Deliverable 7.4

The INGENIUM SDG

Hackathon

Work package 7 – INGENIUM for Sustainable Development

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Document information

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Description of the deliverable (3-5 lines)	This document for the INGENIUM Alliance addresses the organisation, the outcomes and the implementation of the winning project of the INGENIUM SDG Hackathon.
Key words	Sustainable Development, Education for Sustainable Development, Hackathon, Sustainable Development Goals, European Green Deal, Sustainable Universities, Student Engagement.

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Definitions & Acronyms

Table 1

Definition/Acronym	
ECTS	European Credit Transfer and Accumulation System
EGD	European Green Deal
HEI	Higher Education Institution
HS	University of Skövde
SDG	Sustainable Development Goals
URN	University of Rouen Normandy
WP	Work Package

EXECUTIVE SUMMARY

Executive summary/abstract, including introduction to the context/objectives.

At a time when the climate emergency is becoming a priority, higher education institutions are key players in the transition of our societies.

Through its Work Package 7 (WP7) on sustainable development, INGENIUM European University is committed to providing solutions in line with the Sustainable Development Goals (SDG) and the European Green Deal. INGENIUM's objective is to respond to the problems associated with climate change, and this commitment is being made, and must be made, at several levels. As stated in the grant agreement, INGENIUM is committed to setting up an SDG Hackathon to promote student engagement in sustainable development issues.

This INGENIUM SDG Hackathon was organised simultaneously online at all the partner universities. Students were invited to participate and work together in interdisciplinary and international teams on themes related to the United Nations Sustainable Development Goals to propose a solution for their campus. The winning project was used as an example in a following event, "The Science Factory", a part of the senior summer school, held between the 27 and 31 May 2024 in Rouen. All projects created during this week were inspired by the topic of "waste management". These projects will be implemented on the different campuses of the INGENIUM alliance.

DESCRIPTION, METHODOLOGY AND DISCUSSION OF THE FINAL OUTCOME

Description, including methodology applied, constraints faced, pathway towards results and results obtained.

1. Description of the SDG Hackathon

The INGENIUM SDG Hackathon is an online event organised on April 17 and 18, 2024 by the University of Rouen Normandy as part of the INGENIUM project WP7 on Sustainable Development led by University of Skövde. This project involves students from various partner universities who work together to create a solution, on campus level, that could match the expectations of the SDG (Appendix 1).

At the end of the event, a jury comprising members of local authorities from the surrounding societies of the INGENIUM partners were able to select a theme and solution which will be implemented across different INGENIUM campuses. This solution will then be written in the INGENIUM Sustainable Development Goals, European Green Deal and Global Partnership Agenda. Furthermore, the chosen theme presented during the 10 days of INGENIUM in Rouen where students were able to brainstorm of a different way to implement it on a specific campus.

2. Methodology

2.1 Organisation at the URN

The planning for of this event started in March 2023. Multiple meetings were held in collaboration with the T.URN Institute, which implements the University of Rouen Normandie's strategy on socio-ecological transition and sustainable development challenges. These meetings aimed to outline the key aspects of the event, such as its themes, number of participants, scope, involvement of local authorities and the post-event follow-up.

As this was a sustainable development event, it was decided not to bring participants together face-to-face for 48 hours but rather use a hybrid format so that partner universities could create an on-campus event alongside the online event.

This event was held online for two days (between 8 a.m. and 6 p.m. CET time) simultaneously at our 10 universities on 17 and 18 April 2024. The central theme for this event was the SDGs, more specifically the SDGs at the campus level. The choice of themes was also open to all universities and especially to local authorities in the various countries of the alliance.

The following topics were available:

> Nurturing Campus
> Sustainable Mobility
> Waste Management
> Inclusive University
> Digital Responsibility/ Digital Education (recreation facilities on campus)
> Biodiversity on campus

2.2 Application and selection process

Students who wished to participate in this event had to apply online first. Any students from the alliance could participate but since the event was organised in English, it was mandatory to have a B2/C1 level. The students were able to choose the theme to work on.

The call opened in December 2024. The application was launched online on the INGENIUM platform (https://ingenium-university.eu/applications/) which was set up by the University of Crete in charge of the WP3 Digital INGENIUM.

To participate in the event, every student had to complete the same process. They needed to create an account on the platform, and each account was manually checked and approved. After creating, the participants had to apply for the Hackathon. The application required the following information: first name, last name, email, university, current year of study and study programme, and language proficiency in English, and rank the topics of the Hackathon.

