MICRO-PRACTICES IN INNOVATIVE ECOSYSTEMS

A FOCUS ON THE ATTRACT PROGRAMME

CHARLOTTE VANDEVIJVERE

2021

Table of content

Introduction

Large-scale initiatives are an indispensable measure in tackling todays complex societal issues (Tello-Rozas et al., 2015). These initiatives bring together many of the elements that form innovation ecosystems (Mercan, 2011). In this report, we target the ATTRACT programme as an innovation ecosystem that could have far-reaching potence for our society and economy (ATTRACT, 2021).

This report explores how micro-practices can improve the emergence of innovation, cooperation and interaction among the actors of the ATTRACT ecosystem. The focus is restricted to the 'Young innovator and Entrepreneurs' pilot developed during the ATTRACT Phase 1 project. Therefore, this report is divided into the following chapters:

Chapter 1: In this chapter, the ATTRACT programme is briefly discussed to provide some general context. Subsequently, in chapter 2, the theoretical framework of micro-practices is examined to better understand its value in the ATTRACT programme. Furthermore, chapter 3 unfolds the Phase 1 'Young innovator and Entrepreneurs' pilot as key example. Moreover, the methodological approach takes shape here. Via qualitative research using semi-structured interviews, the experiences and findings of the Phase 1 'Young innovator and Entrepreneurs' pilot students were assessed. Based on those nine interviews, chapter 4 reflects and discusses the most significant findings and examines how interdisciplinary learning is key in this process. Finally, proposals of new micro-practices are presented in the form of factsheets ready to be applied in practice. This report aims to contributing to the ATTRACT ecosystem objective to strengthen and empower new generations of young researchers and entrepreneurs across Europe (ATTRACT, 2021).

1 The ATTRACT programme

1.1 Concept

The ATTRACT Programme is a ground-breaking initiative developing the next generation of breakthrough technologies[1]. Its main objective is to help revive Europe's economy and improve societal issues by creating products, services, companies and jobs. The programme unites six of Europe's most impactful scientific research infrastructures, each specialized in their own field of science. Together they will use their scientific instruments to generate and capture value, create jobs and promote growth (ATTRACT, 2021).

The goal of ATTRACT is establishing and deploying a sustainable innovation ecosystem by bringing together elements such as cross-disciplinary actors, (seed)funding, space for prototyping and much more. Actors such as entrepreneurs, scientist, engineers, investors and students will together pursue and create breakthrough innovation in a cross-disciplinary setting. This co-innovating approach is meant to initiate collaboration and jointly strengthen the impact of research and innovation in Europe (Pennings et al., 2018).

1.2 Approach and objectives

The ATTRACT programme's overall goal is to turn scientific breakthroughs in the field of imaging and detection technologies into commercialised products and services for industrial markets (ATTRACT, 2021). To complete this objective, the ATTRACT initiative is divided into different phases over time.

Phase 1 (2019-2020) identified breakthrough technologies from fundamental research in the domain of detection and imaging technologies. From across Europe, 170 projects were selected as high potential technology concepts, each receiving €100.000 to bring their ideas to life and create a proof-of-concept. With a co-innovation approach, the programme seeks to find a balance between research and industry by providing win-win opportunities in the early stages of the innovation value chain. In the later stages of the innovation cycle the focal point will be on strengthening mutual trust, cooperation and interdisciplinary blending (ATTRACT, 2021).

Phase 2 (2021-2024) will take forward the most promising opportunities from Phase 1 and open the path towards developing commercialized products and services relevant to society (Pennings et al., 2018). In this phase public funding will be used to lower even further the risk of breakthrough technologies and eventually reach private investment and the market. Phase 2

[1] The ATTRACT project received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 777222

will amplify a co-innovation European ecosystem of breakthrough detection and imaging technologies for scientific and commercial uses (ATTRACT, 2021).

In addition, phase 1 and 2 both include a 'Young Innovator and Entrepreneurs' pilot for students. In Phase 1, ca. 100 young innovators were trained and integrated in R&D&I projects using design thinking methodology (Tello & Muller, 2021). Now moving to Phase 2, an important objective will be the upscaling of the 'Young Innovator and Entrepreneurs' pilot by increasing the number of universities and students to 400 participating 'young innovators' (ATTRACT, 2021).

For more information about ATTRACT, please visit the website www.attract-eu.com.

2 Micro-practices in innovative ecosystems

2.1 Definition and concept

2.1.1 Micro-practices

This chapter introduces the concept of micro-practices. It is currently receiving extensive attention by different scholars. Although consensus for defining micro-practices has not been reached, we present here some of the definitions proposed in the relevant literature (Table 1).

Author(s)	Definition
Rouleau (2003)	*"Micro-practices have to do with the possibility for the agents to change the future of their enterprise by exercising their capacity of action. The goal of these micro-practices is to convince and master the other person. Closely intertwined during the course of action, these micro-practices refer to the fundamental dimensions of interaction in the theory of structuration."*
Radaelli & Sitton-Kent (2016)	*"We adopted the term 'micro-practice' from Rouleau (2005) to indicate individual activities that have been abstracted from their specific context/time of application. They are context-specific activities that the authors elaborated into one, more theoretically abstract, micro-practice."*
Pankov et al. (2020)	*"We define a micro-level practice in this study as a set of sayings, doings, and actions that individual actors carry out to pursue a specific task."* *"Sustainable entrepreneurs can likewise advocate sustainability in their ecosystem by relying on a combination of various micro-level practices, which are building a supportive environment, disrupting normative standards, and reframing the sustainability paradigm. Those practices affect the sustainable behavior of other organizations and communities."*
Rozas et al. (2015)	*"We define micro-practices of engagement as sets of activities, manoeuvres, and subtle tactics deployed by the promoters of the collaboration to engage different actors in debates, events, mobilizations and action-taking. We refer to micro-practices to emphasize that we are entering into the detailed actions of people's activities, scrutinizing and analysing them to open the black box."*
Wasson (2008)	*"An increasing number of physicians are using microsystem principles to radically redesign their practices. Small, independent practices—micro practices—are often able to incorporate into a few people the frontline attributes of successful microsystems such as clear leadership, patient focus, process improvement, performance patterns, and information technology."*

Table 1: Summary of the definitions of micro-practices defined by different scolars.

It is notable that these definitions are applied in numerous studies and therefore have a broad interpretation. Since this document refers to a very particular initiative (ATTRACT), I would present here a self-elaborated definition of micro-practices, inspired in the existing scholarship and that helped me for pragmatic purposes in the context of this document:

"Micro-practices are an action, a doing with the goal of improving interactions and relations, innovation and cooperation in an ecosystem. This can happen on different levels involving different elements and actors. Individual actors carry out these practices to pursue a specific task to further enable the creation, innovativeness and growth of the ecosystem."

At this point it is relevant emphasizing the reasons for formulating my own definition. This is based on three grounds. First and foremost: pragmatism; the definition was specifically tailored to the context of my assignment. In the literature above, elements of various research are put forward while this definition focusses specifically on my own research. Second: creating a personal definition is more useful for my research since it expresses better what micro-practices are and their value in an ecosystem such as ATTRACT. Lastly, the focus will shift towards the students who were incorporated in the ATTRACT Phase 1 'Young Innovator and Entrepreneurs' pilot where this definition remains significant. These young innovators become the actors who carry out the practices and pursue the growth of the ecosystem. They are part of what this definition represents.

2.1.2 Innovation ecosystems

The concept of innovation ecosystems has become a popular approach in the literature on strategy, innovation and entrepreneurship (Gomes et al., 2018). Despite the lack of a consensus conceptual definition of an "innovation ecosystem", the following one captures to a great extent, the different propositions existing in the literature: "An innovation ecosystem is the evolving set of actors, activities, and artifacts, and the institutions and relations, including complementary and substitute relations, that are important for the innovative performance of an actor or a population of actors" (Granstrand & Holgersson, 2020).

Personally, I found the definition proposed by Schwab & Zahidi (2020) as better suited for the ATTRACT ecosystem. They state that innovation ecosystems are "a complex process that span the generation of ideas, their translation into products and the commercialization of these products to a large scale". One of the main reasons for my statement above, is that this definition emphasizes the fact that innovation can be successfully steered towards applications particularly valuable to society which is one of the ATTRACT pillars. (Schwab & Zahidi,

2020). As previously referred, ATTRACT will create a sustainable innovation ecosystem where stakeholders from all fields can co-operate to turn breakthrough innovations into new products, processes and services. Additionally, as also referred, a new wave of young entrepreneurs, small ventures and innovative services will arise to support growth and jobs for years to come (Pennings et al., 2018).

At this moment, I find it relevant to sketchily advance some of my final conclusions:

- The ATTRACT initiative has managed to bring together many of the elements that the literature of innovation ecosystems recognises as essential. These elements include: an interrelated set of actors, technology, resources, institutions, funding, sociological interactions and culture (Mercan, 2011).
- Micro-practices are introduced to further enable the growth of this ecosystem and its elements. Nevertheless, further emphasis on new and/or improved micro-practices will connect the elements to one another and improve the interactions between them. By carrying out these practices, the ecosystem will make further progress towards establishing applications precious for society.

2.2 Significance of micro-practices in ATTRACT

In ATTRACT, micro-practices are the actions that have been running in Phase 1 and will remain significant in the next stages to come (Phase 2, etc.). As previously stated in my definition, these sets of micro-practices are the actions carried out in an ecosystem, with the goal of improving interaction and innovation. For example, these practices could enhance actor involvement and participation in an ecosystem (Tello-Rozas et al., 2015).

