LATIN AMERICA PRACTICES AND SOFT SKILLS FOR

LAPASSION

AN INNOVATION ORIENTED NETWORK

585687-EPP-1-2017-1-PT-EPPKA2-CBHE-JP

OA2.3.1 – Final Report of WP2

Developed by TAMK, IFTM,
Support DUOC, PUC, UDELAR, UTEC, IFMA, IFG,
IFAM, IFSUL, IPP, UVIGO, USAL, AEP, CONIF

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Contents

1. INTRODUCTION

LAPASSION (Latin-America Practices and Soft Skills for an Innovation Oriented Network) is a project from the program Erasmus+ within the line KA2 – Cooperation for innovation and the exchange of good practices – Capacity Building in the field of Higher Education (reference 585687-EPP-1-2017-1-PT-EPPKA2-CBHE-JP). It involves partners from Portugal, Finland, Spain, Brazil, Uruguay and Chile. LAPASSION consortium has as motivation to create a unique solution to address different problems affecting youth in HEI, helping students to obtain a better training in terms of innovation, soft skills, and internationalization. This solution is obtained by LAPASSION MP/I (Multidisciplinary Projects/Internships) for students' teams to help them to co-create, and co-develop projects proposed by enterprises and other organizations, or to accelerate innovative ideas in an international context involving students from several countries.

The aim of LAPASSION is to increase the innovation culture of HEI and the connection with Enterprises/Organizations (E/O) with impact in Employability, and Internationalization. This aim is pursued by implementing multidisciplinary projects/internships(MP/I) for co-creation, co-development and acceleration of innovative ideas, integrated in the educative project of the involved institutions. MP/I will be implemented by means of students' teams involving students with different backgrounds, different graduation levels, and from different countries, and solving challenges posed by E/O.

1.1 Consortium of LAPASSION

LAPASSION is a consortium with 15 partners, including 13 Higher Education Institutions (4 from Europe and 9 from Latin America), 1 Association of Enterprises from Portugal, and 1 Council of the Federal Institutes from Brazil. The list of the partners is the following:

Polytechnic of Porto (IPP, Portugal)
Tampere University of Applied Sciences (TAMK, Finland)
University of Vigo (UVIGO, Spain)
University of Salamanca (USAL, Spain)
Federal Institute Riograndense (IFSUL, Brazil)
Federal Institute of Triângulo Mineiro (IFTM, Brazil)
Federal Institute of Goiás (IFG, Brazil)
Federal Institute of Maranhão (IFMA, Brazil)
Federal Institute of Amazonas (IFAM, Brazil)

University of the Republic of Uruguay (UDELAR, Uruguay)
Technological University of Uruguay (UTEC, Uruguay)
Foundation of Professional Institute (DUOC, Chile)
Catholic University of Chile (PUC, Chile)
Association of Enterprises of Portugal, Commerce and Industry Chamber (AEP, Portugal)
Council of Federal Institutes of Brazil (CONIF, Brazil)

IPP is the coordinator institution of the project.

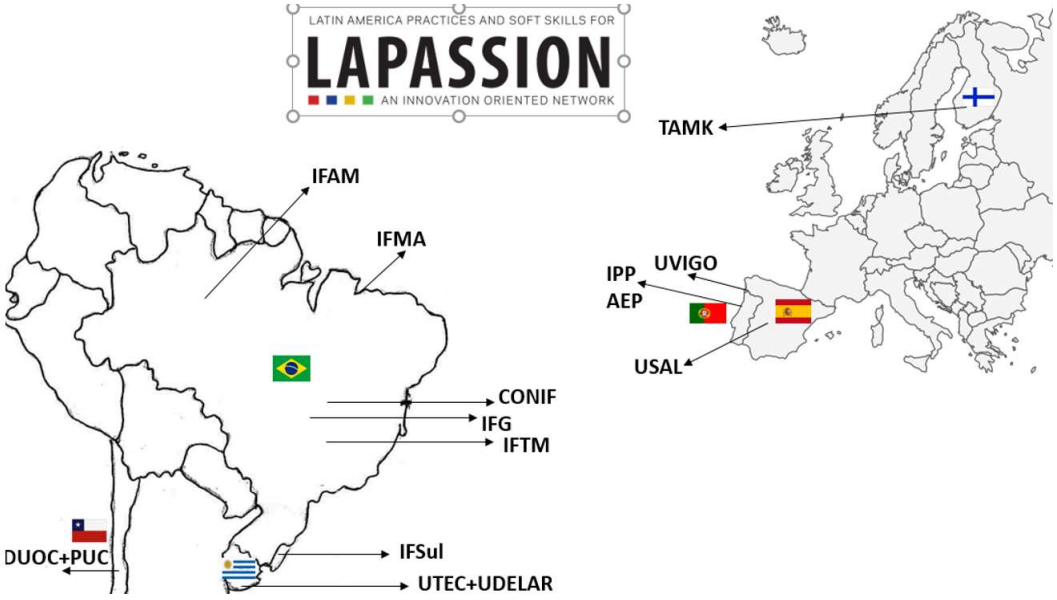

Figure 1 - LAPASSION partners in Latin America and Europe

1.2 Workpackages of LAPASSION

LAPASSION involves the following Workpackages:
WP1 – Preparation and Training for Multidisciplinary Projects/Internships (MP/I)
WP2 – Development of MP/I
WP3 –Quality Planning & Control (QP&C)
WP4 –Communication Plan, Dissemination and Exploitation Strategy
WP5 – Management

The Development of Multidisciplinary Projects/Internships (MP/I) is a very important aspect for the project, and a specific Work package (WP2) has been included for this purpose. One of the important issues is the Teams' Work Planning.

In a period of 10 weeks students needed to concentrate in the development of their

projects/internships. During this period students reported the evolution of the MP/I to a blog, every week. This report describes briefly what has been achieved in each project completely developed in the presential form (LAPASSION@SAntiago, LAPASSION@Uruguay, LAPASSION@SãoLuís, LAPASSION@Uberaba), and because of coronavirus pandemic, in mixed from presential/online (LAPASSION@Goiania, LAPASSION@Manaus) or completely online (LAPASSION@Pelotas).

2. THE LAPASSION DEVELOPMENT PROJECTS

LAPASSION involved 7 editions (sets) of projects plus several other additional editions (3 in Porto, 4 in Uruguay, and 1 in Brazil), in a total of 15 sets of projects.

The challenges selected by the 7 original editions of LAPASSION were the following:

- Santiago/Chile (April-June 2018): How to improve conditions for Senior Populations?
- Uruguay (March-May 2019): How to improve conditions for children?
- Uberaba/Brazil (March-May 2019): Food for the Future
- São Luís/Brazil (March-May 2019): How to improve the Human Development Index (HDI) of the State of Maranhão?
- Manaus/Brazil (March-May 2020): Socio-Environmental Technologies for the Sustainability of the Amazon
- Goiania/Brazil (March-May 2019): How to contribute to an Inclusive and Sustainable Society?
- Pelotas/Brazil (September-November 2021): Accessibility and Assistive Technologies

These sets of projects were developed during 10 weeks and each one involved sub-challenges. Each sub-challenge was assigned to one multidisciplinary students' team. The number of teams in each edition varied from 4 to 7. The number of students varied from 4 to 8. The origin of these students (different origin institutions) and the different background (areas of their BSc or MSc programmes) varied from 3 to 5. Different languages (English, Finish, Portuguese, and Spanish, in the last case with different accents). With this diversity and heterogeneous nature, the work organization in each team was essential for the success of the students' projects. The good activities' schedule was identified as the main aspect allowing a good evolution in all 10-weeks process for the students.

3. THE SCHEDULE FOR THE 10 WEEKS

By the beginning 10 weeks seems to be a long time for the development of a multidisciplinary project by a team involving from 4 to 7 members. However, the heterogeneous nature of the team, with students from different countries, with different command of languages, different cultures, from different areas, and different learning approaches creates some expected difficulties. Working practices and organization are very different for a Business&Administration student from Finland, and an Arts student from Brazil, just to give an example. A well-defined schedule, make for the 10 weeks is a good step to put the team on the good direction.

Figure 3 illustrates the general schedule for the 10 weeks made available for the students involved in LAPASSION@Santigo, held in Santiago de Chile from April to June 2018.

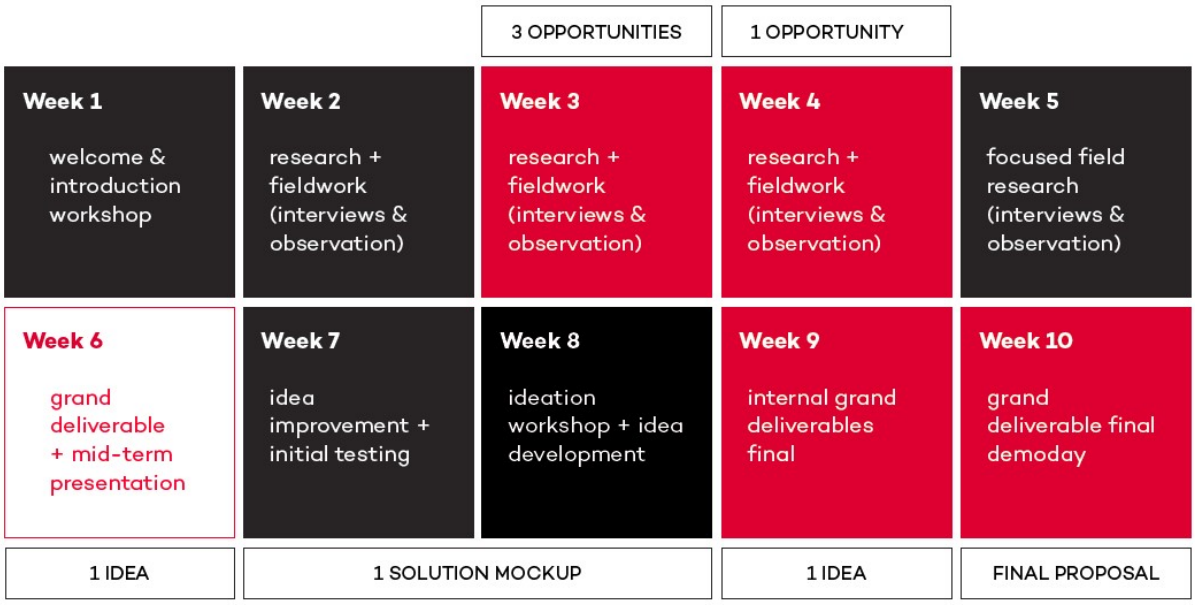

Figure 2 – LAPASSION@Santigo Schedule for students' teams

Notice that figure 2 is very simple and clear. Students know what is expected from the multidisciplinary projects. We can observe that:

- Week 1 is a kind of warming up week, with the welcome to students, the introduction, workshop. This is the week where the teams are created, the main challenge and sub-challenges proposed, the counterparts presented. It is a week for networking for all students
- Weeks 2 to 4 are heavier that Week 1. Students need to make research related with the sub-challenge, observation and interviews are intensive during this week since LAPASSION claims for client or final user orientation. In weeks 3 and 4 there are deliverables, meaning that students will need to present 3 identified opportunities in week 3 and select 1 opportunity in

week 4

- From week 5 to 6 students will focus the research in the selected opportunity, going again for observation and interviews, now more oriented to the envisaged opportunity. Week 6 involve the grand deliverable with the mid-term presentation. Usually this is the moment in which students feel that time is missing since just 4 weeks remain to complete the project, it is a stress moment for teams
- Weeks 7 and 8 are very creative moments with ideation and idea development, improvement and test. Mockups are developed in this phase. Some teams can develop a prototype, others a concept idea. Software solutions appear for some teams, other develop hardware, depending on the background of each team member.
- Week 9 is really the big week for heavy work, and there is the internal grand deliverable, that is the preparation for the last week, and namely for the Demo Day
- Finally week 10 comes with the final grand deliverable and the preparation for the Demo Day, the last day of the project with demonstrations, posters and pitches.

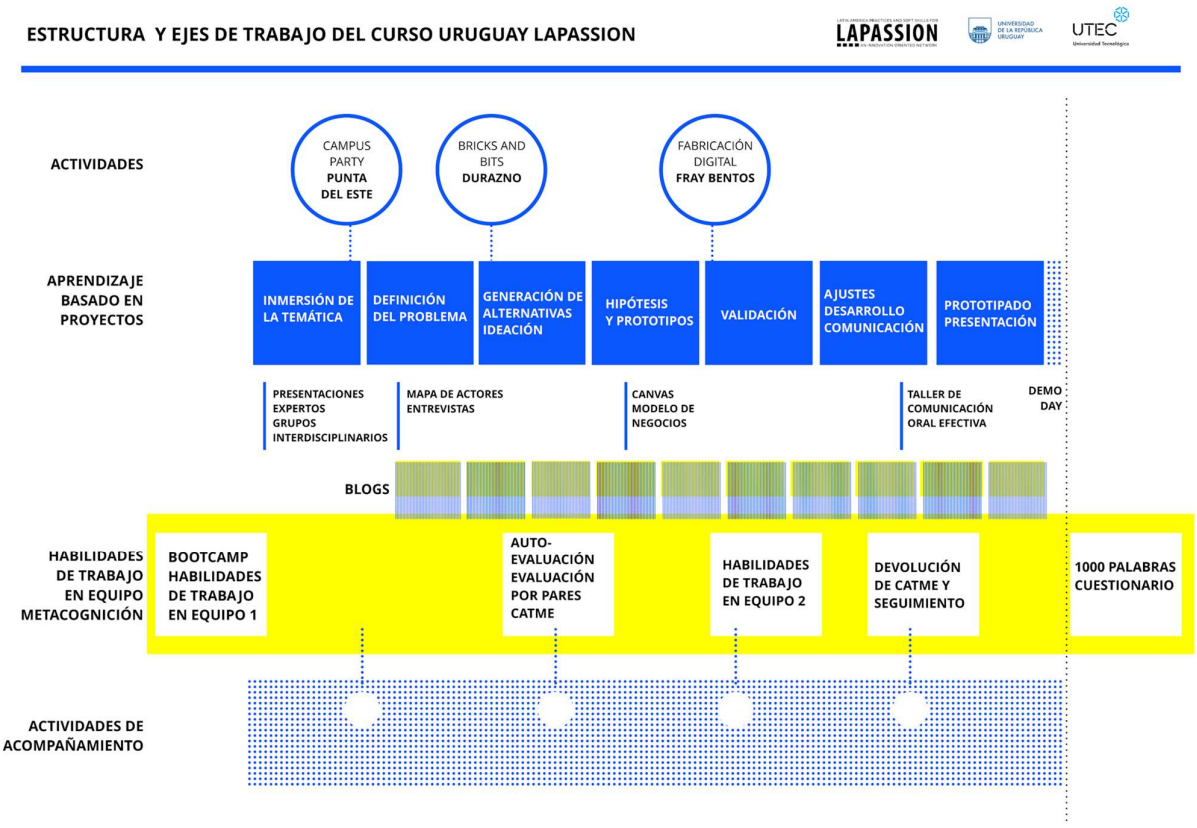

Figure 3 – LAPASSION@Uruguay Schedule for students' teams

Figure 3 illustrates the planning of the students' teams of LAPASSION@Uruguay. Notice that external activities (circles) are planned for three weeks (campus party in Punta del Este, Bricks and Bits in Durazno, and Digital Manufacturing in Fray Bentos). Durazno and Fray Bentos are two cities of Uruguay with campus of UTEC. Project-based Learning (blue squares) are also specified. We have weeks for Immersion, Problem Definition, Ideation and Alternatives' Generation, Hypothesis and Prototypes, Validation, Development, Communication, and Final Presentation. In LAPASSION it was asked to students to report weekly for blogs. In yellow we see the team work skills, with specific weeks for the Bootcamp, self-evaluation and pair-evaluation, team working abilities, and final reporting. CATME is an inquiry made to students for quality control.

