

ENTREPRENEURSHIP IDEAS HACKATHON FOR SDGS HIGHER EDUCATION STUDENTS

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PARTNERS


OSTİM TEKNİK ÜNİVERSİTESİ
ANKARA
OSTİM VAKFI
aide JOVEN
udima
UNIVERSIDAD A DISTANCIA DE MADRID
HELLENIC OPEN UNIVERSITY

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1 INTRODUCTION

What is Erasmus + KA2 Projects?

ERASMUS is a European Union programme offering opportunities for education, training, youth and sport. The aim is to improve the skills and competences of people in Europe, as well as to promote mobility and transnational cooperation.

A KA2 project is a learning cooperation project that aims to develop, transfer and apply new educational methods and practices and is designed to improve the quality and effectiveness of education.

KA2 projects can include a variety of activities, such as work placements, training of trainers, development of educational and training materials, research and evaluation. KA2 pArojects can also involve a variety of organisations, such as schools, universities, non-governmental organisations, enterprises and civil society organisations.

Our project is framed within this line of action and is a strategic partnership formed by different organisations from Turkey, Spain, Italy and Greece. The general objective of our project has been to develop entrepreneurship and digital skills in higher education students between the ENTRECOMP and DIGCOMP Framework.

Presentation of HACKATHON for Higher Education

The aim of the HACKATHON activity was to design and develop technology-based prototypes to solve any problem related to a Sustainable Development Goal (SDG).

These events have been dynamised by a group of experts in HACKATHON events and by the teachers who have collaborated in the implementation of their educational project based on the ENTRECOMP and DIGCOMP frameworks.

The students made their prototypes using robotics, electronics, software, as well as more common elements such as paper, glue, wood, post-it notes, etc. To keep them motivated and offer them advice, they received training pills throughout the event: creative thinking, project prototyping tools, social entrepreneurship, etc. The format is an intensive competition and the final prototypes generated by the groups of students have competed against each other, being evaluated by a jury of experts based on pre-established criteria such as: originality, impact, viability, etc.

Participating in a HACKATHON event is a valuable learning experience for higher education students, providing them with hands-on experience, problem-solving skills, interdisciplinary collaboration, innovation, entrepreneurship, networking and exposure to new technologies.



2 WHAT IS A "HACKATHON"?

From the technological HACKATHON to the HACKATHON HIGH EDUCATION, a social view.

A HACKATHON is an intensive and immersive experience of agile prototyping and technological solutions in a contest format and in a limited time. At the same time, it is also an event in which groups of people interested in a problem or issue raised, which acts as a common thread, propose and design prototypes that provide solutions to the hypotheses raised, share knowledge and attend innovation workshops related to the HACKATHON theme.

The term HACKATHON comes from mixing "hack" with "marathon". Its roots in the term "hack" is due to the fact that at first they were meetings designed for experts in technological development. And its fusion with "marathon" is due to the fact that these meetings were designed with the playful aspect of getting a prototype or a "hack" in a limited time. At a HACKATHON, you can go to participate in the contest, for which you have to be willing to be part of one of the teams that will be created at the event itself.

The participants will be integrated into the teams and adopt the necessary roles to carry out the development of the idea and its demonstration prototype in the allotted time. At the end of the event, the teams present their ideas, prototypes and developments to a jury.

Other ways of participating can be to go to learn from the rest of the participants, to teach the rest what you can contribute the most or merely to give ideas that respond to the needs of the chosen topic.

Ultimately, the HACKATHON will also be a meeting point for designers, entrepreneurs, activists, creatives, experts in marketing and communication, businessmen, and citizens in general with a curiosity to learn, participate and learn new things, always supported by experts in development and technology.