The whole concept of micro-practices is of relevance for ATTRACT. Especially in relation to the 'Young Innovator and Entrepreneurs' pilot because it constitutes a micro-practice in itself and as mentioned before it is the focus of this document. The pilot allowed students to conceptualise and prototype new solutions and applications with societal benefit. The inclusion of students is beneficial for ATTRACT as one of their objectives is to create a new generation of well-trained researchers (ATTRACT, 2021).

The Phase 1 'Young Innovator and Entrepreneurs' pilot will be further discussed throughout this report. The experiences and findings of the participating students will be analysed. Subsequently, three self elaborated micro-practices will be presented in the ATTRACT ecosystem, related to the students.

3 Student projects

3.1 ATTRACT Phase 1 'Young innovator and Entrepreneurs' pilot

The 'Young Innovators and Entrepreneurs' pilot that took place within the ATTRACT Phase 1 project was led by the ATTRACT Consortium partners Aalto University and ESADE Business School. This pilot is based on design thinking methodologies that could lead to the emergence and deployment of innovation solutions targeting social problems. This section displays the Phase 1 'Young Innovator and Entrepreneurs' pilot and its purpose.

During the pilot ca. 100 students from the collaborating universities got the opportunity to participate. Divided into teams of six interdisciplinary students, the young innovators were paired with some of the projects funded by ATTRACT Phase 1. Their assignment was to conceptualise and prototype new technological solutions with societal benefit (ATTRACT, 2021) inspired by the technologies developed by the project professional researchers.

ATTRACT Phase 1 organised the 'Young Innovator and Entrepreneurs' pilot with the following purpose:

1. Use Design Thinking methodologies to extract social value directly from fundamental science.
2. Demonstrate how an entrepreneurship and cocreation mind-set could be introduced in novel ways to pursue social benefit.
3. Complement the current training methods of students in research institutions in novel ways.
4. Analyse the lessons learned in this pilot for the scale-up in the ATTRACT Phase 2 Project and the overall Programme (Pennings et al., 2018).

Taking a glimpse into the upcoming Phase 2 of ATTRACT, one of the main objectives will be the upscaling of the 'Young Innovator and Entrepreneurs' pilot. Phase 2 will increase the number of universities and students applying to the selected projects to ca. 400. The incorporation of student projects in ATTRACT is meant to create a new generation of researchers who will look at co-innovation between academia, research infrastructures and commercial organisations as a natural way of working (ATTRACT, 2021).

3.2 Analysis of Phase 1 pilot for students

3.2.1 Methodology

The methodological choice was a series of semi-structured interviews with a sample of the students that participated in the "Young Innovators and Entrepreneurs' pilot. The students had to answer pre-set questions. Their order was not set in advance.

The reasons for this choice were the following:

1. The semi-structured interviews format allowed me to collect and understand in a deeper way the personal experiences of the students.
2. It encouraged the students to think with a higher level of analysis, about their learnings, take-aways, etc during the pilots.
3. It allowed, if possible, carrying the interviews individually or in groups. The latter was particularly interesting for this assignment since collective interviews added an extra dimension of cross-communication and discussion among the students.

Unfortunately, the potential benefit of 3 above could not be materialised due to the lack of a suitable date for all the students or even groups of them. Therefore, all the findings are based on individual interviews.

3.2.2 Approach

A total of nine students were interviewed, three students from Aalto University (Finland) and six students from ESADE Business School (Spain). The respondents were randomly selected and contacted via their tutors. The duration of each interview lasted approximately 30 minutes. In order to capture the qualitative data more effectively, the interviews were transcribed and included in the appendices. The interviews gave a more comprehensive approach on the students perspective. The students were intentionally anonymised to protect their privacy.

The qualitative data from the interviews was analysed and followed by a three stages process.

1. Different categories were identified such as points for improvement, positive takeaways, learning experiences…;
2. The data was clustered in these categories regarding the same subject;
3. The qualitative data was analysed and used to create personal recommendations and proposals taking into account the theoretical framework discussed in chapter 2 of this report.

4 Results and discussion

4.1 Evaluation of Phase 1 'Young innovator and Entrepreneurs' pilot

4.1.1 Reflection and findings on Phase 1 pilot

In this section we take a closer look at the experiences of the students who participated in the ATTRACT Phase 1 'Young innovator and Entrepreneurs' pilot. These findings will be discussed based on the qualitative data extracted from the interviews. The anonymised transcripts of the interviews are provided in the annexes. The following constitute the main findings:

- The participating schools had different experiences with the pilot. Both the process and the approach were different. Aalto students, for example, started their projects in September while ESADE students much later in March. This is the exact moment when the covid-19 situation escalated, which had a great influence on their experiences. In addition, the students reported that Aalto had more of an opportunity to do prototypes and work closely with the technologies while ESADE students focussed more on market research and organised lectures.
- The target or deliverables at the beginning of the pilot were not very clear. A lot of time went into exploring and figuring out how to tackle the assignment. It was not obvious how the project was going to evolve or what phases they would be going through.
- Students emphasized they learned a couple of new skills and concepts from other disciplines such as business, design and engineering. For example, some students learned: how to approach clients; how to design games; how to use new terminologies; etc. Some skills were completely new, but then they still got to apply their own knowledge in different ways. There was a good combination of both.
- The communication and interaction with the scientists was identified as one of the most important elements in the pilot. Some students reported that they had difficulties with the scientists due to miscommunication and lack of clear guidance and explanation. It depended on the extent to which the scientists were willing to provide good supervision and interaction with their student teams.
- Another interesting finding was that the students felt the need of being more encouraged to take risks and being creative. Basically they lack an atmosphere were they could fail. As the students reported, sometimes the scientists did not leave enough space for them to create various ideas and think outside the box. Some students, for example, did mostly

market research which held them back from enhancing their creativity and interdisciplinary skills.

- In the first few weekends of the pilot, students from ESADE followed some interesting courses regarding innovation processes, prototyping, etc. They received some useful insights for the further process. Additionally, some activities took place to meet their teams (a few weeks before covid-19). These physical courses/activities were considered a memorable and interesting introduction.
- Students reported that they would have liked to learn more about entrepreneurship. The pilot missed the entrepreneurial side that could have been captivating for students who might have been interested in more than just design, but also about the process from project to a more commercialised product.
- It is also significant reporting about the students' opinion regarding the lack of sufficient interactions with other student teams. The students were very interested about how other teams were handling their projects wished sufficient time and opportunities for sharing their experiences with one another. This way the teams could have benefitted from these exchanges and learned from each others methods. The initial plan to bring together all students in Geneva got cancelled due to Covid-19. Despite the cancellation, students emphasized their interest in meetings with other teams to share their progress, ideas and accomplishments.
- An extraordinary circumstance was the Covid-19 pandemic. This was quite a major drawback most definitely for the ESADE students who just started their projects when the pandemic hit. Due to covid, everything migrated online and this presented a number of difficulties. Trips were cancelled and students missed out on face-to-face experiences. For some teams communication and interaction became a challenge which had detrimental effect on the engagement and motivation.

In conclusion, the overall experiences with the projects were rewarding. These collaborations undoubtedly enriched the students' knowledge and manner of thinking. The students emphasized that the ATTRACT experience was a valuable one as many lessons were learned in the pursuit of the end goal. Nevertheless and proven in this section, there is room for improvement and the need for incorporating and/or emphasize more elements like better communication, risk-taking, creativity and interaction among the student's teams.

4.1.2 The value of interdisciplinary learning

Interdisciplinary approaches are widely recognised as becoming more necessary to tackle the large, global challenges facing the world (Fuller, 2016). Preparing students to think in todays dynamic knowledge societies requires synthesizing not only their knowledge but also their manner of thinking (Mansilla, 2016). With this in mind, we take a look at how the students valued and used interdisciplinary approaches in the ATTRACT pilot.

These are the following findings:

- The interdisciplinary approach was, according to the students, the engaging aspect that attracted them to participate in the ATTRACT pilot. Most of the students were curious about what outreached beyond their own scientific field of knowledge and/or the way they practice it within the walls of their schools.
- One interesting conclusion was put forward: “teamwork is key”. One student emphasized that in order to make these mostly interdisciplinary teams work, it is important that you understand that if you’re the design student that doesn’t mean you have to specifically learn business or engineering, it’s about learning how to work together that’s so important. Key elements such as communication, interaction and organization were highlighted.
- Working in these interdisciplinary teams was not always trouble-free. Some students coped with difficulties when merging different visions into one final idea. Despite of these complexities, the students confirmed that the integration of different disciplines did improve the capacity of generating new ideas and solutions.
- The teams’ diversity allowed the students to see things from a perspective they were not used to. An important element for them was that the opportunity allowed using their creativity and “out of their own box” thinking. They valuated that as “something they’ll take with them in their further careers”.

To conclude, it can be stated that the interdisciplinary approach improved the creation of new ideas and enhanced the students’ creativity. The series of interviews then corroborated that students benefit from interdisciplinary learning by developing a broader range of skills and knowledge (Fuller, 2016). As a consequence, the pool of potential talent is broadened which therefore benefits the innovation required to tackle the needs of society (Schwab & Zahidi, 2020).