Figure 4 illustrates the Students' Teams Work Planning for the 10 week of LAPASSION@Goainia. Notice that this is a replanning due to the suspension of the presential activities at the end of the second week due to the pandemic crisis in March 2020. The division of the work is the following:
Week 1: Opening, Integration of students, Challenge and sub-challenge presentation, meetings with tutors and counterparts, Learning Contract, Design Thinking
Week 2: Team studies, Audio-Visual Training, meetings with tutors and counterparts, Design Thinking, suspension of the presential activities (covid-19 pandemic)
Week 3: Activities' continuation in online mode, meeting with tutors, Design Thinking
Week 4: Work Plan and field work presentation
Week 5: Ideation, Focused field search, Opportunities' identification, Solutions exploration
Week 6: LAPASSION Questionnaires, meetings with counterparts and solutions presentation to counterparts
Week 7: Prototyping
Week 8: Prototype Testing
Week 9: Final Deliverable
Week 10: Questionnaires, Reports, Demo Day with pitches, and Virtual Confraternization

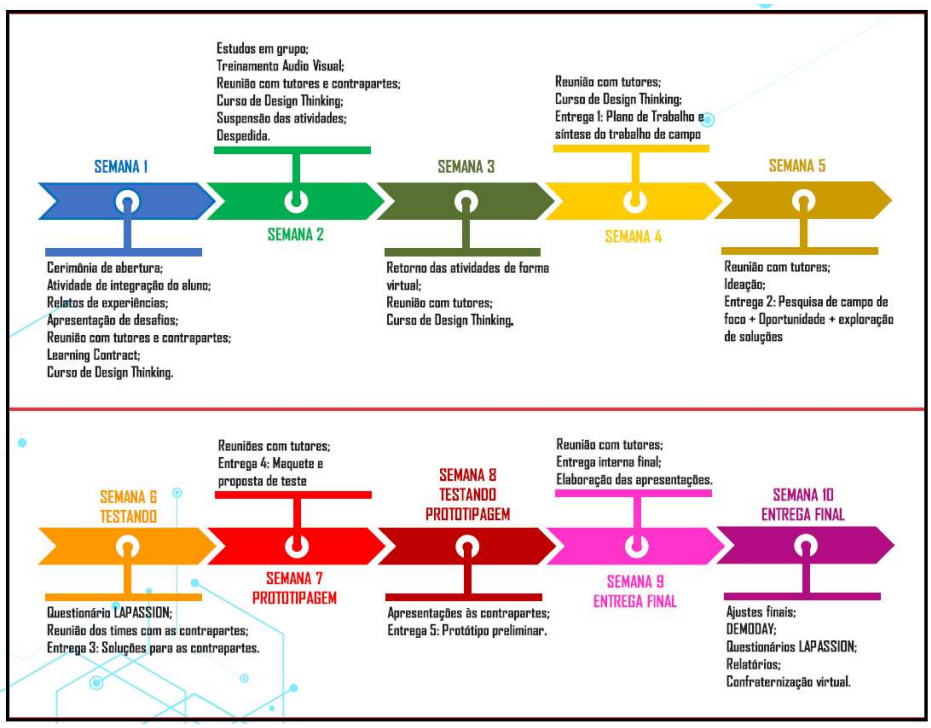

Figure 4 – LAPASSION@Goiania Schedule for students' teams

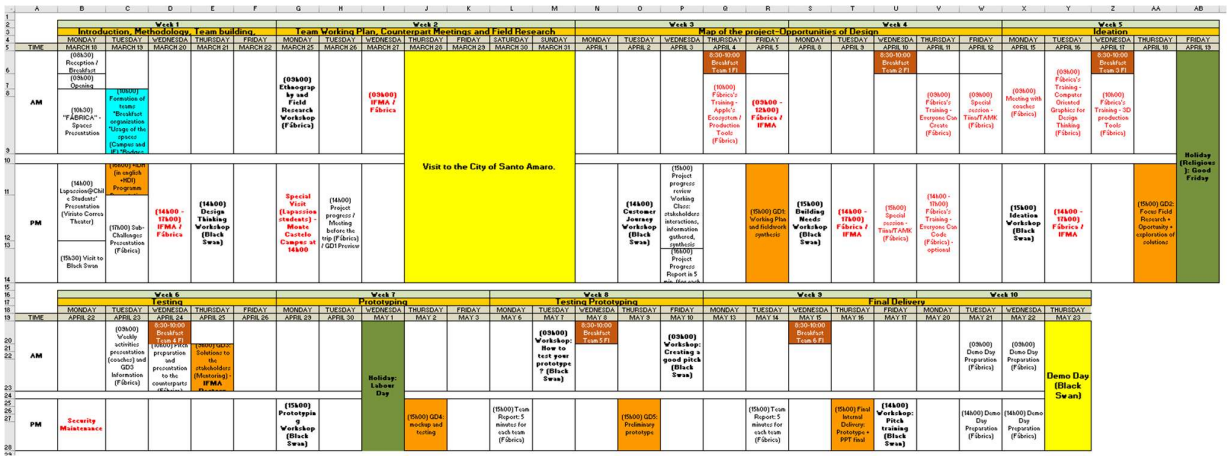

Figure 5 – LAPASSION@SãoLuís Schedule for students' teams

Figure 5 is a very detailed Teams' Work Planning made for students' teams of LAPASSION@SãoLuís. It is very important for students and teams to have this detailed schedule to know the activities expected for each day (eg a Workshop or visit, a deliverable presentation, etc).

Figure 6 shows the activities for one week, the first week, of LAPASSION@Manaus (the first week of

March 2020). In the first day it happens the opening of LAPASSION@Manaus and the main challenge was presented and discussed (Socio-Environmental Technologies for the Sustainability of the Amazon), and subchallenges presented. The second, third and fourth days were dedicated to a workshop on Design Thinking, and activities for the integration of students. The fifth and sixth days involved a travel and immersion in Amazonia Forest Tumbiara's reserve, this activity was very important for the understanding of the problems of Amazonia and the native people, and for the integration and teams' cohesion. Fortunately, it was organized in the first week since that in the third week LAPASSION@Manaus the project was converted to completely online due to the pandemic situation of covid-19.

	01 WEEK - IMERSION (march)						
	2	3	4	5	6	7	8
08:00	Reception and Institutes presentation	Design Thinking workshop			Immersion in the Amazon Forest - Tumbira's reserve	Immersion in the Amazon Forest - Tumbira's reserve	free day
09:00							
10:00							
11:00							
12:00							
13:00							
14:00	Schedule , tutors and challenges presentation. Teams division	get-to-know-each-other dynamic	Team time.	Lecture on Manaus, its geography, history and environmental policies.	Immersion in the Amazon Forest - Tumbira's reserve	free time	free day
15:00							
16:00							
17:00	Lecture: overall perspective on the challenges.						
18:00							

Figure 6– LAPASSION@Manaus Schedule for students' teams for the first week

Another example of week planning is illustrated in figure 7, from LAPASSION@Pelotas. During the weeks 2 and 3 it is planned a set of activities (figure 7), from Talks about topics so diverse like Industry 4.0, Artificial Intelligence, Urban Mobility, Accessibility, and Assistive Technologies. Workshops about other topics, like Soft Skills, or Design and Innovation are also scheduled. There is space for students' projects development and meetings.

	DATE	ACTIVITIES (from 10:00 to 12:00)
Week 2	06/09/2021	Industry 4.0 and Accessibility – Open discussion • Industry 4.0 – Pillars – Prof. Mauro André Barbosa Cunha • Urban mobility and technologies – Prof. Adriana Araujo Portella • Artificial Intelligence for accessibility – Prof. Carlos Fernando da Silva Ramos • Apps and assistive technologies – Liziane Corrêa Gomes Silveira Graphic Designer
	07/09/2021	Project development (discuss the pros and cons of each challenge; decide a priority order for the challenge choice; each team elects a representative)
	08/09/2021	Student representatives and Lapassion Team: meeting - definition of the challenges.
	09/09/2021	Soft Skills and The Future Professional - Prof. Pedro Carlos H. Junior
	10/09/2021	Project development
Week 3	13/09/2021	Design and Innovation - Prof. Vinicius Krüger da Costa
	14/09/2021	Accessibility in educational and open resources - Prof. Raymundo Filho
	15/09/2021	Project Development
	16/09/2021	Accessibility - Prof. Rosane Bom
	17/09/2021	Project Development

UPDATED ON 21/09/2021

Figure 7 – LAPASSION@Pelotas Schedule for weeks 2 and 3

4. THE DEVELOPMENT PROJECTS

LAPASSION Multidisciplinary Students' Projects were conceived to be a presential experience, and this was happened during 2018 (Santiago-Chile edition) and 2019 (Uruguay, Uberaba-Brazil, and São Luís – Brazil editions). A total of 21 multidisciplinary students' projects were developed in this presential mode and will be described in this section of the report. However, Distance/Online development was previewed in LAPASSION proposal application, more in a form of combining some students in presential mode with some other in distance/online mode. This was previewed even for a Sustainability of the project. The reality was different, and distance/online development was adopted from one day to another due to the coronavirus pandemic. LAPASSION@Manaus and LAPASSION@Goiania editions of LAPASSION were programmed to be completely in presential mode, and they start at the beginning of March 2020. However, coronavirus pandemic impacted worldwide at the beginning of March and after 2 weeks of presential development in Manaus and 1 week in Goiania the projects went to distance/online mode, since that most of students must return to their cities (remember that besides the health problem the flight connections were strongly affected, and it was a risk of suspension of flights that happened some weeks later). It was a big learning for

LAPASSION, like changing the wheels' tires with the car moving, but it was achieved with success, and that shows the resilience of LAPASSION students, coaches, and institutions. It was a critical situation not expected at all, not present in the Recovery Plan, but as it can be seen here, the quality of the multidisciplinary students' projects was like the presential projects. The students' team's cohesion of LAPASSION@Manaus and LAPASSION@Goiania was formidable, showing that one or two presential weeks can do a lot for the students' teams functioning. The situation was more difficult in LAPASSION@Pelotas, since students do not meet each other in presential mode (with the exception of students from the same country). However, we are very satisfied with the results of the students' projects of Pelotas.

4.1LAPASSION@Santiago

LAPASSION@Santiago was hold by Pontificia Universidad Católica de Chile (PUC), and Fundación Instituto Profissional Duoc UC (DUOC), both in Chile. The project headquarter was in Campus San Joaquin, in Santiago, where both institutions have their campus in front of each other. The ten weeks of LAPASSION@Santiago was a moment of a great learning for LAPASSION, since it was the first time the practices promoted by LAPASSION were applied in Latin America. With the main challenge of "How to improve the conditions for Senior Populations?" sub-challenges have been launched by different entities like Center for the Studies on natural Disasters (CIGIDEN), Fundación Oportunidad Mayor, Technical Division of the Metropolitan Parks Network (PARQUEMET), and Unidad de Ciudades Inteligentes – Ministerio de Transporte (MTT).

Subchallenge: How to incorporate the elders in the design and execution of prevention programs for the effects disasters of environmental phenomena?
Counterpart: Center for the Studies on natural Disasters (CIGIDEN)
Team members:
Bernardita Gonzalez (Engineering Design, PUC - Chile)
Sara Kauppinen (Business, TAMK - Finland)
Mateo Olivera (Mecatronics, UTEC - Uruguay)
Jorge Michel Vasconcellos (Electronics, IFAM - Brazil)
Sofía Ester Tapia Rodriguez (Graphical Design, DUOC - Chile)
Daniela Rodriguez (Industrial Design, DUOC - Chile)
Daniel Victor Silva Marques (Information Systems, IFMA - Brazil)
Description:
The sub-challenge was "How to incorporate the elders in the design and execution of prevention programs for the effects disasters of environmental phenomena" and the company/organization was Center for the Study of Natural Disasters (CIGIDEN).

The group selected as goal to “take advantage of the people with an active role in neighbourhood community to see the benefits of prevention programmes”.
The ideation process involved Reverse Engineering, Brainstorming, Mockup and Sketching and Testing. The solution was the development of an electronic device to detect the safety zone in public spaces for the orientation of the user in an inclusive and reliable way.

Figure 8 – Team members in a working sesión with lots of ideas and schemes on the whiteboard

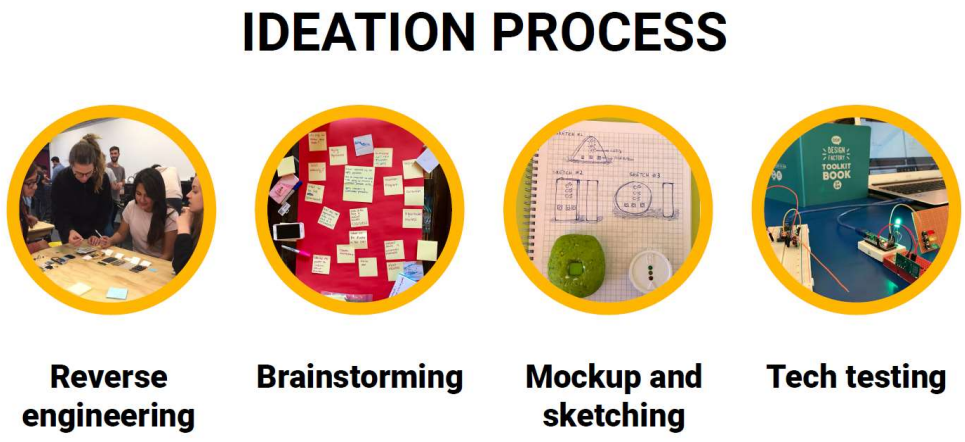

Figure 9– Ideation process was very important in LAPASSION@Santiago

Figure 10– Coordeanda Segura, an electronic device to help elderly people to go to safe places

Subchallenge: Enhance networks, communication, and participation in urban communities by elderly people through smart city, and digital oriented technology
Counterpart: Center for the Studies on natural Disasters (CIGIDEN)
Team members:
Antonio Skillicorn (Civil Engineering, University of Texas at Austin – USA in mobility at PUC - Chile)
Juan Pablo Gonzalez (Physiotherapy, PUC - Chile)
Eduardo José Silva Carvalho Vieira (Medical Computing and Instrumentation, IPP - Portugal)
Jaqueline Jardim de Paula (Design, IFSUL-Brazil)
Claudia Perez (Graphical Design, DUOC - Chile)
Julyana Pereira Saraiva (Control & Automation Engineering, IFG-Brazil)
Fabiano Maciel Soares (Civil Engineering, IFMA-Brazil)
Description:
The sub-challenge was "Enhance networks, communication, and participation in urban communities by elderly people through smart city, and digital oriented technology" and the company/organization was Center for the Studies on natural Disasters (CIGIDEN).
Three insights were detected: 1) Younger elderly are adept with smartphones; 2) Elderly prefer to transmit information by word of mouth, not in currently centralized way; and 3) Elderly are very knowledgeable of their local neighbourhoods and more likely to speak about the past than today. The identified opportunity was to take advantage of currently disaggregated historical data within the elderly community to improve elderly engagement in the city. The solution was a platform that allows elderly to upload meaningful historical photos and experiences into geographic pins on an interactive map for the educational and recreational use of other city citizens.

Figure 11– Interviews, articles, and workshops were important to keep insights for identifying the main oportunity

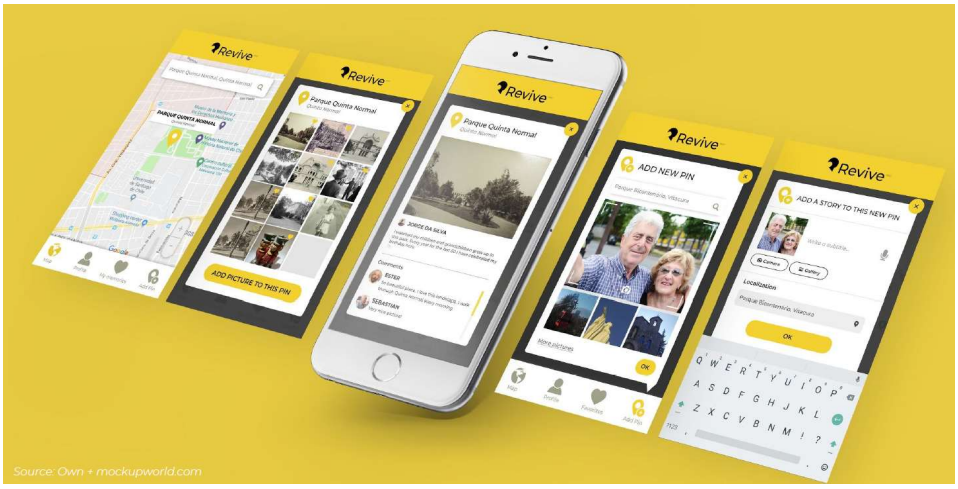

Figure 12– The app where elderly can upload meaningful historical photos and experiences into geographic pins

Figure 13– Team members and coaches

Subchallenge: Understand and propose a system or solution that increases the use of Urban Park Network by the Elderly
Counterpart: Technical Division of the Metropolitan Parks Network (PARQUEMET)
Team members:
Victoria Horn (Agriculture, PUC - Chile)
Joni Ramu (Business, TAMK - Finland)
João Vítor Bernardes (Biological Sciences, IFTM - Brazil)
Camila Casas (Design, UDELAR - Uruguay)
Beatriz Bandeira (Control & Automation Engineering, IFAM - Brazil)
Description:
The sub-challenge was "Understand and propose a system or solution that increases the use of Urban Park Network by the Elderly" and the company/organization was the Technical Division of the Metropolitan Parks Network of Santiago city.
Three insights have been identified: 1) Elders value interactions with younger generations very high; 2) Lack of motivation and security prevents them to visit parks; and 3) Inability to walk long distances prevent them to visit parks.
The team selected as the opportunity to "propose safe and beneficial experience with other generations to change their attitude on going and staying in the Park". The solution involves a service with a bus to four Santiago Parks (Araucano, Bicentenario, La Castrina, and Quinta Normal) where some activities take place (Gardening, Knitting, Reading, and Table Games).

Figure 14– Bus Routes for Santiago Parks

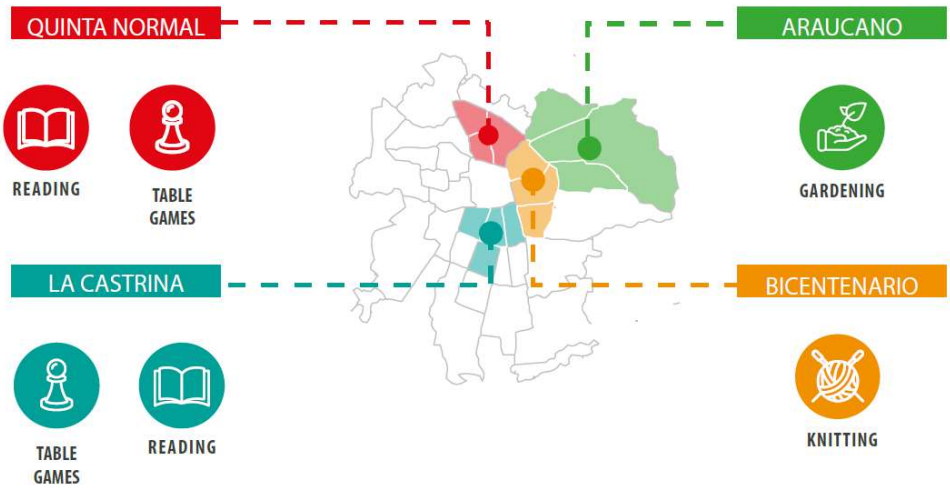

Figure 15– Proposed activities for Santiago Parks

Figure 16 – Team members of the subchallenge proposed by PARQUEMET

Subchallenge: Improve older traveller's experience in public transportation for 2040
Counterpart: Unidad de Ciudades Inteligentes – Ministerio de Transporte (MTT)
Team members:
Gonzalo Camps (Business, PUC - Chile)
Edgard Martin Hernandez (Chemical Sciences, USAL - Spain)
Camila Angélica Santos Souza (Agronomics Engineering, IFTM - Brazil)
Camila Natalia Barrientos Bastidas (Graphical Design, DUOC - Chile)
Gabriel Morales (Biomedical Informatics, DUOC - Chile)
Luis Felipe dos Santos Ribeiro (Civil Engineering, IFG - Brazil)
Description:
The sub-chalenge was "To improve older traveller's experience in public transportation for 2040" and the company/organization was Unidad de Ciudades Inteligentes – Ministerio de Transporte.
The main insights identified were: 1) The public transportation is always crowded and expensive; 2) people like to walk; 3) Security is a problem; Elders are worried about health; and 5) infrastructures are still missing. The adopted solution was to improve the walking experience considering the development of elderly population by 2040. Smart shoes were adopted as well as smartwalks app. With the localization capability of th smart shoe and the smartwalk one can report a problem in the walk to the municipality, making easier the solution of that problem.

