Giving Boat Manufacturing Waste a New Life and Sailors More Storage

Augustin HUESO & Maria BOHIC

Who are we ?

Maria Bohic

Material engineering student (soon graduated)

Former material engineer apprentice at CEA-INES

Former LTU student and intern

EEIGM

Apprenticeship

cea ines INSTITUT NATIONAL DE L'ENERGIE SOLAIRE

Augustin Hueso

Material engineering student (soon graduated)
&
Material engineer at Nicomatic

EEIGM

Apprenticeship

NICOMATIC

Both at the LULEÅ UNIVERSITY OF TECHNOLOGY in Erasmus exchange working on a 3 months lab project

Hackathon

Interreg Baltic Sea Region

Co-funded by the European Union

CIRCULAR ECONOMY GlassCircle

Hackathon challenge

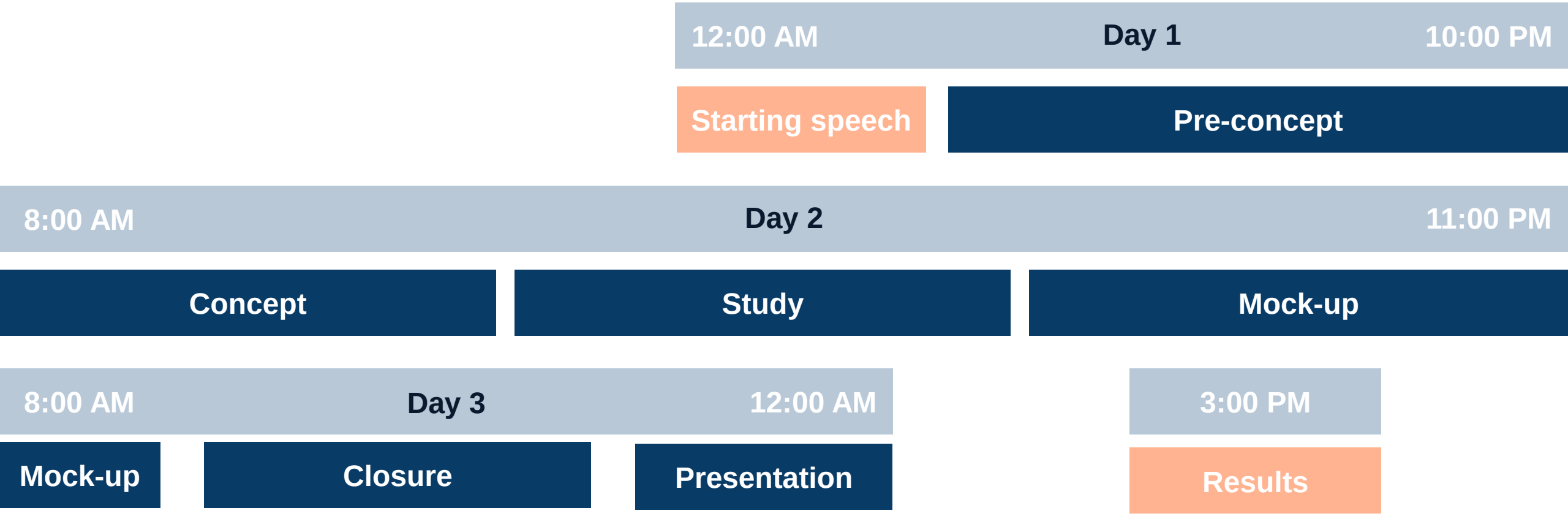
Hackathon challenge

Purpose

« Design a solution to reuse production’s waste of a glass fibre manufacturer in 48h »