Once the call was over, the selection was done by the University of Rouen (URN) with the help of the University of Skövde (HS). This selection aimed to assess the English proficiency of the participants and to form teams based on their respective topics. Teams could have a maximum of 6 students. No pure national team were created. Students were not able to choose their own teammates, and multiple teams could work on the same topic. The participation was limited to 100 people, forming a maximum of 20 teams. The participants selected were contacted to be informed of the result and their assigned team. The participants were also invited to participate to a first online meeting on 8 April 2024 to meet their teammates and to have a first presentation of the event and the tools they were going to use. Through the What the Hack company, we were able to create a digital workspace to help the students achieve their objective. This workspace was presented at the information meeting on 8 April 2024.

On the day of the Hackathon, we reached nine teams with 40 participants. Each team was assigned a mentor from the universities within the alliance. These mentors were either teachers or staff members who specialised in the Sustainable Development Goals (SDGs) and other related issues. The mentors actively participated during the hackathon, aiding the teams as they worked on their final projects.

3. The unfolding of the Hackathon

3.1 Programme and Tools

Throughout the two-day event, the students' activities were divided between presentations intended to help them better define the problem they wanted to address and work sessions where mentors could provide guidance. The programme details can be found in Appendix 2. The students were tasked with coming up with a solution to a theme they had chosen, which could be implemented on a university campus. They were required to present their project in the form of a poster.

Group work was carried out both in Zoom breakout rooms and on Discord. A discord server was specially created for the event, with specific channels for each team. Each mentor had access to his or her team's channel. The event moderator could also intervene on the different channels to answer students' questions. Students were encouraged to use Canva and Miro as tools for creation and reflection. (Refer to Appendix 3)

Alongside this online event, the campuses of the University of Rouen Normandy and the Karlsruhe University of Applied Sciences organised in-person events. These gatherings allowed the students from both universities to discuss the Hackathon and receive feedback. Seven interviews were conducted during these events (see Appendix 4). It has been decided to hire a professional moderator from the company 'What the Hack' to be responsible of the respect of the programme of the two days. This moderator run the first online meeting and the two days of the Hackathon.

3.2 Final presentation and on-site event

A wide variety of projects were submitted during the event. Joint presentations and final student presentations were made on Zoom. At the end of the second day, the participants were invited to present their project to the jury. Each team had 5 minutes to present their project. The jury then had a few minutes to ask questions. The jury, made up of members of the local authorities in each country, were given an evaluation grid (see Appendix 5) to help them assess the projects. This evaluation grid was designed to assess the quality of the presentation, the relevance of the proposed solution and its feasibility.

At the end of the event, one project was chosen as the winner, but honourable mentions and a second place were also awarded. All participants were given open digital badges at the end of the event and special badges were made for the winning team (see Appendix 6). The winning team was invited to the INGENIUM 10-day event from 27 to 31 May in Rouen for a little ceremony where they presented their project and received a prize for their Hackathon's victory.

3.3 Evaluation process

The moderator also assisted in creating the evaluation grid used for the event. (See Appendix 5). It has been determined that each group will have 5 minutes to present their project to a jury comprised of members of the local authorities.

The jury was informed that the winning project had to follow the following requirements:

> Respect the topic chosen by the group
> Be implementable at campus level
> Be applicable in all campuses
> Be realistic (for implementation and financing).

At the end of the Hackathon and the 10 days of INGENIUM, two projects were identified. The first, the winning project of the Hackathon, focused on compost. In the form of a short circuit, the winning project presented a way of combating food waste in university restaurants by producing compost and a vegetable garden with the help of local businesses. The vegetables produced would be redistributed to students in need and to university restaurants. The final poster from students is available in Appendix 7. A video illustrating the project was created for the occasion (Refer to Appendix 4).

The second project selected during the 10 days of INGENIUM focused more on the problems of the Iasi campus. This project offers solutions on several levels. Firstly, an information campaign aimed at students. This information campaign includes challenges for students to create vertical dustbins on their campus and dormitory, creative competitions to use recycled products and 'Cleanup Days' on their campus. The response from the students was

then to tackle food waste in order to transform it into compost, taking up the idea of the Hackathon. This compost would then be used as fertiliser, biogas or biomaterials for research. (See Appendix 8)

4. Follow-up in Rouen: the 10 days of INGENIUM

To ensure continuity and follow-up for the winning Hackathon project, it was decided that the winning theme would be repeated at the Rouen edition of the biannual INGENIUM 10 Days event. This event brings together students from all the INGENIUM partners on a given theme over the course of 10 days. The theme for the INGENIUM 10 days in Rouen was 'Healthy body, healthy campus: Building a sustainable INGENIUM future'.