Figure 17– Interviews and observation for obtaining insights to identify the opportunity

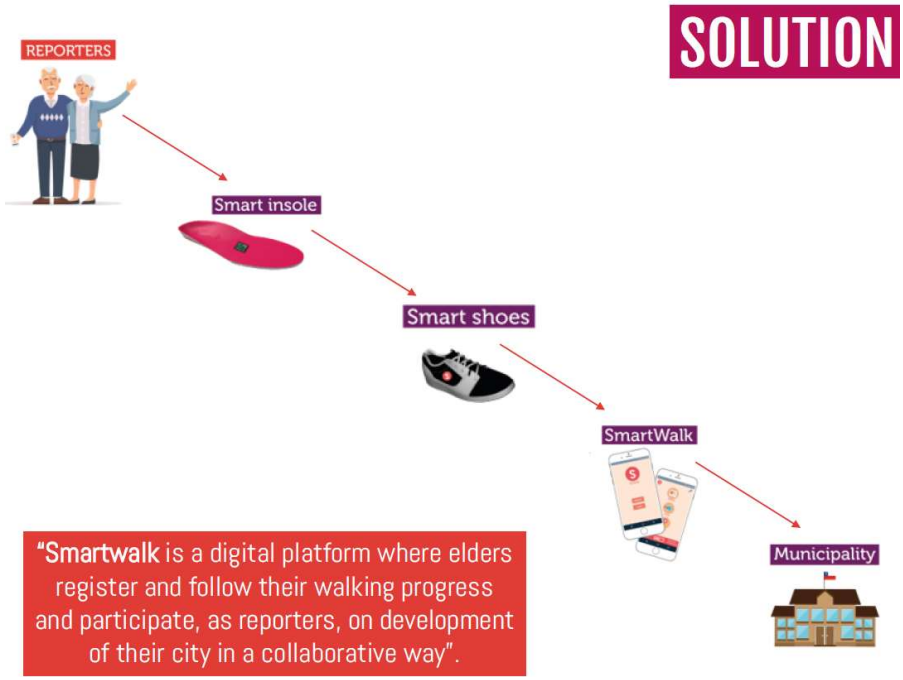

Figure 18 – The proposed solution involving technology

Figure 19 – Team members of the subchallenge proposed by MTT

Subchallenge: How to prevent elders from feeling isolated and being inactive after retirement due to the loss of work relationships and the increase amount of free time that they have?
Counterpart: Fundación Oportunidad Mayor
Team members:
María Loreto Ruano Riesco (Mathematics/Psicology, USAL-Spain)
Hellen Fuenzalida (Engineering – Design, PUC-Chile)
Gonzalo Origoni (Industrial Design, UDELAR - Uruguay)
Juan Jose Eliezer Lopez (Mechanical Engineering, DUOC - Chile)
Renato Milhomem de Oliveira Filho (Electrical Engineering, IFG - Brazil)
Barbara Aqueveque (Industrial Design, DUOC - Chile)
Ana Rebeca Marques Araujo (Information Systems, IFMA - Brazil)
Description:
The sub-challenge was “How to prevent elders from feeling isolated and being inactive after retirement due to the loss of work relationships and the increase amount of free time that they have?” and the company/organization was Fundacíon Oportunidad Mayor.
The group selected as goal to “create an online service that offers activities to elders, aiming to create in them a habit of social engagement before retirement, so as not to lose their work connections and make new ones”. The solution was the creation of a platform that shows activities to elders, aiming to create in them a habit of social engagement before retirement, so as not to lose their work connections and make new ones.

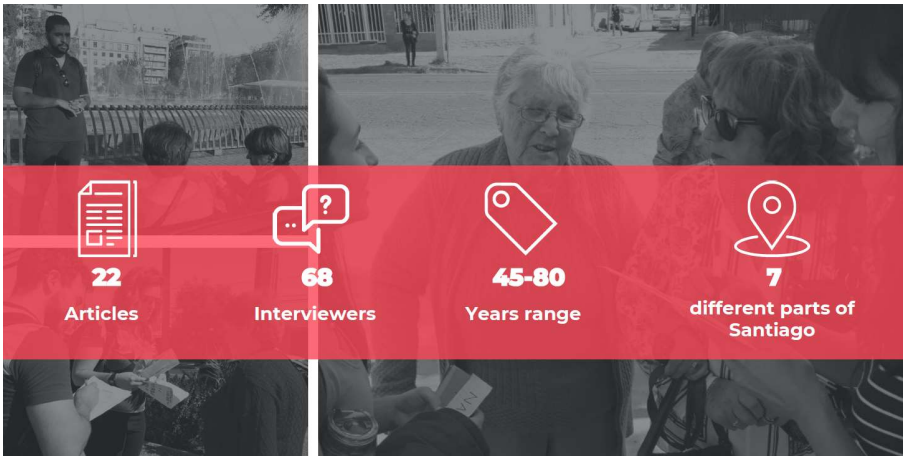

Figure 20 – Interviews covering wide ranges of ages and spaces is very important

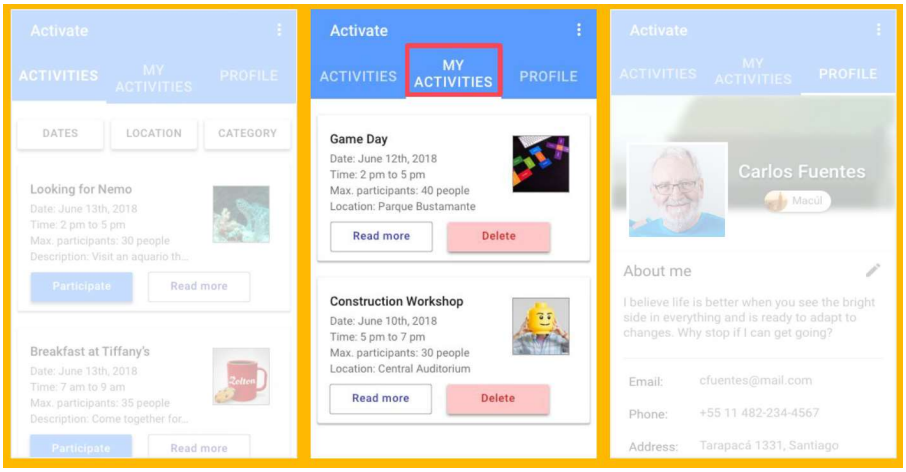

Figure 21 – The app to guarantee connected elderly people

Figure 22 – Team members of the subchallenge proposed by Fundación Oportunidad Mayor to avoid elderly isolation

Subchallenge: Using technology to optimize Longevity
Counterpart: Fundación Oportunidad Mayor
Team members:
Jesus Ponce (Arts&Humanities, PUC - Chile)
Ana Sofía Monteiro Oliveira (Medical Computing and Instrumentation, IPP - Portugal)
Luciano Gezn (Biomedical Engineering, UTEC - Uruguay)
Natáliade Oliveira Martins (Mechanical Engineering, IFSUL - Brazil)
José Tomás Marchant (Industrial Design, DUOC - Chile)
Paola Cortez (Industrial Design, DUOC - Chile)
Levi Monteiro Martins (Information Systems, IFMA-Brazil)
Description:
The sub-challenge was "Using technology to optimize Longevity" and the company/organization was Fundación Oportunidad Mayor.
The team selected as goal to "take advantage of experience of the elderly to re-wire them in the contemporary society, by using collective and participatory practices of technology teaching", having in mind the longevity aspects. The adopted solution was to create a collection of interactive books to introduce smart devices to seniors.

Figure 23 – Interviews, observation and workshops to obtain insights and identify the opportunity

Figure 24 – The prototype of the e-book, a physical book to facilitate interaction with posible final users

Figure 25 – Team members of the subchallenge proposed by Fundación Oportunidad Mayor for longevity

4.2 LAPASSION@Uruguay

LAPASSION@Uruguay was hold by Universidad de la República (UDELAR), and Universidad Tecnológica del Uruguay (UTEC), both in Uruguay. The project headquarter was in Montevideo but students had activities in the cities of Durazno and Fray Bentos campus of UTEC, and a kind of hackathon activity in Punta de Leste. With the main challenge of "How to improve the conditions of Children" sub-challenges have been launched for the areas of Education, Health and Entertainment.

Subchallenge: How to improve the conditions of Children by Health?
Counterpart: UDELAR+UTEC
Team members:
Nair Araújo, Medical Computing and Instrumentation, IPP, Portugal
Nicolas Andrés Riera Ovalle, Civil Engineering, PUC, Chile
Álvaro Briano, Electrical Engineering, UDELAR, Uruguay
Macarena Vázquez Barboza, Psychology, UDELAR, Uruguay
Giorgina Damico, Architecture, UDELAR, Uruguay
Description:
Saki is an excellent project from LAPASSION@Uruguay. Saki is a kitchen utensil and a container that allow children to cut their fruits and take them to school or simply eat it in their free times at home. It was created to help children to be more independent of their parents in the process of preparing fruit. There is also a web site that has different design of presentation that parents, together with their children, can make, turning a simple meal in a memorable experience, because childhood passes fast and every moment is precious, including the meals.

Figure 26 – Team members that developed Saki

Figure 27 – Saki, the device that cut fruits

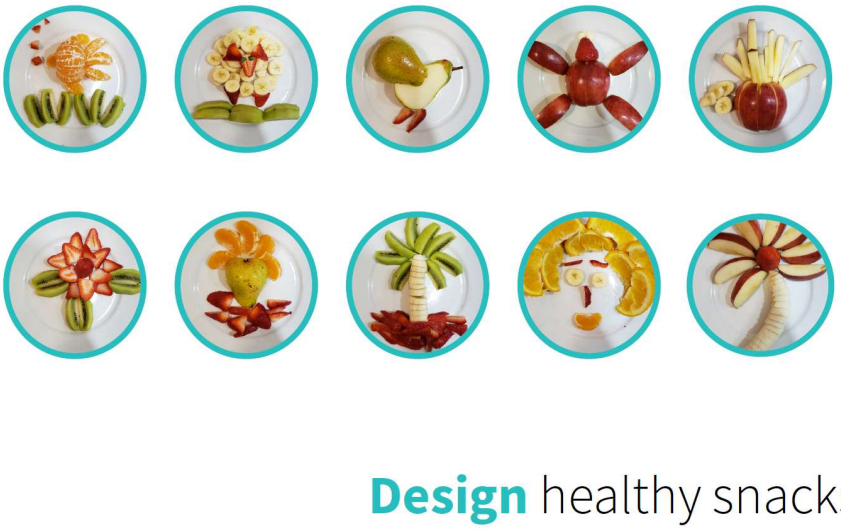

Figure 28 – Eating fruits can be a funny activity for children

Subchallenge: How to improve the conditions of Children by Education?
Counterpart: UDELAR+UTEC
Team members:
Ana Lucía Soto Fuentes, Design of Living Spaces, DUOC, Chile
Tomás Almeida de Sousa, Biomedical Engineering, IPP, Portugal
Romina Gaudio, Electrical Engineering, UDELAR, Uruguay
Macarena Bravo Gossi, Industrial Design and Textile, UDELAR, Uruguay
Diego Silva Piedra, Electrical Engineering, UDELAR, Uruguay
Description:
BookQRit is a product/service that uses QR codes, and according to the children interests personalizes the homework exercises from the book. To use it, the child simply must scan the QR code next to the exercise, register herself/himself on BookQRit and pick her/his interests, then, the problem that was "boring" is rewritten on the webpage but according to the child's interests.
BookQRit was developed in LAPASSION@Uruguay, held by UDELAR and UTEC.

Figure 29 – Interaction with the final users, children, was important to develop BookQRit

Figure 30 – Final presentation of BookQRit during LAPASSION@Uruguay Demo Day

Subchallenge: How to improve the conditions of Children by Education?
Counterpart: UDELAR+UTEC
Team members:
Gabriela Dutra Alves, Chemical Engineering, IFSUL, Brazil
Pamela Conti, Psychology, UDELAR, Uruguay
Natalia Jimenez Lavie, Industrial Design, UDELAR, Uruguay
Ignacio Hounie, Electrical Engineering, UDELAR, Uruguay
Francisco Fabián Neira Segura, Human Resources Administration, DUOC, Chile
Description:
Match-it is a prototype of a game with cards in the UNO style, where children must make associations between words and drawings, colours and numbers. It is a game to fix knowledge in a playful way, where children work other skills such as agility, reasoning, and strategy. It was developed under LAPASSION@Uruguay held by UDELAR and UTEC.

Figure 31 – Match-it a cards game for the learning process of Children

Figure 32 – Testing Match-it with Children

Figure 33 – Match-it team with Children

Subchallenge: How to improve the conditions of Children by Entertainment?
Counterpart: UDELAR+UTEC
Team members:
Alejandra Castro Sa, Social Media, UVIGO, Spain
Verónica Cecilia Rocha Sena, Psychology,UDELAR, Uruguay
Luca Praderio, Landscape Design, UDELAR, Uruguay
Mariana Paredes, Industrial Design – Product; UDELAR, Uruguay
Victoria Belén López Valdés, Civil Engineering, PUC, Chile
Description:
Bondiveo is an app to connect parents and children to be used during travels in the bus. Bondiveo uses the GPS to launch games about the buildings and streets of the city to allow that the attention of children goes to the surrounding environment.

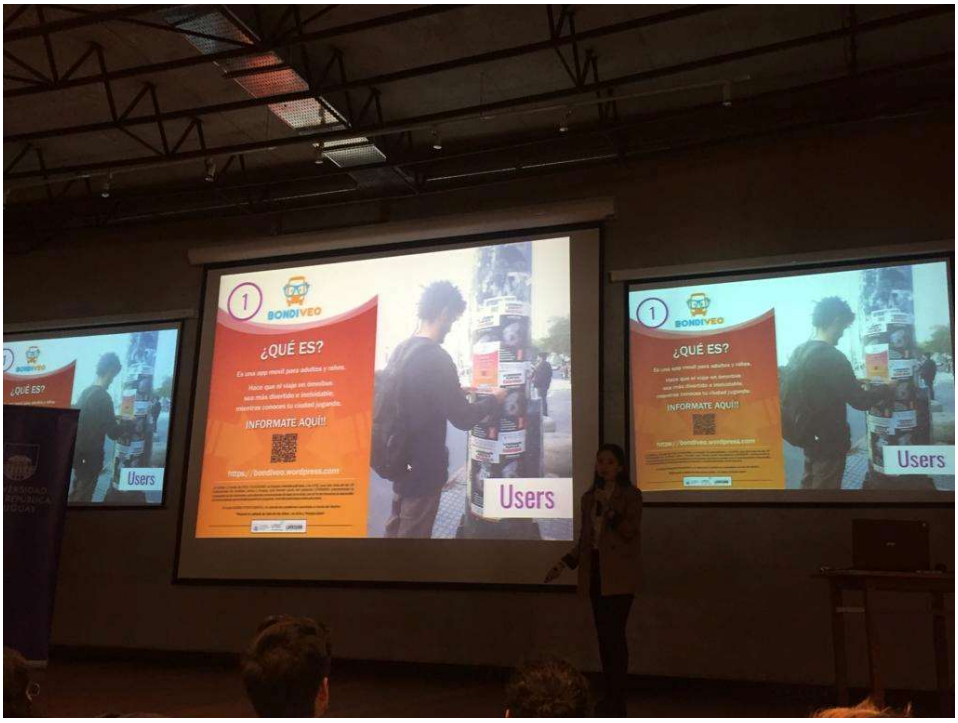

Figure 34 – Bondiveo makes fun a bus travel

Subchallenge: How to improve the conditions of Children by Health?
Counterpart: UDELAR+UTEC
Team members:
Rocío Solla Sampedro, Advertising Art Direction, UVIGO, Spain
Sabrina Kelwig Muller, Chemical Engineering, IFSUL, Brazil
Anibal Tacuabe Gonzalez Cavada, Medicine, UDELAR, Uruguay
Jenniffer Novick Frugoni, Industrial Design, UDELAR, Uruguay
Juan Elenter, Electrical Engineering, UDELAR, Uruguay
Description:
The project consists of creating a fun tool for education about healthy eating and collect data about the diet routine of patients (in our case children aged 10-13 years) for medical/nutritional monitoring. For this, it was developed a virtual game called “Guayabito”, which has an indigenous person (Charrua) as main character and he or she walks at the scene hunting the food that he or she had consumed during the day. From “food hunting”, a database is generated that is stored and only the parents have access. Periodically it is sent to the health system. Only in case of alert (the child stops issuing reports, gain weight, etc), will activate an alarm that reaches the doctor and / or appointment service to anticipate and correct the trend. In addition, the game will have nutritional information on food, so children can learn the importance of eating healthy.

Figure 35 – Guayabito, a character in a cards game to a healthy food practice

4.3 LAPASSION@Uberaba

LAPASSION@Uberaba was held by Federal Institute of Triângulo Mineiro (IFTM) in Brazil. With the main challenge of "Food for the Future" four sub-challenges have been proposed by four enterprises (BRF, Bem Brasil, Taquari, and Doces Joaninha).

Subchallenge: What to do with chicken feathers waste?
Counterpart: BRF
Team members:
Karen Aparecida Martins Costa, Zootechnology, IFTM, Brazil
Anna Beatriz Barreto Coelho, Information Systems Analysis and Development, IFTM, Brazil
Sérgio Martins Tavares Júnior, Mathematics, IFTM, Brazil
José Luis Faller Cepeda, Information Technology, UTEC, Uruguay
Gabriel Vieira da Silva Alves, Transportation Engineering, IFG, Brazil
José Mário da Silva Júnior, Computer Engineering, IFTM, Brazil
Description:
BRF is one of the largest food companies in the world, a global company with more than 100,000

employees. With more than 30 brands, among them the giant Sadia and Perdigão, which together started the history of BRF. If you eat products like ham in Brazil, possibly they are from Sadia or Perdigão. Other important brands are Qualy, Paty, Dánica and Perdix, among others.
The sub-challenge consists in the use of chicken feathers, a waste of the factory, in addition to this the company requested that this innovation had a social and environmental impact. During the ten-week period, the team made research and developed a solution according to what was requested by the company, acquiring new knowledge and methodologies during the process.
The team worked in all steps of the project, to be able to develop a prototype and a presentation to a solution, which is a thermo acoustic insulating plate for the construction industry.

