



TÉCNICO
LISBOA

T.I.M.E. Project

Boosting Relationships between Academia and Industry (BRAIn) Final Report

Summary of the Project

The BRAIn Project focuses on bridging the competencies gap between university education outcomes and the demands of industry, being implemented in collaboration with KTH Royal Institute of Technology in Stockholm and Instituto Superior Técnico of Lisbon. The project aims at developing the innovation competence of bachelor's and master's students in the three partner universities.

By the end of the project, the **students** will be able to:

- to practice innovation related tasks (solving real, low-structured problems, understanding societal issues);
- to develop innovation self-efficacy;
- to practice teamwork in an intercultural environment;
- to practice design-based learning in authentic learning contexts entailing the process of framing, researching, and testing solutions to real problems.

The project blends face-to-face training with online learning.

Between 20th to 24th of May 2019 University POLITEHNICA of Bucharest hosted the first training session focused on design thinking (DT) methodology.

Design Thinking Training Session in Bucharest

Objectives of the first training session

This first session aimed at achieving the following goals:

- develop new capabilities related to the use of DT methodology;
- develop a student teams to practice DT when working on real-life challenges/themes proposed by the industry partners;
- have templates and toolbox to take DT into daily routine;
- make 6-8 coaches from industry partners familiar with DT methodology of IDEO/HPI.
- enable the overall purpose of the project by creating more “hireable” workforce.

Activities

1

Day 1 & Day 2

During the first two days, the participants were introduced to **design thinking methodology, as a specific approach to consumer-oriented innovation**. Being a Human Centred Approach, in the middle of the whole approach stays the interaction with the client. Thus, the focus of the training session was on methods of customer interaction during the product definition phase with a methodological focus on Design Thinking.

The program delivered support for student innovation teams in all the phases of Design Thinking:

- Understand: Framing a proper Challenge and Formation of the Innovation Team
- Empathise: Deep Immersion in Customer Needs
- Define: Breakdown and Reframe the Challenges
- Ideation: Use of proper Ideation Tools in order to increase Productivity of the Ideation Process and get Radical Ideas
- Prototype: Fast Prototyping and Evaluation methods
- Test: Prototypes are tested and the solutions are Iterated further towards MVPs