At the event, a 'Science Factory' workshop was held to address the issue of SDGs at campus level. We chose the winning theme of the Hackathon which was waste management, and the winning project. Throughout the week, the students were divided into teams and partnered with various campuses. Each group received information about the waste management policy of the university they were working with. By taking on the Hackathon project, the students were able to assess the feasibility of the project on different campuses and, in some cases, modify it to meet specific needs.

At the end of the week, the winning team of the Science Factory, working on the campus of the Technical University of Iasi, won the competition. The full presentation is available in Appendix 8.

5. Difficulties we faced

5.1 Students involvement

Throughout the organisation of this event, a number of difficulties were encountered. At various universities, it was challenging to get students to apply for the event due to a few reasons. Firstly, the dates chosen coincided with exams or other compulsory classes for some students. The choice of date was made unanimously by the partners in advance in order to ensure the participation of as many students as possible However, some exam timetables published later overlapped with the Hackathon. For example, in HS, the date for the Hackathon was decided long before the regular schedules for the students were released. Once released, it turned out that compulsory events and assignments clashed making the students withdraw. Additionally, the event not offering ECTS credits may have discouraged some students from registering. Another problem, concerning communication, was detected during the call for applications. It was difficult to reach students and at times to get them to apply for the event. Finally, we also faced technical issues. Some students didn't comprehend the double registration system (registering on the platform and then for the event), and despite reminders, some failed to finalise their registration, preventing us from including them in the event.

5.2 Implementation on campuses

One of the main issues raised by this event was the different needs of the campuses. Even if some campuses shared the same problems, it has become clear that it would not be possible to find a project which would satisfy all the campuses in the alliance, as all partners must face different challenges. If the Hackathon allowed the students to have a more general approach to the SDGs, the Science Factory and the campus casework showed an apparent disparity among the partners. This disparity deeply affected how the alliance decided how to implement the outcome of these events.

6. Discussion of the final outcome

Discussion of the final outcome, in comparison to the DoA objectives (including, IF ANY, deviations from the DoA and contingency plans/measures activated.

The WP7 working group has agreed that the implementation process should be customised for each campus after considering two events. The Hackathon project will focus on the INGENIUM Sustainable Development Goals, European Green Deal, and Global Partnership Agenda. It has been noted that the progress made by different universities in waste management is uneven, so a uniform implementation is not feasible. The Science Factory has been monitoring the subject, and it has provided access to a project in which students have thought of solutions tailored to their campuses. Consequently, it was decided that both the Hackathon project and the Science Factory projects would be converted into a list of measures. Partners can choose to implement these measures based on their level of advancement in waste management. Each partner has been encouraged to seek funding from local authorities for these projects.

The Hackathon was organised in line with the grant agreement. However, it's important to note that the local authorities did not identify the priorities of the territories during the organisation of the Hackathon. These priorities were later adapted during the follow-up work carried out by the Science Factory, allowing for more detailed work to be done on the various campuses. The winners of the Hackathon were able to travel to Rouen to take part in the Science Factory. The heads of the universities did not participate with the local authorities in the presentation of the Hackathon projects, but representatives from each university were present. The implementation of the projects on the campuses has not yet been fully defined and will have to be adapted by the partners. The inclusion of the Hackathon project in the INGENIUM Sustainable Development Goals, European Green Deal, and Global Partnership Agenda ensures that it will be followed up over several years, but its adaptation is likely to evolve.

CONCLUSION

Conclusion (including a further expected use of the results).

The organisation of the SDG Hackathon organised by the INGENIUM alliance the opportunity to engage students in issues related to the Sustainable Development Goals. The event was very productive, allowing enthusiastic students to not only suggest ideas for their campus but also initiate initiatives across INGENIUM. The positive feedback from all the participants in this project encourages us to organise more events that empower students to speak up.

The implementation of waste management projects will be monitored via the INGENIUM Sustainable Development Goals, European Green Deal and Global Partnership Agenda. The progress made on the campuses will enable us to create new projects to increase student involvement. The projects set up on these campuses could also serve as a benchmark for developing INGENIUM's campuses in terms of waste management.

References

Institut T.URN, January 2023

https://www.univ-rouen.fr/actualites/decouvrez-linstitut-t-urn/

What the Hack, July 2024

https://www.what-the-hack.solutions/

Appendix 1

Sustainable Development Goals

1. No Poverty – End poverty in all its forms everywhere
2. Zero Hunger – End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3. Good Health and Well-Being – Ensure healthy lives and promote well-being for all at all ages
4. Quality Education – Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5. Gender Equality – Achieve gender equality and empower all women and girls
6. Clean Water and Sanitation – Ensure availability and sustainable management of water and sanitation for all
7. Affordable and Clean Energy – Ensure access to affordable, reliable, sustainable and clean energy for all
8. Decent Work and Economic Growth – Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9. Industry, Innovation and Infrastructure – Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10. Reduced Inequalities – Reduce inequality within and among countries
11. Sustainable Cities and Communities – Make cities and human settlements inclusive, safe, resilient and sustainable
12. Responsible Consumption and Production – Ensure sustainable consumption and production patterns
13. Climate Action – Take urgent action to combat climate change and its impacts
14. Life below Water – Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15. Life on Land – Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
16. Peace, Justice and Strong Institutions – Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
17. Partnerships for the Goals – Strengthen the means of implementation and revitalize the global partnership for sustainable development

