

DT2.2.4 - Ideas 2 Prototypes

DT224 - Report on Ideas 2 Prototypes 4
manufacturing

Version 2
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1. Prototypes realized in Italy

1.1. Prototype APEn

Major challenges proposed

Challenge 1: Usability of the product: Will the product be usable by everyone? Is it easy to use?

Challenge 2: Feasibility and Costs of the Product Designed: Can you always have the honey with your product at your fingertips? Is it more or less easy to get dirty with your product? What are the manufacturing costs of the product but also the sales of the product?

Challenge 3: Honey traceability, recycling and eco-sustainability

Process of challenge solution

The team used the framework of the course to formalize the problem and concept of the product. In the specific storyboard and user-personas, they have made the problems to be addressed more tangibly and how to best design the product. With regard to the technology and feasibility of the product it has helped to have in the group a computer engineer and two designers who focused on solving Challenge 1 and 2; while on Challenge 3, more members focused on eco-design and innovation management.

Prototype description

The concept consists of a smart honey dispenser named APEN.

APEN is a pen-shaped honey dispenser that can be used in different contexts depending on its manufacturing dimension.

The "smart" base of the pen is the interactive part: when the pen is allocated to the base, the base itself will recognize the container and therefore also the contents of the APEn. The smart base can connect with other devices and show the user information about the honey they are using.



Major challenges solved by the prototype

At the end of the camp, the team focused on the usability of the APEn product and how to make it modular. Specifically, it has thought of several versions to be used in different compartments: APEN from home, to use in-house in conjunction with a phone to view recipes or other coins to the type of honey chosen; APEN from bar to have in the bar context and make it use to clients as honey dispenser and handy APE handy and always carry with it.

Open Challenges

It is still necessary to work on the feasibility of the product (proper design and materials to be used) and how the honey product can be introduced into suitable containers to APEN to keep the honey characteristics intact.



1.2. Prototype CAFFETTERIA

Major challenges proposed

as a handicraft enterprise, tied to a strong story and manual workings imposed by the material used, can it become digital and 4.0? the team found the answer not so much in the product itself but in the complete reorganization of the business, cataloging molds digitally, selling customizable online products and automating where possible to increase production volumes.

Process of challenge solution

The team formed by two design architects, a software programmer, an artisan consultant, and a cognitive science graduate, worked through numerous brainstorming that opened the vision of everyone in previously unexplored environments.

Prototype description

The Navarini company produces very expensive kitchen accessories, so all families can't buy the products. The team has developed a moka, made in Italy and affordable by everyone.

The moka "Caffetteira" proposes itself as a cheap bait product through which the company can be known by families. Another important point is the ability to customize the product with decorations through an online platform.



Major challenges solved by the prototype

The solutions identified were multiple and of a different kind, but to a large extent touched on the internal management equilibria of Navarini. The team has only been able to make proposals, focusing on program motives on a safe innovation product that can not only solve Navarini's problems alone. If integrated into a complete innovation path, however, it could make an international breakthrough in the consolidation of the Navarini brand and in expanding the number of customers enabling Andrea's dream to enter the homes.

Open Challenges

They remain to be solved: the real and concrete realization of the product by interacting automated machines with manual machining; the development of the on-line product management method and the configurator. It will also be necessary to develop artistic designs and relationships with local companies for complementary products.



1.3. Prototype GRAME

Major challenges proposed

The Navarini company as the main challenge has created the concept of a brand, a brand that can represent the products and their high quality under the name NAVARINI. Another challenge deriving from the lead was the proposal of a product that from the point of view of marketing acted as bearer and promoter of the brand and its quality.

Process of challenge solution

the company's main challenge and the findings of the research part and process design analysis. And here the business part of the group has taken its part, while the Tech and design part has been crucial to the part of the product design implementation.

Prototype description

The concept presented as a group has taken into account the idea of not distorting the nature of the range of products offered by the company. So the team focused on an existing product with just one new and intelligent item that saves time to the end user. Another aspect that has been conceived is an element / detail, but not too much detail, of recognition to be included in all products, both the new concept conceived by us and other products.



Major challenges solved by the prototype

The main challenge of space to find the solution to the company's current challenge has been solved with the idea of this particular product and the element for recognizing the brand of the company.