Hackathon challenge

Planning



Hackathon challenge

Skills required

Pre-concept

Imagination, Incubate, Define, …

Concept

Devellop futhermore, add meaning, …

Study

Search, Analyse coherence, create the design, …

Mock-up

Test, Try, Show the possibilities, …

Closure

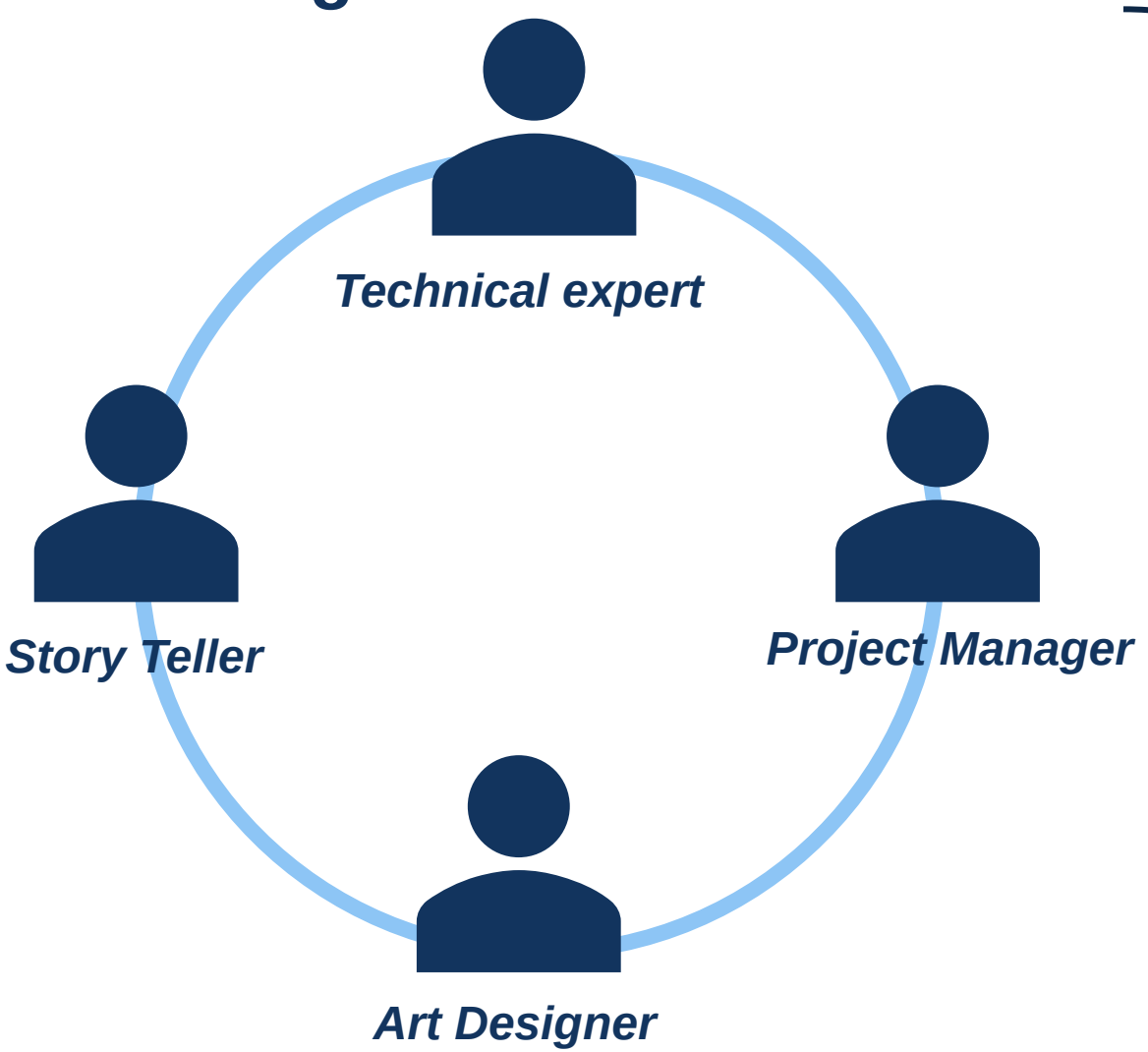
Review the 48h's goals, Sumarise, …

Presentation

Eloquence, Confidence, Passion, …

Hackathon challenge

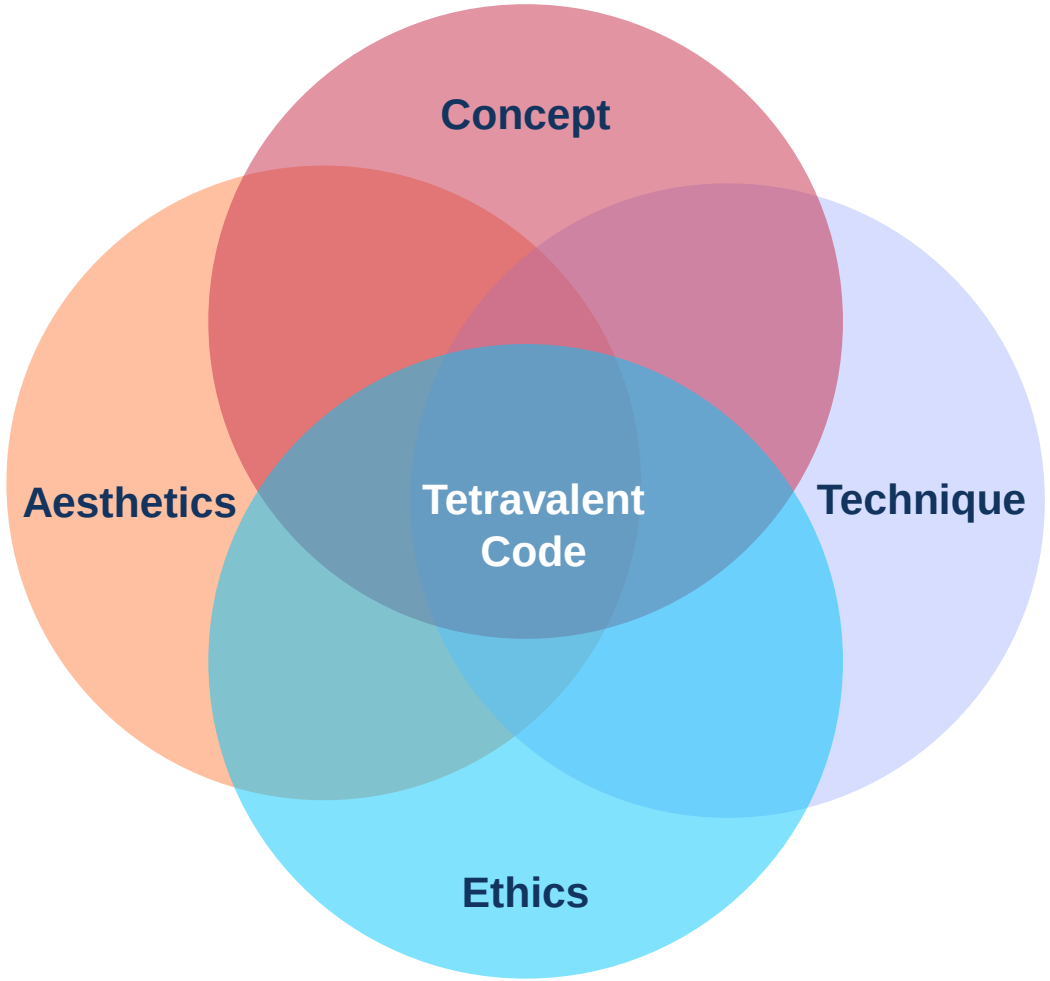
Skills required



