as an innovative university, is established on the University's website, where it is described as "a pioneer in the promotion of entrepreneurship and knowledge transfer and converting it into economic value". UATEC (the technology transfer unit), IEUA (the business incubator) and vocational education and training throughout life in the most relevant areas for the business sector are also found "one click" into the website. The profile of the university is presented as a "wide network with the region and companies" and is a key feature in the prospectus. The importance of protected intellectual property, increases in regional turnover and number of regional jobs including those created by new companies in incubation are emphasised.

The higher education institution actively encourages individuals to become entrepreneurial.

The research-led structure of UA with its strong links with the local economy ensures that students easily identify with the entrepreneurial competences and objectives that are central to the institutions values. The structure at UA, which doesn't have faculties, but rather draws on staff from across the research institutes to deliver teaching in the degree programmes, provides students with awareness of and access to many of the commercialisation and entrepreneurship activities on Campus.

UA has created and published a 73 page, easily accessible and very comprehensive "Guia do Empreendedor", a guide to academic entrepreneurship, which includes tests of one's individual entrepreneurial profile, support for developing a personal negotiation profile, how to validate one's idea, an introduction to the Business Model Canvas and Learn Start-up Canvas, introduction to Finance and the contact details of the regional incubators. This publication provides a mini-reference platform for anyone looking to explore or develop a business idea.

Business start-up education is offered across the curricula and faculties.

The commercialisation of applied research combined with the lack of a formal faculty structure ensures that the commercial impact of university knowledge, and by implication business-awareness, is operationally embedded across the Campus.

Support for the incubation and acceleration of companies is developed via the IEUA Start (available for a maximum of three years) and IEUA Graduate (available for a maximum of two years). These programmes offer integrated spaces and services on Campus, which are adapted to the specific needs of each entrepreneurship stage.

There are entrepreneurship courses for developing commercial entrepreneurship competences in BSc, MSc and doctoral degrees. These are embedded into the curriculum and cover the skills needed to implement business ideas and create start-ups. There is a considerable hands-on experience built into the programmes, this is orientated to developing new business ideas and valuing technology.

Teaching Entrepreneurship has been part of a strategic investment by UA. During the academic year 2012-2013, 13 course units were taught in 30 courses. The course units were bio-entrepreneurship, entrepreneurship and innovation, social entrepreneurship and community intervention, and project management and entrepreneurship. The entrepreneurship courses were delivered to cohorts of multidisciplinary students, hence further supporting the exploration and sharing of different perspectives and the creation of interdisciplinary links and networks.

Additionally there are a number of non-curricular entrepreneurship programmes on Campus. Overall, 600 students took part in the curricular and extra-curricular activities. This covers 90% of the existing degree programmes, as well as many doctoral programmes.

- **Technology-based entrepreneurship programme (CEBT)** is a joint initiative to stimulate commercialisation of university research by UA, the University of Beira Interior, the University of Coimbra, and the Business Council/Centre Region Chamber of Commerce and Industry (CEC/CCIC) in the central region. The programme is delivered through workshops, mentoring and coaching sessions by a team of experienced professors and mentors. Participants can explore technologies and projects from laboratories and research departments in partner universities, assess their business potential and even their implementation through company spin-offs. Part of the power of CEBT is the collaboration between participants with very different levels of experience. The programme is open to students, researchers and professors.
- **Entrepreneurial Laboratory (LabE)** provides a space where would-be entrepreneurs explore their own ideas and projects. The Entrepreneurial Lab offers the necessary services to support and help entrepreneurs to test the viability of their business idea. During the LabE experience, participants follow modules in business planning, economic-financial analysis, intellectual property, marketing and strategy and communication. In addition to the theory which is delivered by university staff, participants in LabE can receive mentorship from the UA Mentors Network in order to help them define their business strategy, develop a business plan and prepare their business pitch. The mentor network is local and easily accessible, and has a very strong loyalty to UA.
- **Emprende+** is a competition that aims to appraise the innovative potential of business ideas, and promote entrepreneurship and the creation of new companies. Prizes are awarded to the best projects in different categories, the categories include Regional Entrepreneurship, Technology-based entrepreneurship and Creative entrepreneurship. Individuals, or teams with up to five members can enter the competition. The competition judges include representatives from venture capital companies, business angels and public and private entrepreneurship support agencies. Prizes include financial support for the creation and growth of new companies. The competition is designed to identify active and viable new companies that can be supported regionally.