Figure 36 – Team visit to BRF plant

Figure 37 – Team with the BRF sub-challenge interviewed in Brazilian TV

Figure 38 – Chicken feathers, how to use it in a sustainable and useful way

Subchallenge: Implementation of the effluent treatment process in potatoes processing
Counterpart: Bem Brasil
Team members:
Anna Luiza Paiva Silva, Food Technology, IFTM, Brazil
Matheus Aparecido Resende Ribeiro, Agronomy Engineering, IFTM, Brazil
Flávio Pinheiro Rodrigues Neves, Marketing Technology, IFTM, Brazil

Aías Santino de Lima, Civil Engineering, IPP, Portugal
Santiago Sánchez Cortázar, Chemical Engineering, USAL, Spain
Thiago Henrique Lopes, Computer Engineering, IFTM, Brazil

Description:

In the LAPASSION@Uberaba Project at Federal Institute of Triângulo Mineiro (IFTM), into the Food for the Future challenge, the PorBraEs students' team worked with Bem Brasil, a company recognized in Latin America for the commercialization of products derived from potato processing. The sub-challenge was to develop an innovation for the implementation of the effluent treatment process, reducing the electrical conductivity of the water for its reuse within the industrial process.

For this solution, the team performed a theoretical levelling for further experimentation of rizofiltration processes, through floating plants, and the implementation of physical-chemical filters, with the objective of removing organic particles and ions to reduce electric conductivity. This is an implementation in the structure already belonging to the company, to treat this effluent, aiming at a low cost of implementation and maintenance, which will result in a high institutional and environmental gain.

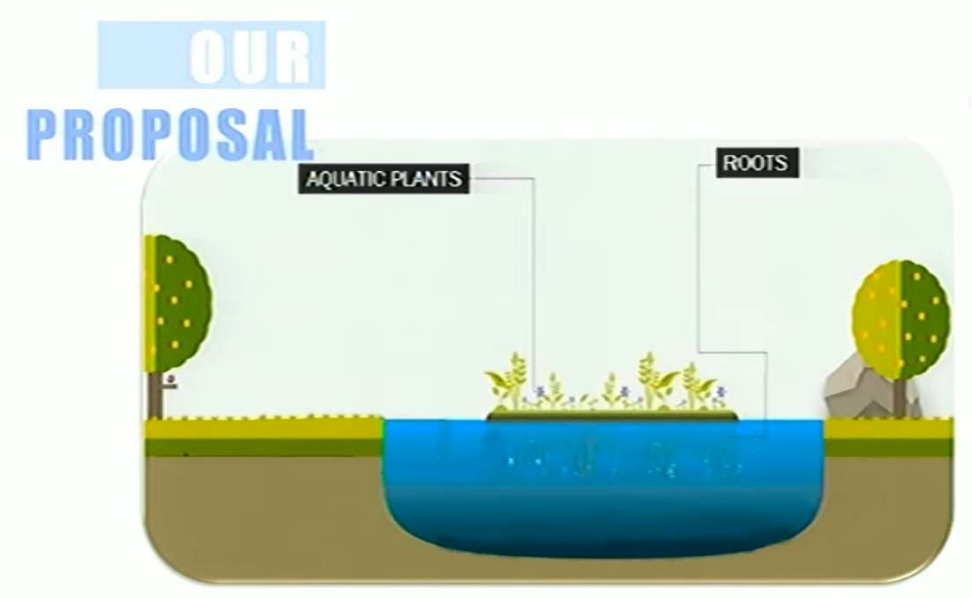

Figure 39 – Rizofiltration process

Figure 40 – Visit to Bem Brasil, a company dedicated to potato products

Subchallenge: New dairy product
Counterpart: Taquari
Team members:
Erik Kennedy de Carvalho Fonseca, Zootechnology, IFTM, Brazil
Kenia Cristina Graciano de Almeida, Food Technology, IFTM, Brazil
Guilherme Felix Rosa, Computer Engineering, IFTM, Brazil
Lucas Monteiro dos Santos, Electrical Engineering, IFTM, Brazil
Gianfranco Greno Giardello, Mechatronics Engineering, UTEC, Uruguay
Ana Rita Santos Mendes, Biomedical Engineering, IPP, Portugal
Description:
INOAL team received the subchallenge of producing a new dairy product. The company involved was Taquari, a dairy-based company from Santa Juliana city in Minas Gerais, Brazil. The challenge led to a new functional butter enriched with fibre. This butter, named MUNVID, caters the target the young and fit clients. However, after a market analysis INOAL team realized that could go further and move for a second prototype, a packaging for the butter, totally innovative. With PACKTTER it aims to meet the pains of our customers, because a big problem is the hardness of the cold butter, since to be consumed it is necessary to take from the refrigerator so that it can be used.

Figure 41 – LAPASSION Project developed with Taquari being presented in Brazilian Globo TV (MGTV)

Figure 42 – The pitch of the Demo Day

Subchallenge: How to increment value to the products?
Counterpart: Doces Joaninha
Team members:
Amanda de Ávila Silveira, Food Technology, IFTM, Brazil
Camila Angélica Santos Souza, Agronomy Engineering, IFTM, Brazil
Jaqueline de Sousa Cardim, Agronomy Engineering, IFTM, Brazil
Guilherme Kenji Ferreira Hachimine, Computer Enginering, IFTM, Brazil
Fábio José Almeida Abrantes; Computer Engineering, USAL, Spain

Aline Maria dos Santos Rodrigues, Education, IFG, Brazil

Description:

This project was about the company Doces Joaninha, a company that makes handcrafted sweets in Araxá, Minas Gerais. Their problem is that customers do not valued their products because they find them too expensive compared to the competition. To create a solution the team started by comparing Doces Joaninha's prices with those of the competitors and find that they are all on the same line and in some cases even cheaper. So, the team decided to focus on the brand image and customer experience when going to buy since the company is a company with 50 years of history but with an outdated image and with a confusing product layout for the customer. The proposed brand and image was introduced by Doces Joaninha with success.

Figure 43 – Doces Joaninha store

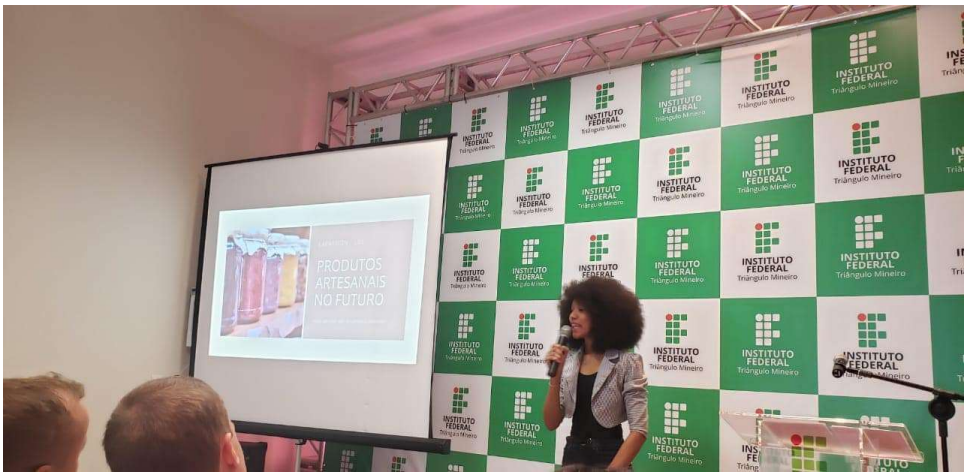

Figure 44 – The pitch of the Demo Day for Doces Joaninha sub-challenge

4.4 LAPASSION@SãoLuís

LAPASSION@SãoLuís was held by Federal Institute of Maranhão (IFMA) in Brazil. With the main challenge of "How to improve the Human Development Index (HDI) of Maranhão State?" six sub-challenges have been proposed involving 3 Secretariats of the Maranhão State Government (Secretariat of Tourism, Secretariat of Woman, and Secretariat of Human Rights and Popular Participation) and two Municipalities (São Luís and Santo Amaro). Two enterprises gave support to the 6 projects (Apple and BlackSwan).

Subchallenge: How to improve the Human Development Index (HDI) of Maranhão State by means of Tourism in Santo Amaro?
Counterpart: Secretariat of Tourism of Maranhão (SETUR) and Santo Amaro Municipality
Team members:
Sanna Pauliina Tahlo, Entrepreneurship and Team Leadership, TAMK, Finland
Daliana Vieira Marques, Civil Engineering, IPP, Portugal
Bruno Diego Barros Araújo, Electrical Engineering, IFMA, Brazil
Joana Amélia Soares, Civil Engineering, IFMA, Brazil
Antônio Fernando Vasconcelos Braga, Chemistry, IFMA, Brazil
Description:
Rota Amaro is the project developed by BraFinP team and coordinated by Prof. Daniel Lima from the Federal Institute of Maranhão. The sub-challenge was "How to improve the tourism experience for increasing the economic growth of Santo Amaro city, in Maranhão state?". Rota Amaro is an application that connects tourists and locals (residents and entrepreneurs) to facilitate connections and improve the visibility of local routes and culture, using community-based tourism and conservation as a parameter. Santo Amaro is a municipality on the Lençóis Maranhenses border.

Figure 45 – Team members with coach aftera deliverable

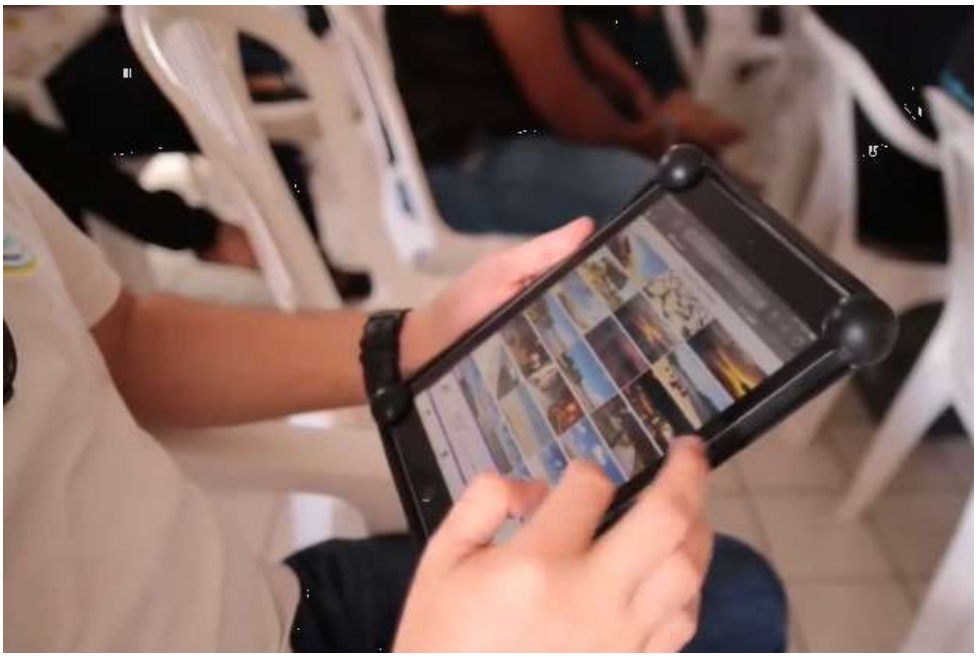

Figure 46 – The developed software being used

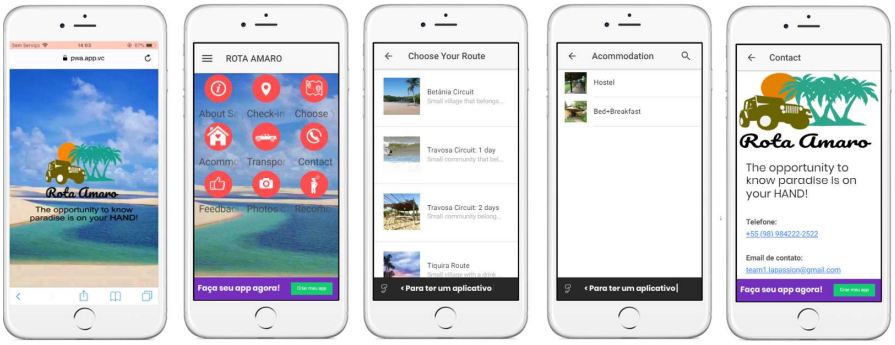

Figure 47 – Views from Rota Amaro app

Subchallenge: How to improve the Human Development Index (HDI) of Maranhão State by means of Tourism in São Luís?
Counterpart: Secretariat of Tourism of Maranhão (SETUR) and São Luís Municipality
Team members:
Daniel Carlos do Vale Ramos, Informatics Engineering, IPP, Portugal
Mariana Soledad Suarez Yelpo, Industrial Design, UDELAR, Uruguay
Caio Felipe Pinheiro Cantanhede, Electrical Engineering, IFMA, Brazil
Daiane da Silva Moraes, Information Systems, IFMA, Brazil
Francisco Tanilson da Silva, Administration, IFMA, Brazil
Description:
This team had as sub-challenge to improve the tourism experience for increasing economic growth of São Luís. For that they developed an app, Joga&Go, with concepts of gamification to allow ludic, dynamic, personalized and interactive memorable experiences for tourists. Using Joga&Go the tourist has access to notifications, challenges and mini-games, special discounts and badges.
Joga&Go has been selected by the Inova Maranhão Programme to startup preparation. The Programme created by the Maranhão state Government is preparing the project teams for the challenges of the creation of a Startup.

Figure 48 – Interviews with Tourism experts

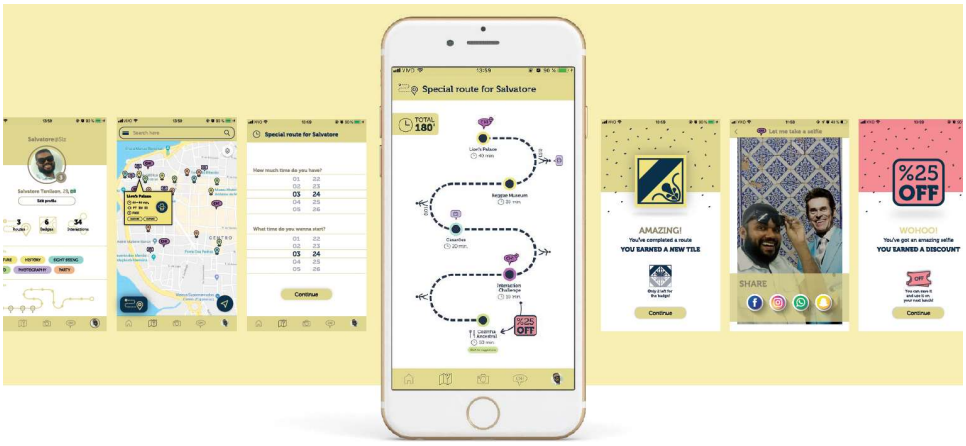

Figure 49 – Joga&Go app

Figure 50 – Interview of Joga&Go team member in the Brazilian TV

Subchallenge: How to improve the Human Development Index (HDI) of Maranhão State by better access to basic needs in São Luís?
Counterpart: Secretariat of Human Rights and Popular Participation of Maranhão (SEDIHPOP) and São Luís Municipality
Team members:
Sofia Isabel Saez Antille, Psychology, UDELAR, Uruguay
Carlos Henrique Ferreira do Nascimento, Civil Engineering, IFMA, Brazil
Gabriel Nogueira Berthier da Silva, Information Systems, IFMA, Brazil
Lucas Nascimento Mendonça, Electrical Engineering, IFMA, Brazil
Erika Viana Sena, Professional and Technological Education, IFAM, Brazil
Description:
VejAilha team received the sub-challenge on how to improve the access to basic needs in São Luís, in Maranhão, Brazil. In São Luís some communities suffer from any deprivations, on the other hand, there are NGOs and volunteers' groups working with them. Both are mostly unknown to the rest of the city. VejAilha solution was to develop a digital service, VejAilha, to strength the network between Society, NGOs, and public/private institutions to improve the access to basic needs.

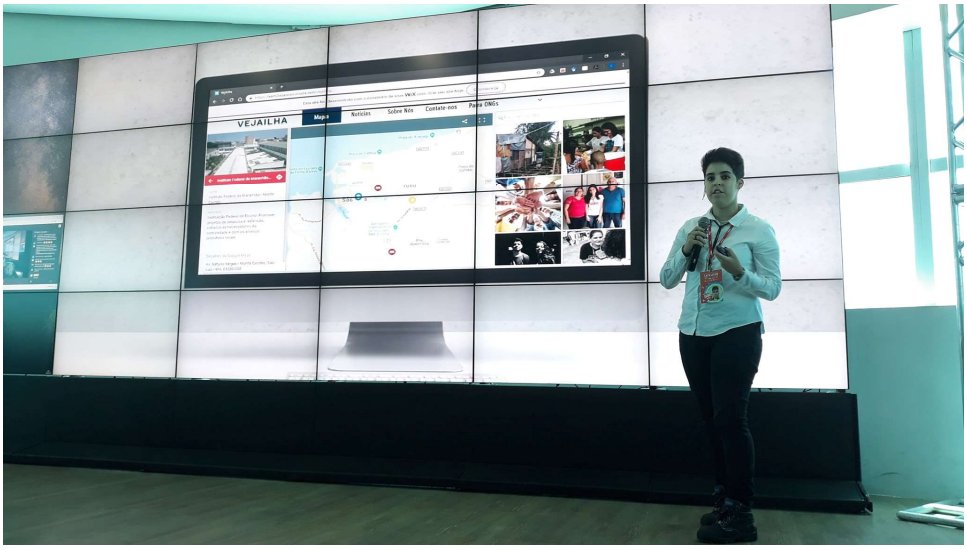

Figure 51 – VejAilha software presented in the Demo Day

Figure 52 – Detail of VejAilha software

Subchallenge: How to improve the Human Development Index (HDI) of Maranhão State by protecting Woman in risk in São Luís?

Counterpart: Secretariat of Woman of Maranhão (SEMU) and São Luís Municipality

Team members:

Patricia Gómez Otero, Primary Education, UVIGO, Spain

Francisco Borges Carreiro Filho, Information Systems, IFMA, Brazil

Symon do Nascimento Pinto, Civil Engineering, IFMA, Brazil

Ana Karoliny Machado Macedo, Agroecology Technology, IFAM, Brazil

Description:

Chance Mulher is a digital service to help women at risk in São Luís. For that the students' team has created a platform which helps public institutions to manage the process of entrance of capacitated women into the labour market by connecting them with companies, productive groups, and start-ups. For public institutions it allows databases of capacitation courses, qualified women, companies, start-ups, and productive groups. On the other hand, companies have visibility throughout free advertisement and enhance the social responsibility.

Chance Mulher was selected by InovaMaranhão to be prepared to be a startup. InovaMaranhão is a program from the Foundation for Support of Research and Innovation of Maranhão State in Brazil (FAPEMA).