Method

Tetravalent code

Or the way to design a product thinking as an arty designer



Concept ➔ describe, express and bring new aspect

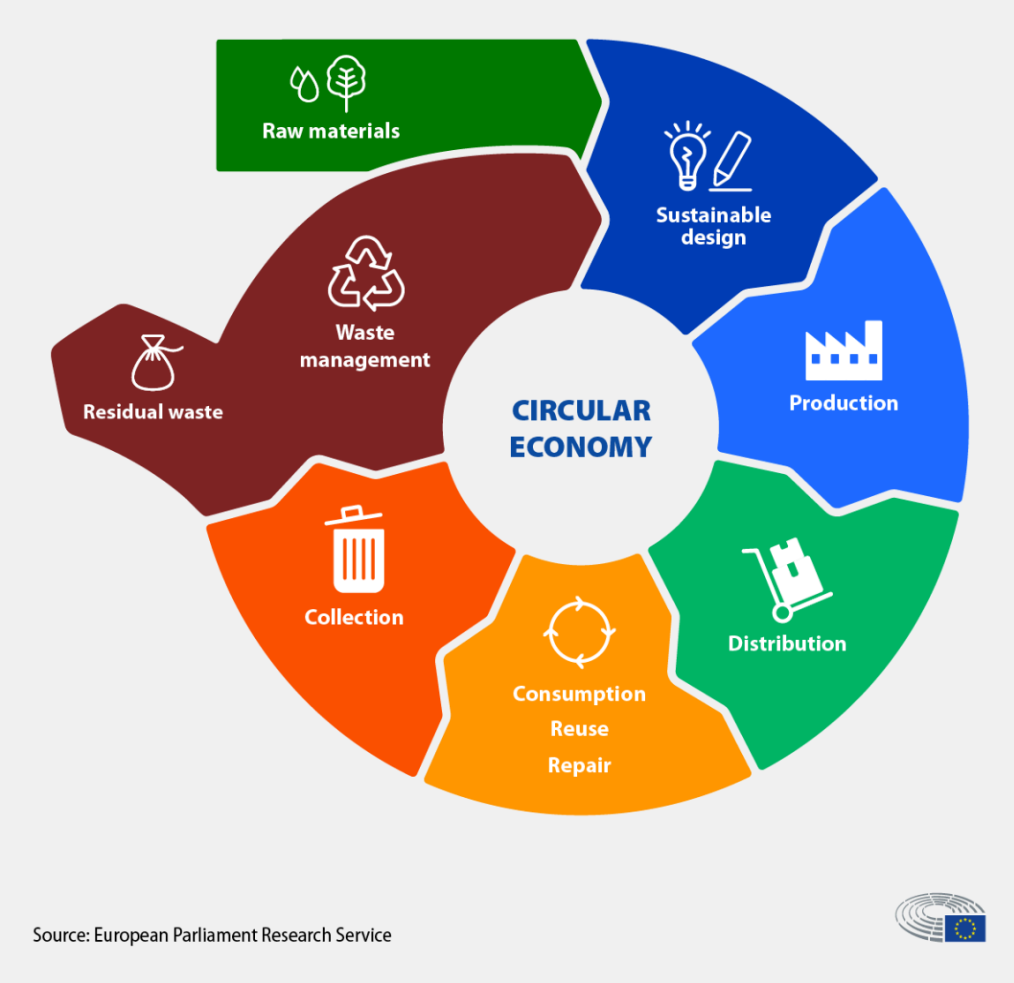
Aesthetics ➔ Material, texture, colors and references