4.2 Conclusion

The previous findings allowed extracting the following overall conclusions:

- In the evaluation of the Phase 1 ‘Young Innovator and Entrepreneurs’ pilot, the above findings indicate the needs for improving in: 1) the frequency of interactions between student teams; 2) the encouragement in risk-taking and creative thinking; and finally, 3) the communication and interaction with the scientists. Improvement in these three aspects most likely could have great potential for increasing the students’ learning opportunities.
- The covid-19 pandemic constituted a major drawback affecting especially the students’ engagement and motivation. A reflection should be made about what measures could be implemented in similar situations especially considering an online framework.
- Interdisciplinary approaches presented a valuable learning experience for the students. This had a significant impact on the creation of new ideas and the use of creativity in the process. The ATTRACT Phase 2 project should continue emphasizing on this aspect.

5 Micro-practices for Phase 2 students

Based on the findings and conclusions of the Phase 1 'Young Innovator and Entrepreneurs' pilot, this chapter proposes three micro-practices for the ATTRACT Phase 2 student programs and beyond, related to experiences involving 'Young Innovators and Entrepreneurs'. Each micro-practice is presented in the form of a factsheet so possible interested practitioners can find tailored information on how to put the ideas reflected here into practice.

5.1 Micro-practice 1

5.1.1 The ATTRACT Bootcamp

The ATTRACT Bootcamp is a short term, intense training week to introduce students to the practical reality of the ATTRACT programme. In this week, student teams gather together in one physical location not only to meet each other, but to compete against each other. The concept is that every day a new challenge is presented to the teams. These challenges could be linked to some particular learning objectives or experiences. At the end of the day, the challenge ends and scores are distributed and displayed on a ranking board. This is a practice that can be used in many different ways. There could be, for example, only one challenge throughout the whole week; or there could be other aspects involved such as: in between workshops, coffee breaks, switch teams for a day…. The options can be customised.

5.1.2 Envisioned objectives of the micro-practice

The goal is to teach the students certain learning objectives in a fun and motivating way. Challenging them to compete and collaborate against and with one another, will be a stimulus to come up with the best results/ideas/…. The overall goal is a week full of creativity and useful learning experiences that students will take with them in their further careers.

5.1.3 How it could be implemented?

This week should be organised more at the middle/end of the process. A short term training week could, for example, take place at the IdeaSquare location in Geneva. Every morning, there should be a general briefing of what todays challenge is going to be. At that moment, it should be communicated what the supplies are, the deliverables, the scores they can earn on the ranking board… Every team should also have a curator as contact point. Then the challenges and activities are organised throughout the week, and at the end there should be a small price for the winning team. The last day should be a feedback moment, looking back on what they accomplished that week.

Examples of challenges could be:

- Coming up with ideas for a commercialised product
- Switch teams for a day and/or switch study disciplines for a day
- Social media challenges: connect and interact
- Prototyping in real life
- Team-building activities

5.2 Micro-practice 2

5.2.1 Social platform

The idea is that teams of students have access to one platform to interact with each other. This could be similar to a social media platform like Facebook or LinkedIn. Here, they can post their accomplishments, ideas, photos…; they can chat and discuss with the other teams. This easily accessible platform allows the students to follow each others progress. In addition, it serves as a communication channel. This platform could also be used by supervisors or other stakeholders who can post weekly announcements or invite the students for an activity or a meeting. It could depend on what kind of information people want to share.

5.2.2 Envisioned objectives of the micro-practice

The main focus here is interaction and communication. When students are working in teams it's important to connect them via a certain medium. Reaching out to other teams is also an important learning experience for the students. Not only interacting with them, but learning form their methods and ideas could be valuable. For example, how do the other teams tackle certain challenges or how are they working efficiently?

5.2.3 How it could be implemented?

This platform could be implemented and specifically customized for ATTRACT. Students can log in, create a profile per team and get started with the platform. ATTRACT could use this platform as main communication with the students and other stakeholders. This provides a clear overview for all. Furthermore, this is a great way of staying connected from a distance. ATTRACT can easily follow up on the students, while students can easily communicate and reach out.

5.3 Micro-practice 3

5.3.1 The use of applications

What better way of catching the students interest than to work with applications they use everyday. These applications can be deployed, for example, to explain certain concepts or technologies; or to creatively form teams of students…

Applications could be:

- Inter(TINDER)plinary teams: the app 'Tinder' is very popular among young people looking for their match. So why not use this app as a creative way of putting the interdisciplinary teams together? Students can swipe left or right when looking for their potential match for their team. Certain talents and characteristics can be displayed on the app. Furthermore, this could be used in other ways too, for example, as a way of displaying the projects or technologies…
- Brainstorm wall: this is an online application called 'Padlet' that is a big bulletin board that can be filled with ideas, links, quotes, videos, photos, chats… This is an easy way for students to share some of their ideas and thoughts. The benefit is that this is easily accessible for all students.

5.3.2 Envisioned objectives of the micro-practice

The overall objective is to use applications in creative ways to connect students by letting them share thoughts, ideas and information. Additionally, they can serve as an introduction or guide to a particular activity ('Tinder' example). Using these applications, you step into the world of a student and that catches their attention. Keeping students motivated is important for their further progress. Therefore, this is an interesting practice.

5.3.3 How it could be implemented?

In ATTRACT, these applications could be implemented throughout the entire duration of the process related to different aspects. Personally, I think it is important to implement this in the beginning. This gives the students a first positive experience that sets the tone for the rest of the process. As these applications are well accessible online, as this is a practice that can be easily implemented in ATTRACT.

6 Conclusion

The research on micro-practices allowed to get a better understanding of their value in an ecosystem. This report correlates theory with practice as it links the theoretical framework of micro-practices with the student experiences of the ATTRACT Phase 1 'Young Innovator and Entrepreneurs' pilot. Focussing on the students' experiences has been most interesting, as they could foster a new generation of researchers who are able to work with interdisciplinary perspectives and therefore tackle societal issues. Having the chance to learn and work in an interdisciplinary environment, is a great opportunity for any student. Therefore, ATTRACT is seen as a valuable learning experience. However, as proven in this report there is need for improvement. With this aim, three micro-practices are proposed seeking to enhance the students' learning experiences. These proposed micro-practices could not be only limited to the ATTRACT context.

This assignment allowed me to understand the ATTRACT programme and its value to our society and economy. Also, learning about the student experiences was an interesting topic for me personally. The whole process of doing this research has been a true exercise for me. At the beginning it was hard to find my way through the literature and delineate what I was going to investigate. Slowly, things were falling into place as I decided to focus on the Phase 1 'Young Innovator and Entrepreneurs' pilot. Being a student myself, I find this research very interesting as this is not the conventional way of learning. That is what attracted me to this assignment. One of the most interesting parts is the use of interdisciplinary approaches. This is something I value in my own education and so I was never bored doing research for this assignment.

This is an experience that I will definitely take with me in my further career. It was my goal to test myself with a challenging internship that teaches me to look at things from a different perspective. And that is exactly what ATTRACT did.

7 References

ATTRACT (2018). *ATTRACT phase 1 website: What is ATTRACT?* Retrieved from https://phase1.attract-eu.com/the-project/

ATTRACT (2021). *ATTRACT phase 2 website: About ATTRACT phase 2*. Retrieved from https://attract-eu.com/about-attract-phase-2/

ATTRACT (2018). *Work Plan and deliverables*. Retrieved from https://phase1.attract-eu.com/wp-content/uploads/2018/07/WorkPlanandDeliverables_ATTRACT-2.pdf

Fuller, S. (2016). *The role of interdisciplinary teaching and learning in higher education*. Retrieved from file:///C:/Users/Gebruiker/Downloads/adept-qmul-role-interdisciplinary-teaching-learning-higher-education.pdf

Granstrand, O., & Holgersson, M. (2020). *Innovation ecosystems: A conceptual review and a new definition*. Retrieved from https://www.sciencedirect.com/science/article/pii/S0166497218303870

Jamshed, S. (2014). *Qualitative research method-interviewing and observation*. Retrieved from https://www.researchgate.net/publication/266946266_Qualitative_research_method-interviewing_and_observation

Mansilla, V. (2016). *Interdisciplinary learning: A cognitive-epistemological foundation*. Retrieved from http://www.pz.harvard.edu/sites/default/files/X%20Boix%20Mansilla%20Interdisciplinary%20Learning.pdf

Mercan, B. (2011). *Components of innovation Ecosystems: A cross-country study*. Retrieved from https://www.researchgate.net/publication/283797767_Components_of_Innovation_Ecosystems_A_Cross-Country_Study

Pankov, S., Schneckenberg, D., & Velamuri, K. (2020). *Entrepreneurs, Sustainability and the Sharing Economy*. Retrieved from https://slub.qucosa.de/api/qucosa%3A72872/attachment/ATT-0/

Pennings, R., Tello, P., & Nordberg, M. (2018). *A strategic proposal for boosting breakthrough co-innovation on detection and imaging technologies in Europe – preparing the*

scene in Phase 1. Retrieved from https://itemsweb.esade.edu/research/iik/ATTRACT-Strategic%20Programme-Summary.pdf

Radaelli, G., & Sitton-Kent, L. (2016). *Middle Managers and the Translation of New Ideas in Organizations: A Review of Micro-practices and Contingencies*. Retrieved from https://onlinelibrary.wiley.com/doi/epdf/10.1111/ijmr.12094