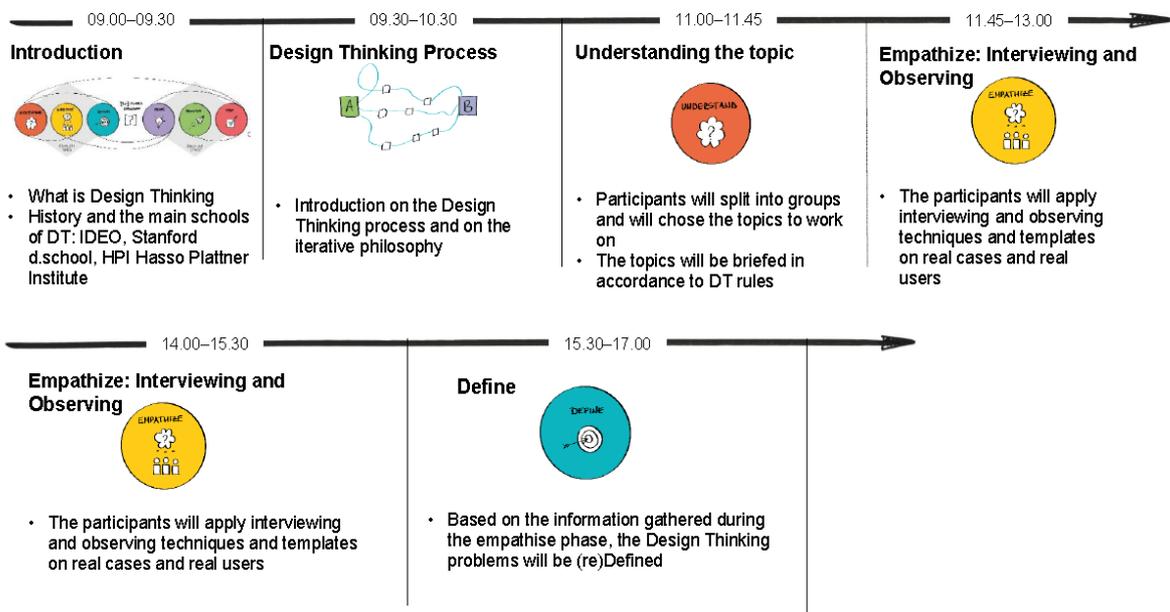


Figure 1. Design Thinking Training Outline - Day 1

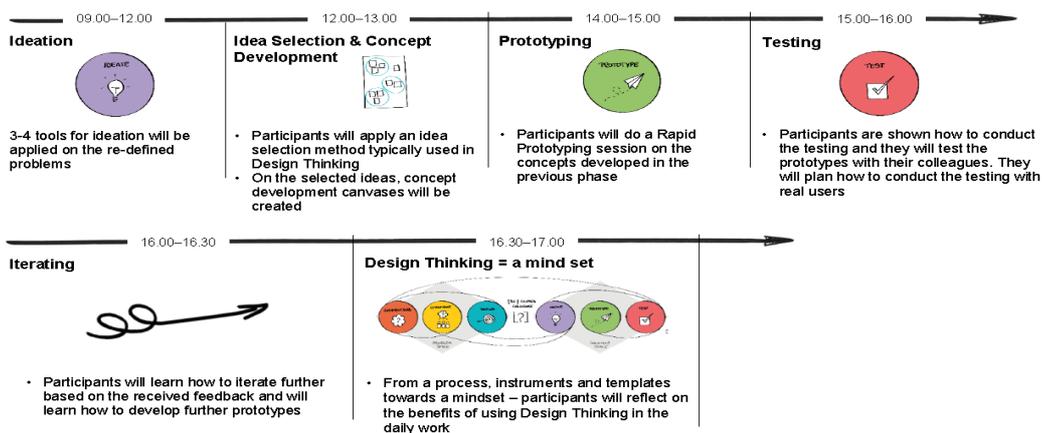


Figure 2. Design Thinking Training Outline - Day

In addition to this, the industry partners assigned coaches who offered technical support and provided insight on projects that the participants embarked on.

The students worked in four teams, on the chosen topics:

- **Challenge 1:** Mobility as a Service in your Cities;
- **Challenge 2:** Electro Mobility (E-Mobility);
- **Challenge 3:** Intelligent and flexible system of advanced monitoring and inspection based on elements of artificial intelligence for critical infrastructures (with drones);
- **Challenge 4:** Mobile autonomous communication system based on aerial platforms.

3 Day 3

Following the stages of design thinking methodology, on the third day, the participants reviewed the prototype stages and worked in teams to develop prototypes. The activity of each team was assisted by industry partners and UPB teachers.

4 Day 4

On the fourth day, the teams tested the prototype and started working on the final presentations, having also a public speaking workshop in support.

5 Day 5

On the last day, the students had to pitch their ideas in front of a jury, being also video recorded for further analyses and discussions. The participants had the occasion to carry on cultural activities in the meanwhile, visiting the capital of Romania, Bucharest.

YouTube Watch [here](#) a short video presenting the students activity.



Figure 3. Students, teachers and business partners working during the training session

TRAINING



Training materials are available [here](#)

Online Training Session

On October 25th took place an online training session addressing team leadership skills. Participants in the Leadership Skills seminar learned to:

- Implement practical steps for self-improvement
- Master the fundamentals of leadership
- Build confidence
- Set long-term/visionary goals
- Understand how leadership styles affect team members and how to adjust those styles to gain commitment
- Build trust and reduce resistance to change
- Sharpen communication and people skills to energize your entire team for higher productivity and greater success

What Does It Take To Be a Great Leader?

(1) Resilience
Being a leader can be tough. There's the balance between creating a strategy and supporting and guiding others to execute that strategy to manage. The politics and pressures associated with being in a leadership position can be exhausting on a good day, and overwhelming on a bad day. Making decisions that impact the business and a team of individuals who are following your lead is a responsibility that can at times create a sense of tension. Building a resilient mindset is often the missing link for leaders who don't want to stop at being an effective leader, but rather want to be an exceptional leader. Resilience is the key to dealing with leadership challenges effectively, and boosting leadership performance to thrive in your leadership position.

(2) Flexibility
Being a leader can be tough. There's the balance between creating a strategy and supporting and guiding others to execute that strategy to manage. The politics and pressures associated with being in a leadership position can be exhausting on a good day, and overwhelming on a bad day. Making

(3) Communication
Being able to communicate effectively is a fundamental skill for anyone who wants to succeed in business. But communication isn't always about saying the right words. It also means that you are able to empathise with your employees, and follow through on the promises you make in those inspiring speeches. Letting your strengths shine through and emanating confidence in the way you communicate is one of the most powerful tools a leader can wield.