Figure 53 – Chance Mulher team members

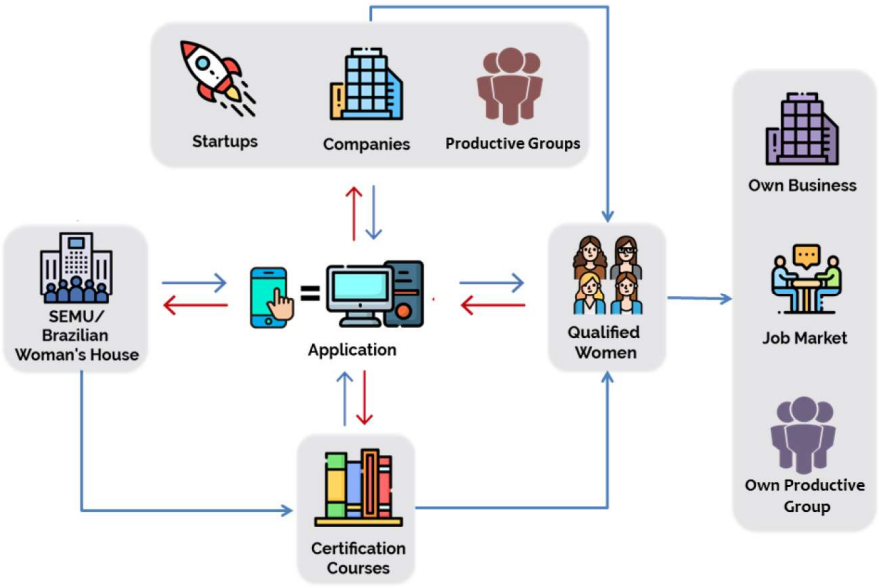

Figure 48 – Chance Mulher scheme

Figure 54 – Chance Mulher and Joga&Go teams selected by InovaMaranhão contest

Subchallenge: How to improve the Human Development Index (HDI) of Maranhão State by protecting Woman in risk in Santo Amaro?
Counterpart: Secretariat of Woman of Maranhão (SEMU) and Santo Amaro Municipality
Team members:
Petteri Kiuru, Entrepreneurship and Team Leadership, TAMK, Finland
Ana Cleide Silva Torres, Information Systems, IFMA, Brazil
Gustavo Espíndola Corrêa, Civil Engineering, IFMA, Brazil
Jhonatas Gutierrez Santos de Jesus, Electrical Engineering, IFMA, Brazil
Evandro Pedro Alves de Mendonça, Mechanical Engineering, IFPE, Brazil

Description:

This team had as sub-challenge to propose a service to help women at risk in Santo Amaro city. The found solution is in the form of a campaign that disseminates information about women's rights making use of local touristic potential through the work developed by Santo Amaro's handcrafters. Besides the products like rings, necklace and natural handcrafts, the created brand involves QR codes and one website.

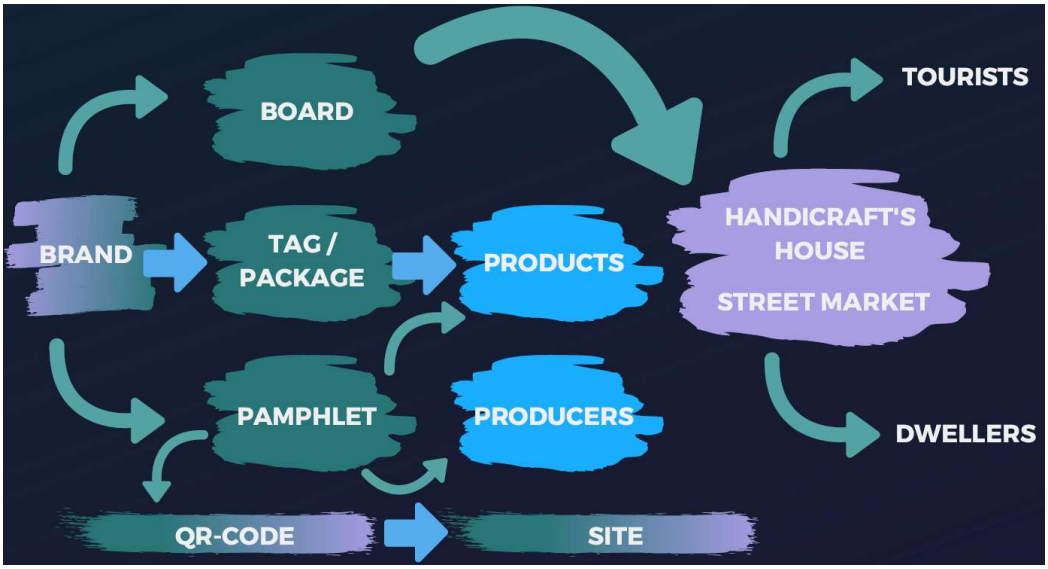

Figure 55 – Scheme for handcrafts to help woman in risk in Santo Amaro

Figure 56 – Handcrafts to help woman in risk in Santo Amaro

Subchallenge: How to improve the Human Development Index (HDI) of Maranhão State by improving the quality of water in Santo Amaro?
Counterpart: Secretariat of Human Rights and Popular Participation of Maranhão (SEDIHPOP) and Santo Amaro Municipality
Team members:
Javier González Penedo, Public Administration and Institutional Leadership, UVIGO, Spain
Kristhyan Davinny Nascimento Santos, Science and Technology of Dairy, IFAL, Brazil
Helida Thays Gomes Soares, Civil Engineering, IFMA, Brazil
Juliane Cutrim Marques, Chemistry, IFMA, Brazil
Gabriel Vitor de Sousa Silva, Information Systems, IFMA, Brazil
Description:
This team received as sub-challenge How to improve potable water quality for people of Santo Amaro. Since 30% of Santo Amaro consists of students our team has decided to act in Schools of Santo Amaro. A recyclable filter was envisaged, and after analysing different alternatives like carbon, wool, bucket, and stone gravel the team decided to choose bamboo for that filter. Bamboo is a natural product from Santo Amaro and has properties against microorganisms. Bamboo filters are in good situation by 12 months.

Figure 57 – Analysing the quality of wáter in Santo Amaro

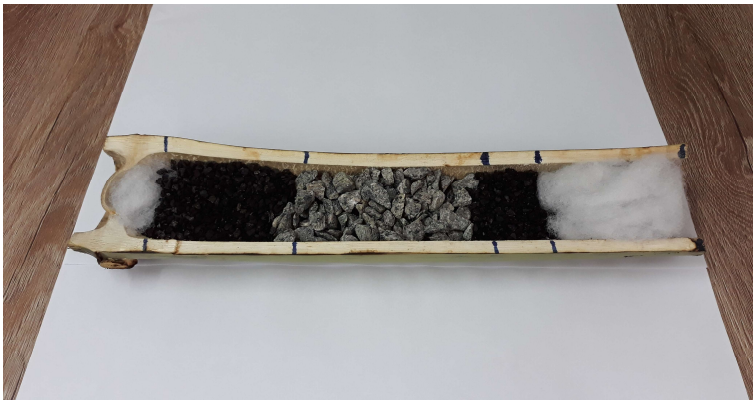

Figure 58 – The bamboo filter proposed by the team as solution for the challenge

4.5 LAPASSION@Manaus

LAPASSION@Manaus was held by Federal Institute of Amazonas (IFAM), in Brazil. As referred before that students' projects started in presential mode and due to the coronavirus pandemic situation were converted to distance/online development. With the main challenge of "Socio-Environmental Technologies for the Sustainability of the Amazon" sub-challenges have been launched by different entities like the enterprises Caloi (a big bikes' manufacturer in Latin-America), and Samsung, and institutes like Transire (Institute of Technology and Biotechnology of Amazonas), and the Federal Institute of Amazonas, the Secretariat of Environment of the State of Amazonas (SEMA), and the Foundation Sustainable Amazonas (FAS).

Subchallenge: Sustainable Bike
Counterpart: Caloi
Team members:
Vitor Martins Nogueira, Bioresources, IPP, Portugal
María Constanza Quezada Silva, Industrial Design, DUOC
Ana Carolina Paiva e Silva, Mechanical Engineering, IFAM
Raphaela Lima de Araujo Goes, Software Engineering, IFAM
Matheus Ben-Hur Ramirez Sapucaia, Mechanical Engineering, IFAM
Description:
Ths team, Team 1, received the sub-challenge "Sustainable Bike". As a result, they mitigated the impact of the bike life-cycle. All the plastic components of bikes were identified, proposing the substitution of them by bio-based materials. The project was developed with counterparts from Caloi, the largest Brazilian manufacturer of bicycles.
The behaviour of the bicycle's parts made with petroleum-based plastics and the renewable

sugarcane-based bioplastics were shown. How the replacement could be carried out and how it would make the bicycle manufacturing process more sustainable and less polluting. The team also sought to address the UN Sustainable Development Goals, such as Innovation and Infrastructure, Sustainable Cities and Communities, Responsible Consumption and Production, and Climate Action.

Figure 59 – Team members during a visit to Caloi Plant

Figure 60 – Identification of components of a bike that can be substituted by bio-based materials

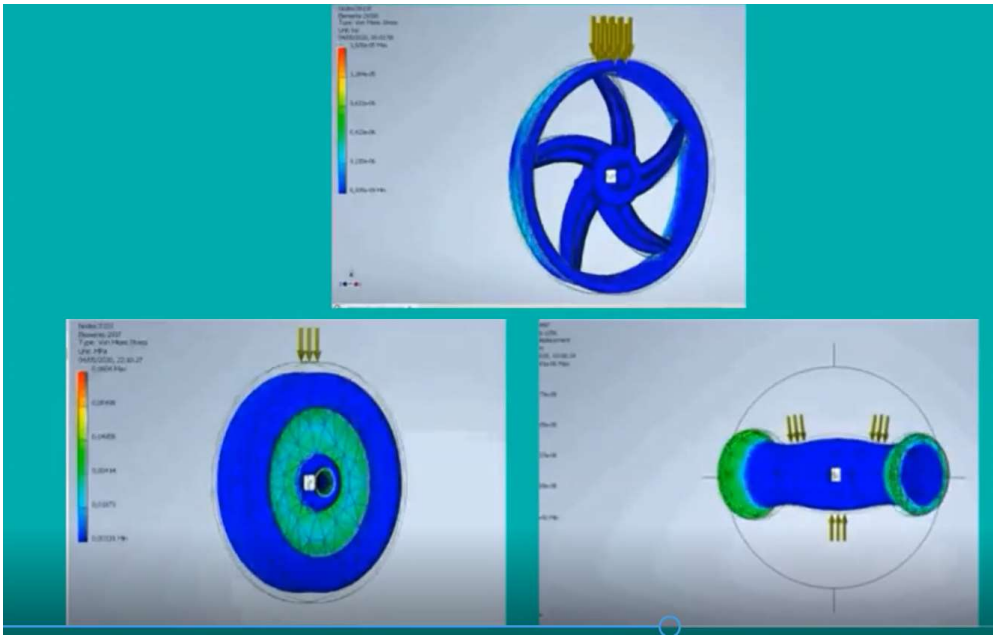

Figure 61 – Analysis of the performance of bio-based materials

Subchallenge: Low-cost methods in drinking water generation
Counterpart: Transire
Team members:
Martin Samuel Sirén, Nursing, TAMK
Lucas Silva Pinheiro, Electrical Engineering, IFMA
Ananda Santiago de Oliveira, Veterinary, IFAM
Sarah Feitoza da Silva, Logistics, IFAM
Rodrigo Moura de Carvalho, Software Engineering, IFAM
Raiza Campos Lucena, Advertising, IFAM
Description:
Team 2 received the sub-challenge “Low-cost methods in drinking water generation”. Despite being in a place with huge amount of water many communities have not access to drinkable water. As result, we work in a proposal of a filter (A’Calhar filter), a solution to install to the gutter and filter rainwater. The product comes with a booklet with information of water contamination, gutter cleaning, alternatives for building your own filter and maintenance of the filter. The project involved counterparts from Transire Institute – Technology and Biotechnology of Amazonas.
The filter has a kit with material to build it and a manual on how to do it. The filter can be placed directly on the gutter to capture rainwater. As coaches, the team members monitored the execution of the booklet, with educational information on the importance of drinking water, on the usefulness of the filter, ways of maintaining and cleaning the gutter, using home-made materials for water purification, as well as the operation of the product, which was named “A'calhar”.

Figure 62 – The kind of houses of Amazon communities to benefit from the Team's project

Figure 63 - Solution for direct filtering of rain water

Figure 64 – The filter developed by the team

Subchallenge: Reuse of Electronic Devices
Counterpart: Samsung
Team members:
Sara Matilda Valavaara, Media and Arts, TAMK
Camila Victoria Lienlaf Vergara, Design, PUC
David dos Santos Costa, Environment, IFAM
Amanda Sales da Silva, Advertising, IFAM
Description:
The Team 3 received the sub-challenge “Reuse of electronic devices”. In fact e-waste is a major concern because of toxic substances involved. The proposal is to create a Microcomputer club, in which participants can use components of old mobile phones. The club involves students and teachers, and members learn how to address real problems of isolated communities. Together with processors like Arduino these components build interesting systems and reuse electronic devices. An Arduino club has been proposed. The project involved counterparts from Samsung.
The solution found has every possibility of being operationalized at IFAM. The students and teachers of the various technical training programmes at medium and higher institution levels would be the Arduino Club members. Later, with the project's success, the solution could be expanded to other establishments, such as state technical schools and specialized centres for technical and professional training.

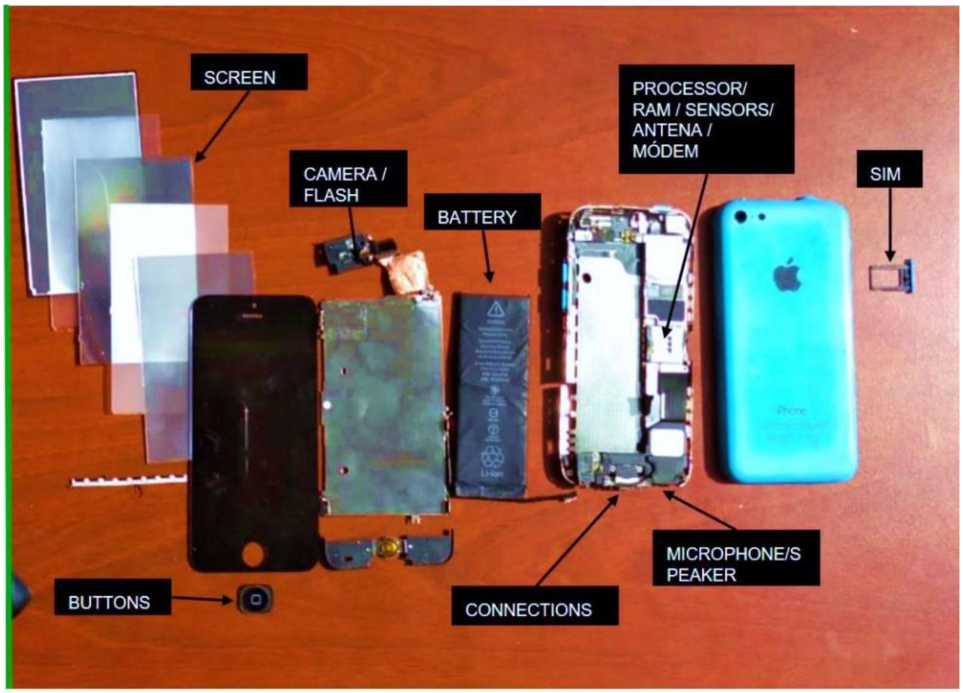

Figure 65 – Electronic device (smartphone) and their components

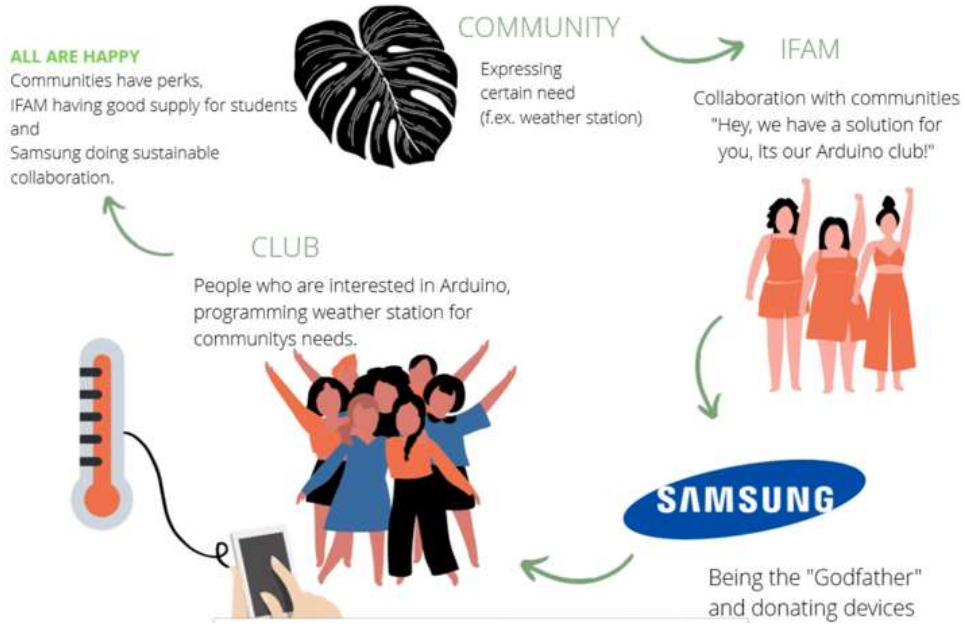

Figure 9– Arduino club, a way to reuse edectronic devices

Subchallenge: Efficient Environmental management to public instituitions
Counterpart: Federal Institute of Amazonas
Team members:
Alberto Infante Willson, Design and Innovation Engineering, PUC
Luzia Emanuelle Rodrigues Valentim da Silva, Mechanical Engineering, IFMA
Melyssa Oliveira Gomes, Biological Sciences, IFAM
Jamille Miranda dos Anjos, Pedagogy, IFPA
Lucas Gomes Flores, Control and Automation, IFAM
Description:
Team 4 received the sub-challenge “Efficient Environmental management to public institutions”. As result, they worked in a proposal of a Waste Separation station that sensitizes the care of the Environment through visualization in a Community Network. The station involves sensors for monitoring and a camera for people pictures that can be shared if desired. An EcoPoint manual was developed. Visual contents were developed as well. The project involved counterparts from IFAM, the Federal Institute of Amazonas.
The ecopoint station was designed and idealized to contain information about recyclable and non-recyclable, in its front part and a camera to capture the interaction actions between this and the user audience. The capture takes place using a sensor that, when feeling the addition of residues, captures the image and shows it on a screen (monitor or television) to disseminate positive attitudes towards the environment. This monitor or television was designed to remain in circulation on the Campus, showing images and videos with informational messages on sustainability actions and guidelines in a fixed way.