Technique ➔ Process used, cost, production size, assembly, …

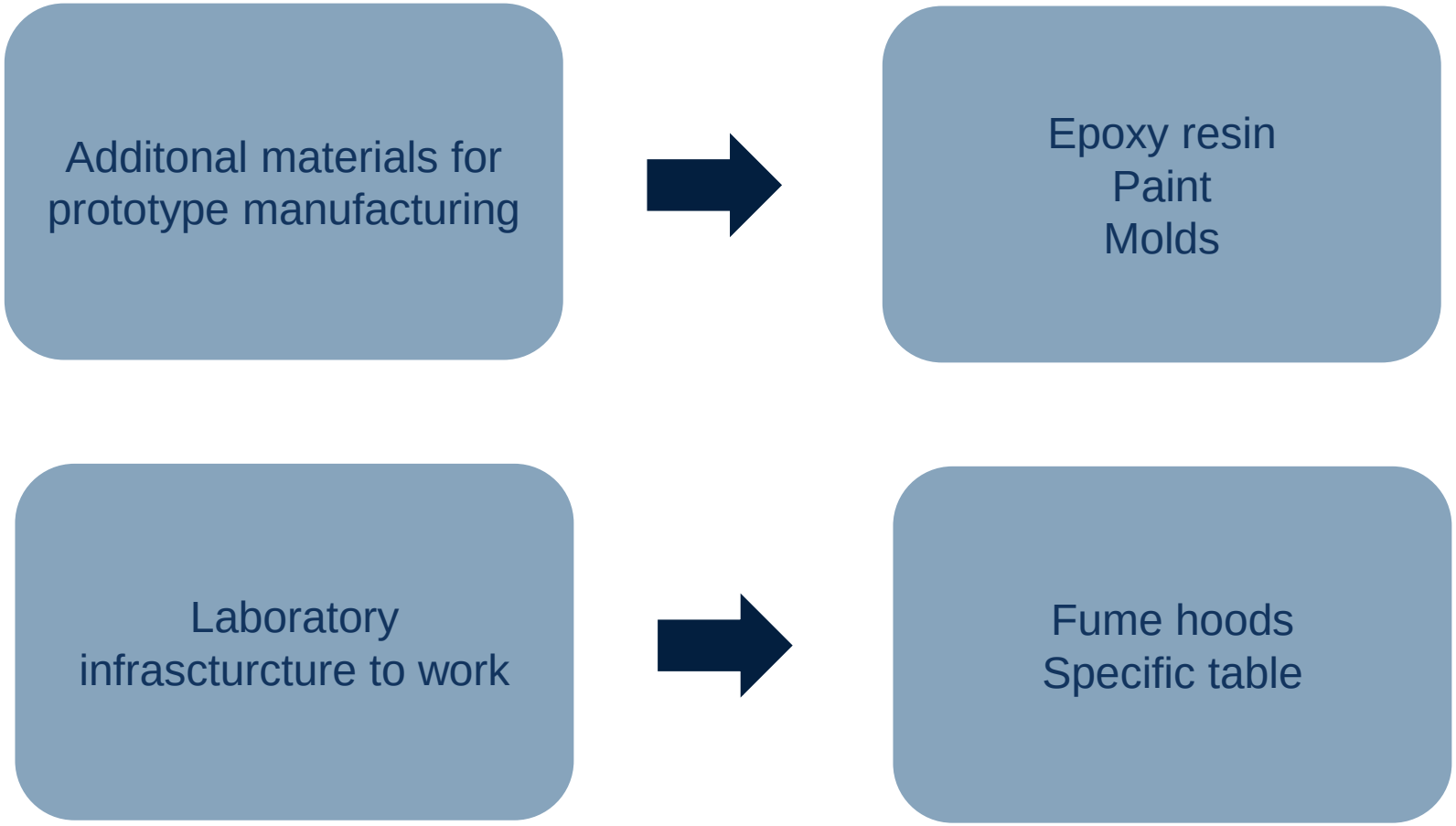
Ethics ➔ The target, purpose of the project, social & economical concerns.

Circular Economy

Or the way to have less raw material, less waste and fewer emissions



Luleå University Composite Laboratory



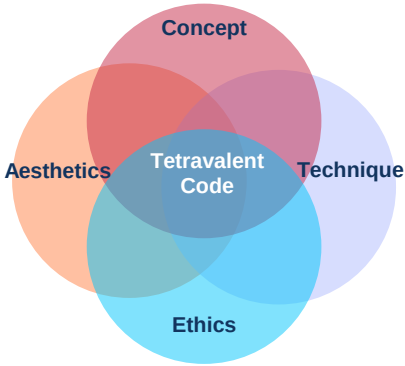
Thoughts

Glass fibres

(Chongqing Dujiang Composites Co., Ltd.) *(Mid-Mountain Materials, Inc.)*

Tetravalent code

Or the way to design a product thinking as an art designer



Concept

➔ A storage for personal goods
➔ A sit to change ourselves after a boat trip (ex: remove the shoes)

Aesthetics

➔ Make a product from glass fiber waste & epoxy
➔ A wavy design that reminds of the sea/ocean

Technique

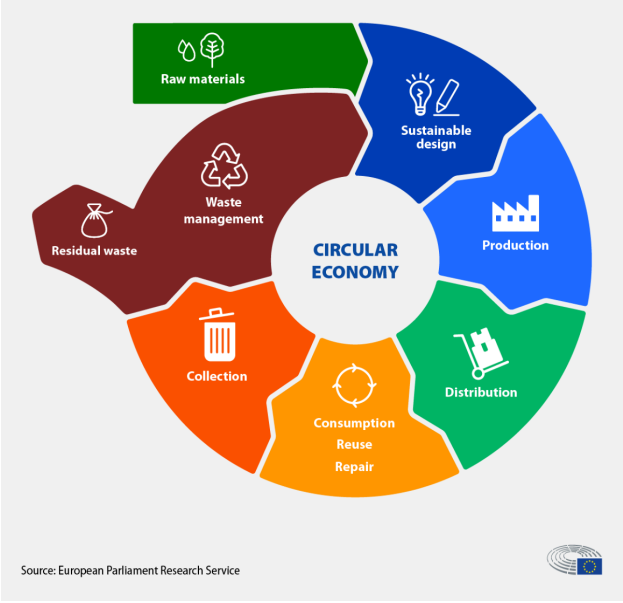
➔ Use the same process as boat's crafting.
➔ Human scale production on request + Nut and bolt assembly
➔ Glass fiber properties sustain salty atmospher