(4) Courage
Courage is a fickle thing, but incredibly important in a great leader. A leader needs to be able to stand alone, and stand up for what they believe in. Having the courage to do what you believe will work is sometimes one of the hardest things to do. With courage also comes determination and patience – the ability to hold firm and not succumb to negativity or the pressure to crumble, and the patience to keep going along a difficult road until they reach the end with their head held high.

Figure 4. Discussing the attributes of a great leader

The participants also completed asynchronous assignments. The designed learning activities targeted both individual study and reflective activities, as well as activities that can be performed in dyads or small groups, respectively self-evaluation activities (see Figure 5).

Reflection Activity: Culture and Climate (1) +

Culture and Climate ⋮

Assignments: **Scheduling** **▶ Begin Task** ▾

✖ Anyone can work on this task! No Scheduling set for this Task

This is a self-reflection activity for distinguishing between the culture and climate of an organization and what can and cannot easily be changed. It may be used for individual selfstudy or as a classroom activity.

Instruction: Read the short article below on *What things can you easily change within an organization* and then complete the reflection activity below it.

What things can you easily change within an organization?

Culture

Changing the culture of an organization takes the full commitment of every leader within the organization. You cannot just tell people, "From now on its going to be done this way." For example, when the Armed Forces started to integrate women into what were traditional male jobs, a great resistance was put forth by the men who believed that the type of soldiering skills they were performing could only be performed by men. Many of them believed in equal rights, but the culture they worked and lived in made them believe that their work was strictly a man's job... they could not picture a women doing a job that was traditionally performed by males.

Climate

On the other hand, climate is a feeling by the employees on how they perceive that something should be done at the minute. These feelings can normally be changed within a few hours, days or weeks. The workers get these feelings from their both leaders and peers, formally and informally. Feelings are transmitted to them by how their leaders act and model, and what they praise and ignore. For example, you might believe your department needs to provide better customer service. You then take the necessary actions to help your department start performing customer service better. In the majority of organizations, your actions will not be met with great resistance throughout the ranks. Why? Because "not providing good customer service" is not part of the heritage of most organizations. Thus, if someone wants to change it, it does not really affect others within the organization.

Figure 5. Example of learning task on the Brainers.ro platform (1)

Leadership and Character Activity ⋮

Assignments: **Scheduling** **▶ Begin Task** ▾

✖ Anyone can work on this task! No Scheduling set for this Task

Tough

The 20th Maine marched over 100 miles in the 5 days before the Battle of Gettysburg. In fact, the night before the battle they marched all night to get there on time. They got very little rest, yet they fought ferociously due to the pride they had in their unit. In recent modern day Army units, it is sometimes a common practice to haze or yell at the troops in an effort to cause artificial stress—the commander wants to "toughen up" the troops. Which unit was really tough and why? What are some means of creating a tough unit?

The Test

After this lesson, you are given a multiple-choice exam. When you come to question five, you know that the answer is A or B, but can't decide which. You deliberate and finally choose A. You are sitting next to the hallway door, and when you are just about finished with the test, you hear one of your fellow classmates in the hallway remark, "Oh no, I thought for sure that the answer for question five was A," which of course tells you that you choose the wrong answer. What do you do?

The Inventory

You are required to do a physical inventory of all the computer equipment by serial number. You do a quick count, and you have all the equipment you are supposed to have. You are extremely busy and since you have the required equipment, you wonder if you really need to check all the serial numbers?

The Bonus

You get a bonus every quarter if your production team meets its quota. You have made or exceeded quota every quarter. This quarter, due to a number of production equipment breaking down, you are falling short of your quota. Last quarter you far exceeded your quota. One of your peers (who also shares in the bonus plan), shows you that a few numbers could easily be moved from last quarter into this quarter in order to meet the quotas for both periods. He says it would only be fair since the equipment breakdown were no fault of the production team. What do you do?

Figure 6. Example of learning task on the Brainers.ro platform (2)

Training and Pitching Sessions in Lisbon

Between 4-5 November 2019, Instituto Superior Tecnico in Lisbon hosted the final training session focused on refining the prototypes and delivering the final pitching presentations. The students worked together with their mentors and refined the stages of the design thinking methodology.