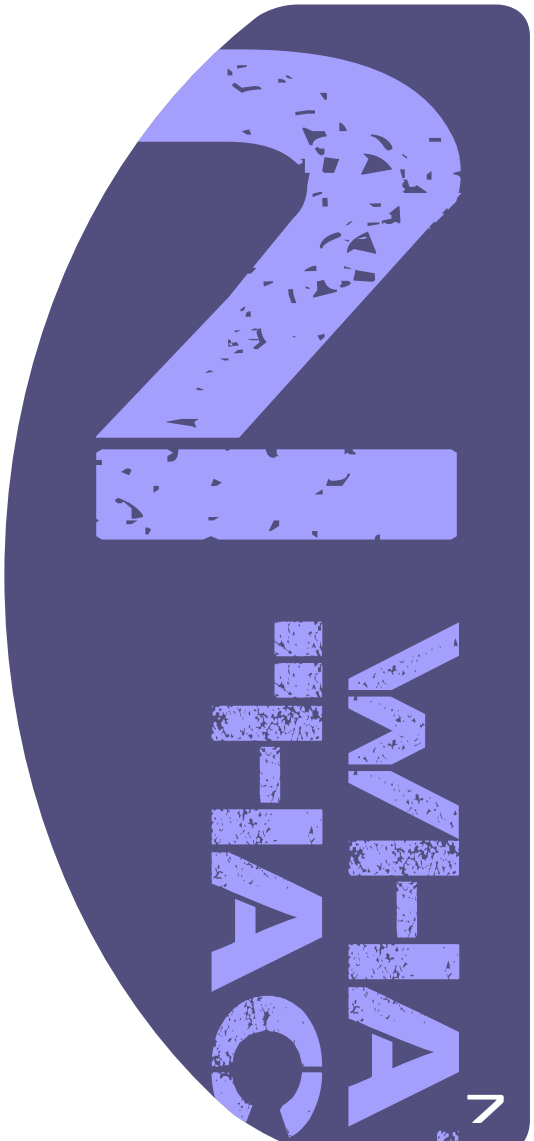
In this open and collaborative climate, powerful synergies arise that lead from creating mobile applications to creating the embryo of what a future technology startup can be. And in any case, they serve as a training experience in many aspects for all attendees, and for the creation and exchange of experiences, which usually results in the creation of new (or the strengthening of already existing) networks of knowledge and people.

Organising a HACKATHON

The HACKATHON follows a process:

1. **Introduction and scope of the tasks:** the participants receive information on the schedules and activities, to later receive it on the topic and the problem statement. The groups should start working after it.
2. **Identification of needs and problems:** the search field must be analyzed to find the problems and needs that users have already perceived on the subject.
3. **Conferences:** group workshops are given in which the topic of the event is discussed to offer useful information to the groups.
4. **Information booths:** Companies promote these events to present themselves as employers and find new talent.
5. **Pitches:** this is the time when participants suggest ideas for projects they would like to work on.
6. **Teamwork:** teams are usually spontaneous, so there will be participants with different levels of knowledge about the subject;This will make the approaches very different from each other and a project can be pushed forward quickly.
7. **Development work:** brainstorming is done to collect strategies and solutions to the problem. It is time to start with the prototype.
8. **Presentation:** it is the moment in which the solution they have found to the problem is presented, it is not a final presentation, but an intermediate one in which they announce the status of the prototype; in this way, they can receive advice from the other participants.
9. **Ceremony:** the ideas and the final prototype are presented and the winning team is decided.for all attendees, and for the creation and exchange of experiences, which usually results in the creation of new (or the strengthening of already existing) networks of knowledge and people.

It is a good way to meet people with the same interests and share experiences; teamwork is encouraged and programming skills are discovered. In addition, it is an opportunity to share presentations with professionals from the world of new technologies, which allows you to learn from them and expose yourself to new job opportunities. It allows you to learn, innovate and demonstrate skills; allows you to learn to stay calm, being as productive as possible. It allows you to discover the achievement, not only in a group, but also individually.



What do we need to do a HACKATHON?

Previous stepes

1. Define the objective of the HACKATHON.
2. Establish an Expert Technical Committee that will carry out different actions during the HACKATHON.
3. Dissemination Plan: Define the dissemination strategy of the event. Graphic material: logo, poster, brochure, roller, etc.
4. Defining the profile of the participants.
5. Finding sponsors.
6. Finding a place to carry out the HACKATHON: with enough space, internet connection, tables and chairs in order to work in teams, TV or projector, sound equipment, etc.

