



Industry Affiliation Model

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Industry Affiliation Model

Revision

This deliverable was revised to include the following information:

- Detailed information about the model for industrial affiliation and how this will engage the interested industrial organizations;
- Services and benefit for the participation of industrial organizations to this Industry Affiliation and their relevance to the BIG strategic areas and activities;
- Engagement of the ERA Chair Research Team in the Industry Affiliation;
- Status of the discussions between the BIG members with the interested industries in participating in the Program.

1. Overview

The aim of this report is to explain how our industry model works in practice and how it informs our strategic vision for industry cooperation within Portugal and with EU partners. This report examines industry-based efforts of the BIG Lab – that we have called DCentral - to aggregate, support, and conduct research with external and internal partners. It sets forward industry affiliation models based on creating longevity.

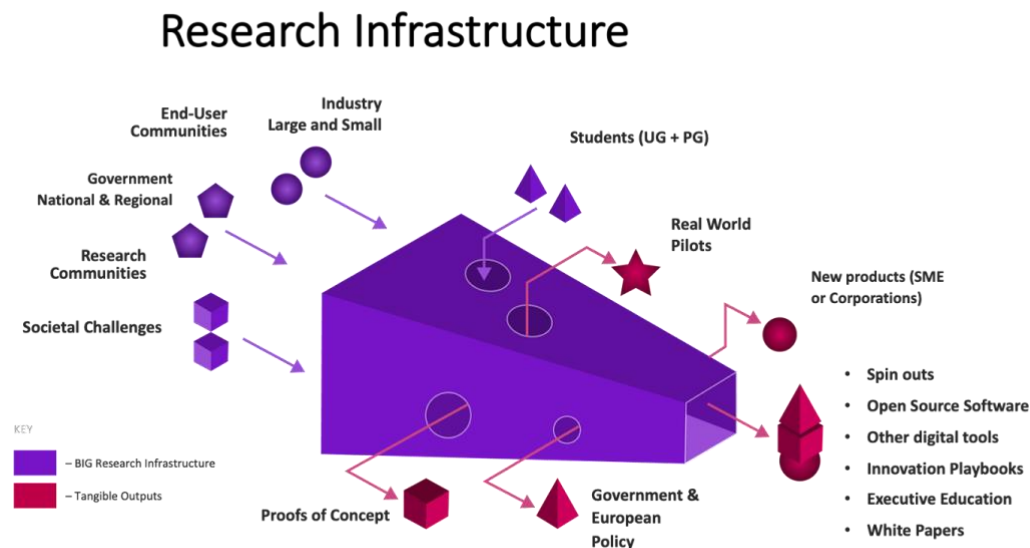


Figure 1 - Research Infrastructure for BIG

Blockchain holds significant potential to deliver sustainability and social good outcomes – however to create significant impact in society it is important for the research community to work closely with

corporations, start-ups, and end-user communities to deliver appropriate and usable outputs per our open innovation approach¹.

1.1. Services and benefits for the participation of Industrial Affiliation and their relevance to the BIG strategic areas and activities

The collaboration between the industry partners and BIG is beneficial for both parties. By working closely with the industry the team can find new applications for the research that is being developed in the lab. The partners will have the opportunity to work with experts that will help them solve problems that are related with the strategic areas of BIG.

More specifically, this affiliation will allow the industry partners to:

- Share real world problems and needs they face that are related with the strategic areas from BIG;
- Propose research projects that can be developed by the BIG team members and its students;
- Participate in regular meetings to discuss the new cutting edge research regarding Blockchain;
- Invite the BIG team members to organise seminars related with the strategic areas of BIG.