Figure 66 – Ecopoint visión - front

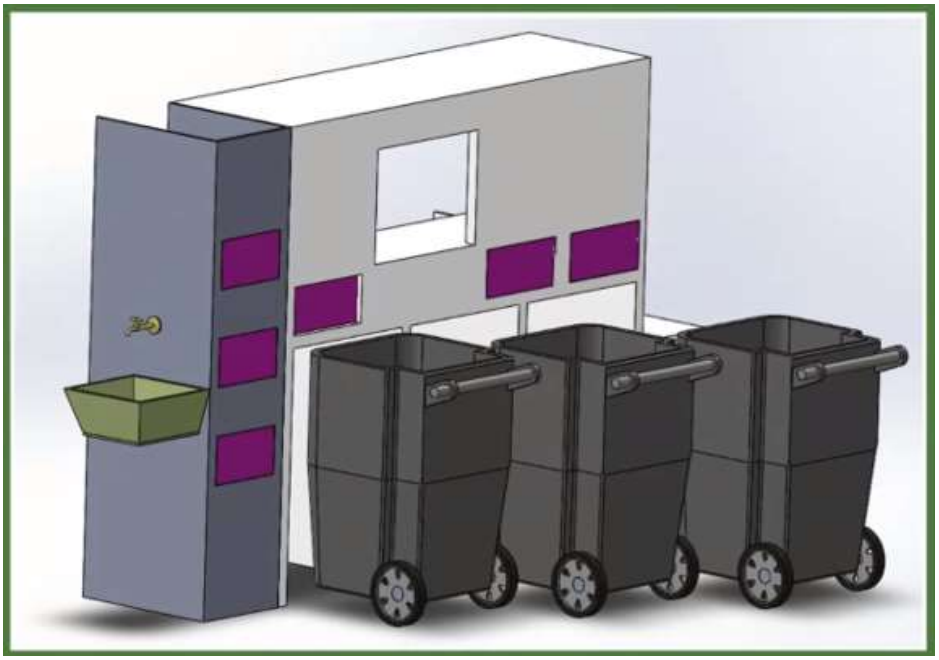

Figure 67 – Ecopoint visión – 3D

Figure 68 – Team members of the subchallenge "Efficient Environmental management to public instituitions"

Subchallenge: Insertion of sustainable productive chains of conservation units in the Market
Counterpart: Secretariat of Environment of Amazonas state (SEMA)
Team members:
Jennifer Alejandra Condemarín Guzmán, Tourism and Hospitality, DUOC
Lucyanna Moura Coelho, Environment, IFAM
Ana Carolina Paiva e Silva, Mechanical Engineering, IFAM
Vitor Leonardo Batista dos Santos, English and Portuguese Languages, IFAP
Kennedy Lima de Azevedo, Advertising, IFAM
Description:
Team 5, received the sub-challenge "Insertion of sustainable productive chains of conservation units in the Market". As result, the team identified some of the main products of Amazonia and developed a booklet (Business of the Forest) and the visual identity. Using Infographics, they helped in the formalization of the Business, in the marketing Plan, in a Geographical Identification Seal, and in the creation of an Association. A good example of Visual Identity was found for Jatobá, a product for Biocosmetics and Phytomedicine. The project involved counterparts from SEMA, the Secretariat of Environment of Amazonas state.

Figure 69 – Analysis of some possible products from Amazonia

Figure 70 – Visual identity of Jatobá, a producto for Biocosmetics and Phytomedicine

Figure 71 – Team members of the subchallenge proposed by SEMA

Subchallenge: Sharing knowledge tool in the schools of the Conservation Units
Counterpart: Sustainable Amazon Foundation (FAS)
Team members:
Carolina Costa Araújo, Medical Computing and Instrumentation Engineering, IPP, Portugal
Juan Elias Pena Luque, Mathematics, IFAP, Brazil
Yuri Farias dos Santos, Control and Automation, IFAM, Brazil
Naiara Hassan Coutinho, Advertising, IFAM, Brazil

Tales Alves Júnior, Biological Sciences, IFAM, Brazil

Description:

Team 6 received the sub-challenge "Sharing knowledge tool in the schools of the Conservation Units". As a result they developed SAPOPEMapp, a platform for sharing challenges between communities for sustainable practices. The project was developed with counterparts from Sustainable Amazon Foundation (FAS).

The proposed challenge is based on the need to assist teachers and educators in the insertion of regional themes in the classroom, highlighting elements and values of the local culture and proposing solutions for sustainable development. Therefore, the development of data sharing app/tools for levelling knowledge and subsequent scheduling strategy for other remote areas can significantly strengthen the training centres for young people/teenagers in remote areas of the state.

Figure 72 – LAPASSION@Manaus teams working at distance and online during the beginning of the pandemic

Figure 73 – Team members of the subchallenge proposed by FAS

4.6 LAPASSION@Goainia

LAPASSION@Goiania was held by Federal Institute of Goiás (IFG), in Brazil. As referred before that students' projects started in presential mode and due to the coronavirus pandemic situation were converted to distance/online development. With the main challenge of "How to contribute to a Sustainable and Inclusive Society?" sub-challenges have been launched by different entities like the enterprises Bela Vista (Diary products), and Ecológica (Solar Energy and Air Conditioning), and the municipalities of Goiania and Senador Canedo.

Subchallenge: Generation of Energy by means of Body Movement
Counterpart: Municipality of Goiania
Team members:
Juuso Hakanpää, Nursing, TAMK, Finland
Maxmiliano Frey Moreno, Industrial Engineering and Inofrmation Technologies, PUC, Chile
Danielle Rodrigues Melo, Civil Engineering, IFG, Brazil
Gustavo de Souza Ferreira, Electrical Engineering, IFG, Brazil
Karlla Aparecida Ribeiro, Biology, IFG, Brazil
Description:
The team received the sub-challenge "Use of devices that lead citizens to practice physical exercises and generate Electrical Energy from Body Movement". The counterpart was the Goiania Municipality. As result, it was developed the hardware to test the concept of Energy generation from a Bicycle and an app to deal with social aspects, different modes of operation, and rewards.

Figure 74 – Team members during the beginnig of the Project (pre-covid period)

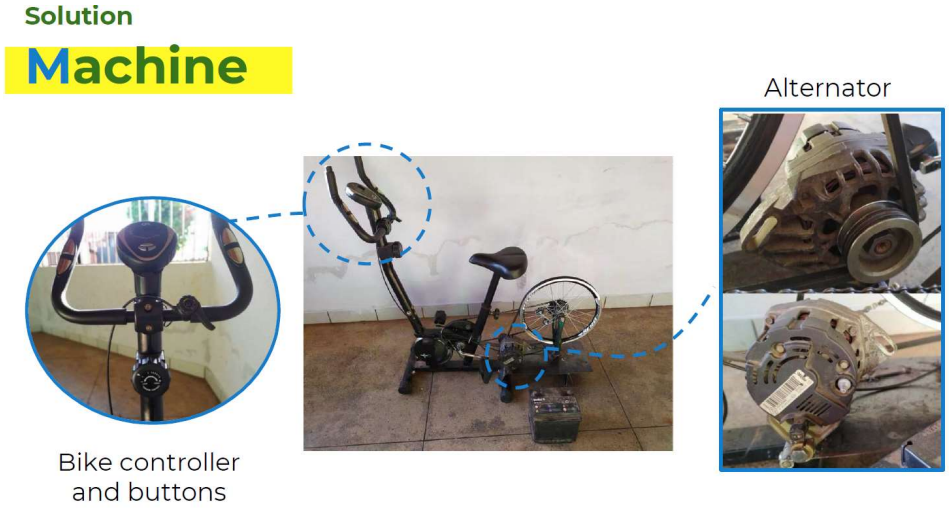

Figure 75 – Prototype of the Bike with controls, alternator, and battery

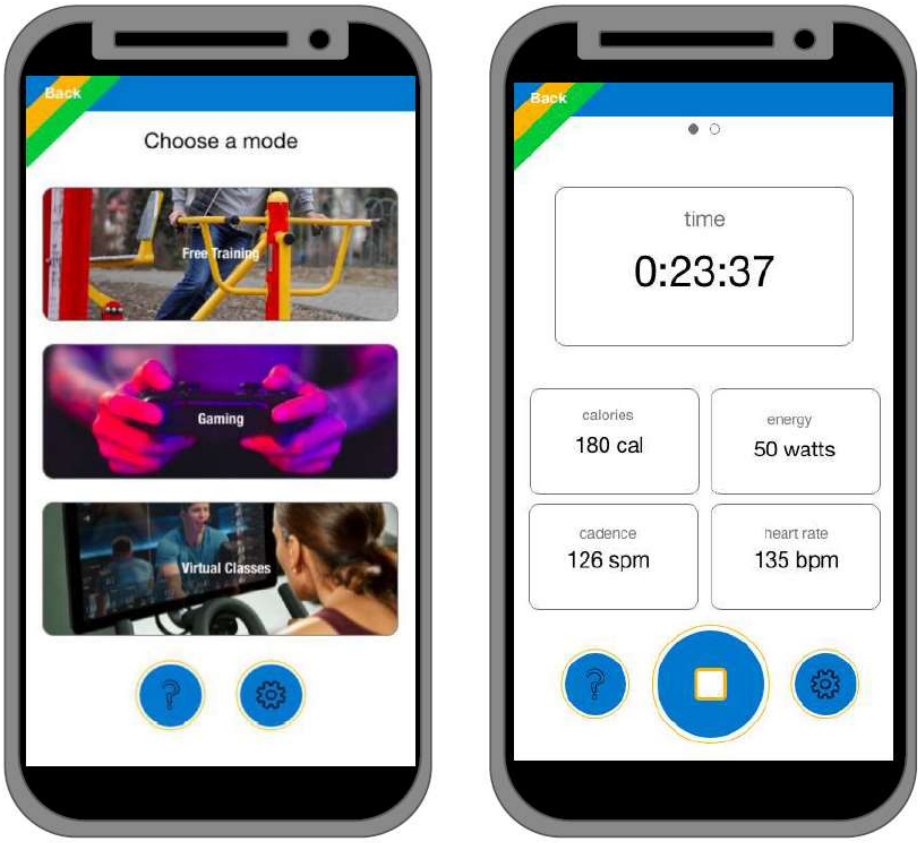

Figure 76 – The developed app

Subchallenge: A model street for accessibility for people with disabilities or specific needs
Counterpart: Municipality of Senador Canedo
Team members:
Hannes Töysä, Nursing, TAMK, Finland
Carla Silva, Industrial Engineering and Management, IPP, Portugal
Ademar Lopes, Portuguese Language, IFG, Brazil
Nelson Rodrigues Silva - Electrical Engineering, IFG, Brazil
Beatriz Torezani Sacramento - Sanitary and Environmental Engineering, IFES, Brazil
Description:
The team received the initial sub-challenge "Use of technologies to improve urban mobility for people with specific needs". The counterparts were the Municipal Traffic Superintendence of Senador Canedo and Senador Canedo Municipal Secretariat for Education and Culture. As result, the team developed technology for the Street Ademar de Barros in the Senador Canedo city. An example

is the app for bus stop to inform people in different ways about buses considering different specific needs. The team worked also in an Educational Programme and in a Social-Cultural event to inform people about the changes and how to create empathy with people with special needs.

Figure 77 – Team members during the beginnig of the Project (pre-covid period)

Figure 78 – Ademar de Barros real street

Figure 79 – 3D modelo f Ademar de Barros Street proposed by the team

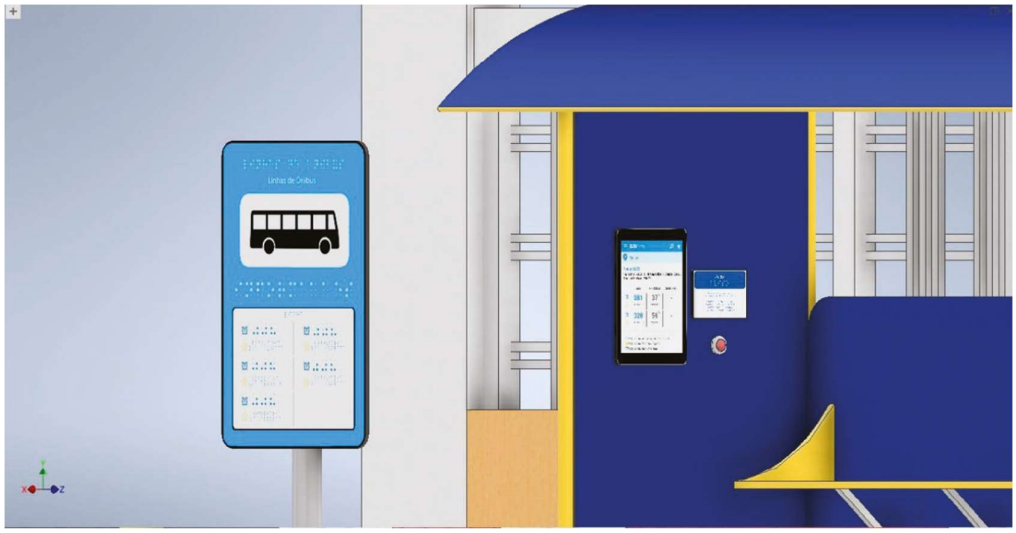

Figure 80 – Inclusive Bus Stop proposed by the team

Subchallenge: Enhancing Tourist visibility through the improvement of physical and digital signaling of tourist points of interest

Counterpart: Municipality of Senador Canedo

Team members:

João Matos Guimarães, Medical Computing and Instrumentation Engineering, IPP, Portugal

Araceli Jazmín Sánchez Cortés, Tourism and Hospitality, DUOC, Chile

Gabriel Vieira da Silva Alves, Transports Engineering, IFG, Brazil

Matheus Monteiro Cabral, Electrical Engineering, IFG, Brazil

Sandro Ribeiro, History, IFG, Brazil
Aline Cristina Moraes Ferreira, Architecture, IFMG, Brazil

Description:

This team received the initial sub-challenge "Development of Sustainable Solutions that improve Urban Mobility for the improvement of Tourism and Leasure in Senador Canedo". The counterparts were the Municipal Traffic Superintendence of Senador Canedo and Senador Canedo Municipality. As result, they developed an application to support Tourism and Leasure in Senador Canedo city. A proposal of Touristic Signals and routes has been developed. With this project they expected to create a conscience of the capabilities of Senador Canedo for Tourism and Hospitality, to increase the frequency of visits to the city, the sense of security, the creation of an autonomous Economy, in conclusion a new mindset for the opportunities.

Figure 81 – Team members during the beginnig of the Project (pre-covid period)