Materials that can be used

- **PAPERWORK:** Posters with SDGs for each team, Post-it notes, stickers, colours, pens, posters, cardboard boxes, paper, scissors, glue, adhesive tape, etc.
- **ELECTRICITY AND ELECTRONICS:** Electrical wire, Switches, Light bulbs, etc.
- **HANDICRAFTS:** Strings, Lego pieces, wooden bases, small nails, fabrics, sewing thread, printer.



The Awards

At a HACKATHON, prizes are usually awarded to the teams or individuals who create the most innovative, impactful and viable solutions to the problem or challenge addressed. Prizes may vary depending on the organisation or event sponsor, but often include cash prizes, scholarships, internships or mentoring opportunities. In addition, many HACKATHONs also have partnerships with companies and organisations that offer in-kind prizes such as software licenses, access to co-working spaces or other resources to support the continued development of winning projects.

Another common award that can be given is the "People's Choice", where the general public or event attendees have the opportunity to vote for their favourite project. This award helps to increase the visibility and recognition of the winning team.

In addition, some HACKATHONS also have special recognition for teams that address and align with the SDGs (Sustainable Development Goals) that the event focuses on.

In short, the prizes awarded at a HACKATHON are intended to recognise and reward the most promising and impactful solutions, and to provide the winning teams with resources and support to further develop their ideas.

In our case and in order to motivate the students, all participants have received a prize and sponsors have been sought from different companies and businesses close to the schools, such as:

- Tickets to plays, movies, concerts
- Tickets to spas, beauty centers, hairdressers
- Courses and/or sports activities
- Assorted gifts: books, stationery, cosmetics, flowers, plants, games, etc.
- Technologies: Speakers, headphones, tablets, smartphones, etc.
- A lunch / dinner / snack in a cafeteria / restaurant. A hotel voucher.
- Coupons clothing and decoration stores.

The Sponsors

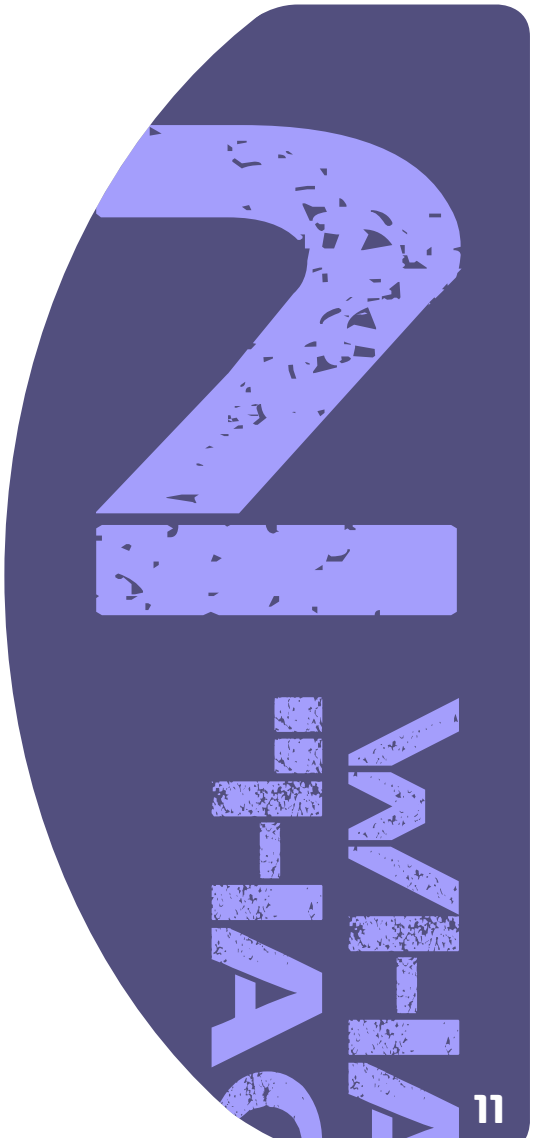
It is one of the most important things in order to carry out a good HACKATHON for two main reasons. On one hand, for an economical reason. A proper Hackathon needs a lot of resources, including prizes for the participants, a big space, food... Each participant will receive a prize that has to be interesting and attractive, both in terms of its relevance to his or her interests and the fact that it is a valuable prize. Therefore, to try to cover all these expenses by the organisation alone makes the economic cost of the activity too high.