Rouleau, L. (2003). *Strategizing in and through micro-practices and social contexts: a structurationist perspective*. Retrieved from file:///C:/Users/Gebruiker/Downloads/STRATEGISING_IN_AND_THROUGH_MICRO-PRACTICES_AND_SO.pdf

Schwab, K., & Zahidi, S. (2020). *How countries are performing on the road to recovery*. Retrieved from http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2020.pdf

Tello, P., & Muller, R. (2021). IdeaSquare: *Delivering value for CERN through European Projects*. Retrieved from https://indico.cern.ch/event/984811/contributions/4147878/attachments/2177761/3677720/ATTRACT%20and%20CROWD4SDG.pdf

Tello-Rozas, S., Pozzebon, M., & Mailhot, C. (2015). *Uncovering Micro-practices and pathways of engagement that scale up social-driven collaborations: a practice view of power*. Retrieved from https://onlinelibrary.wiley.com/doi/epdf/10.1111/joms.12148

Wareham, J., Priego, L., Romasanta, A., Nordberg, M., Tello, P., & Mathiassen, T. (2019). *Systematizing serendipity for big science infrastructures: the ATTRACT project*. Retrieved from https://phase1.attract-eu.com/ATTRACT-Report-Serendipity.pdf

Wasson, J., Anders, S., Moore, L. G., Ho, L., Nelson, E., Godfrey, & M., Batalden, P. (2008). *Clinical microsystems, part 2. Learning from Micro-practices about providing patients the care they want and need.* Retrieved from https://www.sciencedirect.com/science/article/abs/pii/S1553725008340550

8 Annexes

This is a compilation of the nine interviews with the students of ATTRACT Phase 1. The students were intentionally anonymised to protect their privacy.

8.1 Annex 1: Interview student 01

Interview student 01 - Tuesday April 6, 2021

What school are you from and what do you study?

I study Aalto and I do this bachelors programme called IDPM, which is international design business management. It's kind of a mix of business design and engineering together. In Aalto the ATTRACT project was a separate course anyone could take, as long as you were a student here.

Tell me what project did you work on?

We worked with the start-up in Rotterdam, called sky-echo. They developed this technology using radars for measuring rainfall at a very precise level. They came up with a different way of measuring so you could get precise rainfall data of a city block level. They developed the technology and we were partnered with them to come up with business cases and other used cases to make use of that data. The experience was very nice, we had a team of 6 students here, 2 designers, 2 business students, and 2 engineers working with them. For some of us this was the second time of doing a project like this, so it was quite fun. We had the experience from last year and we got to do it more independently this year.

How did the process go, how long did it take?

September was the official starting date but our project started in October when we got to meet our start-up in Rotterdam. It lasted until may, so it was basically a whole schoolyear. I was the team leader, so I was mainly coordination the communication. In our team we did not really have any titles but I was the person responsible for coordinating and communication with the clients.

How did you feel, working in a team?

In our case it was a bit different, because half of the team had already done PDP (project development project) and worked before, so they knew the methods from there, and the other half of the team, like me, had already been part of another projects. In that way our teamwork was really nice because we had already worked with each other and the others knew the process. But then of course there were also different things like time commitments and the excitement level, and of course the pandemic affected a lot.

What was your experience with ATTRACT in general? Good, bad?

Personally for me, I love learning by doing and participating in these project based courses. I would always take these options over any other typical traditional lecture. But then of course with the whole objectives of the project we didn't know what we were going to learn as much. It was a lot of exploring and figuring out things. We didn't knew the kind of project we would create so we ended up creating a game which was not what we thought we would do at that time. So that kind of skill was completely new, but then we still got to apply our knowledge in different ways. The designers got to design. As business students we got to come up with the business model, figure out how to get the revenue for these things, but also just the overall project experiences were very similar too.

What is the most important thing you learned?

Teamworking is definitely one of the biggest things, because when you are working in these mostly multidisciplinary teams it's really important that you understand that if you're the business student that

doesn't mean you have to learn design, but you need to know how to work with designers. Or as a designer you don't have to learn engineering but learning how to work together that's really important. Then of course framing the whole project comes with experiences like how to make sure that you don't promise too much or you end up working on so much ideas that you never get a final idea.

What crucial aspect would you highlight in the process?

Communication was very important. Especially with the clients, we were lucky to have clients who were very friendly. They were always sharing what they were doing so we could always learn what would be helpful for them. Because one they we looked at was what were the long term goals with this project but also at the same time, we had to deliver something. How we could help the clients was something important and they were very open.

Did you struggled with in the process? Things you didn't understand or knew how to handle?

Yeah the technological aspect was a bit of a struggle. Luckily for me, I had a bachelors in engineering and then I switched to masters in business. So understanding how the technology could be used was easy but of course our team never had to understand how the radar worked or how to get the information from the radar. So we did not had to go very deep into the technological part because I don't think enough of us had those skills. When we were doing our final idea, what was the game, I realised I am not a very good developer while engineers in our team understood that part much better. We, the two business students, focussed more on the game mechanics, how to make it more attractive, more addictive, more fun. Also good to mention is that Covid was a bit of a struggle. luckily we created a virtual game because of the whole pandemic we could not create something physical.

We were lucky because the year before some of us did the PDP course and that's whey the teachers let us be more independent. We got to find the team members ourselves, so we knew that it was important to get designers and engineers and business students. We got to form our team ourselves so that was very helpful. I was able to ask my friends who I knew were very capable of design or graphic design.

What is something you would have changed or done differently?

This is interesting because I'm doing my thesis on ATTRACT as well. So from my point of view, I think we had the advantage that we knew the design thinking method and our team had that experience so we could convince the client about it. That was something the staff also did, they supported us, we never felt like we had to listen to the client, we could do the thing we wanted. This was very useful and they should definitely encourage that, the entire point is that students learn what they want to learn and helping each other. It should not be only what the scientist and entrepreneurs want to do, but the vision of the students.

What was your relationship like with the scientists?

In our case it was a bit different because the scientist were a part of the start-up, so we didn't necessarily have a type of organisation joining us. It was the start-up who were the scientist and the entrepreneurs. It was to work with them because they had a clear goal of what they wanted to do and how to get the data. They never restricted our team about what we should do with it. They had been working strongly with engineers and not that much with designers so it was also very interesting for them.

Did you need more coaching/mentoring, training?

I liked that it was independent but that also meant that we had to decide what we were going to learn out of the project. The designers for example were really interested in exploring speculative design methods and came up with an experiment for that. As a business student I was very interested in understanding the gamification, business models… we were looking into that ourselves. That way it was

more independent, but if there were some more lectures or keynotes we could have attended, that would have been welcome. I realise it is hard to organise this because all the projects were so different, but it would have definitely made it more interesting for us.

How did the interactions go (between the team or other actors)?

We did a lot of interviews and chats with outside people and of course the design factory network helps there as well. If we wanted to talk to someone, we just send a message to the staff in the design factory and ask them if they know someone in this industry. We also just googled a lot of people and did workshops with engineering companies that we had a chat with (the weather institute, game developers). It was really important to get these outside perspectives because the technology was so early and not yet put into the market. So we had to understand what the perception would be of this whole view.

Were you as a team, independent? Did you have enough guidance?

In our team it was very independent and we did most of those things ourselves. But it was not because the staff was not present, if we needed help they were definitely there to assist us. But as I said earlier, half of us already did the projects before so they let us do whatever we wanted unless we needed help. We still have these kind of meetings every couple of months with the staff. They still ask us how we are doing, what are we doing, do we need any help or give us directions to explore… So they definitely helped us but it was more our job to ask if we needed extra help.

Did you sit together with the different teams, exchange ideas, concepts, thoughts?

Not really, I think that is something we should of done. We had 2 events but one got postponed to September, and it was a bit different because of the pandemic. We had this half way show which was in December and then we got to see what the other projects were doing. But it would definitely be interesting to see what the others were going through more progressively as well. Because maybe there were things that we were doing that others could have benefitted from and we could have also learned from there methods.

For my own thesis about ATTRACT I interviewed other students about it and some had difficulties with the scientists, some had a very clear objective from the start and so it was just about developing a product and not thinking differently so to see how they were doing over time could have been very interesting.

Was there enough room for being creative and sitting together, exchanging ideas and concepts? Was it fun?

The trip to Rotterdam was a very good team building experience. We could have had a skype call but it was very different meeting them in person. We had a 6 hour workshop with them to think about different ideas they had about what we could do. We created this kind of tulip that was controlled by a motor, the idea was that is was a roof that opened when the rainfall data tells when it is going to rain. So that was interesting for the start-up because they saw that we were good at prototyping. As a team we could really band, having lunch and diner together. Before the trip to Rotterdam we only had 2 calls with the client to say hello and then we planned this trip and got to meet everyone. Then we considered the project kick-off.

Would you encourage other students to take part in these projects?

Yes, I really like project based work. Interesting to see what kind of organisations were part of this chain (CERN, start-ups…). It would have been very cool to meet them in person, but due to corona this was difficult or course.

What other things were notable?

Sounds cliché but I think the teamwork was really great. It was the whole process of going through the annoying part where we couldn't come up with any ideas and then coming together as a team we could make some decisions and create a game.