http://www.un.org/sustainabledevelopment/sustainable-development-goals

Appendix 2

Programme of the Hackathon

Hackathon PROGRAMME

Wednesday 17 April

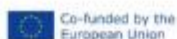|	
9:00 - 9:30	**Introductions** • Participant check in • Launch talk • How this event is going to happen • Tools we are going to use • Best practices
9:30 - 11:00	**Understanding The Problem Statement** • Teams will focus on understanding their problem statement. • Digging into the causes of the problems, teams will work to become experts on their chosen problem. Using a variety of research methods and tools teams will dig into finding the core cause of the

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problem in order to determine the most impactful solutions later in the process

11:00 - 11:15	Speaker note: Jenny Lenartsson "From awareness to action: a brief insight into change for biodiversity conservation"

11:15 - 11:45   Finding Presentation and Discussion #1
- A representative from each team will present their understandings of the problem statements to the group. By presenting their findings to each other throughout the process participants can become invested in the work of other teams.
- During this time teams will have the opportunity to share their thoughts on the findings of the other teams. Unlike hackathons where teams stay segregated, this seminar will bring teams together to discuss their ideas and give suggestions.

11:45-12:30   Solution-ising How To
- Teams will be introduced to brainstorming tools to generate a large quantity and wide variety of ideas for potential solutions.
- We will also discuss how to determine the impact of the proposed solutions and select the "best" to work with for the rest of the hackathon.

12:30 - 13:30   • Lunch break

13:30 - 15:00   Solution-ising Work Time
- First, teams will brainstorm potential solutions to their problem statement. Participants are encouraged to go find as many potential solutions as possible within this first brainstorming session.
- Second, teams will narrow down their potential solutions to find which are most viable in terms of ease of implementation, economic benefit, and impact.

15:00 - 15:30   Idea Presentation and Discussion #2
- As with the findings solution presentations, teams will have time to briefly present their potential solutions and discuss within the larger group.

15:30 - 17:00   Feature Determination
- Teams will work on looking to the market to determine what will be successful in their own ventures.

The goals here is to identify features in existing solutions that might be repurposed or gaps in existing solutions that could be exploited for impact.

17:00 - 17:30   Final Stand Up
- Teams will share what they've learned or achieved throughout the day. Teams have the option to work outside of the scheduled workshop times, but are free to work on their own schedules from the end of the first workshop day to the start of the next.

Thursday 18 April

9:30 - 10:00
- Kick off talk
- Schedule for Day 2

10:00 - 11:30   Business Model Structure
- Because there always must be a business argument behind every solution (alas!). We will introduce a variety of tools to analyse and plan for business models that support sustainable solutions in particular.
- Teams will have time to work on their proposed business models and strategies.

11:30 - 13:00   Mentor Meetings
- Mentors will take time to discuss the team's ideas, their proposed business models and answer any questions that may have arisen in their examinations of the problem and potential solutions.

13:00 - 14:00   Lunch
- Kajsa Phalen - Pitch and presentation techniques

14:00 - 15:00   Presentation Preparation
- Teams are given structure for their presentation, both for the visual poster and their spoken "script".
- They also have time to prepare and practise their presentations.

15:00-16:30   Final Findings Solution Presentations
- Teams will present their completed findings and suggested solutions to a panel of expert judges.
- Judges will have the opportunity to ask questions of the teams to better understand their findings and the reasoning behind their proposed solutions.

16:30 - 17:00 Judges' Deliberations
- Judges will have time to compare their scores and determining the winning team!
- This is also a time that is good for keynote speakers as everyone is more relaxed after their presentations.

17:00 - 17:30 Presenting The Winners!