1.2. The industrial affiliation contributes to the following strategic areas of BIG:

- Cross-discipline communication and collaboration — By creating communication channels between the BIG team and the industry partners, new ideas and collaboration will emerge. This will ensure that the research developed by the team members can be applied to real use-case scenarios. The communication channels will also facilitate the dissemination of important scientific results, allowing immediate feedback from industry professionals and, as a result, improve the applicability of the work being developed by BIG.
- Research and innovation driven by real-world problems and real-world impact — The input given by the industry partners will drive the research from BIG, allowing the team to focus and design innovative solutions that are relevant to solve real-world problems. This partnership will also contribute to improve the quality of work by putting the developed research to the test in a close to real-world scenario.
- Close ties between academia and cutting-edge industry — To avoid developing fundamentally theoretical research it is necessary to work closely with the industry. By affiliating with industry partners that work in the same technical areas as BIG we can ensure that our research has practical use and is innovative. The industry partners can also contribute by providing technology resources that can assist the daily work of the researchers.

¹ See Research Infrastructure document for more details

1.3. Engagement of the ERA Chair Research Team in the Industry Affiliation

The ERA Chair Research Team members collaborate with the industry partners to disseminate scientific results, participate in seminars, promote the work developed by students and create multidisciplinary working groups that will allow them to evaluate research projects in real world environments.

To engage the participation of the ERA Chair Research Team in the Industry Affiliation the team will periodically meet with the industry partners. The agenda of these meetings varies but it focuses on one of the following topics:

- Disseminate the latest scientific results — This will put our research to the test and ensure that the team gets immediate feedback. By sharing the current work with industry partners new ideas can be discussed allowing the team to pivot the focus of the work and improve its quality;
- Gather input from the industry affiliates — To ensure that the BIG team produces quality work that is relevant and impactful to the real-world it is necessary to know what are the needs and challenges that the industry professionals face. This information will allow the BIG team to develop research that is motivated by real-world problems;
- Engage the industry partners — The affiliate industry partners can contribute in different ways to the research being developed by BIG. It is necessary to motivate the industry partner to have an active role in the partnership. In the meetings the team will motivate an active participation from the industry partners. The partners can participate by providing resources for the current research activities, creating multidisciplinary teams composed of elements from both parties and testing the research projects developed by the BIG team.

2. Background

Industrial affiliate programs are designed to facilitate the transfer of knowledge to society and the dialogue between academia and industry. Supported by corporate membership fees, these programs provide an avenue for industry to contribute to and sustain research and teaching in BIG / DCentral teams and programs of interest. Companies receive facilitated access to research programs and to participating faculty and students. Corporate members typically attend annual meetings, receive copies of reports and publications, and have opportunities to recruit students. Any interested company may join an affiliate program.

3. Objectives of BIG Industry Partnerships

Industry partnerships are important in creating an ecosystem in which knowledge can be created and shared across several stakeholders. This Industry affiliation model provides short-term and long-term opportunities for Lab to work with a wide range of actors within and outside the lab. The objectives of the industry partnerships are:

- Acting as a reference lab on a national and international scale, aiming to guide and prioritise national and international research projects on Blockchain technologies and design for social good.
- Creating knowledge by developing cutting-edge research solutions for Academia and Businesses.
- Sharing knowledge by working cooperatively to advance research in Blockchain technologies and design for social good.



Figure 2 - Industrial Affiliation Outcomes (Science Europe)

3.1. Expected impacts of these objectives

The following are the expected impacts of the objectives:

- Raising international awareness about the research institutes in IST and connecting Técnico to a global knowledge and business network.
- Improving the innovation potential and impact of Lisbon and Portugal in the Euro-Atlantic region of the EU through domestic and international partnerships.
- Favouring labour market agility and spill-over effects between academia and Business.
- Providing advisory services to enhance the investments readiness of AI/Machine Learning/Blockchain to Portuguese Start-ups.
- Building an ecosystem of Blockchain, in which DCentral stands at the centre and acts as a coordinator for other stakeholders.

4. Competences and capacities of the industry affiliation model

BIG/DCentral has carried out the management of the industry partnerships whose scientific activities included:

Strengths	Weaknesses
International connection Cooperation with industry groups (businesses, start-ups, government institutions) Global spectrum of collaborations	Intellectual property management Market prospects of the different technological solutions
Opportunities	Threats
Commercialisation of research-based outputs Workshops Feedback effects Labour market spill-over effects	Strong global competition Reputational risk Industry-spillover effects at the expense of research developed in the Lab

Table 1 - SWOT Analysis Industry Affiliation Model

4.1. Strengths

Strengths lie in international connection and novel relationships in technology, innovation and social good. Cooperation with industry groups allows knowledge sharing and strengthening the position of Técnico within and outside Portugal.