One thing we realised is that different school had very different experiences. So at Aalto we had better knowledge about design thinking so we could apply it better. What I heard from ESADE is that the workshops did not work because it was like a lecture and they were not thought how to implement it. So everything was there in theory but in practice it failed. The other thing was that the work with scientist was a bit of a struggle. The scientist telling the students what to do was quit apparent in some of the collaborations. In our case it was very different because we were working with the scientist and entrepreneurs put together so it was all very open minded. But then when I talked to the people from ESADE they mentioned that the scientists were getting the students to do free work, doing a lot of market research and not getting to be creative and things like that.

When I talked to the people here from Aalto, I heard that the researchers or start-ups did not trust the students entirely. That made a huge difference for us, maybe it has something to do with the way the students present themselves. So without the trust, they never got to work with the technology as they would have liked to. Maybe the students weren't as bold as the client wanted them to be and then the students got more scared and the client more worried and then you get a chain reaction. Then the start-up itself had some ideas they wanted to implement so they were pushing these ideas onto the students, that made a difference. From the Aalto side, the university did step in but I don't know how this happened or if it was successful. This affected the students learning quit a bit. What happened at ESADE is that they started the project much later in March. They do it for six months. They did not get any physical teaching at all, because they started when the pandemic hit. This affected there learning as well, they never got to visit the labs and research centres.

Another insight I got was about risk taking, about the environment the projects created. Because in our school or project, we were encouraged to take risks and we knew that if we failed, it was not the end of the world. That freedom is very important, Marcus also mentioned that they don't want the students to come up with the same ideas that already exist. And students come up with the same ideas if they don't feel they can take risks so the encouragement to take risks is crucial.

The big problem with ATTRACT is that they meant to be obscure but it was not very transparent, for example like how the whole thing was connected. Like I got to know more in general when I met then in person for the workshop. But I don't think the rest of my team got to know them because they did not attend the workshop. Then I really got to know how CERN was involved and the different universities. That could have been very interesting to use the contacts they have, like CERN, everyone has heard of this organisation so it's an easy way of contacting people.

Could it be interesting to arrange more interactions between the students?

It would be better to learn from each other. We were not so active in talking to the other students but that would have been better indeed. What really helps is peer learning and looking at what the other teams are doing. I don't see any reason why we couldn't have talked more to the other students, and not only from Aalto but also ESADE.

8.2 Annex 2: Interview student 02

Interview student 02 - Monday April 19, 2021

So what University or school are you from, tell me what do you study?

I'm from UCP (University Catalonia, Barcelona) and I study a bachelors degree in telecommunications and industrial engineering.

How did you enrol in the ATTRACT programme and what project did you work on?

I had a course which was advanced engineering projects, and there were many options and one of those project options was getting involved in the ATTRACT projects. There was this TESI challenge (technology for social innovation) and that's how I joined. So it was a mandatory course bur still an elective. I worked on the FastICPix project which involved the development of a light sensor.

How did you feel, working in a team? Was there enough diversity?

In my team there were two students from IED, the design school, three students from ESADE and myself from the UPC. So it was a nice group, we had a good understanding of each other. I was the only engineer in the group and I think having another engineer would have helped. The IED student were not able to stay with us (because of COVID partly) but we managed to finish the project with no more difficulties than that. I believe that when it comes to diversity that our team was perfect, we had students from design, business and engineering, maybe one more engineering student would have been great. But this diversity allowed me to see things from a perspective I am not used to seeing in my university.

How did the process go, how long did it take?

We started in February and ended in June, so it was a spring semester. At the beginning the targets were not very clear. I know it is difficult for a project of this kind to state the specific objectives from the beginning but at the beginning it was a bit unclear what we had to do or the deliverable we had to hand in. But for me the first steps were understanding the technology because particularly for this project because the technology was not easy to understand. It involved a lot of electronics and engineering knowledge in general. Once we understood the technology we could start looking for applications and businesses or enterprises that could benefit from this technology and find real work applications that could have social impact. Finally we put it all together in a report or presentation and contacted the researchers/industries/developers who were interested in the technologies.

Did you get a clear overall picture of what was expected?

I believe the overall picture was clear but specific deliverables were difficult because we were working with specific projects so you can generalise for some of them but not all. For example we were told that we should work on developing a certain prototype or model of how the technology should work. But for a technology like ours specifically it was difficult since it was a sensor with very particular applications, so building a prototype was not kind of direct, and in this sense we were not so clear on how to do this.

What crucial aspect would you highlight in the process?

Guidance was important: there was a constant review and contact with the person responsible for our group. We had meetings every two weeks or every week and this was very useful. We got aware of our progress of work because in the end it was easy to loose track of our progress. Another important aspect is direct contact with our researchers, with the ones who are actually developing the technology. They are indeed the ones that understand the technology best and who make us understand it better. Other than reading their papers or looking at secondary material, I think first hand information was key for the group.

Was there enough room for being creative/sitting together exchanging ideas and concepts?

In this pandemic situation we were provided with tools like google meet accounts and other platforms to have interaction with the group.

Did they encourage you to work independently, to take risks?

We had plenty of liberty in the sense of finding applications. We also had some indications, which was great because when you couldn't come up with anything, we could look at this and this and this. This was very useful because at some point first and mostly when we didn't understand the technology, this was very clarifying to know what this technology was expected to be applied to. But on the other hand we had plenty of freedom to floor other new ideas.

Were there any struggles? Things you did not understand or did not know how to handle?

Understanding the technology was for me the main challenge. At some point we thought we knew how the sensor worked and then looked for applications that worked with this understanding but then we realised that our understanding was completely wrong. It was difficult to contact industry leaders or industry people that could have showed their interest. Finding possible applications for the sensor was difficult. One of my teammates emailed 100 people and got very few answers back. This in contrast with researchers who were very open and interested in knowing more about the technology.

What is something you would have changed or done differently in the whole experience?

Especially the first sessions that were an introduction to different methodologies of teamwork or design thinking, maybe relate these initial sessions a bit more with the specific deliverables of the project and also adapt these specific deliverables to a specific project like the prototype.

What is the most important thing you learned?

Reading academical is something I really learned. I had to read a lot of papers and literature and technical literature. Trying to understand this and extracting conclusions from that is an experience that I wouldn't have had anywhere else. Besides that I learned a lot of things and concepts from the business world like an executive report or executive summaries. These are terms I was not familiar with and this I would not have seen this otherwise. I would recommend this to other students, it is a big challenge, but the outcome is worth it!

What was your relationship like with the scientist(s)?

Yes, they were charming and interested. We contacted one researcher in Oxford and she was very interested and helpful, she told a lot about her work and how our sensor could benefit her work. That was nice and interesting for us.

Did you meet the other student teams? Or were interactions only happening in your own team?

We did not have any interaction with the other students. But it would have been great to know the progress of the other groups, if we were far behind or far upfront or calibrate our work. We managed to solve that by asking our supervisors directly where in the process we were and if we needed to work more or less. So it would have been nice to know these kind of things.

Do you think it would have been more interesting to sit together with the others and exchange ideas, concepts, thoughts?

That would be great and beneficial, definitely because with the pandemic we learned that we can do everything online. Two universities were already mixed so I don't know if another would have been necessary. Having different nationalities was a very divers experience in terms of ideas and nationalities. For me that was enough but it could definitely be beneficial to mix also other universities.

8.3 Annex 3: Interview student 03

Interview student 03 - Monday April 19, 2021

So what University or school are you from, tell me what do you study?

I'm doing two degrees, I did business analytics at ESADE and then a master in international management which is called SEMS in Rotterdam.

How did you enrol in the ATTRACT programme?

This was part of my first masters in business analytics and we had to do a capstone project with a company or the industry and some of those projects were offered through ATTRACT. So I signed up for the project FastICPix that was a collaboration between ICCUB and CERN.

How did you feel, working in a team? Was there enough diversity?

Initially we were with 6: one engineering student from university from Barcelona, two students from IED and three from ESADE. The two students from IED dropped out at a certain point but the reason was more personal. I do thing 6 is too large of a group to have a productive collaboration. The administrative work increased a lot otherwise, you need someone dedicated to monitor who is working with what and that everybody is involved, it also facilitates the decision making. So for us it was easier that we were with only 4. So the diversity was nice but it was not really helpful.

How did the overall process go?

It was a bit confusing, we were encouraged to do kind of a waterfall project with planning and phases etc. But at the same time there were some requests to keep it more agile. The process was ok but we had a lot of stakeholders. There was ATTRACT and then there was the organisation involved called TESI (technology for social innovation). Then there was ESADE like our own professors were involved, then there were coaches. So everyone wanted something else from us and that was a bit too much. There were stakeholders from client sides and ATTRACT and TESI and so the overhead of keeping up with the administrative stuff was just a lot to take. Like we had a lot of weekends were we had to be at the university taking some courses or doing some events, and that took out a lot of energy out of the project. This became a bit frustrating because we could have put more energy in the project itself. We had a pretty good coach supporting us, that was responsive about our feedback and understood us very well. We told him how we felt but it was still kind of there. The organisations like ATTRACT an TESI had there agendas set and want to see this trough. So very often when we came with criticism, we were told to trust the process.

Did you get enough information about the expectations or the overall picture?

I think the overall picture was clear but there was a bit of confusion in the beginning because there was ATTRACT involved and TESI. At some point we knew about it and got it but it was not super clear at the beginning.

Was there enough room for being creative and sitting together exchanging ideas and concepts?