Appendix 3

Tools used during the Hackathon

Canva

https://www.canva.com/fr_fr/

Miro – Collaboration tool

https://miro.com/fr/

Discord

Discord | #general | Ingenium Virtual Hackathon

Appendix 4

Videos and posters from Hackathon

Video of the winning project of the Hackathon

https://www.youtube.com/watch?v=_oDSZEO8rkg

Poster of the winning project

Video of second place

https://www.youtube.com/watch?v=4YC9-gxHhMY
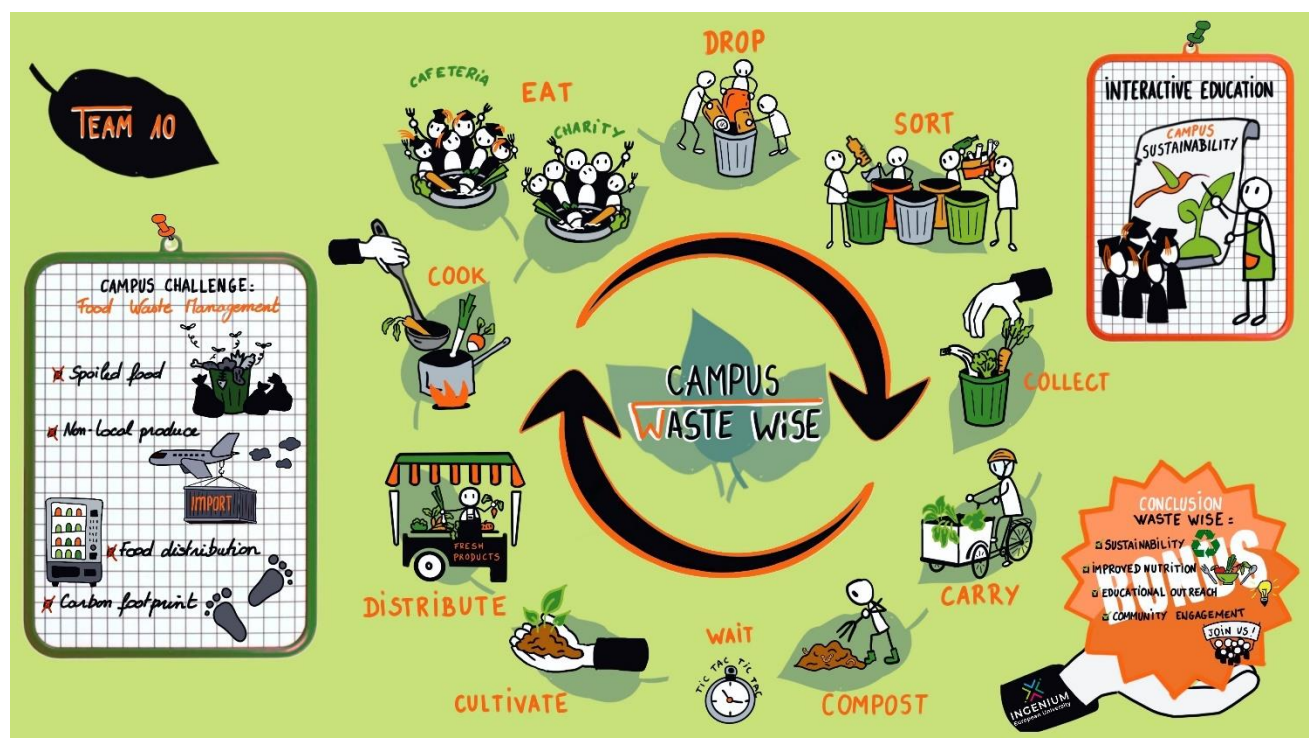
Poster of the second place