Ethics

➔ Product for marina's sailors
➔ User of the harbour as an incu; Create additonal jobs in the naval factory + a glass fiber school

Circular Economy

Or the way to have less raw material, less waste and fewer emissions



Raw material

➔ Waste from the manafacturer supply with the orders

Sustainable Design

➔ One material & few parts

Production

➔ Reuse the current ones availble in the marina

Distribution

➔ Done locally

Consumption, Reuse, Repair

➔ Interchangeable parts in case of damage + high performance material (no volontary obsolescence)

Collection

➔ Use the one of the marina

Residual waste

➔ Crush and reuse inside of matrix composite or concrete (but mechanical properies reduced)

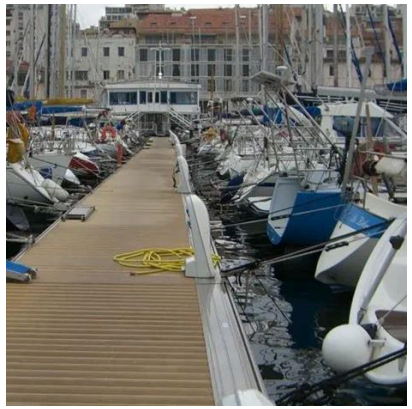
Business Model

Or the local ecosystem economy

Glass Fibres Manufacturer

Send the waste + Orders

Marina



Center of expertise

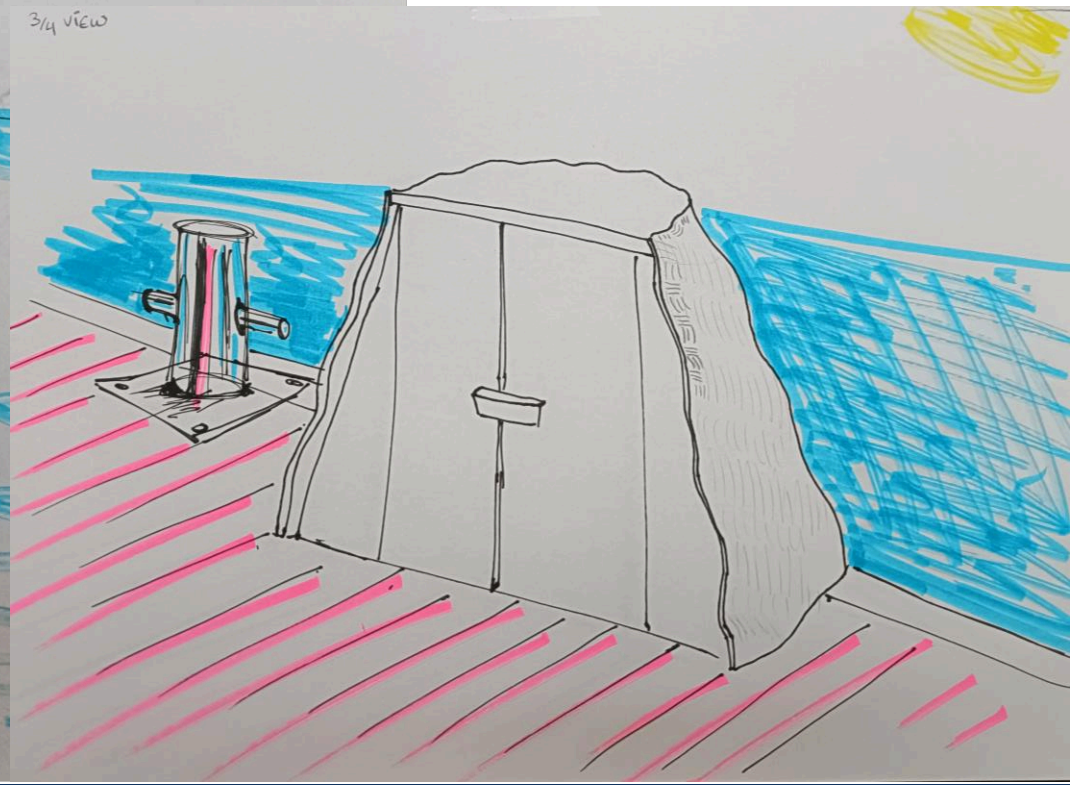
Create new glass fiber specialist

Give the waste for students' project