- For projects that involve a considerable innovation factor, which may require IP protection, UA offers support in analysis and defining the best strategy for IP. Support is provided through the Intellectual Property Bureau. This initiative is supported by both the technology transfer unit of the University of Aveiro (UATEC) and the Portuguese Industrial Property Institute (INPI).

The business start-up education offer is widely communicated, and measures are undertaken to increase the rate and capacity of take-up.

The IEUA acts as a stimulus for entrepreneurship outside the university through the Business Incubator of the Aveiro Region (IERA), which is a combined project with UA and 11 regional municipalities. A new Science and Innovation Park will border on the main university Campus to reinforce the relationship between science, the economy and enhancing quality of life in the region. Extensive links with industry through the region, supported by the network of regional incubators, have resulted in high awareness of the value and availability of business start-up education at UA, both on and off Campus.

This promotes capacity building and networking to stimulate the sharing of experience and knowledge. UA supports potential entrepreneurs in identifying the resources they need to implement their business ideas. There are four aspects to this support, 1) the Intellectual Property workshop 2) IEUA Sharing 3) entrepreneurship workshops, and 4) the Entrepreneurship Bureau.

- The **Intellectual Property** workshop involves the Portuguese Industrial Property Institute (INPI), the General Inspectorate for Cultural Activities (IGAC) and Official Industrial Property Agents (AOPI), all of whom are UA partners.
- **IEUA Sharing** is a consolidated entrepreneurship experience and knowledge sharing initiative that takes place in an informal environment with the participation of the UA Business Incubator (IEUA) and companies associated with this entrepreneurial ecosystem. Visiting speakers, who are well known for their contribution towards the development of entrepreneurship and innovation, stimulate networking between the academic community and citizens interested in the specific event topic. In this setting the sharing of business experiences, including the discussion of mistakes, is actively encouraged.
- **Entrepreneurship Workshops** are held to address issues such as internationalisation, and financial support for business. Former UA students who have created their own businesses share their insights on the early stage pre-start-up experience.
- The **Entrepreneurship Bureau** is a UATEC and IEUA initiative that aims to clarify and support potential entrepreneurs in the development of their project and the implementation of the business idea. This is a personalised service that covers the analysis of business plans and market implementation strategies.

The monitoring and reporting of the impact of UA on the local economy reinforces the value of engaging in business start-up education across the student community, as does the entrepreneurial roadmap – learning – training-protection-competing-capacity building-validation-growth – which is widely communicated across Campus. There is a dedicated brochure which unpacks the stages and the facilities and activities available at each stage.

A suite of business start-up courses exists, which uses creative teaching methods and is tailored to the needs of undergraduate, graduate and post graduate students

There are entrepreneurship courses for developing commercial entrepreneurship competences in BSc, MSc and doctoral degrees. These are embedded into the curriculum and cover the skills needed to implement business ideas and start-up a firm.

There is considerable hands-on experience built into these courses, which are oriented to the development of new business ideas and valuing technology. Teaching entrepreneurship has been part of a strategic investment by UA. During the 2012-2013 academic year, there were 13 course units taught into 30 courses. This makes entrepreneurship available to 90% of the existing degree programmes, as well as to all doctoral programmes of UA. The entrepreneurship courses were delivered to cohorts of multidisciplinary students, hence further supporting the exploration and sharing of different perspectives and the creation of interdisciplinary links and networks.

The 7-step approach to entrepreneurship adopted by UA can be comprehensively described in the brochure "UA entrepreneurship". It covers formal teaching, learning by doing, mentoring, networking, IP protection, concept and opportunity validation and early stage funding and growth. The 7-step approach to entrepreneurship (Figure 3) is used across Campus to create a unified picture of the entrepreneurial journey and the access points and resources available to staff and students.

Figure 3. UA's 7-step approach to entrepreneurship



Source: University of Aveiro.

The Intellectual Property workshop involves the Portuguese Industrial Property Institute (INPI), the General Inspectorate for Cultural Activities (IGAC) and Official Industrial Property Agents (AOPI), all of whom are UA partners. IEUA Sharing is a consolidated entrepreneurship experience and knowledge sharing initiative that takes place in an informal environment with the participation of the UA Business Incubator (IEUA) and companies from the regional entrepreneurial ecosystem. Visiting speakers, who are well known for their contribution towards the development of entrepreneurship and innovation, stimulate networking between the academic community and citizens.