Open Challenges

An important challenge is the implementation and the marketing and sales strategy, on which the team has not worked so much.



1.4. Prototype NECTAR

Major challenges proposed

The main challenges were to try to relocate the brand (Mieli Thun) in areas where the use of honey is considered unsuitable for application difficulties and spreading culture related to honey production / use.

Process of challenge solution

The theoretical guidelines provided by the mentors have been applied in addition to the specialist know-how shared in our team. The team was multidisciplinary and included engineers, computer scientists, economists, 3d modelers, UI designers, which allowed us to devote ourselves to prototyping the product as well as embryonic business modeling.

Prototype description

The concept is to create a universal cap to apply to honey jars that allows it to be extracted and used in an "ergonomic" manner. It is also designed to release information (audio / photo / video) on the user's smartphone about possible culinary uses as well as geographical origin and production.



Major challenges solved by the prototype

the problem of the diffusion of honey-related culture has been resolved, both in terms of culinary use and production and health benefits. Nectar's ergonomic features make it suitable for use in many contexts that are currently excluded as frenzied environments such as crowded bars or luxury environments where precision and cleaning is required during product dosing at the tables.

Open Challenges

The initial challenges have been resolved. The challenges that are now open are making the product to zero impact, making it 100% recyclable and compatible with any honey texture.



2. Prototypes realized in Czech republic

2.1. Heat switch calibration components



The main challenges is to design the heat switch for application in vacuum, when the thermal conductivity of the material is not known. Thus, the aim was to fabricate the special designed test parts, which would be used for thermal conductivity calibration in the vacuum chamber. It was decided to use metal 3D printer to test parts fabrication with use of copper alloy material. The test parts had to be slightly modified with respect to the metal 3D printing limitations. However, the benefit was fast fabrication and more design freedom in comparison to machining.

2.2 Moulds of sidepod for formula student monopost



The main challenges was to fabricate the sidepod moulds in the desired accuracy and time. Current cooperation of Formula student team with external companies was problematic due to lack of communication regarding the technological limits of machining workplace, thus the planned timing of mould manufacturing was fulfilled. Now, with the FabLab Pilot plan, the students were able to discuss the limits with mentor and they were able to quickly react with design modifications before the start of mound manufacturing. The timing of manufacturing actually depend only on their situation. Therefore, they obtained exactly what they wanted in time they wanted.

2.3 Steering wheel for Pneumobile

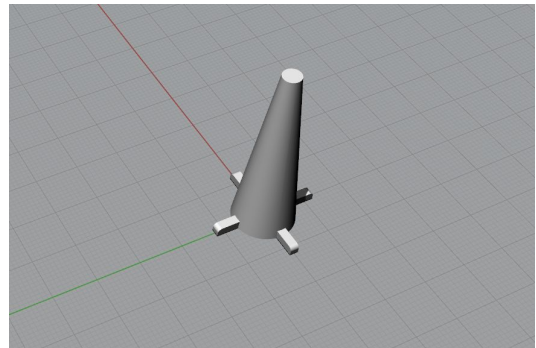
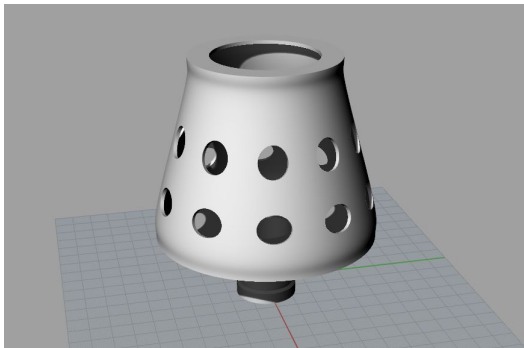


The challenge for the pneumobile team was to design steering wheel with better ergonomics and easy manufacturability due to limited budget. The other criteria were also the weight and attractive design. After considering couple of concepts the version made of plastics fabricated by 3D printing was chosen. The advantage is the lightweight design with internal structure ensuring the necessary stiffness and ergonomic grip.