4.2. Weaknesses

Weaknesses lie around Intellectual Property Management due to limited legal implications of deployment of emerging technologies for social good.

Market prospects of the different technological solutions, how does the market react to these technologies?

4.3. Opportunities

Opportunities lie in the commercialisation process from research projects with industry partners which may allow DCentral Lab to find the relevant funding resources to scale up our research outputs into commercial solutions for business, governments and third sector.

- Long-term impact investment in technology-based solutions.
- Connection with Venture Capital in Portugal and in Europe in order to scale-up Portuguese businesses. (This can also help long-term funding for the lab).
- Workshops with business leaders, policymakers, government officials in Portugal in order to educate them about the opportunities and risks of emerging technologies.
- Feedback effects in order to improve the lab.

4.4. Threats

Threats lie in strong-global competition for international funding, industry spillover effects that result into the industry partners taking advantage of the research developed within the Lab, due to limited intellectual property management; we aim to address this through our Knowledge Transfer Plan². Reputational Risk of the lab being exposed to the failure of the test-beds based solutions of the start-ups.

5. Relationship to the BIG work programme

Our industry affiliation model is closely related to the work program of BIG – we have spent the first part of the work program hiring the staff for BIG and then discussing and interviewing people across the Lisbon cryptocurrency and blockchain ecosystem³. Here we briefly summarise our completed and planned work around the industrial affiliation model.

5.1. Phase 1 Establishing the Industrial Model (October 2021- March 2022)

In the last six months the focus of the lab has been to:

- Raise awareness among several stakeholders about the importance of the DCentral lab and increasing research projects collaborations between Técnico and potential external partners. To do this, we have carried out a series of meetings with a broad range of stakeholders, from government, QANGOS, the private sector, investors, and end-user communities.
- Create research partnerships that can be used to develop Horizon Europe and other funding body bids.
- Support the development of projects with external stakeholders including the PRR Bids and co-operation with the Portuguese government that build upon our initial ideas around our paid industrial affiliation model and our planned research infrastructure⁴

5.2. Phase 2 (March- December 2022)

In the coming months, our focus will be to:

- Develop our co-investment strategy with partners – in particular as it relates to our research infrastructure and blockchain design studio. Through this, we aim to create financial and in-kind contributions that expand our lab and enable a larger ecosystem in Lisbon.
- Further develop our partnership ecosystem with the European and global community focusing on blockchain for social good – examples include but are not limited to – the EIT communities

² See Knowledge Transfer Plan

³ For more information, please see the 18 month report

⁴ See Research Infrastructure document

(e.g., EIT Food for blockchain in the food industry), foundations such as the ETH foundation as well as corporations that need assistance in developing secure and usable cryptocurrency and blockchain solutions.

- Analyse and share data from our proofs of concept, testbeds and create data sets that will assist policy makers, other research centres and companies make structured progress in the application of cryptocurrency and blockchain.
- Strengthen the industry affiliation model across all partners and implement joint research projects, joint research bids and embed DCentral in the local Lisbon ecosystem.

6. Industry Affiliation Model: Concept and approach, quality of the partnerships.

Our approach is to stimulate mutually beneficial interactions between the IST BIG community and the tech community: technical exchange, collaboration, career opportunities for our students, feedback on the effectiveness of our education programs, etc.

The program offers many benefits to member companies. There is the opportunity to stay apprised of the leading edge of computing research and education, learning about and providing feedback on the latest advances and long-term directions of our field. Contacts with prospective employees can be established easily; most of our students provide resumes to a central repository established for the purpose of sharing with our affiliates. Additional events and seminars can be arranged with faculty and students.