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Entrepreneurial Laboratory (LabE) provides a space where would-be entrepreneurs explore their own ideas and projects and test the viability of their business idea. During the LabE experience,

participants follow modules in business planning, economic-financial analysis, intellectual property, marketing and strategy and communication.

The higher education institution provides support for individuals and groups to move from entrepreneurial ideas to action

UA's 7-step approach to entrepreneurship provides multiple opportunities for experiencing entrepreneurship from taught classes, which are embedded into the first and second year degree programmes, to extracurricular competitions, workshops and on-Campus incubation facilities. Many of these include opportunities to network with UA alumni who have started their own companies. Each stage in this 7-step map is supported by specific programmes and facilities on Campus, many of which running altogether with local industries, alumni and regional incubation facilities.

UATEC, the technology transfer unit at UT was created in 2006. Its mission is to support the University in its pursuit to become a centre of excellence in the creation, transmission and transfer of knowledge, at a national level, via protection of IP and the promotion and valuing of its technologies in the market and the encouragement of Enterprise liaison and the promotion of entrepreneurship. UATEC services include a complete range of support services for successfully implementing knowledge exchange including: Protection and management of IP rights, Support for the creation of technology based enterprises, Support for the promotion of innovation in business, R&D projects in consortia, IP valuation and post licencing management.

Mentoring by academic and industry personnel is available

Alumni are an important part of the everyday operation of UA and its multiple knowledge exchange activities including mentoring of early stage companies, links with the internship and careers office, and delivery into taught programmes.

Former UA students who have created their own businesses share their insights on the early stage pre-start-up experience. They are also mentors for current students and staff, who wish to start a business. The sharing of business experiences, including the discussion of mistakes is actively encouraged, allowing early stage entrepreneurs to learn openly from the mistakes of alumni and regional businesses. Entrepreneurship Workshops are held to address issues such as internationalisation, and financial support for business. Participants in LabE can receive mentorship from the UA Mentors Network to help them define their business strategy, develop a business plan and prepare their business pitch. The mentor network is local and easily accessible with strong loyalty to UA.

The higher education institution provides access to business incubation facilities

UA encourages, supports and promotes the development and sustained growth of business ideas and innovative companies by academic staff. Support for the incubation and acceleration of companies is developed via the IEUA Start and IEUA Graduate programmes. These programmes offer integrated spaces and services on Campus, which are adapted to the specific needs of each entrepreneurship stage.

UA's research and start-up activities have been developed in collaboration with a network of 10 regional incubators. This collaboration lies at the heart of UA's strategy and originates back to the original founding aims of the university. Support for the incubation and acceleration of companies is developed via the IEUA Start and IEUA Graduate programmes which offer integrated spaces and services on Campus which are adapted to the specific needs of each entrepreneurship stage.

Figure 4. Business incubator locations around UA



Source: University of Aveiro.

HEI-BUSINESS EXTERNAL RELATIONSHIPS FOR KNOWLEDGE EXCHANGE

The higher education institution is committed to knowledge exchange with industry, society and the public sector

Knowledge exchange is embedded into the rationale for the university's creation and the creation of its unique structure. There are no faculties within the Campus, instead existing more dynamic research units and departments. Both structures drive the Campus activity, in terms of educating the students as well as linking the university to the regional and national ecosystem. The unique structure makes knowledge transfer transparent both internally and externally. The Technology transfer unit, UATEC, was created in 2006. It encourages enterprise liaison and the promotion of entrepreneurship and provides a complete range of support services for successfully implementing knowledge exchange.

Besides UATEC, the career office, the association for professional training and research, and the integrated unit of continuing education, are core elements of UA knowledge exchange infrastructure.

UNAVE www.unave.ua.pt, an association for professional training and research, was founded in 1986, and is one of UA's interface units with society. UNAVE operates in the field of lifelong training not leading to an academic degree and develops, organises, conducts and manages training in collaboration with the departments of UA and other public, private, national and international organisations. UNAVE offers 13 identified training areas including behaviour, cultural, management for executives, public and private legislation, statistics applied to science safety and sustainable construction and research methodologies.