However, the sponsors can help the organisation with some of these resources or even all of them. On the other hand, It is also very important from the point of view of the motivation of the participants. This is an activity that requires great commitment, effort and dedication over several days. Although the main reason why they do the activity is intrinsic to the Hackathon and will allow them to acquire a great deal of knowledge and skills, receiving a prize that is interest for them will also contribute to a high level of motivation.

But, what do we offer in exchange? First of all, a space for participation in the HACKATHON event, with the possibility of awarding the company's prizes. That means visibility for the company through advertising space for them in the HACKATHON EVENT, advertising on Social Networks, the incorporation of the company logo in all the promotional materials of the project (poster, banner and roller), inclusion of the logo on the Project's website...

So the main way to find sponsors is with the way "win-win": They can offer us resources, (the place, the food, the prizes...) and we can offer them publicity and dissemination of their business. But to attract sponsors to a HACKATHON, there are several strategies that can be used:

1. Identify companies that would benefit from the solutions developed in the HACKATHON: For example, if the HACKATHON focuses on green technology solutions, it could look for sponsors in the renewable energy sector.
2. Use social media and personal relationships: Promote the event on social media and in the organisers' networks. You can also send emails to potential companies to inform them about the event and how they can benefit from sponsorship.
3. Offer sponsors a relevant presence at the event: sponsors can be mentioned on the event website, in event communications, presentations and promotional materials.
4. Provide sponsors a relevant presence at the event: Sponsors can be mentioned on the event website, in event communications, presentations and promotional materials. or participants: Sponsors may have the opportunity to meet participants at the event and may even be able to advise teams or provide additional resources to help them develop their projects.
5. Offer sponsors an opportunity to present their own challenges: Sponsors can provide specific challenges for teams to work on during the event.
6. Offer sponsors an opportunity to acquire the intellectual property rights of the solutions developed during the event.



During the HACKATHON: phases

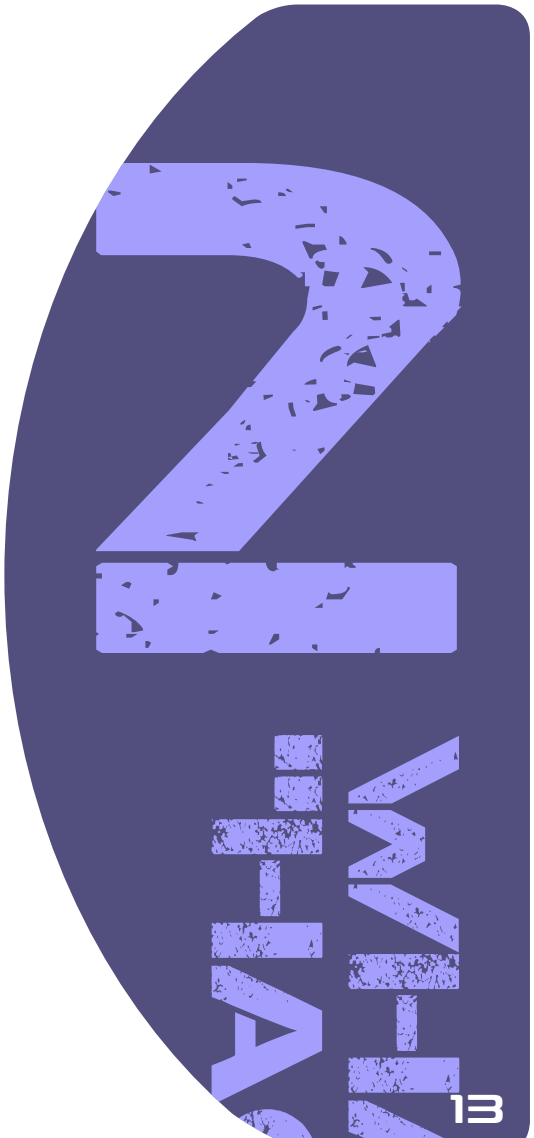
1. What is a HACKATHON? The first part of the Hackathon is something similar to a Team building. It is necessary to create a work environment and a good collaboration between the different participants and groups. For achieving this objective there are so many dynamics that can be used. With these activities the participants can start to get to know each other as well as the activity: the definition of SDG objectives, presentation of the work methodology, the contest rules...
2. From the problem to the idea and from the idea to the product: project development. This is the centre of the Hackathon and the longest part, they have to define the problem, the solution, the idea that they have...
3. Show your idea: prototyping of projects. This is the part related to the communication and the connection with the external part of the project. They have to be realistic and to create a real prototype, they have to take into account the marketing and merchandising part of the project.
4. Do we set up a Startup? The last part is to present the prototypes and after that the evaluation and the choice of the winner. Finally the closing and prize-giving ceremony.