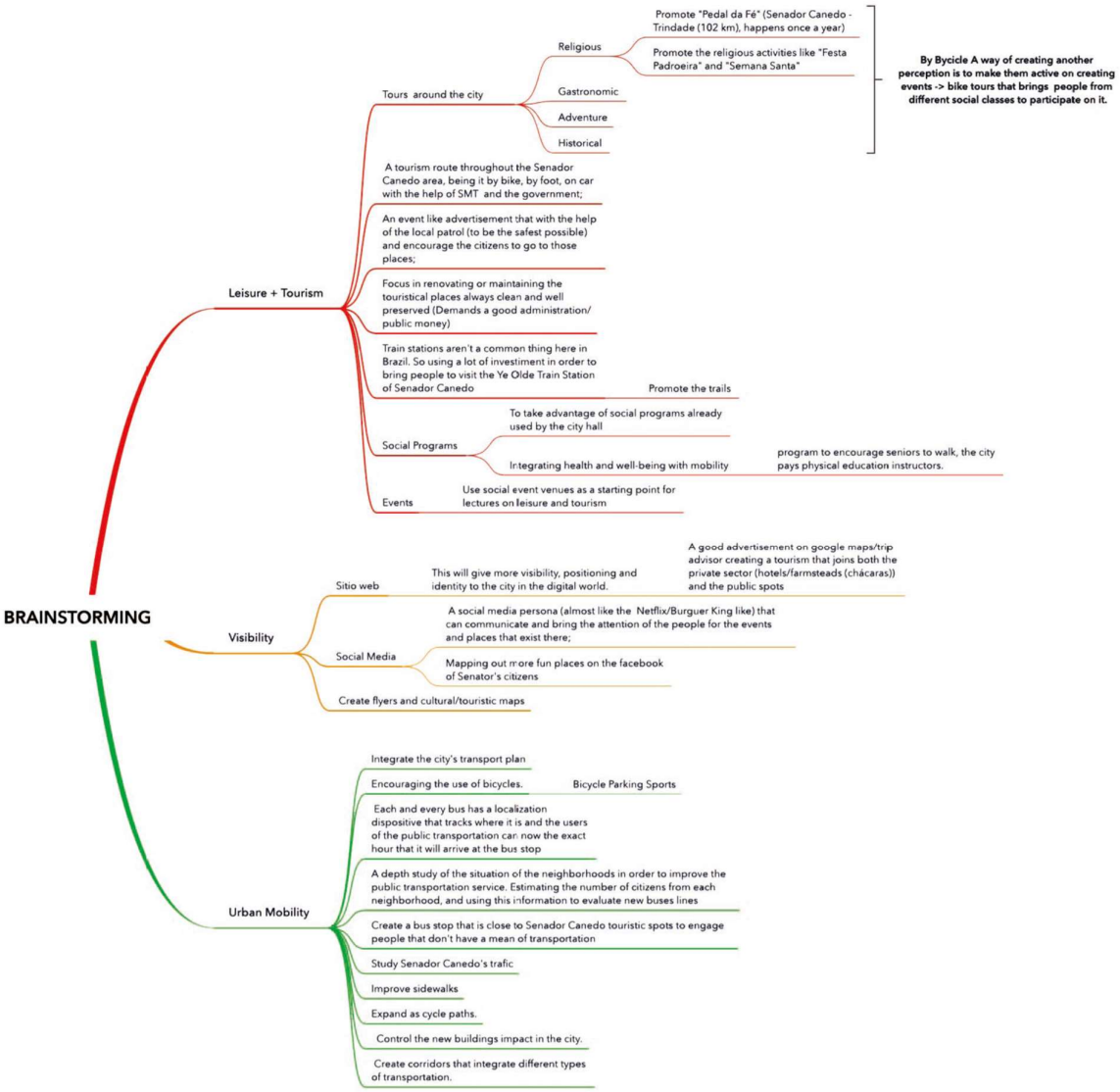

Figure 26– Ideation Tree

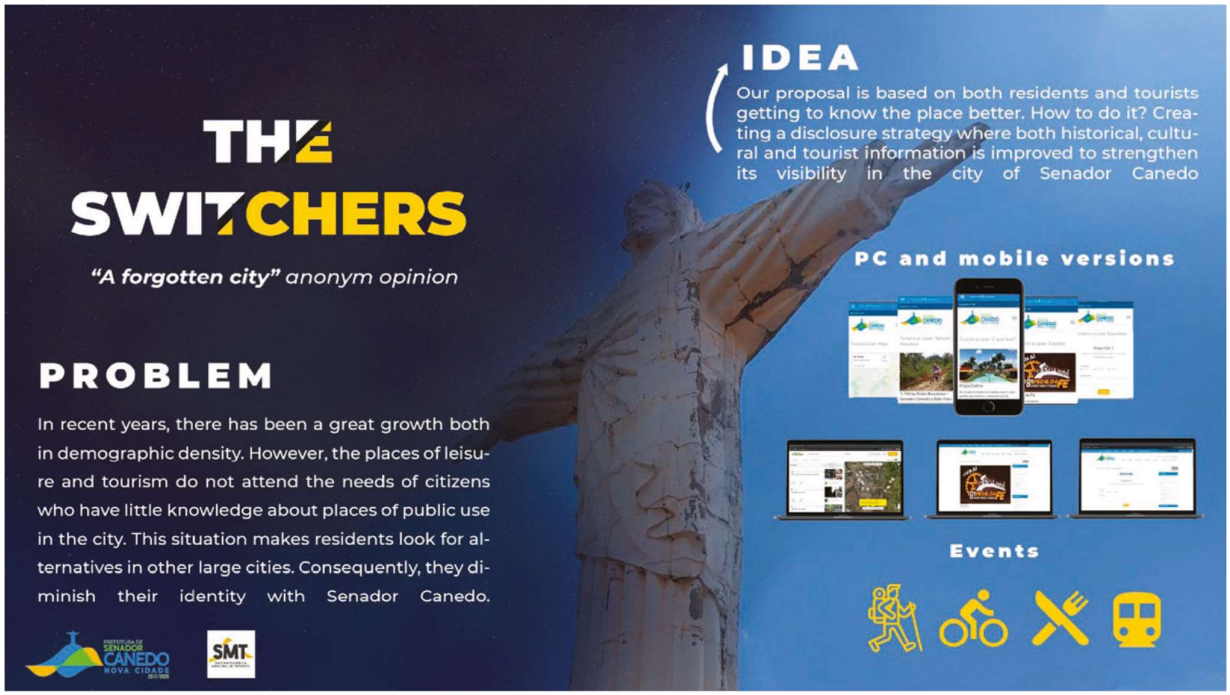

Figure 82 – Ideas written on a Cannes Board

Figure 28– Adventure tour suggested by the system

Subchallenge: Reverse Logistics of post-consumption waste of a diary industry
Counterpart: Bela Vista Lacticínios Lda.
Team members:

Carolina Iglesias, Industrial Design, DUOC, Chile
Gabriel Camargo de Jezus, Agronomy, IFTM, Brazil
Gabriel Santos Novato, Civil Engineering, IFG, Brazil
João Eduardo Marques Costa, Control Automation, IFG, Brazil
João Paulo Dos Santos Rodrigues, Chemistry, IFG, Brazil

Description:

Team 4, received the sub-challenge "Use of Reverse Logistics of Post-Consumption Waste from Dairy Industry". The counterpart was the Lacticínios Bela Vista, a dairy company. As result, the team developed a campaign based on Reverse Logistics, starting by people awareness to correct solid waste dump, namely for dairy product packaging. This campaign places information in the packing of dairy products and use information technology to support people for correctly placing the solid waste of the packing.

Figure 83 – Team members during the beginnig of the Project (pre-covid period)

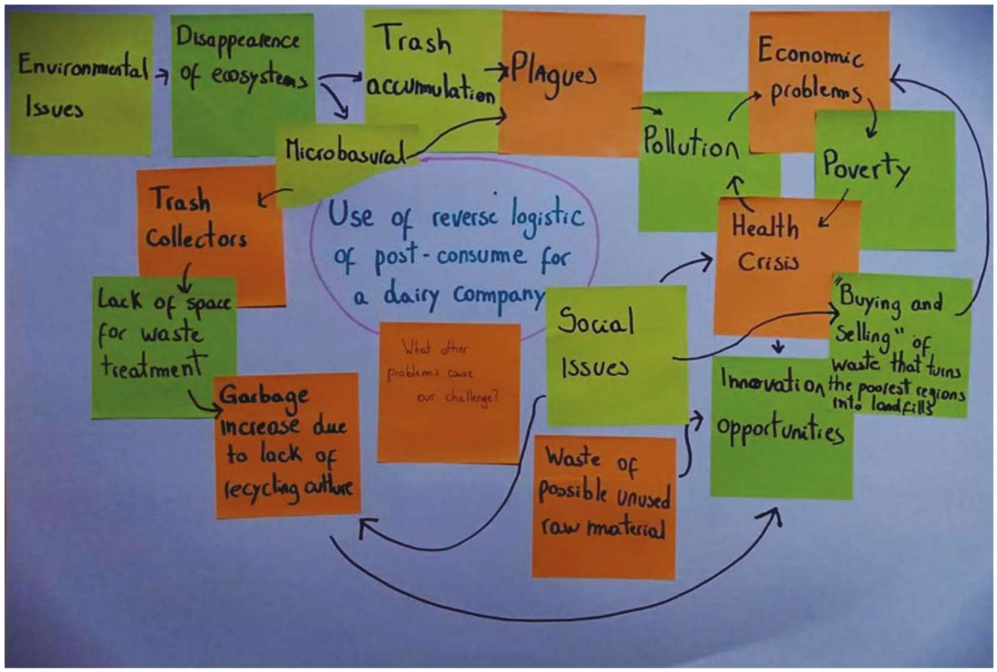

Figure 84 – Analysing the problem with post-its

Figure 85 – Prototype for the milk carton

Subchallenge: Canadian well integrated biodigester for climate control of poultry and pig breedings with additional electrical energy generation

Counterpart: Ecológica

Team members:

Urania Donoso Guzman, Civil Engineering, PUC, Chile

Fernando César Ferreira, Agronomy Engineering, IFTM, Brazil

Cilas Carvalho Silveira, Sanitary and Environmental Engineering, IFG, Brazil

Valmir Gonçalves Campos Neto, Chemistry, IFG, Brazil

Larissa de Oliveira Aragão, Environmental Management, IFRJ, Brazil

Description:

This team received the initial sub-challenge "How to achieve a sustainable culture of swine and poultry with a focus on sustainable production of electricity and environmental sustainability". The counterpart was Ecológica, a company oriented for Environmental problems. The project involved to specify the process that goes from the waste of organic matter till the use of the generated energy. It involves a Biodigester that converts organic matter in biogas, and by burning the methane gas it is possible to produce electricity, but there is the problem of carbon dioxide. Thus, the purification of the biogas makes sense, and microalgae are used in a photobioreactor for this purpose. In this way it is obtained methane and biomass. Additionally, it is provided the reduction of the energy use for the thermal comfort of the animals by means of a Canadian well. Thus, it was obtained a solution that is environmental friend, providing energy efficiency and it is unexpansive.

Figure 86 – Team members during the beginnig of the Project (pre-covid period)

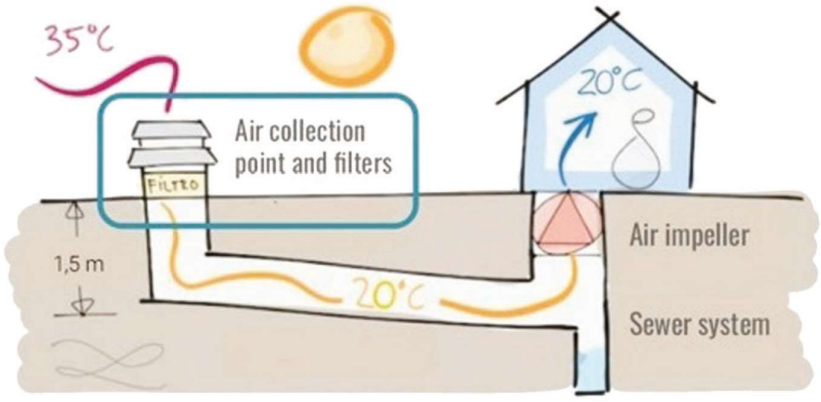

Figure 87 - Functioning of the Canadian Well

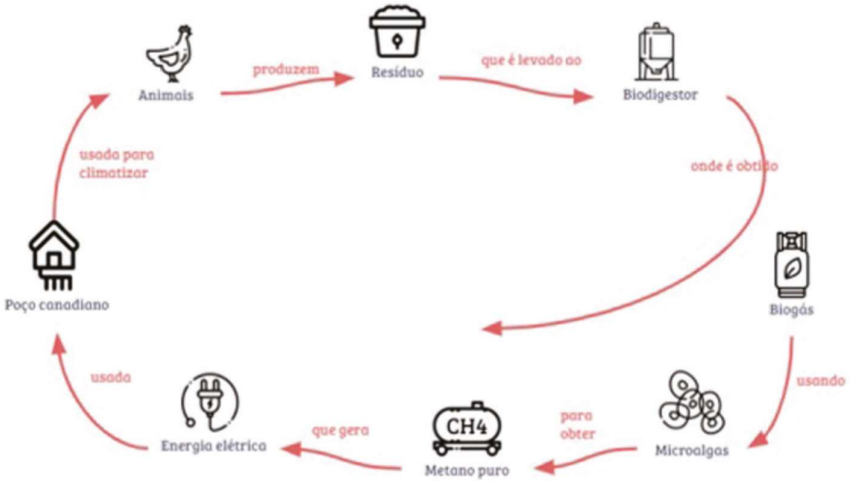

Figure 88 – Proposal of the sustainable cyclic system

4.7 LAPASSION@Pelotas

In November 2019, the preparation meeting for LAPASSION Pelotas was held. At that time, LAPASSION Pelotas was scheduled to take place face-to-face, starting at the middle/end of March 2020. Due to the pandemic, travel between countries were not allowed, several activities in the countries were interrupted and the on-site activities in IFSul were suspended and, consequently, Lapassion Pelotas could not start on the planned date. Lapassion project was postponed due to the duration of mobility restrictions and the use of face-to-face spaces. In the case of Lapassion Pelotas,

it started in September 2021, but remotely. A new training week, now in online format was necessary since the project was decided to run completely online. This training took place in the middle of 2021. Counterparts have been identified, involving Enterprises, Associations, the Municipality, and R&D groups. The counterparts were the following: APL Saúde Pelotas (Association of Enterprises in Health Sector); Pelotas Municipality; Holy House of Pelotas; Freedom (an enterprise that manufactures wheelchairs); and R&D groups of IFSUL, University of Pelotas, and IPP. The main challenge was "Accessibility and Inclusive Technologies".

In this edition of LAPASSION besides students from the partners of LAPASSION we had students from the following partners: Federal Institute of Paraná (IFPR); Federal Institute of Rio Grande do Sul (IFRS); Federal Institute of Santa Catarina (IFSC); University of Pelotas (UFPel).

LAPASSION@Pelotas started on September 1st, 2021. Notice that considering the usual 10-weeks experience of LAPASSION students the end of the project is previewed to November 5th, 2021, 20 days after the end of the international LAPASSION project. But this is not a big problem since no costs a dependent of that, since students of this edition had not fellowships for the travels and stay. Anyway a Pre-Demo Day was scheduled for October 14th, 2021, the last day of the international project.

Figure 89 – Opening Cerimony of LAPASSION@Pelotas on September 1st 2021

Subchallenge: Thinking the way to build sidewalks
Counterpart: Pelotas Municipality

Team members:

Enzo Timote, Logistics, UTEC, Uruguay
Fellipe Carvalho Araújo Costa, Electronics, IFSC, Brazil
Jênifer Thaís Graebin, Chemical Engineering, IFRS, Brazil
Martita Browne, Design&Innovation, PUC, Chile
Matheus Monteiro Cabral, Electrical Engineering, IFG, Brazil
Osvaldo Santos, Aquaculture Engineering, IFPR, Brazil
Sergio Márquez Sánchez, Informatics Engineering, USAL, Spain
Thaís Possebon, Civil Engineering, IFSUL, Brazil

Description:

Sidewalks in Brazil are missing in many roads, and this is a big problem for people with difficulties in locomotion, for example in wheelchairs. Thus, the main problem is to have a cheap solution for sidewalks that are missing. The problem involves the price, legislation, and users. The solution found by this team involves prefabricated blocks with sustainable materials, and the management of the process of acquisition and construction of the sidewalks. The blocks combined reused plastic with concrete, and the material has been tested in different compositions till achieving a feasible solution for the blocks. The design was adopted to make easier the connection of different blocks.

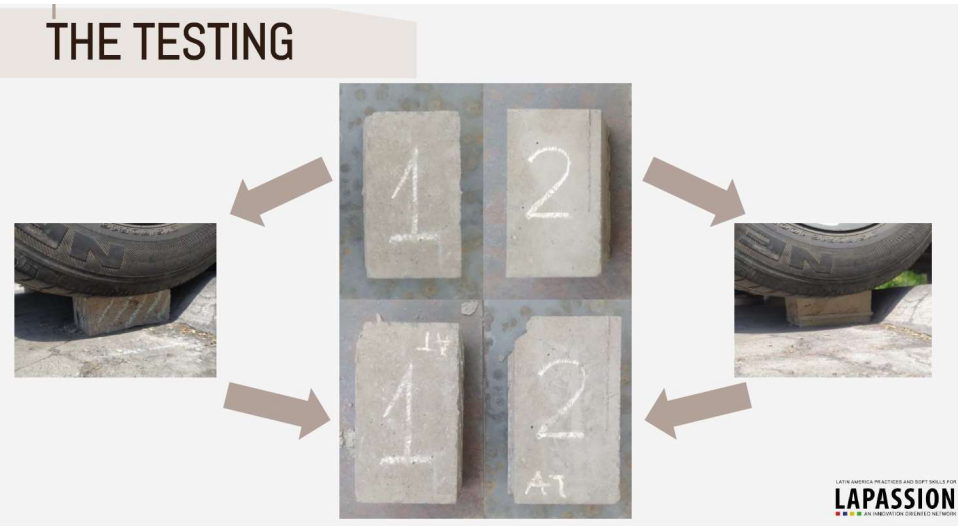

Figure 90 – Testing the blocks

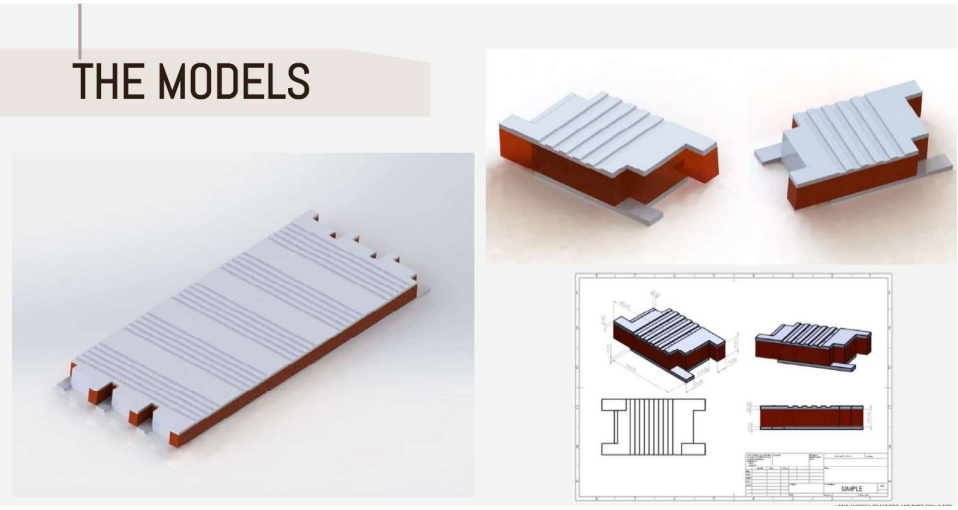

Figure 91 – The Design of the blocks

Subchallenge: Supporting tourist with disabilities to move in a Smart City
Counterpart: University of Pelotas
Team members:
Dara Elisa dos Santos Bandeira, Architecture and Urbanism, UFPel, Brazil
Francisco Pinto Santos, Informatics Engineering, USAL, Spain
Manuel Alverdi, Civil Engineering, PUC, Chile
Mariana Karkow Bones, Chemical Engineering, IFSUL, Brazil
Maylon Pereira da Silva, Electrical Engineering, IFG, Brazil
Paula Gonzalez, Industrial Design, UDELAR, Uruguay
Samuel Wachholz, Electrical Engineering, IFSUL, Brazil
Stéphanie Sampaio Dallagnol, Electrical Engineering, IFPR, Brazil
Description:
People would enter the App and use it to notify other users of things like protests, metro/omnibus lines not working, crowding, missing or uneven sidewalk. In addition, the app would highlight places of interest based on filters that the user has placed. In addition, the community will contribute with information, such as safety, accessibility, amenities, and curiosities.