3. Prototypes realized in Poland

- **The prototype of the educational program itself** - based on the desk research we found out that there is a niche regarding the access to the state-of-the-art equipment, especially for the youth and children and there is a lack of practical educational activities for them in schools. We considered the 3D modelling as a skill that will be necessary to know by the future engineers, designers, ICT sector workers and other more or less industrial jobs. That is why we create a programme that can become a spark, a first step that will awake their creativity. Moreover, the program will help young people to become a significant and aware member of the local innovation ecosystem
- **Conical air filter for lens cooling system and distance pins for the laser cutter** - on the workshops that took place in FabLab Bielsko-Biała and were provided for scouts we manage to create two prototypes that will improve our equipment. Led by the mentor, the participants of the workshops invent two parts for our laser cutter that will make it easier to use, more efficient and safer.





4. Prototypes realized in Slovenia

Prototypes realized during the mentoring program “City for all”

“Rusted white”

The project idea, from **Maja Modrijan**, is ambitious in its tackling issues related to recycling and the idea of environmentally friendly clothes and shoes, proposing ways we can make a contemporary fashion collection fit for women and men of all generations out of used organic fabrics such as grandma’s bedsheets or auntie’s tablecloths. Engaging the community in the collection of waste textiles was an important part of the project, which also compels the wider public to reflect on the unsustainable and environmentally unfriendly consumption of clothing today.

Issues

The project was very innovative, it demanded the combination of classical and new fabrication technologies, therefore it was a big challenge for all the mentors and brought several hours of interdisciplinary experimentation. The biggest problems were how to develop a rust based color for printing and how to apply a 3D scan of an object on a curved sole.



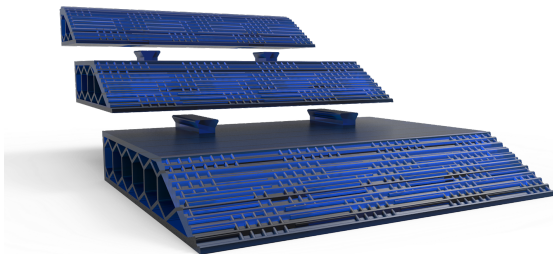


“Rognik”

The project idea addresses the problem of bicycle obstacles, like pavement edges that are too high or damaged. The author, Tina Mozetič, has proposed a 3D print of pavement accessories that will allow cyclists to cross the obstacles more easily and at the same time warn others about the (lack of) road safety. The project raises users' awareness of the problems in their environment while urging them to assume an active role in shaping it - all the accessories are designed in a modular way, which means that any user can apply it or to a specific situation. Moreover, the accessories are equipped with a light which makes them visible at night.

Issues

The biggest issue was the question how to fix the accessories (ramps) to the find the solution how they will glow in the dark. We have tested several solutions in real environment. Fixing with screws is not permitted in public areas, so we have tested with different types of glue for outdoor use. When approaching the issue of visibility of the object at night, we have first tested different kinds of glowing filaments but the glow was not lasting enough therefore we have abandoned this solution. At the end we went for the solution with in-built led lights with battery power.





Prototype: accessories for Shirting project

The project addresses the sustainability challenge in the fashion industry by developing a collection of small practical items that would inform the user about unecological practices related to the way we use clothes; at the same time it provides storage solutions that would allow users to keep track of their clothes and use them more economically. In addition, the development of small accessories would enhance the economic viability of the [Shirting project](#), one that has been bringing the community together already for two years, informing people of the importance of quality clothes and sustainable approaches to clothing. Five participants were part of the project: **Sanela Krese**, **Lucija Jankovec**, **Urška Medved**, **Gašper Gajšek**, **Elena Fajt**.

Issues

We have started the prototyping process with 2D sketches and have laser cut the first object. It made us understood quite soon in the process that the in order to achieve the wished functionality, we have to switch to 3D printing. We have decided that individual 3D models of the prototype will be split horizontally, which made the printing easier and faster. On the other hand this approach demanded more time for finalisation of the prototype (glueing, coloring, polishing,..) but the final appearance of the prototype has proven our approach to be the right one.





Prototyping contest “Creathon” (Mentoring program part 2)

At the first RogLab Creathon we were creating urban dens together - modular pavilions or spatial designs for activities that we want to do outdoors, a bit removed, but not completely isolated. 36 participants took a 2 day contest in the Museum of Architecture and Design. Throughout the process we have offered a professional team of mentors working in 3D fabrication and modelling, architecture, biotechnology, electrical engineering and the art of spatial interventions to support you and offer some of their valuable advice to teams of participants. The end of the process resulted in 9 excellent mockups.