After the HACKATHON: results and evaluation

1. Establishing the winning projects. The winners will be recognized through a jury previously established by the country's organisation. All groups have to present the ideas and prototypes and the Technical Committee will choose the winner evaluating the presentation of the idea/project with the basis of the previously established contest rules:
   - The innovative character of the project.
   - The feasibility of the idea/project.
   - The impact on society in relation to the SDGs and in relation to potential beneficiaries.
2. Evaluating the HACKATHON. There are two important aspects to evaluate: the organisation and logistics and the content. A proposed assessment of both aspects would be as follows:
   - **Organisation and logistic of the HACKATHON (value from 1 to 5):**
     - Information received before the event to arrive at the place.
     - The program of the event
     - Duration and timetable
     - Equipment and resources
     - Conditions of work
     - Management and development of the works
     - Coffee breaks
   - **Content of the HACKATHON (value from 1 to 5)**
     - The information you received before the meeting about the task to do
     - Starting of the project (welcome speech, presentation...)
     - Trainers
     - Monitors

     Themes of the event
     - Quality of the activities developed.
3. Dissemination (collect all the projects, make blogs with the winners, report of the HACKATHON...)



Template for the projects

In order to collect the entrepreneurial ideas of the projects developed during the HACKATHON events, it is important to provide the participating groups with a template in which a series of key questions are posed to help define the business idea. The aim of this template is to publicise the ideas presented at the event, both for potential funders and to disseminate the results of the project itself.

Template questions:

1. Name of Project/Product/Service
2. Work Team
3. Short description of the project
4. What do you want to achieve? What problems does it solve? Why is it innovative?
5. Who will be the beneficiaries of the project?
6. Which SDGs (Sustainable Development Goals) are you going to work on?
7. What methods/tools will be used to achieve the expected result? How will you work towards its achievement?
8. What resources will your project need and how and where will you get them

Conclusions

One of the most important things is to choose the theme of the hackathon, as it has to be an attractive theme for the participants and related to the competences and contents we want to work on during the Hackathon.

The selection of the students is another of the basic things. Is important to find students with a high level of responsibility, compromise and motivation. Also the duration of the event is important. It has to be an immersive activity so it should last more than a day, but no more than 2-3 days, because the motivation and the capacity of work decreases significantly after the third day and the format of the activity must be contest type.

As it is a competition, it is essential to establish clear and precise conditions for participation, which include knowledge of the program, evaluation criteria, activity process, among other relevant aspects. The choice of venue and the availability of resources are equally important, as students must feel that they are participating in a professional activity of high quality and excellence, which will contribute to increasing their involvement. All of the above will only be possible with the support of the sponsors, who will provide the prizes, the venue and all the necessary resources to carry out the event successfully.

Maybe the most important thing, together with the sponsors, is the Technical Committee for the dynamization of the event, with a good choice of training pills. Finally, it has to have a good dissemination of the activity (before, during and after the event): web pages of all participants, social media, logo, brochure, poster, roller, etc.

Applicable techniques, tools and methodologies

There are many valuable tools and methodologies derived from Hackathons. The Hackathon is framed within the methodologies called Gamification which are based on using certain characteristics of the game with the aim of increasing the interest, involvement, attention and motivation of students.