Videos of Honourable mentions

https://www.youtube.com/watch?v=vqtwvjF8Y7Q

https://www.youtube.com/watch?v=J5ksUZ3vLXw
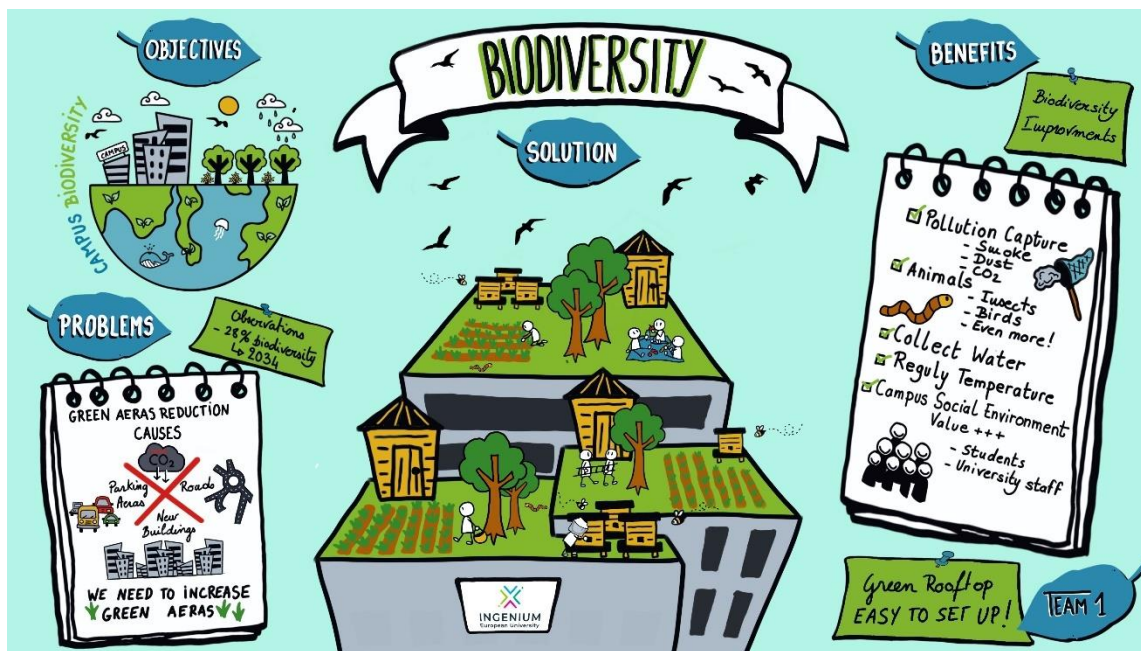
Posters of Honourable mentions
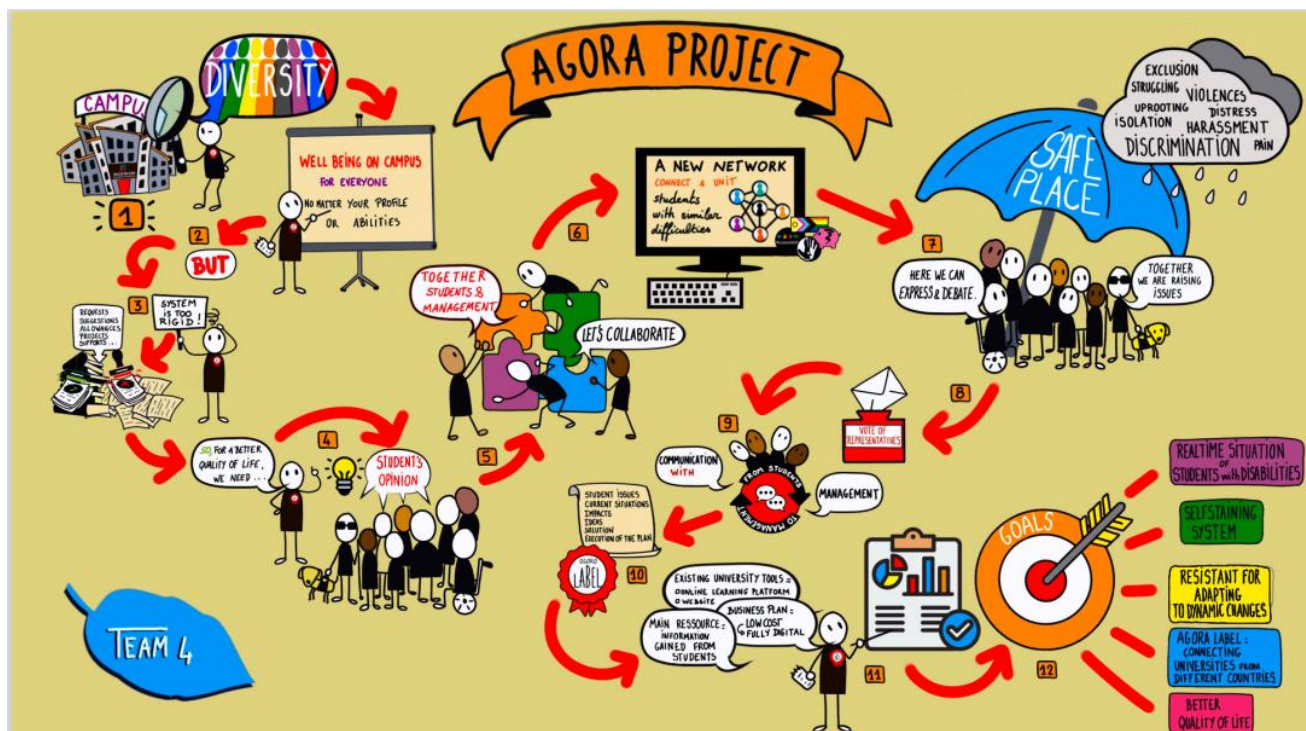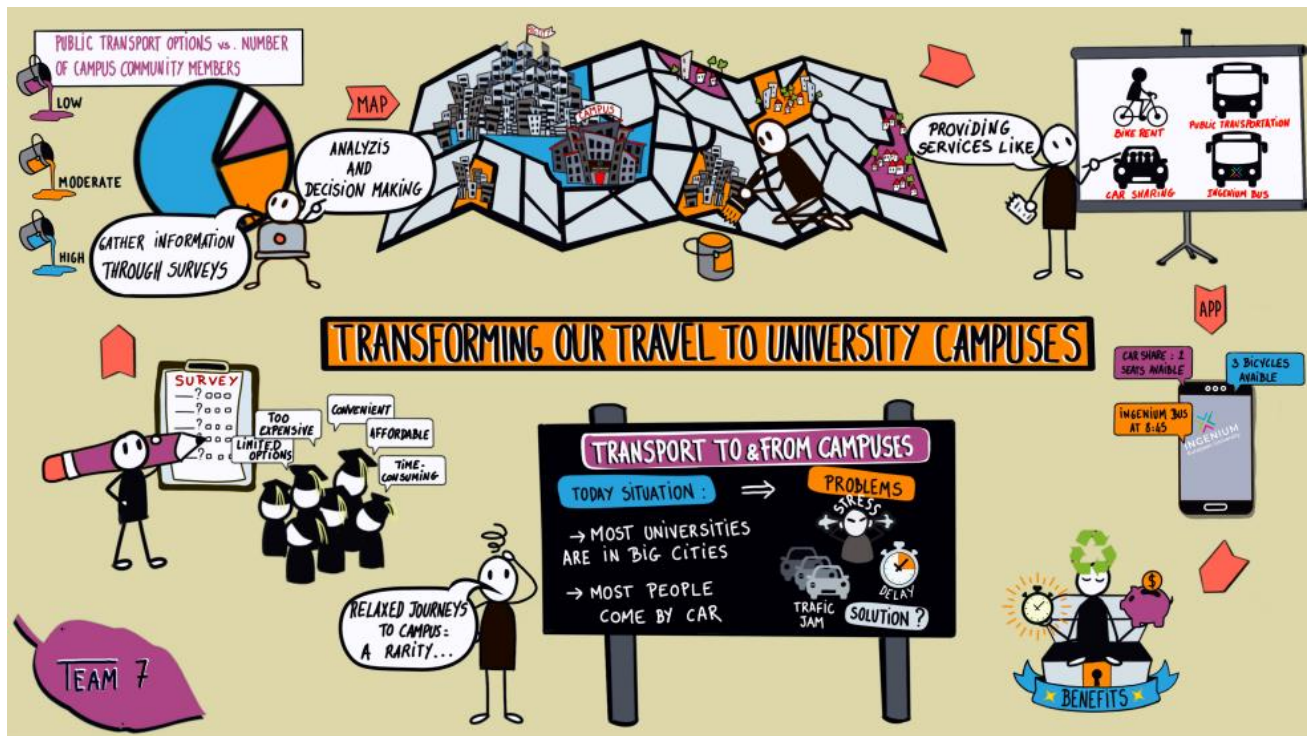
Interviews of participants from the Hackathon