The advantages to the University are also substantial. We can learn about current problems in the industry. Students become acquainted with industry needs. The co-op program and summer internships with local and national companies provide students with an important complementary element to their education. The result of the interaction is greater excellence in both the research and teaching missions of the school.

At a more general level, the Affiliates Program is an example of a constructive relationship between industry and the DCentral -- a relationship that stimulates advances in both segments of our society.

The model is based on university–industry–government relations to explain how DCentral Lab has operated and will continue to operate in order to fulfil the EU funding 95226 objectives and contributing in strengthening Técnico-Lisbon as a global digital centre for Design Innovation for Social Good and Blockchain Technologies.

The model explains industry relationships within and outside the DCentral Lab. The model shows trajectories and potential collaborative regimes developed mainly at the level of the DCentral Lab and outside with public and private institutions. The action of the Lab does not stop within the internal capacity of the University of Lisbon, but it works alongside national and international partners fulfilling

regional innovation strategies of Portugal such as the Smart Specialisation Strategies in Portugal (S3) and StartUp Portugal” - the National Strategy for Entrepreneurship, was launched by the Ministry of Economy with the objectives of supporting the national ecosystem.

6.1. Model

The industry affiliation models show how Dcentral Lab has interacted with relevant stakeholders in the last six months. It builds on three layers which explains the timeline, the nature and content of our partnerships. Considering these partnerships, the model serves as a heuristic framework to understand what the role of the lab is and inform the strategic directions of the Lab for the foreseeable future:

The three layers of the model are:

1. **Partnership Processes** include partnership identification, development and establishment of partnerships
2. **Internal Capacity** development represents how DCentral Lab and the Instituto Superior Técnico interact within a collaborative capacity with all stakeholders within the University of Lisbon. Internal capacity represents how IST develops the competences and the resources to design, implement, run and deliver the industrial projects with external institutions
3. **External Institutions** represent the modality according to which group of start-ups, public and private institutions have interacted or will interact with Técnico in the future. External Institutions also include EU institutions such as the European Innovation Council. European Blockchain Services Infrastructure

These three, work together to advance our objectives, measure our impact and update how DCentral Lab works and will continue operating with internal and external stakeholders.