UA's career office is GESP, the *Gabinetes de Estágios e Saídas Profissionais*, which translates as "the internships and careers office" positions internships as a valuable and even essential aspect of

building a career path. GESP was opened in 2003 with the mission to facilitate the career development of UA graduates and to place students in national and international trainee programmes.

The Integrated Unit of Continuing Education (UINFOC) was created in 2010. It is a centre for scientific, educational and administrative coordination which supports lifelong training and research activities for traditional and non-traditional audiences in UA. UNIFOC is the UA interface unit between its departments and schools, and works externally with municipalities, businesses and society in general. It contributes to the training of working adults via the promotion of ongoing, permanent and Lifelong learning. UNIFOC builds up a relationship with UA students from their arrival at UA as undergraduates, through their path as students and acts as a link with their lives after university, as alumni. UINFOC acts as support/information and meeting/socialising centre for alumni and the industrial community in the district of Aveiro. It focuses on flexible and continuous training initiatives.

The higher education institution demonstrates active involvement in partnerships and relationship with a wide range of stakeholder

UA was directly involved in central region's Smart Specialisation Strategy. The nature of collaboration with the region was described as strategic / top management level rather than being dependent on individual staff initiatives. This strategy developed joint responsibility through intermediate organisations (networks, clusters, TTOs, etc.) both through cash and in-kind contributions. The success of UA's collaborative strategy and its integration into the regional economy is promoted across Campus in terms of the increase in jobs, start-up companies and turn-over in the region.

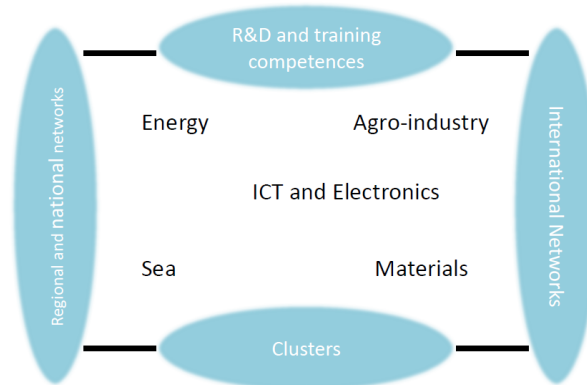
This goes back to the very early stages of university development in the 1970's, when a regional incubator programme was created on Campus. This involved the creation of a single multi-polar incubator, with incubator nodes in locations in the different municipalities close to the UA, working closely with the Aveiro Municipalities Council and the Aveiro Industrial Association. Central to the philosophy of University of Aveiro is the co-operation with local economy sectors, the Aveiro Region Business Incubator and the network of regional business incubators (Figure 4).

The higher education institution has strong links with incubators, science parks and other external initiatives, creating opportunities for dynamic knowledge exchange

The links between UA and the surrounding economy are highlighted in terms of the number of companies in incubation, the jobs created in these new companies and the turnover of these companies.

Recently a smart specialisation strategy for Aveiro region was proposed by the Council of Mayors and UA, this identified 4 priority areas for the region: 'the sea and Ria de Aveiro / information and communication technologies / materials and / agri-food and forest. A new science park is being developed as an extension of the Campus, this science park will have 5 thematic areas, Energy, Sea, Materials, ICT and electronics, and agro-industry (Figure 5). There are 19 shareholders in this development besides UA, including local governments, banks and major companies in the region.

Figure 5. UA at the heart of smart specialisation



Source: University of Aveiro, own elaboration.

The higher education institution links research, education and industry (wider community) activities together to affect the whole knowledge ecosystem

Staff stays at UA mainly because of the interactivity and regional mobility. For an industrial researcher Aveiro offers close proximity to industry which facilitates applied research. Industrial research activity is supported through the close connections to both industry and incubators across the region, the new science park and the location of two company R&D facilities on Campus. UA encourages, supports and promotes the development and sustained growth of business ideas and innovative companies by academic staff. IEUA start and IEUA Graduate programmes offer integrated spaces and services on Campus for the further development of ideas originating on Campus. To this end, UA offers a number of non-curricular entrepreneurship programmes, including:

Technology-based entrepreneurship programme (CEBT) is a joint initiative by UA, the University of Beira Interior, The University of Coimbra and the Center region Business Council/Centre Region Chamber of Commerce and Industry (CEC/CCIC). These entities joined together in 2006 for the purpose of stimulating the capacities and skills needed to create technology based companies. The course has been extended to deliver two Iberian programmes (in 2012 and 2014). These were created in association with the Universidad Pontificia de Salamanca, The Fundacion General de la Universidad de Valladolid and the Fundacion General de la Universidad de Salamanca.