Some of these characteristics are competition, scoring, teamwork... Thanks to these characteristics it is very common for participants to feel more relaxed and motivated, in this way they learn in a more playful and enjoyable way and they can work reducing stress levels and negative feelings.

On the other hand, problem-solving and project-based learning methodologies are also very useful for them in Higher Education. They can develop their creativity and entrepreneurial skills, two aspects completely necessary in the actual labour market.

HACKATHON AS AN INNOVATIVE EDUCATIONAL TOOL

A HACKATHON event for the Sustainable Development Goals (SDGs) is an innovative educational tool for several reasons:

1. Encourages collaborative learning: participants work in teams to develop innovative solutions to SDG-related challenges, allowing them to learn from their peers and collaborate towards a common goal.
2. Develops practical skills: participants have the opportunity to apply what they have learned in class to real problems, which helps them develop practical skills and better understand how their education relates to the real world.
3. Encourages creativity and innovation: participants have the freedom to think outside the box and come up with novel solutions, which helps them develop their creativity and innovation.
4. Contributes to sustainable development: participants have the opportunity to contribute to sustainable development by creating solutions that address SDG-related challenges.

In summary, a HACKATHON event for the Sustainable Development Goals is an innovative educational tool in higher education as it promotes collaboration, practical skills development, creativity and innovation and contributes to sustainable development.

HACKATHON FOR SDG
Vasto, Italy
From June 20 to 22, 2022



4 WINNING HACKATHON PROJECTS

ITALY PROJECT

1. Name of Project/Product/Service
APP4PARK

2. Work Team
Angela Leopardi, Rossano Torino e Monica Conti

3. Short description of the project
To create an app that makes an easier re-search of free parks.

4. What do you want to achieve? What problems does it solve? Why is it innovative?
We want to reduce the Urban pollution focusing on the problem of traffic.

5. Who will be the beneficiaries of the project?
The beneficiaries of the project are first of all the drivers that have to waste a lot of time to look for parking, but all the people can benefit if we are able to reduce the urban pollution.

6. Which SDGs (Sustainable Development Goals) are you going to work on?
Our project works on the Number 13: Climate Action

7. What methods/tools will be used to achieve the expected result? How will you work towards its achievement?

Use an apps that provide a detailed map of the city and that indicate the location of available parking spaces, in this way, reducing the time spend finding park and consequently reducing urban pollution. We need to promote the app using billboards radio ads, reaching drivers easier

8. What resources will your project need and how and where will you get them?

The resources needed to develop this project is the development of a mobile app and a website.

These resources would be obtained through different investors such as sponsors, donations, and crowdfunding.



HACKATHON FOR SDG
Ankara, Türkiye
From 1st to 3rd June 2022



1. Name of Project/Product/Service
BREATHEFREE

2. Work Team
Syed Ibrahim Bilal

3. Short description of the project
Our aim is to manufacture a new insulation material from the most abundant pollutant (CARBON) collected from leftover residue, these are Fly Ash in Coal and Bagasse fired power plants.

4. What do you want to achieve? What problems does it solve? Why is it innovative?
Our aim is to use the most abundant waste material to solve the problem of global warming and provide cleaner air for every one to breathe freely, hence BREATHEFREEE.

Our product solves the insulation problem, which leads to the less requirement of energy and ultimately less fossil fuels are burned and at last we use the major pollutant itself for our production.

It is innovative because a product like this does not exist in today's market. Furthermore, it solves the issue of pollution and global warming at the same time.

5. Who will be the beneficiaries of the project?

We consider that Building Owners & Government will be the main beneficiary of this product.

BUILDING OWNERS can save a remarkable energy cost by using the efficient insulation material.

GOVERNMENTS will help the development of their industrial sector to grow with less harmful effects.

6. Which SDGs (Sustainable Development Goals) are you going to work on?

BREATHEFREE will target the following SGDs

1. Good health and well-being
2. Responsible consumption and production
3. Climate action
4. Environmental protection



7. What methods/tools will be used to achieve the expected result? How will you work towards its achievement?

- It needs extensive research to find out the required properties of Ash & Gypsum to attain the required result.
- At the moment we are in contact with the top management of Coal and Bagasse fired power plants to get their consensus for the regular supply of the material round the year.
- It is noticeable that the handling & storage of Fly Ash is a continuous challenge therefore the prices are very nominal, in some cases we may have to pay only the transportation charges.