Kind of, because there was not much room for creativity required. Our task was to find applications for the existing technology and that meant reaching out to as many people as we could from different industries. First it was like a market research and finding out what's a good strategy, what's possible and where could we find an application and then reach out to experts and talk to them. So basically there was not too much creativity needed, also the technical part of it was very complicated so we had a hard time being creative about it, because it was hard to understand. But it was not a problem though, it was exciting to see what exactly we were looking for. We got this question a couple of times like how to be

creative during workshops and in this process, but it was not really the right question. It was not really about creativity, it was about reaching out to people, confirming used cases in different applications and connecting the researchers from CERN and ICCOB with researchers somewhere else, so that they can collaborate when we are gone. I think in the second last week, we had a little break through and could connect some interesting actors with each other.

Did they encourage you to work independent, to take risks?

I think at time I wanted to be more independent. For example one of the coaches that we had, they kept insisting that we come up with used cases but that was not what we were trying to do here. There is no normal user at home waiting to use the technology of FastICPix, this is a very nice application that is ahead of it's time. So there were these little conflicts at time, yes.

Were there any struggles, things you did not understand or did not know how to handle?

A lot of things were done pretty well, I would say that the motivation of the people involved was pretty high, lots of good intent and good energy. But sometimes it was just a bit hard to navigate all that.

What is something you think could have been done differently/better?

They tried to equip us up with these ideation workshops and how things are done. But at least for the business students they were already familiar with it so that was a bit misplaced. That was not the case for the tech or design students but the thing is if they want to keep team sizes of 6, the focus should be about how do you manage such a team, for example by using some kind of structure or tools. Because we were not asked to have an official team leader, there was not much help to monitor our progress internally. Like I think there are some cool tools that we could either just be encouraged to develop ourselves where you just regularly ask ourselves a question: like do we know exactly what the client wants from us or are our results of high quality or do we feel comfortable and psychologically safe? Just to monitor these things regularly to react if something goes of the rails. I feel like this more project management kind of support could have been helpful, definitely with the group size of six. I'm not saying we needed hierarchy but maybe at least some tools as indicators when something goes off. Because in my opinion we could have prevented that those two girls dropped out, that was still a bit of a failure.

What was your relationship like with the scientist(s)?

Our main contact person was with the ICCUB. But the relationship with the scientists was pleasant and respectful. It was a very professional relationship, they were quick with their answers and were ready to help. At the end of the day there was not too much conversation needed because they just had to explain to us what the technology is, what kind of used cases they were considering and then it was up to us to find other used cases. So there was no need of daily interactions. With CERN we had no interactions. I know there was a guy named Rafaël who was involved.

Did you meet the other student teams? Or were interactions only happening in your own team?

No and I don't think that there was time for it. There were already lots of interactions with multiple teams were we had to do an event and talk about problems of other teams that did not affect you, so you are sitting there like hey that's my Sunday. I know that there was this plan to meet everybody in Geneva at the end of the project post factum. That would have been very nice to meet others and talk about the ups and downs, share some experiences. So that is great but while working on the project it might be too much of a distraction or too much work that we could put in the project instead of interactions.

What happened with the project after you were done?

I don’t know, we were not really informed about that. It would be interesting to know, but it’s not crucial to follow that up.

What important change would you make, looking back at the journey?

Teams of 3 or 4 instead of 6. There is too much risk of people who are not involved or free riders and that can cause some friction. If there is a decision with four people, your voice counts but if there is a decision with six then you just agree with everything and that gets frustrating.

8.4 Annex 4: Interview student 04

Interview student 04 - Monday April 26, 2021

So what University or school are you from, tell me what do you study?

I did my bachelors in business administration in Rotterdam and then I went to ESADE where I did my masters in business analytics. Now I'm doing my second master called SEMS.

How did you enrol in the ATTRACT programme?

It's a course, we have this thing called 'capsule projects' and there we have to work with projects and collaborate with projects. I think 4 or 5 of these projects were ATTRACT, but we didn't know in the beginning that it was ATTRACT. We got the descriptions of what the projects were but more we did not know.

Tell me what project did you work on?

We worked on Hysplant, it's an embryo imaging technology to detect which embryos would grow healthy… We helped them to bring this to the market, we interviewed a lot of clinics which was tough because it was covid and people were not necessary in the clinics.

How did you feel, working in a team? Was there enough diversity?

We were with 6: two from business analytics, two from UPC telecommunication, two from IED science school. But the problem with the students from IED is that this was not a compulsory course for them, so in the end half of the people from the IED school dropped out. This left some teams with only three students, which was a bit hard. In our situation one dropped out early and the other person did not do much. I think the groups and the diversity was fine. A problem was organisation, because we were from 3 different universities and studies. Even online, in the 3 months, we only found two half hour time slots where everyone was available. I feel universities should organise a full day for the projects where we could like read and chat and meet the companies. It was super hard to find a time where everyone was available.

How did the process go? Were the deliverables clear for you?

The deliverable were not super clear in the beginning, but I think it also depends on the project since the project is very much lead by the lab. For us it was very slow in the beginning, because we had to contact so many clinics and the 'clients' only wanted market research. If we knew it would only be market research, then we might have changed projects. My teammate and I who are studying business analytics, found that we were again stuck in business, which was good because on one hand we had the knowledge but on the other hand it was all just repeating itself.

Was there enough diversity in your learning (interdisciplinary learning)?

I think there could have been more focus on this. For example in Aalto University they did prototypes and they moved stuff and worked with technologies, they were more hands on than the projects I saw in ESADE.

Did you get enough information about the overall picture and deliverables?

I think this was very clear, they explained what ATTRACT was and told us that Aalto was also working on it. Also that fusion point was very involved in this (in ESADE we have this area called fusion point and they are a sort of department that organise all the hackathons, ATTRACT). So they explained clearly what the purpose was, what ATTRACT was, there was also a conference in the beginning where I learned a lot.

What crucial aspect would you highlight in the process?

The client interaction is really important. You should always find clients who are as involved as they were with us. Otherwise when you have a bad interaction or communication, people take ages to answer and then you cannot really work as well, so this is very important. Also the fact that one of them (the intern) was working with us and taking the responsibility was very positive. She was an intern so she had time and kept time to work with us. We could always contact her and we knew she would make time so maybe posing one contact person that's not a high up manager or super busy, is interesting.

Was there enough room for being creative and sitting together exchanging ideas and concepts?

What ESADE did and most of the students disliked this, was that they organised full Saturdays and Sundays where we studied innovation and process management, which the others students never had. This lasted the whole Saturday and it was not irrelevant but there were much repetitive things that we had seen in our bachelors. Sometimes this was not relevant because we rather sad down and had lunch with our teams to discuss and talk with each other and about the project. So in those days I would have loved if they divided us and thought us things we did not know. Business stuff for the technology people, design or technical stuff for us business students and so on. The last thing we wanted to do is learning the innovation cycle again. The thought behind it is good because they want us to learn the innovation process and how to get the ideas and the rest. But it was just not working, it was more hackathon teaching that was too repetitive.

Did they encourage you to work independent, to take risks?

Well the client had a picture in mind of what they wanted to do and therefore we were kind of pushed in one direction, and only in the end they started listening to some of our other ideas. In the beginning it was mostly following their path and gaining their trust. If we were on another path they put us back on their path so we couldn't just do the idea we wanted to do, so it was not so independently.

What did you not learn but wanted to learn and did not happen?

Something that was a struggle for me is that they never explained us how the technology worked. That is something we really would have liked to know, but we were not given this chance.

Other things you struggled with?

We did not really struggled much, only in the end because we had to do so many calls and it was very boring like after we contacted over 800 clinics and got only like 150 responses. So calling every day became our project at one point and again I am not doing a masters for this. I think some of the priorities or type of work you give to students should be kind of finesse with the clients. Market research is ok and is a learning experience, but as a masters project that is not enough.

What was your relationship like with the scientist(s)?

We were very involved with the clients/scientists, we had weekly calls with them. One of the interns that was working with the clients, was basically working in our team. She was doing interviews with us, calls/chats, we put our knowledge together, we had google drives together so in that sense our client was one of the most involved ones in the ATTRACT cohort of ESADE. They were very involved and wanted us to come to their lab one day and meet up, but with covid we could not do that unfortunately. But we were very lucky with them, they had strict ideas but at the same time they were very involved so they facilitated the process for us.

Did you meet the other student teams?

No but I would really loved to have meet the students from Aalto and see what they are working on and have achieved. I had contact with one other student from Aalto and at one point in covid we just stopped sharing our advancement of our projects. You are just stuck in your own project.

8.5 Annex 5: Interview student 05

Interview student 05 - Wednesday April 28, 2021

So what University or school are you from, tell me what do you study?

I'm from the polytechnic university of Catalonia. I studied telecommunication and engineering, I took both my bachelors and masters there.

How did you enrol in the ATTRACT programme?

So in 2019 I took the course of CBI which was a really good experience. The next semester they proposed us if someone would like to enrol in TESI (technology for social innovation) and that is related to the ATTRACT projects. I had the chance to enrol and they let me and I think taking the CBI course gave me already some perspectives that others did not have.

Tell me what project did you work on?

We worked on the project Sniffdrone. Our assignment was to find other alternatives to that project. They already had the idea and worked with that and we had to find other perspectives. For me that was really weird because they didn't give us clear goals, they just said: find other ideas. I don't know if it was because of us, or because of the pandemic but I really missed the contacts with the research institutions. We did like a couple of meetings but then they were like: you do it. The communication was very difficult between us. The results were considered good and in the end we did a good job but the communication and coordination was quite difficult.