#Issues

We had 7 3D printers at the venue, however for the number of participants and the intensity of the prototyping process they were not sufficient. The working space was great however it would have been better to have a separate space to sleep so the participants could take some rest.

Mockup#1: the “Marie” Den

Mental health is often a disadvantaged topic in our lives. Stress, rapid rhythm of life, anxiety and other mental disorders are part of the everyday life of a large part of the population, but at the same time it is rarely spoken about in the public. Slovenia is at the top of the country by the number of suicides per population, as well as alcoholism, for which it was discovered that it is often the result of mental imbalances.

Marie, as our poster is called (after Maria Kogoje, the Slovenian expressionist musician who suffered for schizophrenia), wants to raise awareness of the frequency of the occurrence of mental illnesses and to open a public space dedicated to the therapy and talk about them behind the four walls of the home. The first step in troubleshooting is to identify the phenomenon as problematic. By his position, Mary would subtly warn of the presence of mental illness. Marie offers an alternative approach to addressing and tackling unwanted psychological feelings and, through certain acoustic frequencies, improves well-being.

This object is to be placed in pre-existing public and semi-public spaces. Technically it's composed of an infrared camera, a focused speaker and a microphone. Depending on the deviations from the average of collected data, the individual would receive a 'musical therapy' (for example, for those with an increased pulse, sounds that calmed down would be used). With the help of a targeted speaker, music would capture the user - sound would not only be exposed to the ears but whole body. The use of a focused speaker



makes sense, since it builds a sound space, an intimate experience, which is at the same time merged into a public space. The microphone serves to record the surrounding sounds and then remove the external stimuli using the program. With the help of a sound scenery, the listener is separated from the rest and at the same time remains part of the society - mental health is placed in a public space without actively exposing the individual.

As the final location for Marija, we imagined the Ljubljana-Zagorje train (according to statistics, Zasavje is one of Slovenia's regions where the predisposition to depression is greatest). It would be located above the seat, hidden in the shelf (model). Electricity would be fed from the existing electrical network on the train - it would be installed "from the light". The design would be discreet and minimal, so that passengers would be more relaxed. Rhythmic vibrations when traveling by train on an individual are themselves relaxing, so complementary enrichment with sound stimuli seemed to be an appropriate intervention in the public space.

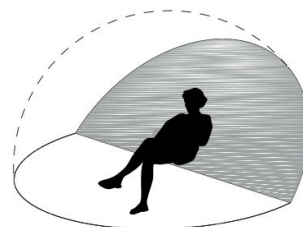




Mockup #2: the Lazy Den

LAZINESS; "A state characterized by a strong desire to persist in idle, inactivity."
linking individual tricks to different parts of the world

- Inclusion of all senses in the experience of space,
- placement of applications on various locations, but it works through a common platform where it is published,
- It can be accessed through applications,
- The user selects the user by the phone when entering the stamp the desired location, which is next to the virtual record it also includes other associated elements that arose other senses,
- On-field placement at different locations,
- The Nylon also takes care of the technical equipment necessary for realizing, accurate video projection and transport into another reality,
- This is a window into the world, which at the same time protects but opens up new possibilities taking advantage of free time,
- special textile is developed for this thread material from fungi to achieve ecological and sustainable aspect





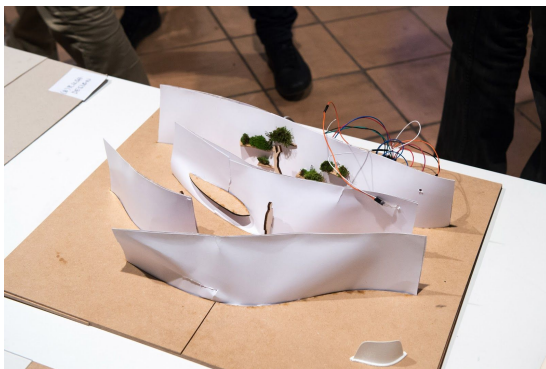
Mockup #3: the “SHUMNICA” (white noise Den)

At the railway station, in addition to the usual discomfort, such as too fast a rhythm of life, it is permanent tension and stress, we also encounter constant noise. The noise is an audiovisual label that it allows an individual to disconnect from everyday hustle and bustle. The solution is over four levels: spatial, auditory, visual, and touch-sensitive. By placing simple units in an urban environment (such as a train station) we achieve a complete physical insulation and partial sound insulation from the surrounding area. The units are positioned to separate two compartments by function.