Monday, November 4	
15:45	IST Campus Tour
19:30	Welcome Dinner (LX Factory – A Praça)
Tuesday, November 5	
9:00	Welcome words / Warm-up / Students workgroups on previous prototypes (IST Congress Center – Room 01.1)
10:30	Coffee Break (IST Congress Center – Hall)
11:00	Students workgroups: Testing Prototypes Mentors: Professor Konrad Tollmar, KTH Assoc. Professor Ilona Costea, UPB Assoc. Professor Florin Nemțanu, UPB
13:00	Buffet Lunch (served in the hall near the conference room)
14:00	Testing Prototypes: Team work together with mentors Mentors: Professor Edgar Fernandes, IST Professor Rui Maranhão, IST Professor Konrad Tollmar, KTH Assoc. Professor Ilona Costea, UPB Assoc. Professor Florin Nemțanu, UPB
16:30	Coffee Break (IST Congress Center – Hall)
17:00	Presentations and conclusions Mentors: Professor Fernando Lau, IST Professor Konrad Tollmar, KTH Assoc. Professor Ilona Costea, UPB Assoc. Professor Florin Nemțanu, UPB
19:30	Farewell dinner in a restaurant close to IST campus
Wednesday, November 6, 2019	
Departure	

Figure 7. Final meeting in Lisbon. Event agenda

Firstly, the students were guided to design and to administrate a short survey in order to test the opinions on their proposed prototypes. The results were briefly analysed and presented.



Figure 8. Pictures taken during the final meeting in Lisbon

In order to facilitate the design of the prototypes, two instruments were developed (see Figure 9 and Figure 10).

	INITIAL SOLUTION CANVAS		Describe it in a tweet: Describe your solution in a short catchy way in maximum 280 characters
	Title of the solution:.....	Team name:.....	
Challenge addressed:.....			
Solution description: Please describe your solution. What is your final product/service/tool/activity? How could the success of the solution be measured? How will the solution provide benefits to the challenge owner?	Target group: Who is the target group for your solution? Who will this solution affect and how? How will they benefit?	Innovativeness: What makes your solution different and original? How innovative is it?	
	Impact: What is the impact of your solution? How do you measure it?	Transferability: Can your solution be used in other contexts? What parts of it can be applied to other context?	
Context: What is the problem you are facing? What is the challenge that you are solving?		Sustainability: What is your plan for the implementation of the solution and how do you see it in the mid- and long term?	
		Teamwork: How well did you work as a team? Could you continue to work as a team in the future?	