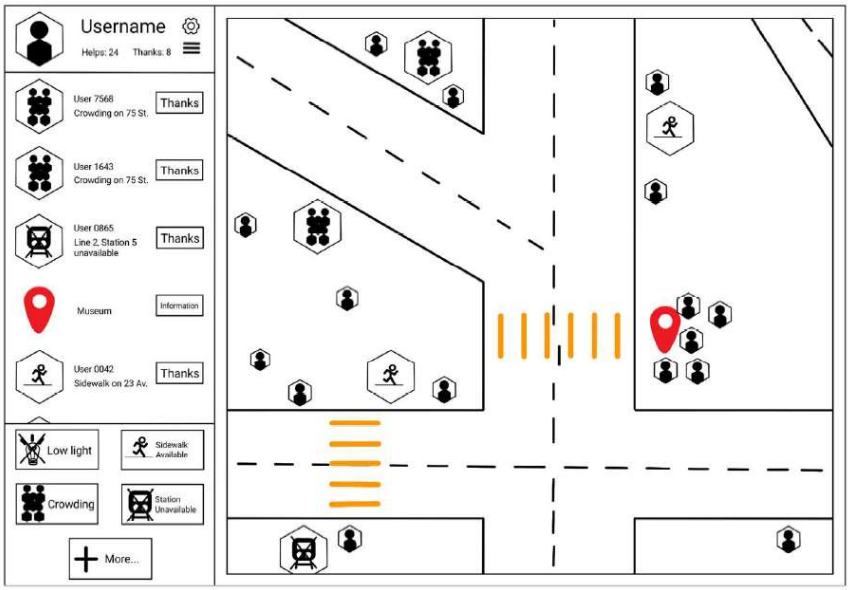

Figure 92 – The Mockup of the main screen of the application

Subchallenge: Which is the best way for user to determine their motorized wheelchair ?
Counterpart: Freedom
Team members:
Alexander Vicente Gómez, Informatics Engineering, USAL, Spain
João Henrique Riboli, Portuguese Language, IFPR, Brazil
João Victor Cirino Aguiar, Electrical Engineering, IFTM, Brazil
Lisiane Corrêa Gomes Silveira, Education, IFSUL, Brazil
Marcela Mota, Design, IFSUL, Brazil
Raquel Ordóñez Tobío, Children Education, UVIGO, Spain
Rithiele Gonçalves Araújo, Architecture and Urbanism, UFPel, Brazil

Description:
It is important to understand that this sub-challenge is about people, not about wheelchairs. The team proposes a complete tool that aims to identify the needs of wheelchair users through the construction of a profile with the help of research instruments, tutorials, and graphic feedback. The basic operation of the MyWay tool is to select the wheelchair better adapted to the user needs.

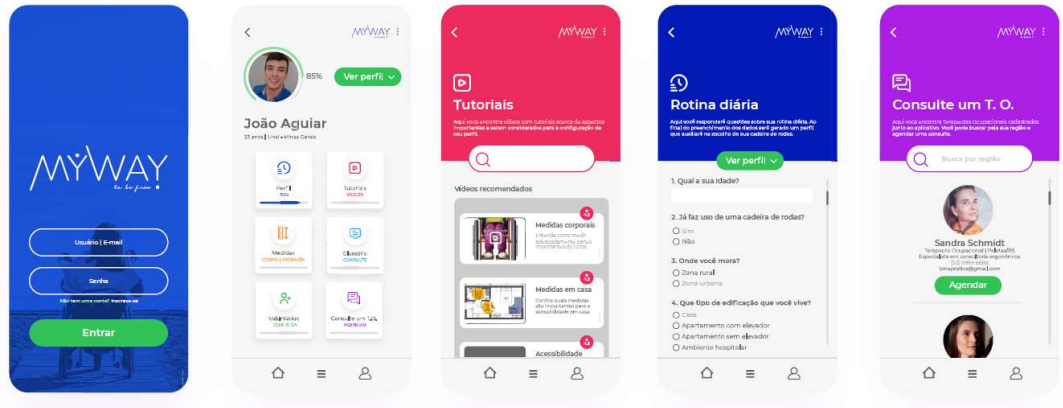

Figure 93 – MyWay is a tool to help in the selection of the most adapted wheelchair for the user

Subchallenge: Develop an interface that makes Casarão 8 Museum a sensory experience for people with disabilities
Counterpart: University of Pelotas
Team members:
Anelize Souza Teixeira, Architecture and Urbanism, UFPel, Brazil
Carlos Martin de Arribas, Informatics Engineering, USAL, Spain
Cristiana Rocha, Biomedical Engineering, IPP, Portugal
Leonardo Oliveira Tiago, Marketing, IFTM, Brazil
Marcos Fernández, Design, PUC, Chile
Matheus Rodrigues Funari, Portuguese Language, IFPR, Brazil
Oscar Schmitt Kremer, Electrical Engineering, IFSUL, Brazil
Description:
This team has as sub-challenge to develop an interface that makes Casarão 8 Museum a sensory experience for people, considering its historical value and heritage for the identity of the city of Pelotas. The team made interviews with people from 25 associations for people with disabilities. Activities of the Museum were not planned for people with disabilities. Tactile models, 3D models, virtual replicas were analysed. But people with disabilities do not want to go alone, or talk with robots, human contact is important. The creation of a multiplayer game for mobile phones that uses QR codes to initiate the interactive experience. QR codes, Augmented Reality, Audio player, and apps are technologies to use.

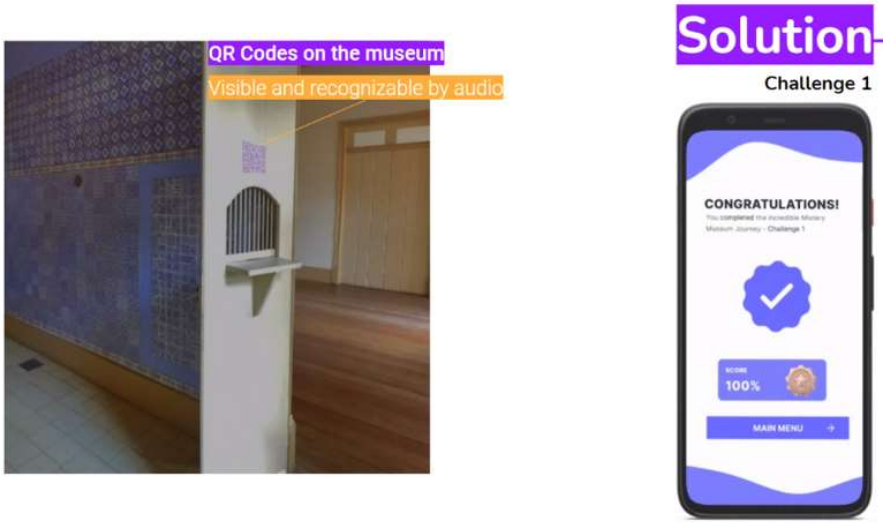

Figure 94 – Combining technologies to help people with disabilities in the Museum

Subchallenge: Development of a digital tool for Hospital-Patient interactivity
Counterpart: Holy House of Pelotas
Team members:
Alexandre Weingartner, Viticulture and Oenology, IFSUL, Brazil
Alisson José Barrabarra, Information Systems, IFPR, Brazil
David Alvarez Caneda, Education, UVIGO, Spain
Herbert Marçal Rodrigues, Electrical Engineering, IFSC, Brazil
Inês Martins, Biomedical Engineering, IPP, Portugal
Julia Soares, Design, IFSUL, Brazil
Sanjay Ramchandani, Informatics Engineering, DUOC, Chile
Silvia Leticia dos Santos, Portuguese and English Language, IFRS, Brazil
Description:
This team has as sub-challenge to develop a tool for the interaction between the Hospital and the patients. It is important to maintain a digital communication channel between the hospital services and patients namely for long-term stays.

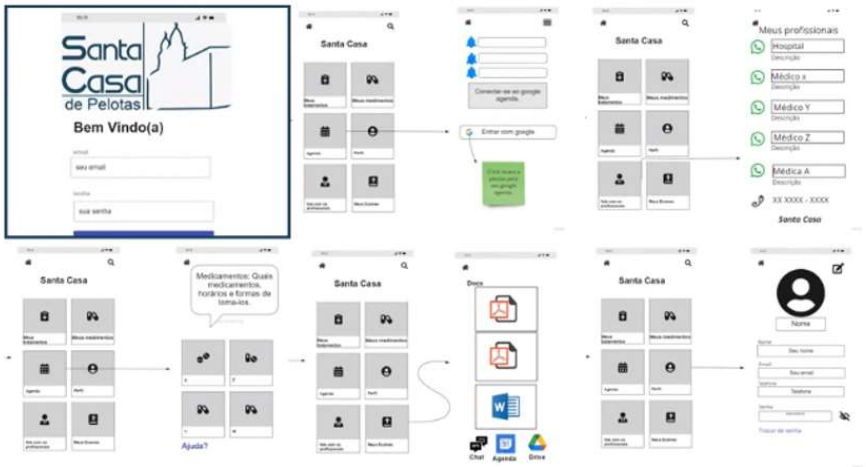

Figure 95 – The viw of the application to establish the contact between the Hospital and the Patient

Subchallenge: An Auditorium for Everyone
Counterpart: Federal Institute Sul-Riograndense
Team members:
Ademar Batista Lopes SAntos, Portuguese Language, IFG, Brazil
Anandha Dewes Escobar, Architecture and Urbanism, UFPel, Brazil
Eron Yamamoto Della Justina, Electrical Engineering, IFPR, Brazil
Gabriela Silveira, Biology, IFSUL, Brazil
Livia Cava, Design, IFSUL, Brazil
Luis Blázquez Miñambres, Informatics Engineering, USAL, Spain
Teresita Corthorn, Civil Engineering, PUC, Chile
Description:
The Auditorium is an important place in Higher Education Institutions. Is the place where several events are organized, and accessibility is always a question. Usually there are solutions for wheelchair access, but usually they are not adequate or with simple and safe use. On the other hand, there are other people with problems of disability. Thus it is important to consider different specific needs (hearing, walking, vision) for helping people in participating in the activities of the Auditorium. This team has proposed two solutions. The first is a kind of elevator to move someone in a wheelchair to the main floor of the Auditorium. The second is a device to connect with a mobile phone to help people with vision specific needs, like tritonopia.

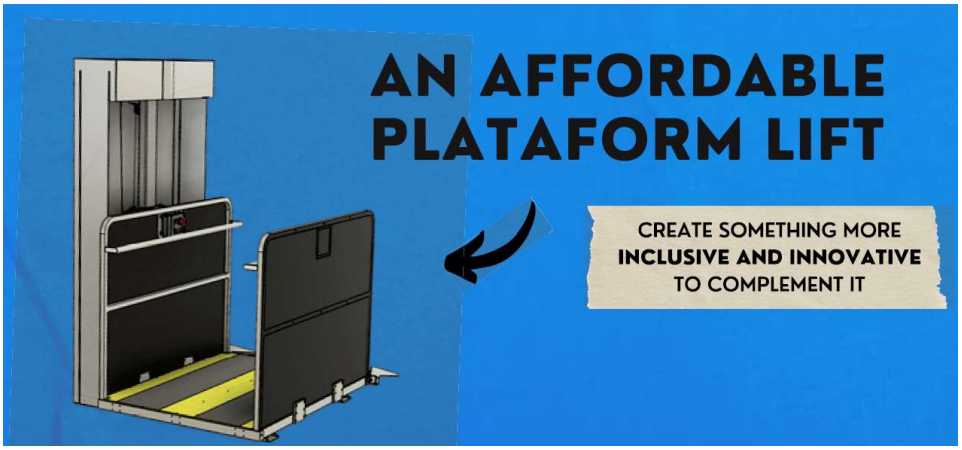

Figure 96 – Elevator to help moving people with wheelchairs

Figure 97 – Device to connect with mobile phone

Subchallenge: Assistive Technologies for Diabetes
Counterpart: Polytechnic of Porto
Team members:
Ana Catarina Lopes Antelo, Artificial Intelligence, IPP, Portugal
Bruno César Jantarada Teixeira, Artificial Intelligence, IPP, Portugal
Diego Dutra Sampaio, Electronics, IFMA, Brazil
Edgar Simão da Mota e Silva, Artificial Intelligence, IPP, Portugal
Francisco Romeu da Costa Neto, Mechanical Engineering, IFMA, Brazil
Hernâni Azevedo da Silva, Artificial Intelligence, IPP, Portugal

Vitória Maria Serafim da Silva, Pedagogy, IFSUL, Brazil

Description:

Diabetes had an accelerated increase from 188 million of patients in the 80's to 422 million nowadays. Diabetes can be treated, and its consequences dissipated with diet, physical activity, medication, and regular analysis. However, Diabetes is the main cause of Blindness, Kidney failure, heart attacks, strokes, and lower limb amputations. Prevention is important to avoid these problems. This team proposed a family of solutions involving several AI technologies, like multiagent systems, machine learning, and computer vision to help patients with diabetes. On the other hand, a hardware solution has been proposed for insulin injection as a function of blood glucose value as well.

Figure 98 – AI technology used to help patients with diabetes

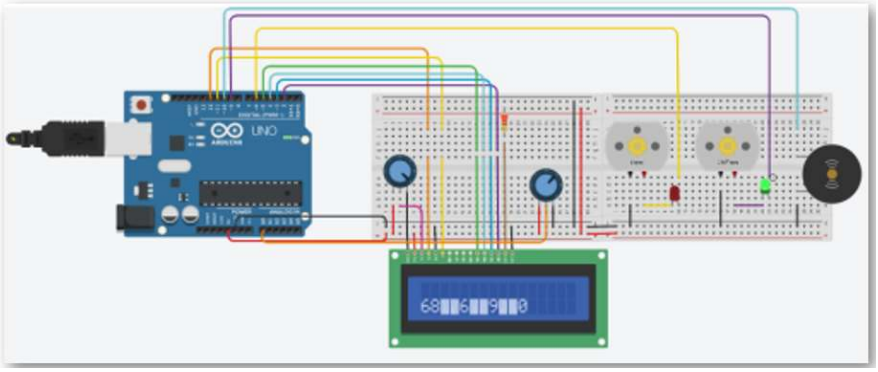

Figure 99 – Hardware to control the injection of insulin according to glucose

5. CONCLUSIONS

During the ten-weeks multidisciplinary projects, students' teams developed completely in presential mode (LAPASSION@Santiago, LAPASSION@Uruguay, LAPASSION@Uberaba, and LAPASSION@SãoLuís) in amazing experiences. LAPASSION involved warming up since students do not know each other, main challenge and sub-challenges proposed by counterparts, enterprises, and other organizations. LAPASSION students' projects followed a Design Thinking approach, with interaction with possible final users of the solutions of the teams, observation, workshops, articles reading. All this interactive activity resulted in the identification of insights that were important for the formulation of the opportunity/goal to follow. Then the solution stated to be clearer, and ideation, mockups, prototypes, and implementations appeared. During the development of the projects students reported to blogs, interacted with coaches and counterparts, made several intermediate presentations (usually 4 or 5 deliverables) and finally, in the last week, they made the final pitch and demonstrations of the found solutions during the Demo Day of the project.

Figure 100 – LAPASSION@Santiago Demo Day

Figure 101 – LAPASSION@Uruguay Demo Day

Figure 102– LAPASSION@SãoLuís Demo Day

Figure 103 – LAPASSION@Uberba Students and Professors

Coronavirus pandemic was a different level challenge for LAPASSION. On the 2nd of March 2020, LAPASSION@Manaus started, with 32 students engaged in the challenge of Socio-Environmental Technologies for the Sustainability of the Amazon. At the weekend of the first week, they visited Tumbira community, a Brazilian indigenous community reserve.

Figure 104 – LAPASSION@Manaus students during the Tumbira reserve immersion

On the 9th of March 2020, LAPASSION@Goiania started, with 26 students engaged in the challenge of "How to contribute to an Inclusive and Sustainable Society?".

Figure 105 – LAPASSION@Goiania openning cerimony

However, the coronavirus pandemic obliged LAPASSION@Manaus and LAPASSION@Goiania to go from a complete presential experience to a online, remote and distance-oriented experience. It is important to remember the context of the pandemic. At the end of 2019 and beginning of 2020 the occidental world was surprised by the evolution of the pandemic in China. At the beginning of March 2020 the evolution of the pandemic started to be dramatic in Europe, namely in Italy, and after in Spain. Most of the European Universities have decided to stop the presential classes and adopt e-learning. The suspension of the classes in Brazil was decided at the middle of March, as well. The same happened in Chile and Uruguay. However, they were not really prepared for online training of students, namely due to the social conditions of many students. It took several months to adopt to e-learning in Brazil, Chile, and Uruguay.

When the decisions to stop the classes were taken in the Federal Institute of Amazonas (IFAM) LAPASSION@Manaus was in the third week. When the decisions to stop the classes were taken in the Federal Institute of Goias (IFG) LAPASSION@Goiania was in the second week. At the week following these suspension LAPASSION started in online/distance mode, and important to say that LAPASSION was the only academic activity happening in IFAM and IFG on these weeks after the suspension of the classes.

Fears about the coronavirus were in the thinking of everybody during these first weeks. At this moment the projects for Pelotas, and Santiago (the second edition) were postponed. The fear of some student ill with a virus killing so many people, flights being cancelled, supermarkets with limited

access, canteens and restaurants closing, this was the situation. But students of LAPASSION@Manaus and LAPASSION@Goiania were there, in the middle of the coronavirus storm, away from their homes and countries, and without protection of home health systems. LAPASSION partners decided that the safest was trying to return students to their home countries as soon as possible. It was a huge and stressing operation, but fortunately it was successful. But students assumed all a compromise, they decided to go till the end of the projects and adopt technology for that purpose.

Figure 106 – LAPASSION@Goiania last presential moment and compromise to continue

Motivation of students for the new mode of actuation (online/remote) was important. One of the used techniques was motivation students to students during this troubled situation.

Figure 107 – LAPASSION@Manaus students produced short videos to motivate each other

One of the most surprising achievements of LAPASSION was the ability to convert from one day to another a presential set of students' projects in a complete online/distance experience when the coronavirus pandemic appeared: it is like to change the wheels' tires with the car in movement, in a certain moment LAPASSION was the only academic activity running in IFAM and IFG on March 2020 when the coronavirus crisis impacted the world. The results of LAPASSION@Manaus and LAPASSION@Goiania were amazing, considering all constraints imposed to the students' teams to develop the work in remote/online mode. When we compare the quality of the solutions of these 2 editions with previous editions the quality of the results is quite similar, showing that it is possible to think into a combined set of projects, part presential and the other part at distance.

Excellent results have been achieved in LAPASSION@Pelotas as well, developed in 2021 completely in remote/online mode. However, when comparing the motivation of students in Manaus and Goiania, held in 2020 with 2 or 3 weeks presential and the other weeks online due to the pandemic, with Pelotas, completely developed online, we found that a difference in the teams' motivation as a whole is clear. But it is important to say that we were satisfied with the excellent results of the final projects of Pelotas, but we recommend online as part of the students' projects and not for all the project life cycle.

As conclusion we can say that LAPASSION is about the passion students put in their projects, about all the experience they had during 10 unforgettable weeks, an academic experience for their lives, all friendship, the ability to deal with challenges, to work in teams, to feel the pains of people, to search and ideate for solutions that make the difference for a more inclusive, sustainable, efficient, and intelligent World.

Figure 108 – "Vai devagar tempo !" (Time, please slow down !) 10.April.2019 – after 1 month in Uruguay, Sabrina Hellwig Müller, LAPASSION@Uruguay student, IFSUL (BR), Chemical Engineering