All along the way the two corridors have a sound system installed which creates a gradient during the passage through the building colors of harmony. Towards the middle, the richness of the color of the sound increases and decreases towards the exits. The white corridor for relaxation is white noise. It is a noise made up of all frequencies, by a sound similar to a waterfall or rain that proves to be soothing and relaxing. Visual part of the concept represents light from LED bulbs, which follows the movement of an individual while moving through transient corridor. The movement of light is also controlled by touching the grass at the height of the belt sown along the transient corridor and providing an experience at the touch level.

Automatic tracking light movement allows an individual to interact with the object in spite of passivity.

The object indirectly affects the individual by reducing the speed of movement through transient corridor, or stops it for a moment (the movement of light to an individual unconsciously takes the focus). Due to interaction, albeit unintentional, the object encourages a person to a slower, more calmer pace, resulting in increased relaxation. The light path can be controlled by touching and bending the grass. Spatial layout of units, placement of sound elements and the installation of saddle objects create sub-ambients, in which they can be separated from the outside the world and the sounds of white noise, relaxes and calms down.





Mockup #4: “LOOPES” (the dog’s Den)

A new principle of public enclosure for dogs as an element of urban equipment.

Solving the issue of dogs waiting for their owners who left the city without supervision by works or by to places where dogs are not allowed entry.

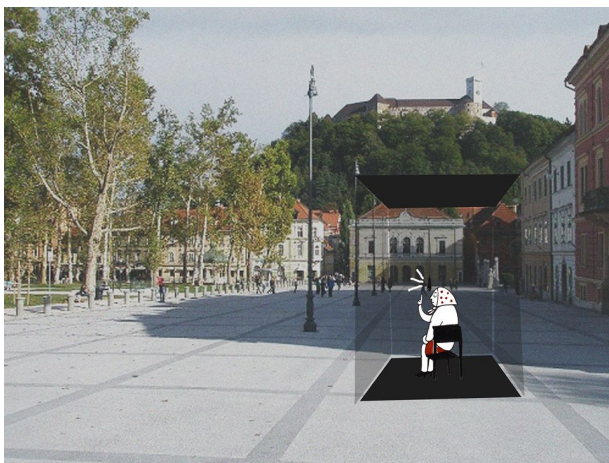




Mockup #5: the declaiming Den

A place where everyone can records its own statement (regardless of age, status, gender ... pensioners who are enthusiastically talking about their geraniums, loving teenagers, frustrated teenagers, refugees ...), in the future this could be an audio base , from which artists, anthropologists and sociologists could draw inspiration, for example, used for various analyzes

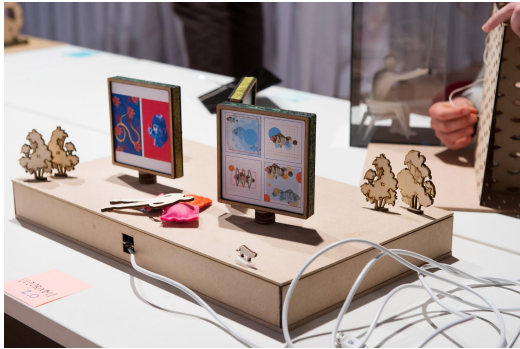
With an enclosed space made of semi-transparent glasses and metal in the user, we try to awaken a sense of intimacy, security, and in this way stimulate it to deep (or not) personal confessions. Due to the installation in a public space and semi-transparent glass walls, which, in addition to the security visual membrane, have the function of sound insulation, the visitor gets the feeling that he directly addresses the city and passersby, although the city and passers-by do not really see or hear it. By selecting the materials, we tried to achieve the fusion of anonymous and public space, which intertwine all the time, go over each other and together form the so-called. "cloud". The glass is like a virtual, fragile border, like human skin, which delimits its interior from the outside world. A visitor's testimony records a microphone controlled by the visitor at the touch of a button, the duration of the speech is limited to two minutes, the time is recorded and subtracted on the screen, and the recorded test is immediately uploaded to the online platform.