Sandra's interview from HKA

https://www.youtube.com/watch?v=NunwnLopKvQ

Raphael's interview from HKA

https://www.youtube.com/watch?v=j8vRHMwYJ4Y

Nick's interview from HKA

https://www.youtube.com/watch?v=_LXuK-o-jAU

Juliette's interview from URN

https://www.youtube.com/watch?v=TXez2777q5A

Emeline's interview from URN

https://www.youtube.com/watch?v=W1_X0h0ZssA

Edouard's interview from URN

https://www.youtube.com/shorts/TNd93HdNq4E

Ripsimé' s interview from URN

https://www.youtube.com/shorts/l9yVdW3q3DU

Appendix 5

Evaluation Grid for the Jury

Evaluation Grid

Team #	1	2	3	4	5	6	7	8	9	10
Problem Research Has the team clearly demonstrated an understanding of the barriers and issues surrounding their problem statement/ the chosen topic?										
Validation How well does the team understand what is the need of the target group for their solution?										
Demonstration Did the team explain clearly what their solution is and why it is relevant?										
Feasibility Is the solution feasible? What impact will it have?										
Presentation Quality Did the team go the extra mile in presenting their work clearly and concisely? Was the presentation engaging?										
Total Score:										

4 – Surpassing Expectations	3 – Meeting Expectations	2 - Approaching Expectations	1 – Minimal Expectations
"Stunning job, well done!" Answered every question very thoroughly, and provided evidence to support their claims	"Great job!" Hit on every category very thoroughly and clearly. Answered all question to the best of their ability.	"Nice job!" Hit on every category fairly well. A few unresolved questions.	"Good start!" One category needs more work. Several unresolved questions.