Figure 9. Initial solution canvas

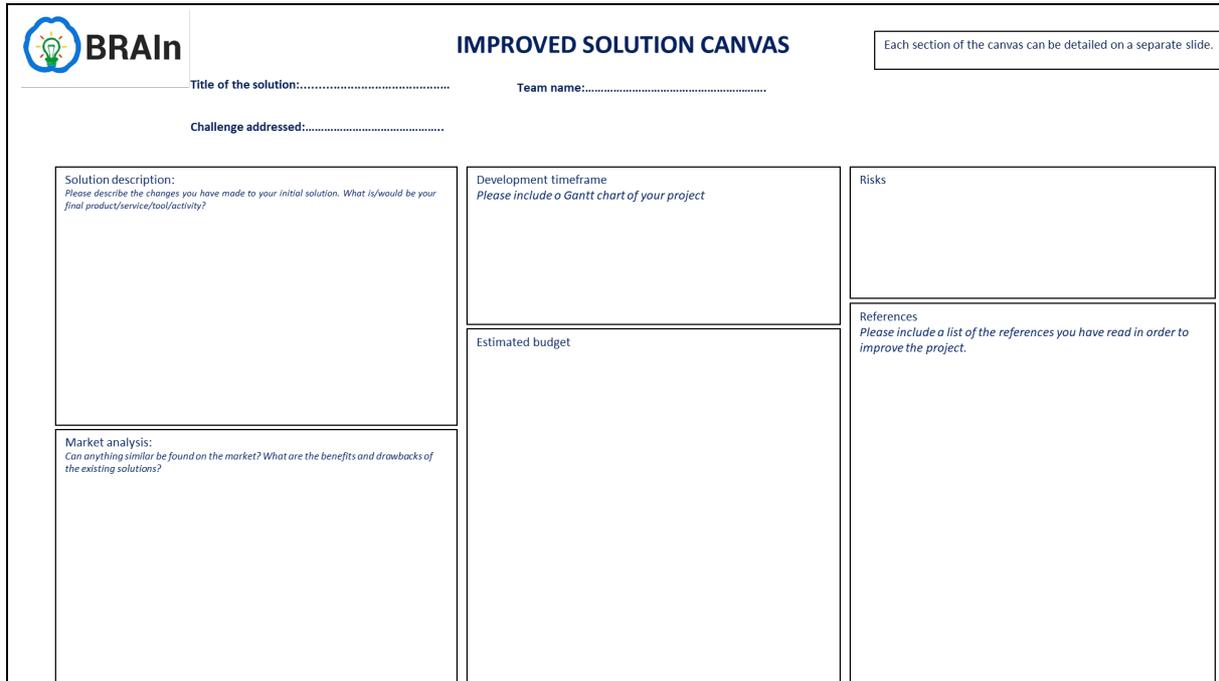


Figure 10. Improved solution canvas

As presented in Figure 10, the focus of the final session in Lisbon was on project management aspects (budget planning, risk and time management).

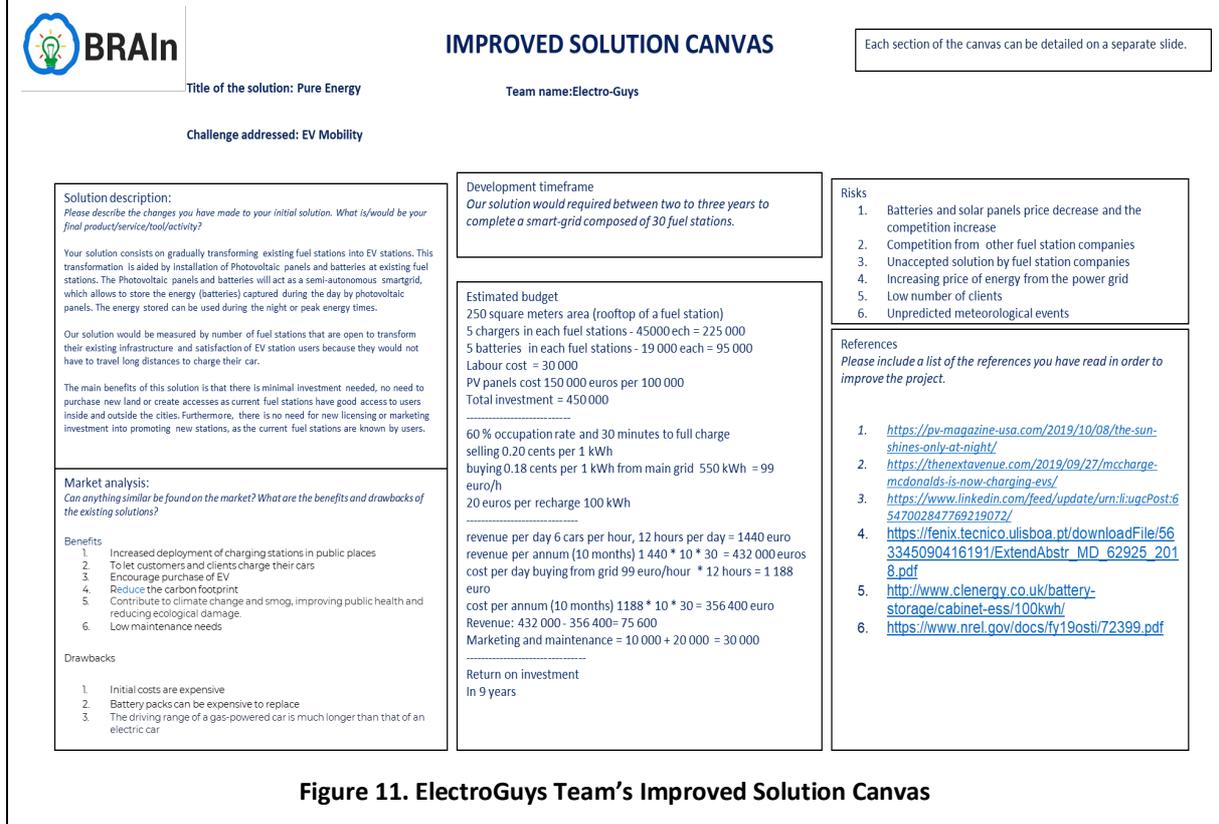


Figure 11. ElectroGuys Team's Improved Solution Canvas

Results of the Project

Academia and industry partners worked together through coaching methods to facilitate the achievement and development of innovation skills in order to reduce the gap between employers' requirements and academic curriculum. The outputs of the project are:

- 1 training guide on developing innovation skills (work in progress);
- 1 face-to-face training session aiming at developing innovation and design-thinking skills students;
- development of the Brainners online community of practice to support problem-based learning and coaching interventions (www.brainners.ro);
- 1 online training session on Team Leadership Skills
- the first generation T.I.M.E. Ambassadors of Innovation (BrAIInners) who will be able to train and coach undergraduate students to develop innovation skills;

Media channels to communicate project's activities



Facebook page available at <https://www.facebook.com/BRAIn-270868280483156/>



Instagram: <https://instagram.com/brain.project19>



Twitter: <https://mobile.twitter.com/BRAInProject4>



Website <http://www.brain.upb.ro/>

Target group and impact

The main target group of the project are BSc and MSc students enrolled in a university programme from all the three members of the consortium. The selected group of students participates in all activities proposed within the project: face-to-face and online training sessions, study visits, project-based learning activities, and coaching sessions.

The impact of the BRAIn Project is intended to be visible at the level of various beneficiaries as follows:

➤ The academic **staff** participating in the project will gain experiences and new skills regarding design thinking, design-based learning, and project-based learning, which could be easily transferred to new instructional contexts. In addition to this, the faculty members will sharpen their intercultural competence by working with intercultural teams of students.

➤ At the **institutional level**, the project will support the inception of a culture of innovation to be eventually transferred in the process of curriculum design. Moreover, the universities participating in the project will benefit from an increased support and involvement of other local and international stakeholders: organizations providing non-formal education and industry partners.

➤ At the **local level**, University POLITEHNICA of Bucharest is an active member of the Alliance of National Technical Universities. This will offer the ideal context to disseminate the results of the project and to promote the concept within the members of this

alliance. Other universities will be able to use the training guide and to benefit from the knowledge and skills of the BrAInners.

Sustainability of the project

With support from the **BrAInners** and from the industry partners, the members of the consortium will work together to continue the annual implementation of the project.

1 st year of implementation (2019-2020)	According to the current description of the project.
2 nd year of implementation (2020-2021)	<p>Main activities:</p> <ul style="list-style-type: none"> - promoting the educational programme via social media; - applying for new funding to support the project; - open a call to coaches from industry in order to assure a dynamic implementation of the programme; - organizing a new edition of the programme with multinational participation; - organizing a training session for new BrAInners.
3 rd year of implementation (2021-2022)	<p>Main activities:</p> <ul style="list-style-type: none"> - promoting the educational programme via social media; - applying for new funding to support the project; - inviting other international partners (universities and business representatives) to participate in the project implementation; - inviting other local partners to participate in the project (e.g. universities members of the Alliance of National Technical Universities); - organizing a new edition of the programme with multinational participation; - inception of the BrAInners Alumni Community which will ensure the know-how transfer to newcomers.
4 th year of implementation (2022-2023)	<p>Main activities:</p> <ul style="list-style-type: none"> - promoting the educational programme via social media; - applying for new funding to support the project; - inviting other international partners (universities and business representatives) to participate in the project implementation; - inviting other local partners to participate in the project (e.g. universities members of the Alliance of National Technical Universities); - organizing a new edition of the programme with multinational participation; - first edition of Innovation Days with international participation, hosted by UPB and co-organized by BrAInners Alumni Community; - development of a MOOC on Innovation skills in Engineering; - design of an elective course for undergraduate students.

Project expenses			
	Activities	Total (EUR)	T.I.M.E. budget
Training session in Bucharest	International transportation	5703	5703
Website & Brainners.ro platform	Development of project website	400	400
	Development of Brainners.ro platform	900	900
Training guide on innovation	Training guide on developing innovation skills	1350	1350
Final meeting in Lisbon	International transportation	3526	3690
	Accommodation	910	910
	Catering IST	2055	2055
	Total	14844	14844
Members of the consortium			
	University POLITEHNICA of Bucharest		
	Instituto Superior Técnico		
	KTH Royal Institute of Technology		
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