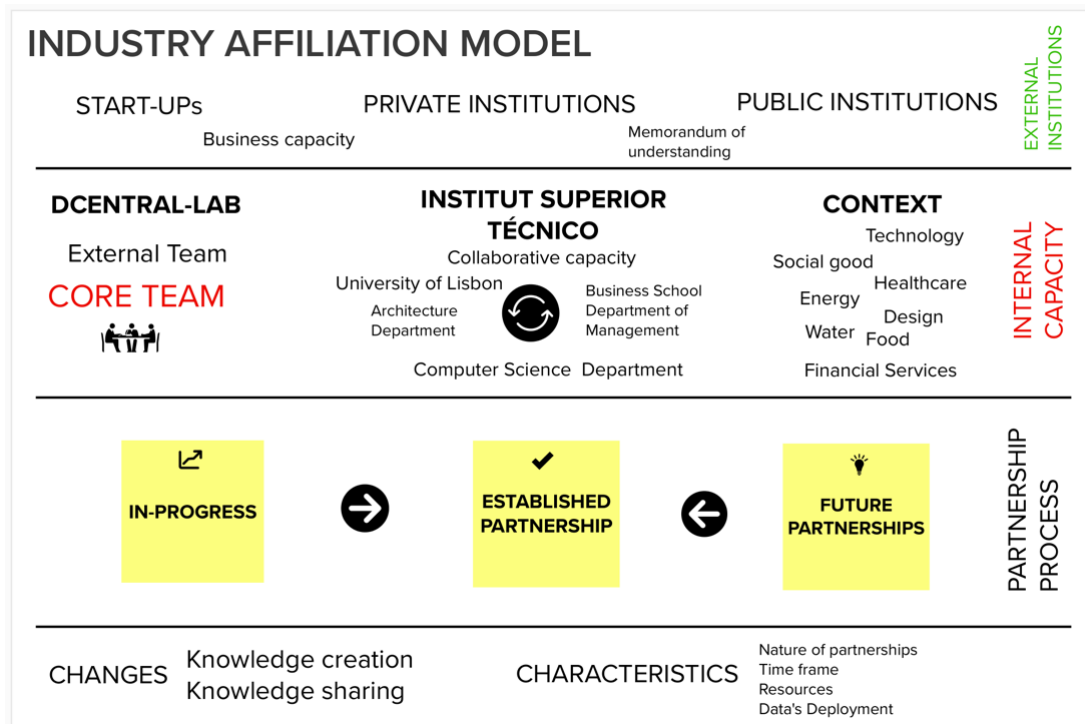


Figure 3 – Industry Affiliation Model

6.2. Membership

Membership in the Industry Affiliates Program requires a qualifying contribution to the DCentral Lab. In contrast to many other industry affiliates programs and research consortia, this contribution simply covers the expenses of running the program (e.g., the costs involved in putting on the research symposium and recruiting fairs):

- €250 for individual entrepreneurs or startups with 10 or fewer employees
- €500/year for startups and companies of fewer than 50 employees
- €2,500/year for those with between 50 and 150 employees
- €5,000/year for those with between 150 and 1000 employees
- €10,000/year for larger companies

6.3. Benefits

The benefits of the program to member companies include:

- Attendance at an annual Industry Affiliates Program meeting that features research overviews by faculty, in-depth research presentations and demonstrations by students on current work, and working sessions on common technical areas with both faculty and students.
- Participation in IST recruiting fairs.
- Access to online resumes submitted by graduating students at all degree levels, as well as ability to post open positions to the student jobs board.
- Seminars by faculty members at the affiliate company's site (upon request).

- Announcements of interesting seminars and presentations.
- Contact with technical and administrative representatives of other affiliate companies.
- Many opportunities for informal interactions

The annual meeting is an opportunity for the DCentral Lab and our industry affiliates to come together and discuss topics and issues of mutual interest. All the faculty attend, as well as most of our students, and we ask for at least one to three representatives from each member company to attend. The meeting features the following:

- Research overviews by faculty and updates on recent developments and research results within the department.
- Small focused sessions organised by research areas where students, faculty, and affiliates can interact in a workshop setting and discuss research areas in depth.
- Demonstrations of software and hardware systems developed by our research projects.
- One-on-one meetings with individual faculty and students to create and/or continue collaborations.
- Discussion of the educational mission of the department and the continuous changes and improvements made to the curriculum.
- Interaction with other affiliate members.
- Opportunities to interview and discuss employment opportunities with our undergraduate and graduate students for both permanent and co-op/internship positions

6.4. Initial Industrial Discussants

The lab has engaged with the following institutions as follows, those marked with an * have committed to payment to participate in the DCentral Lab if the PRR funds are successful. Those marked with an ± are pursuing active opportunities to fund DCentral lab via the affiliate model:

- Zharta*
- Anchorage*
- Feedzai
- Ericsson
- Energy Unlocked ±
- KLH sustainability
- IoT Tribe
- Climate Connect
- EIT Food
- Digital Economist
- Mesh Net
- eWater

- World Economic Forum
- Sudden Compass
- Vodafone

6.5. Potential Industry Partners

In the upcoming months of the project we plan to reach more industry partners to embrace more diverse industries. This will enrich the quality of research being developed in DCentral and contribute to new research projects that will be developed by the ERA Chair team and IST students. The list of potential collaborations includes, but it is not limited to, the following organisations:

- Unlockit - <https://unlockit.io/en> - Real estate
- SenseFinity - <https://www.sensefinity.com/> - IoT for supply chain
- Quant Network - <https://quant.network/> - Finance
- Blockdaemon - <https://blockdaemon.com/> - Blockchain technology
- Compellio - <https://compell.io/> - Blockchain technology

7. Conclusion

To create a long lasting bond and longevity with Companies on the outside, is what this report explained in detail. The Industry Affiliation, will allow this project to aggregate, support and conduct research with external and internal partners. The Era Chair Holder role on this goal, will definitely be an extraordinary asset.