Mockup #6: the co-creation Den

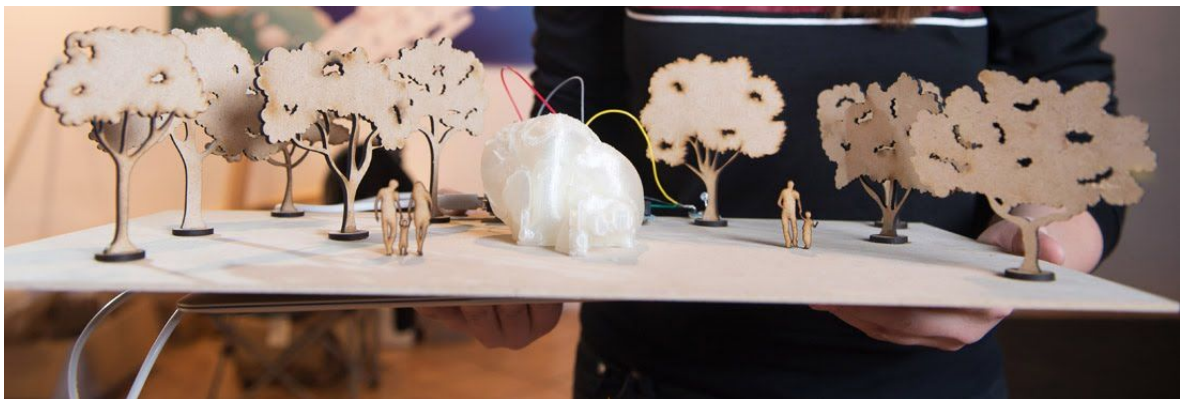
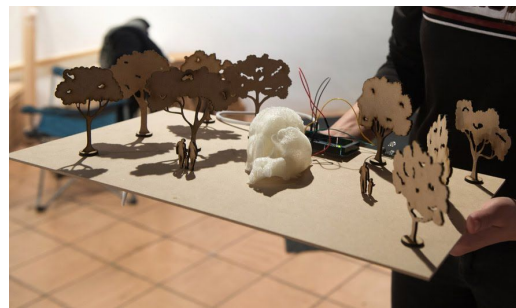
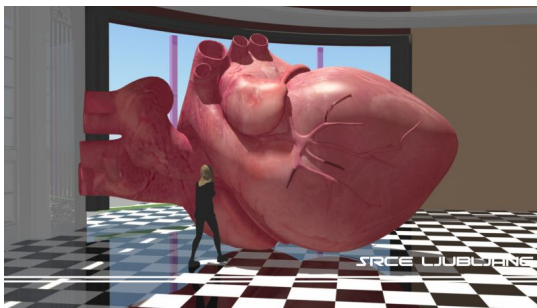
The aim of this Den is to create a partially closed 'space' that allows artists to present their own creation through exhibitions, presentations, projections and knowledge sharing with lectures. Besides it enables networking and connecting people from different fields. It encourages co-creation on a disc with a free theme (board and chalk) that is on the other side of the LCD screen, the other two panels are classic display areas. Presentation of both classic, printed, digital and multidimensional products, not only the presentation of one kind of art / creation / products.





Mockup #7: Ljubljana's heart Den

Giant interactive sculpture representing the heart of Ljubljana. Different light effect are triggered by sensors measuring the corporal status of the visitor (pulse, temperature, humidity).





Mockup #8: “Bookev” the reading Den

Reading oasis in urban centers; in parks, along walking paths, on the markets, ...

There are no location restrictions, it can be placed anywhere, individual modules can be turned arbitrarily and assembled with one another.

The bench is intended for intergenerational integration through the common thematic of literature.

Thematic workshops would be held monthly or weekly to encourage people to read and also to express themselves through the word.

They would encourage both the inspired and already established writers to co-create Bookva.

Books could be borrowed from bookcases on the outside of Bookev. The drawers would be opened using the same mechanism as the bench.

In the system itself, there would be a signal jammer that would guarantee a signal free area. This would create a corner of peace, without the pressures of the external, technological world.





Mockup #9: the rainbow Den

1. pumping water (mechanically interactively and with the aid of a pump);
2. water filtration (observation and cooperation process);
- 3rd game - use water or return to the environment;
4. work with passers-by - create a rainbow;