Appendix 6

Badges for the Hackathon

Appendix 7

Winning project of the Hackathon

Appendix 8

Winning project from the Science Factory

TUIASI

Problem statement – recycling

- Students are not recycling
- Garbage bins only outside of the dorm

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TUIASI

Problem statement – recycling

- Small rooms and dorms
- Students use only one bin for all types of waste

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Competitions for students

- **Vertical Bins Challenge:** Organize "innovation contest" for students to create their own vertical bins and use them in the campus areas.

- **Creativity Contest:** Besides simple recycling, encourage students to create new items using recycled materials. For example, making furniture, artwork, or useful objects from waste materials

- **Cleanup Day:** Organize "**University Cleanup Days**" in campus areas, where students compete to collect the most waste, with extra points for correct sorting and recycling of materials

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Rewards and Prizes

- **Vouchers for School Supplies and Food**: Provide gift cards for purchasing school supplies or discount vouchers for subscriptions to scientific journals and food.

- **Accommodation Fees:** For winning students there will be discounts or "rent free" months for the dormitories.

- **Sustainable Rewards**: Provide winners with eco-friendly gadgets such as stainless steel bottles, backpacks made from recycled materials, portable solar panels, etc.

- **Event Tickets**: Offer free tickets to cultural events, concerts, exhibitions, or theater shows.

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Campaign

Create a campaign to raise awareness for students.

Organizing demonstrations which show how to recycle properly.

Searching for local sponsors who can offer supplies like wood pallets and paint or other materials for the competition.

Publishing of Projects: Give visibility to winning projects by publishing them on the university's official channels, such as the website, newsletters, or social media (e.g. Instagram).
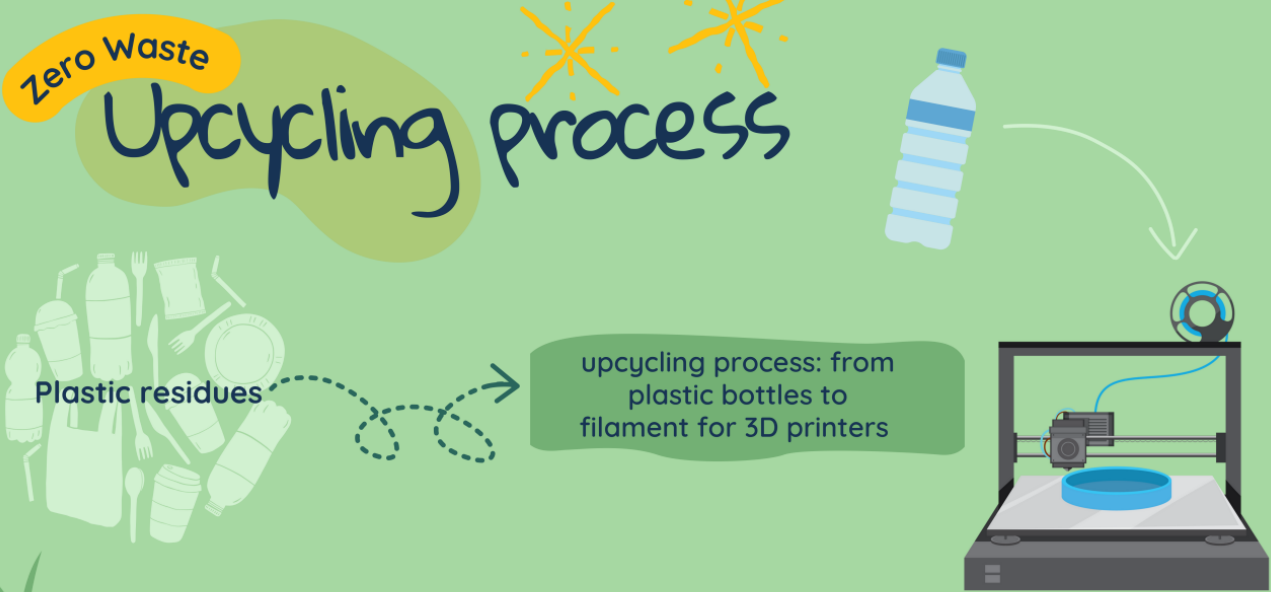
Upcycling process

Zero Waste

Plastic residues

upcycling process: from plastic bottles to filament for 3D printers

2. Compost

TUIASI

Problem statement – compost

- 60.000 m2 of grass to cut
- Cafeteria waste isn't disposed of sustainably

Zero Waste
Upcycling process

Grass + Food waste = **COMPOST**

Biogas

Fertiliser

Biomaterials

- Introduce trash cans in dormitories for recycling
- Increase awareness of the importance of recycling
- 100% of cafeteria food waste composted
- 100% of cut grass composted
- DON'T WORRY, BE HAPPY