How did you feel, working in a team? Was there enough diversity?

With the pandemic it was not easy working in a team, we only saw each other face-to-face like ones or twice. Working with different disciplines was quite difficult in terms of communication. I was very interested and also there were grade attached to this so I wanted everything to work well, but the design students took this as a voluntary work. In the beginning they were really involved, but when they had a lot of work from their own university they were suddenly not really involved anymore, some even dropped out. We were a team of six: two design students, two business and two engineers. They showed us the projects where we could enrol and asked which ones we liked and disliked, and that's how the groups were made. There were also some activities in the beginning of the course. With a group of 6 we had the feeling that there was not work for everyone but even if we separated everything and we all had a task, there were still some free riders who barely did anything.

What's a positive aspect of ATTRACT that you will definitely take with you?

I do appreciate the multidisciplinary part, that's why I entered this project. The results are also very different when you combine these kind of disciplines in stead of working with only one discipline. We had to do like a prototype with a video which was quite fun! But maybe the classes we did where they told us how to prototype came too late in the course. We had to built a prototype and send it to people so they could develop our idea, and this was the hardest part: to find people (who were experts in this topic) to look at our video. The feedback we got was that it was not a bad idea but maybe it was not that visible, or in the wrong area. So I think we did a good job but we had too little time to check everything about our idea. I think this was because of communication.

Did you miss some interactions with certain actors?

The problem was really covid when it comes to interactions. It was not a problem we could cope with easily. Also the university workload was immense, it was crazy the amount of things I had to do so this was something that also affected the project. To be creative you also need to have time for that.

Did you have enough room to create your idea? Did they let you be independent?

They wanted us to be super creative, we just had to find another application for this product, and in that sense we could be very creative. They did not give us any restraints on what they were expecting. They were not expecting anything, we could do whatever we thought that could be useful. We brainstormed a lot and from all the conclusions and feedback we were getting, we found a good application and went for that one. In the first two weeks we met on the weekends and then it was really working on our own. We had this tutor with who we had talks with every two or three weeks. We worked very slow because we never had an hour in the week where we could discuss and meet up. Everyone was very busy also

Was is something you would have changed?

The bad stuff is the communication between the team, but considering the pandemic is was very difficult. Another thing is that the communication with the research institution was not super great but also corona.

Would you wanted to meet the other teams and exchange experiences?

In those first two weeks in February they did activities where you could meet people but that was only one or twice and in the weekend. The next day we were already assigned the team and we did the meetings with them and not anymore with other groups. And it would have been super interesting to see what the others were doing. The project was a bit confusing as we did not have a clear goal of what we were going towards, so to see if the others were as lost as us, would have been nice. At the end we were supposed to come to CERN and meet everyone and meet also everyone from Aalto University but I did not know anything of the projects in Finland or how their presentations were, etc. So to see what the groups from different countries did, could have been so interesting.

8.6 Annex 6: Interview student 06

Interview student 06 - Thursday April 29, 2021

So what University or school are you from, tell me what do you study?

I went to ESADE Business School, at that time I was doing my masters in business analytics. That's pretty much it, otherwise I'm French.

How did you enrol in the ATTRACT programme?

As part of the masters degree is ESADE, what we have is something called the 'capstone' projects. Most of them are related with other business analytics companies, some projects with academics within the school and then there were also some research projects they offered who were part of the ATTRACT programme. So you had to choose between those projects and between more analytics oriented or academic oriented topics.

Tell me what project did you work on?

I worked on the project Hysplant concerning embryo's. Basically they developed this technology to improve invitro fertilisation, to help couples have babies. And our assignment was to explore the market technology, so in other words they did not know how to design the project and that's where us students came in.

What value has interdisciplinary learning for you (working in a team)?

The team is a mix between design, engineering and business students. There is a collaboration between different universities and we were with six in a team, two design, two engineering and two business students. It was super interesting working together with everyone, because we all had very different strengths. At the end you would distribute tasks and delegate according to peoples strengths, so even if you had this high diversity in backgrounds, everyone tackled the issues related to their own study. So business students looked into the business models, design students were designing the prototype and engineering students looking at the ideas and engineering solution. So everyone had their own specification for certain tasks and then their were also common tasks like performing interviews, doing market research.

How did the process in general go?

With our project, a lot of it was pure market research. So we were reaching out to fertility clinics and asking for interviews, doing the interviews or sending out surveys. The project also happened when corona started so that was difficult, everything went online and lots of fertility clinics were closed. This was like the main part of the project, we did this for like two months and a half, only contacting clinics and stuff, so to keep engagement and motivation within the team, that was not the most fascinating part. The second things was that we were working in parallel with the researchers too so they are working on their stuff together and then we were working on our stuff, and some of the findings that we found for example did not go inside with what they were going forward internally and so it was always complicated having those discussions with the research institute to consider our insights. That was a challenge.

Did you have enough room to be creative and think about out of the box ideas?

The thing is, you could have been very creative in this project, but in terms of in terms of what was required for the technology perspective, you could not be that creative. The options that were available as a product were quite limited, we had maybe 3 or 5 visible options but from there, based on market research, you could easily know which ones could be interesting.

Did the scientists encourage you to take risks and think independently?

We were working with one or two scientist, and basically what they told us from the beginning was that they did not want to influence us. They really wanted to let us do our thing and if we find something different than what they were thinking of, then perfect otherwise it's ok. But even though they told us this, they still had their own clear idea internally. It was like saying: "ok you can explore and we won't tell you what we have in mind, and when you find something we tell you what we were thinking of and then still stick to that plan". So there was a mismatch there.

Did you have a good interactions with the scientists and other guidance?

We had good interaction with our academy coach, but he was not super useful. From the company side, they had a clear vision on what they wanted us to work on, so there were a lot of expectations, ambitious objectives that we had to accomplish. But overall the relationships were pretty good.

Other students had some courses in the weekends, how did you feel about that?

So in the beginning I told you we had the choice between the ATTRACT projects and the business analytics ones. And in the business analytics ones you don't have those boring classes on the weekends, so a lot of people from the ATTRACT projects dropped out because they did not want to be busy for four weekends. Not a lot of people wanted to do that. The first weekend was somewhat useful because you got to meet as a team and you got to discuss on the project and it's actually useful. But the other weekends were really not useful. They were courses like 'how to work in multidisciplinary teams' which was lots of theory but nothing concrete.

What kind of impact did covid have on the experience?

I think we had one or two physical meetings and then everything went online. So we had meetings via zoom until the end of the project and we never saw them physically again. The same with my team members. It did not have a too big impact on working together because we were able to adapt quite well. It's more the aspect of motivation, the research part got longer because it was harder to reach people.

Were there things that you wanted to learn but did not learn?

The thing was that at the beginning, we did not really knew how the project was going to go like the different phases and such of the project. We were busy working on what the research institute was sharing, so I guess I did not have particular expectations of what I could learn at that moment. As a learning experience I think they could have done more.

Would you have wanted to interact with the other teams?

The difficulty with this is that everyone had very different projects. One thing we all had in common was that we were working with multidisciplinary teams and research institutes, so we had some common challenges but otherwise I don't know. Of course it would have been interesting to know what the other teams did, even at the end they did not send us a recap of what the other teams accomplished. I guess that's what I preferred to know, is what the other teams did at the end.

Would you have changed something about the experience?

The market research is something I would have done differently because that was not fun, it was mostly sending emails and contacting people on LinkedIn or interviews. Constantly waiting for responses and having maybe 5% answer our emails was a bit frustrating. It doesn't feel like it's screaming any value for us, we were not learning anything in the experience so I guess this was a bit the problem here. I think the other phases were quite good, we got the survey responses and did an analysis to find insights, so that was more fun.

Were the technologies properly explained to the team?

We got a very high level explanation, they did not want to give us the details really. They kind of showed us their lab, so we saw the technology but explained it in a very difficult way so we did not quite understand it.

8.7 Annex 7: Interview student 07

Interview student 07 - Wednesday May 07, 2021

So what University or school are you from, tell me what do you study?

I study at UPC telecommunication engineering and I participated at the ATTRACT projects last year and I'm a bachelors student doing my bachelors thesis right now in an exchange programme.

How did you enrol in the ATTRACT programme?

We had this course at the university in the last year of the bachelors degree and it's a project we all have to do that is focussed company wise. There was the option in this same course to enrol in the ATTRACT project. I enrolled in the project because I liked the idea of learning or working on something outside of the university engineering environment. In university we were always working with the same kind of background and in ATTRACT you get a whole other experience with different disciplines.

Was it a good experience working together with different disciplines in your team?

Yeah definitely, but one thing I didn't see completely working efficiency was that for example the design students trying to develop a prototype. But this probably depends on the projects of course, because when I saw the presentations of the groups, it looked like each of the disciplines were able to put their speciality into the projects.

Tell me what project did you work on?

I worked on the project Ecotags. These were fire alarm systems, temperature triggered alarms to be precisely. Changes of temperatures were detected with this technology.

Did the scientists explain how the technology worked?

Before the lockdown happened we saw the scientists ones in their laboratories and there they showed us how the technology worked and everything. We got a good understanding of how it worked, even though we did not know all the details and insights like the chemical processes etc. So that was very interesting.

How did the process in general go?