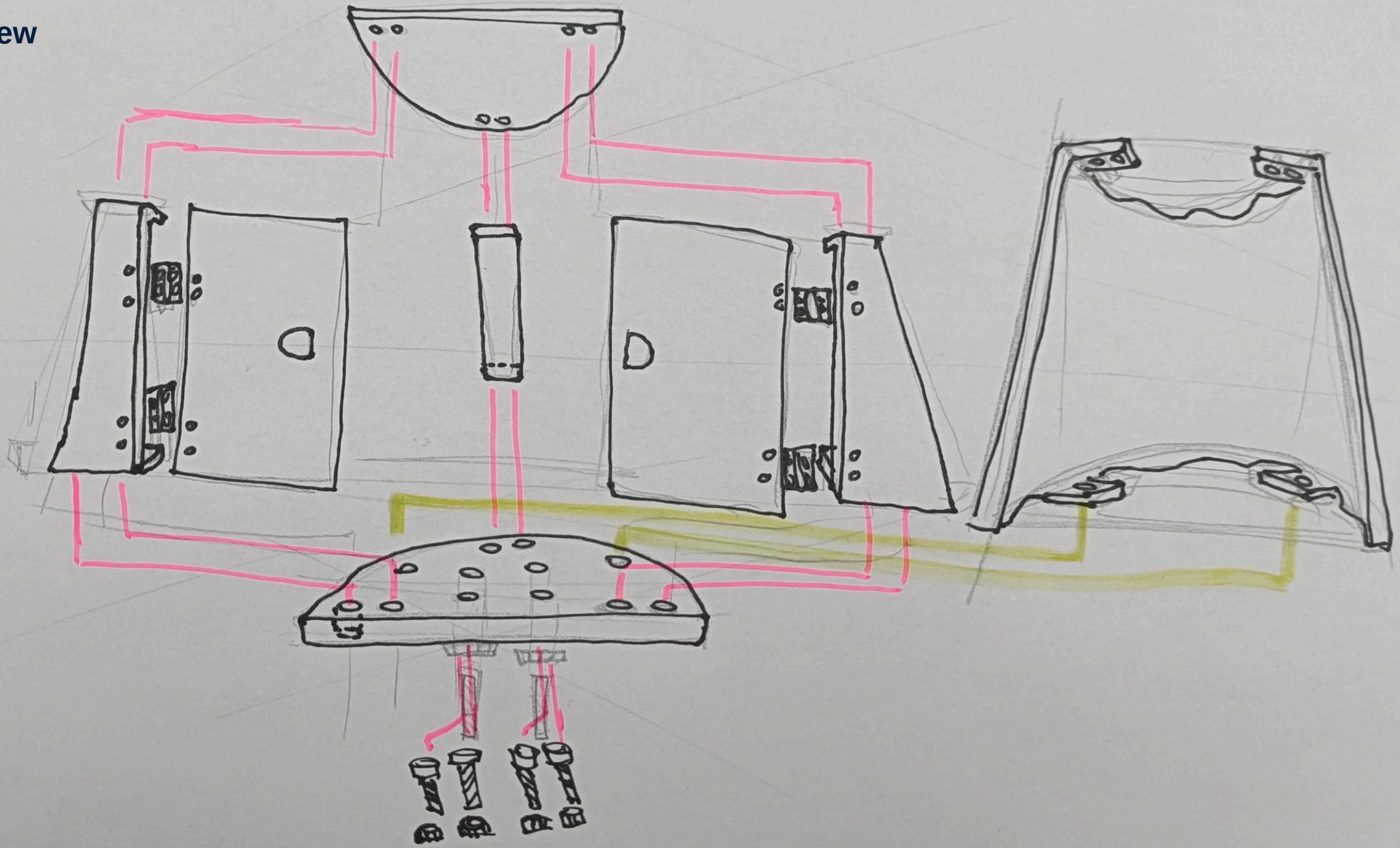
Marina's customers

Result


USE CASE
NICE I CAN KEEP OFF MY SHOES !!!


3/4 VIEW

Exploded view



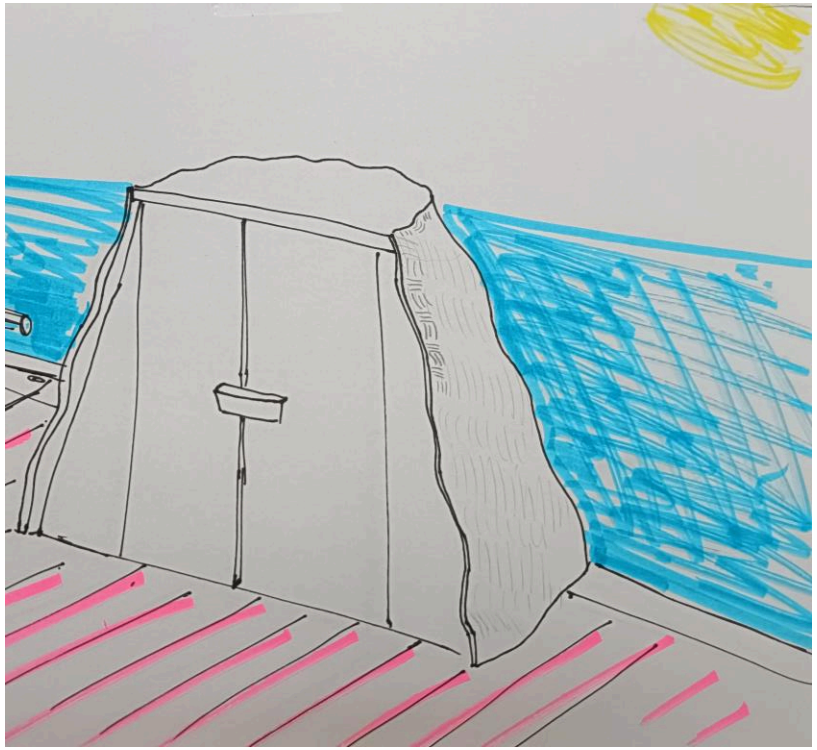
Prototype made

Test on how feasible was the texturing on glass fiber

Conclusion

Conclusion

Project



➔ Show how local actor can be part of sustainable developpement

➔ Add more concrete application on our expertise

➔ Give freshly news vision to the GlassCircle project & its Ecosystem

Conclusion

Our Hackathon feedback

“A Hackathon lets you realize that in 48 hours you are four people at the same time: the technical expert, the communicator, the artist, and the storyteller.”

“I enjoyed participating to the hackathon and I appreciated working within a team to find a solution for a more sustainable world.”

Conclusion

After Hackathon

Continued working as an apprentice at CEA-INES on Perovskite-Silicon solar cells until August 2024

Did an internship at Luleå University of Technology on biobased thermosets for applications in regenerated cellulose fibers composites

Today

Presented both my aprenticeship and intership for my final defence

Official graduation is now approaching

I want to continue in that path of working in recycling of polymer materials or working on new materials that can be recycled easily or that are more sustainable for my future job

Conclusion

After Hackathon

I participate to create a sustainability team in my company by giving my material expertise. Exchanging on LCA feasability and waste reprocessing.

As an example, we have one project on how implement regenerative material in our products.

Today

Working 2 years in Singapore. The goals is to spread for the Asian hub of my company an efficient material management (including ecodesign aspect for the CSR strategy)

CSR = Corporate Social Responsibility

Any questions ?

Otherwise, thank you for your attention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