8. What resources will your project need and how and where will you get them?

The Fly Ash will be sourced from:

1. Coal Fired Power Plants
2. Bagasse Fired Boilers from Sugar Plants

This ash is produced in millions of tons all across the globe from coal and bagasse fired power plants. Interestingly it is very inexpensive and the storage and handling is a challenge for the producer.

BREATHEFREE will require a team of Chemists & Material experts to find out the exact ratio required for the best insulation after mixing of Gypsum & Ash.

HACKATHON FOR SDG
Patras, Greece
From 19th to 20th May 2022



1. Name of Project/Product/Service
DR. ROBOT

2. Work Team
Anna-Maria Vlachogianni, **Manager,**
Anthi Mavrika, **IT and Production/product development manager**
Irini-Hrysovalantou Bourgoudi, **Financial**
Marvina Petsani, **HR**
Pavlina-Christina Frangogoula, **Marketing**

3. Short description of the project
Robot (and/or in combination with drone) to provide basic medical services and assistance to residents of remote areas.

4. What do you want to achieve? What problems does it solve? Why is it innovative?
To provide medical services where it is needed to save lives. To create a better and safer everyday life for the people in remote islands.

It is innovative because people who live in remote islands have a lot of difficulties accessing medical assistance and materials.

5. Who will be the beneficiaries of the project?
People who live in remote islands

6. Which SDGs (Sustainable Development Goals) are you going to work on?

It refers to Goal 3:-Good Health and Wellbeing (3.8) in accordance with other goals (innovation, entrepreneurship etc).

7. What methods/tools will be used to achieve the expected result? How will you work towards its achievement?

Based on existing technology –choice/adaptable features, Telemedicine (in contact with public/private hospitals and health structures), Telemedicine (in contact with public/private hospitals and health structures).
We will contact companies or institutions that can provide the necessary existent technologies to help the project to achieve the objectives.

Also we will try to persuade the Government/local authorities, we will participate in fora, exhibitions, award completions, etc.

8. What resources will your project need and how and where will you get them?

One million euros with the following Investment structure:

- Funding, Loans, Personal/family savings
- Funding opportunities (60% of the initial investment):
  - The Recovery and Resilience Facility
  - The EU Support Framework



HACKATHON FOR SDG
Madrid – Spain
From 10th to 12th December 2021



SPAIN PROJECT

1. Name of Project/Product/Service
THIS IS MY BUSH

2. Work Team
Adrián Pérez, Vanesa Solamillos, Sandra Vaquero, María Gómez

3. Short description of the project
It consists of a simple chain of favours, where we have got more than 20 people to buy/plant a flower or plant and they will get at least one other person to plant another one.

4. What do you want to achieve? What problems does it solve? Why is it innovative?
The aim is to achieve a greener, happier and healthier world. The aim of "this is my bush" is to ensure that everyone has a plant on their terrace, creating a great social impact. It is innovative because its simplicity and cost is affordable for everyone.

5. Who will be the beneficiaries of the project?
The beneficiaries of this project are both young and old, in fact, the aim is to involve as many people as possible, therefore, the beneficiaries are society as a whole.

6. Which SDGs (Sustainable Development Goals) are you going to work on?

The SDG that this project aims to work on is number 13: climate action.

7. What methods/tools will be used to achieve the expected result?

How will you work towards its achievement?

The resources used for this project are free of charge, promoting our project through social networks so that it has a wide reach. We will work directly by reposting the videos of the people participating in the project.

8. What resources will your project need and how and where will you get them?

The project is already underway and needs very few resources. The only resources needed are the seeds that each person will decide to plant (these can be obtained in a large number of establishments) as well as a pot, some soil, water and sunlight. These resources vary depending on the plant you want to plant. In this first phase, the resources will be obtained by each person participating in the project, but in the second phase, funding will be sought for the budget that has been drawn up through crowdfunding.