At first trying to contact the industries was difficult. More for people from my background were not so used to public relations, we never had to do that, so it was hard at the beginning but when we got used to it, things got better. Because of the lockdown it was a bit more difficult to contact people though. One thing I missed for example of developing this project during the pandemic, was physically seeing the systems they were using, like the current technology they were using that might could have been substituted by what the scientists were developing. I didn't get to see that, I had to take the word of people telling me. But the process thought me some interesting things like how to approach people the best and how to get information considered more necessary. With people with business backgrounds it was super easy and just a repeating task.

Did your fellow team members help you understand things from their own field?

We had the opportunity to speak a lot as a group during the first months and after lockdown it was more difficult to gather like that. We tried to gather online like once a week, but it happened a lot that someone was too busy with something else or exams coming up, etc. Communication and interaction in our team let for me to more insights in business and for others I explained more the tech part.

Were the courses in the weekends useful?

It was going to be four weekends in the semester, but two happened physically and two online. I found the first two very useful because I think it is easy to work physically. There I got a lot of insight information about innovation processes and tools we could use for our projects and making it work. They explained some things about prototyping what was also pretty interesting.

Would you have changed something?

Overall I was quite happy, for me it was really interesting how to work with these projects.

Did you have good interaction with the scientists?

There was some miscommunication with some cases where they made clear that some of the applications we were researching, were not really going to work because they had already did some research on that field. So there was a bit of miscommunication, then we had to redo some things.

Was there enough room to be creative?

We did have the opportunity to do that but in the end we always had to stick with what the scientists or researchers group wanted.

Did they encourage you to take risks and be independent?

At first they were not really giving us lots of freedom and trying to make us research on several different business areas. In a certain case they were saying in vague words to stop researching on that, they were trying to push the team to take an other direction sometimes.

Were there things you wanted to learn but didn't?

I think public speaking and doing the presentation itself would have been a great experience for me. In the end we did it all on zoom. Apart from that maybe I did not get enough learning on the tech side, like the first weekends it was more focussed on team building and not on the tech part. I think for the process of the project itself it was more learning about business that something else?

Would you have wanted to interact with other teams and follow their process?

Luckily I knew some guys from my university that were doing the projects too. So we did have a little chat about it, and that was quite fun. But those students were from the same background as me so I did not have contact with other teams with other disciplines. So it would definitely be interesting to incorporate this into the process. The first two weekend we met a few of the other teams but it was at the very beginning. After the lockdown we never heard of them again. It would be nice to speak with them and see what they accomplished.

Is there something you'll take with you from this experience?

Team building and how to work together with different disciplines is something I really learned. The project started really well and due to the situation we couldn't communicate to the fullest. This affected a bit the outcome of the project, what still was not bad at all. The first two weekend I will definitely remember and meeting the team, planning phases and information. That was really interesting and I'll take that with me.

8.8 Annex 8: Interview student 08

Interview student 08 - Monday May 10, 2021

So what University are you from and how did you enrol in the ATTRACT programme?

I study at Aalto University, mechanical engineering and this is my last year. I was connected with ATTRACT through this product development project course in which ATTRACT submitted 3 projects. I was the project manger for our ATTRACT project.

Tell me what project did you work on?

We were in the project WPET, where we as ATTRACT team had to come up with a PET scanner. Usually this is a big scanner for cancer detection, but here they were able to make a small scanner that was wearable. This wearable scanner had the form of a vest and was more affordable and could be used for cancer screening.

Was it a good experience working together with different disciplines in your team?

Having many disciplinaries is very beneficial, we had the engineers who were thinking of the weight of the scanner and they tried to tackle that. The design and business people helped us think about the project as a more commercialized product so that was really interesting.

Were there things in the process that did not go well, struggles?

We had seen a lot of stuff in the beginning but knowing where to start was hard. Trying to figure out the actual problem was not easy as well, definitely with these different backgrounds in engineering, design and business, at first we did not understand because everyone approached the problem differently. But slowly it came together.

Did you have enough room to be creative and think of new ideas?

I think we definitely had enough time, we had a whole year to figure out the idea of what we were actually doing, and our team made a lot of prototypes. But in the end I wished we had a little bit more time to really finish it, but in the end we were all on the same page and working together as a team.

Were you encouraged enough to take risks?

I feel like we were really encouraged by our research team and the company behind it. They really wanted us to explore anything and all our ideas. They did not want to guide us too much I feel and also the course staff was really encouraging to be creative and they really wanted to spark the ideas in us.

Were there things you wanted to learn but did not learn?

We were introduced to physics and I was happy that members other than our team explained the physics quite well. The point was really to reflect on our findings and learning path and try to understand what we were doing.

How did covid influence your experience?

We already had a remote team and when covid came it remained easy to communicate as all the meetings were open for everyone. But on the other hand we were planning to go to a study that was cancelled due to covid so we missed that. There we could have seen the results of our prototype but we did not get anything concrete because we could not go. We had quite a good base to go virtual but still it was not easy. Pre covid, we had physical meetings with the team in Finland, and the rest was in Poland via skype. We did some prototyping together like that. We did meet with the Poland team but mostly it was online.

Did you meet the other teams from ESADE too?

We did not meet the other teams. There was a conference but because of covid the conference was a bit weird. I never went to any of them. The problem is that we did not really know about this, in a normal setting we would have found each other but here is was not really a success. More interaction with other teams could be interesting, there were showrooms on the website but it was not that personal.

Did you have a good interaction with the scientists you were working with?

We had a really good interactions, we had weekly meetings where we told what we were doing and how far we got or problems. So the interactions were really good and we were even in the final paper so that was very nice.

Would you encourage other students to take part in ATTRACT?

If you are really interested in the academic world and working in interdisciplinary teams, then I would definitely recommend the ATTRACT projects.

8.9 Annex 9: Interview student 09

Interview student 09 - Monday May 10, 2021

So what University are you from and how did you enrol in the ATTRACT programme?

I study at Aalto University, mechanical engineering and this is my last year. I was connected with ATTRACT through this product development project course in which ATTRACT submitted 3 projects. I was the project manger for our ATTRACT project.

Tell me what project did you work on?

We worked on the project Heimdall. There was this technology that could be used to detect sparks of fires. They were actually working already with a start-up that was having the idea of utilizing that sensor in wildfires detection product. So the target of our project was to develop a product that utilizes that sensor from ATTRACT so we created a drone that had the sensor on board and use it to detect wildfires.

Was it a good experience working together with different disciplines in your team?

Our team had a couple of mechanical engineers and a part of our team was actually from India. Our project was the combination of mechanics, electronics, programming and design, so having these interdisciplinary teams really helped us get through all that. We had to think of a business plan to develop the product so it really helped, we learned a lot from the team. I was so focussed on the mechanics from my study that I did not understand all the other things that were going on in the project and it helped to have students who knew about this and how these things were done.

Were there things in the process that did not go well, struggles?

A big struggle was coming up with the idea. Getting the idea together and what we are going to do was difficult. Creating a plan is hard because you want to be focussing on the right things and there were some doubt about that. Other difficulties were the sensor technology and trying to learn how to use it.

Did you have enough room to be creative and think of new ideas?

We had enough time to do idea generation. It was pretty straightforward for us, we had the idea pretty early. With what we took the risk with was that we did not really knew anything about the technology. So we definitely took the safe route and now afterwards I think we should have worked more creative and take more risks with our ideas. But there was enough room to be creative in general.

Were you encouraged enough to take risks?

Yes there should have been more encouragement of taking the chance to try out some stuff and basically create a place where you could fail. I would have loved to see more of that. I think the reason we went with the safe option, because of the pressure to deliver a good end result. There was a start-up looking to have this prototype they could use in their later stages, so that put a bit more pressure on it.

Were there things you wanted to learn but did not learn?

There were some problems or things I wanted to learn more about. The project management was based on how you do things and I wanted to learn a bit more about that. But that is not too much ATTRACT related so. One thing that came into my mind is that we were lucky enough to visit CERN, and that was very great and everything was well explained etc. But we never got the sensor in our hands, not even the early prototype of the sensor. If we had it in our hands, the ideation would have been very different. Maybe for these projects specifically, the entrepreneurship side of things should be more in the picture. How do you proceed from the project to a more commercialised product, that would have been very interesting.

How did covid influence your experience?

We had the project in September so I think it did not really affected things too much. Like 75% of our process was covid free, but when February happened things were getting a bit more difficult. We were lucky enough to go that far but finalising the actual hands on stuff was super difficult. But the remote communication was already very good at that time so we had a remote team during the whole process and that worked very well. During the lockdown period we did everything separately, we had the drone and our payload. One person was working on this and then he passed it to another. But we had room in our university to work there in a space. But for contacting firefighters that was so difficult, just when we managed to get in contact with them and meeting them and showing our project, everything got cancelled. So we never met them and that was an experience that I really missed.

Did you meet the other teams from ESADE too?

No we hardly even met the team from Aalto. I was also in the conference put up by ATTRACT, it was ok how it was carried out but I don't think anyone would have found us and chatted with us. Some more interaction with the other teams would have been nice. During the project itself from the beginning, to have these interactions would have been more fun. So there could have been more of that.

Did you have a good interaction with the scientists you were working with?

We had not a good interaction, it was not terrible, but they had their own targets, ideas and much pressure because they had their own timeline. So they left us a bit on our own.

Would you encourage other students to take part in ATTRACT?

I would say definitely! It is time well spend.