The programme methodology was based on workshops, mentoring and coaching sessions delivered by a team of experienced professors and mentors. Participants explored technologies and projects from UA laboratories and research departments in partner universities. As part of the programme they assessed the business potential of the specific technologies and the scope for implementation through company spin-offs.

CEBT has been created for HE students, recent graduates, postgraduate students, senior staff and management in existing companies. Part of the power of CEBT is the collaboration between participants with very different levels of experience. This is possible because of UA's long-term investment in active collaboration and development of a high trust community in the local economic region. CEBT students have a unique opportunity to explore processes and technologies belonging to the UA IP portfolio. This programme is open to students, researchers and professors, one aim of the programme is to stimulate commercialisation of UA research. Mixing individuals from different

disciplines and different career backgrounds and stages creates the opportunity for spontaneous networking and levels of creative ‘serendipity’ not usually attainable. The environment of CEBT creates a context where the outcomes of such serendipity can be taken seriously and actively researched and developed.

Entrepreneurial Laboratory (LabE) provides a space where would-be entrepreneurs explore their ideas and projects. The entrepreneurship Lab offers the services necessary for entrepreneurs to test the viability of their business idea. During the LabE experience, participants follow modules in business planning, economic-financial analysis, intellectual property, marketing and strategy and communication. In addition to the theory which is delivered by university staff, participants in LabE can receive mentorship from the UA Mentors Network to help them define their business strategy, develop a business plan and prepare their business pitch. The mentor network is local and has a strong loyalty to UA.

Poliempreende is an ideas and business plan competition that evaluates and gives prizes to projects developed and presented by students from Technical Universities (Politécnicos), graduates and professors. Empreende + (Empreende + Business Ideas Competition) evaluates the innovative potential of business ideas, and promote entrepreneurship and the creative of new companies.

Prizes are awarded to the best projects in different categories, these include Regional Entrepreneurship, Technology-based entrepreneurship and Creative entrepreneurship. The judges are representatives from venture capital companies, business angels and public and private entrepreneurship support agencies. Prizes include financial support for the creation and growth of new companies.

For projects, which may require IP protection, UA offers support in analysis and defining the best strategy for IP protection. Support is provided through the Intellectual Property Bureau. This initiative is supported by the technology transfer Unit of the University of Aveiro (UATEC) as well as the Portuguese Industrial Property Institute (INPI).

Lessons-learned

The University of Aveiro was created to support the needs of the local, regional and national economy, both for applied research as well as the development of a highly skilled workforce for industry. The university’s commitment to create real value and be the approachable, the "go-to" place for the region, has enabled the building of a high-trust community centred round the university and its research expertise.

Collaboration and a belief that there is value in openness lie at the heart of UA’s success. This vision has resulted in the creation of an unusual and highly effective internal structure built around research groups who collaborate with each other and provide teaching as required on Campus, rather than a conventional faculty structure. This, in turn, has provided the foundations for a comprehensive road-map approach to both enterprise education and pathways for enterprises’ development.

Links with regional needs lie at the heart of this university, and the institution has kept close to this original purpose. This attracts excellent academics who want to be involved in applied research, the presence of two major R&D technology companies on Campus reinforces this purpose and positioning.

UA has consistently grown its capacity to serve local industry, adding new interfaces such as the association for professional training and research in 1986, the institute of environment and

development in 1993, the technology transfer unit in 2006, the Integrated Unit of Continuing Education (UNIFOC) in 2010, and is now establishing a new Science park adjacent to the Campus.

As the emphasis at UA is on sharing experience and co-operation, there is a great openness in the community about sharing expertises, failures and entrepreneurial experiences. One of the main consequences of this environment is a clearer communication, stronger relationships and more open collaboration between all the involved players, which in turn opens up a new level of opportunities for serendipity and the creative innovations that come from open high-trust communication.