FiberEUse

Large scale demonstration of new circular economy value-chains based on the reuse of end-of-life fiber reinforced composites

Dena Arabsolgar

HOLONIX®
BRING THINGS TO LIFE

Holonix FiberEUse IT platform

a circular IT platform to manage innovative design
and Circular Entities

Sustainable Places 2020

Virtual, 27th October 2020

Dena Arabsolgar

- Data about FiberEUse project

- FiberEUse Use Cases overview

- FiberEUse Example in Construction

- Stakeholders needs overview

- The new Circular Information Management

- A Matrioska approach: Circular Platform

- Multi-Actor involvement: co-create Circular Products

- Challenges

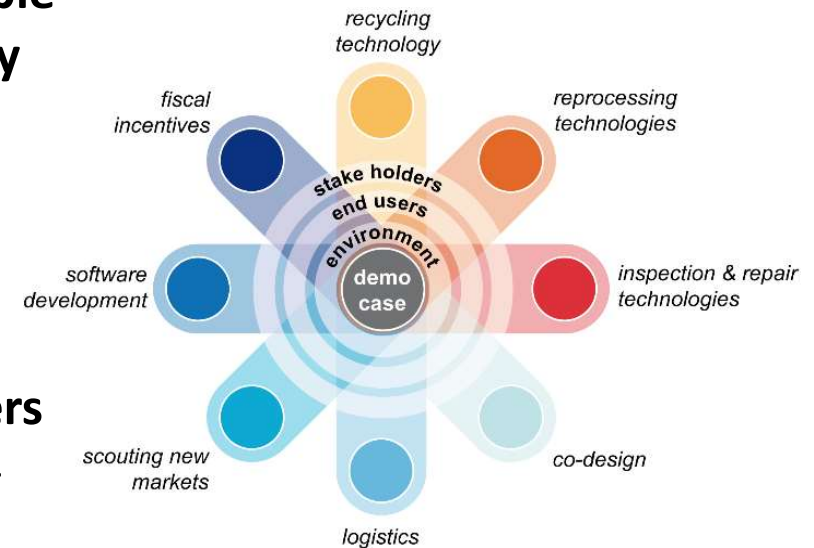- Solutions: Idea Manager, Eco-System Management Platform

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- Funding body: **EU Horizon 2020** (Grant Agreement No. H2020-730323-1)

- Grant: **€9.8 million**

- Duration: **4 years** started on June 2017

- Consortium: **20 partners**, from **7 EU countries**.

- Aim: **Integrating different innovation actions through a holistic approach to enhance the profitability of composite recycling and reuse in value-added products.**

FiberEUse aims to develop and demonstrate a large scale reuse of end-of-life (EoL) composites materials via:

- **Integration of innovative remanufacturing technologies addressed to develop profitable reuse options for mechanically or thermally recycled EoL GFRP and CFRP composites** - enabling ease of operation, significant cost reduction, compliance with EU Directives

- **Development of an innovation strategy for mobilization and networking of stakeholders from all the sectors related to composites** - from original equipment manufacturers (OEMs) to tier 1 suppliers, logistical operators, technology providers and exploiters, designers, and end-user associations
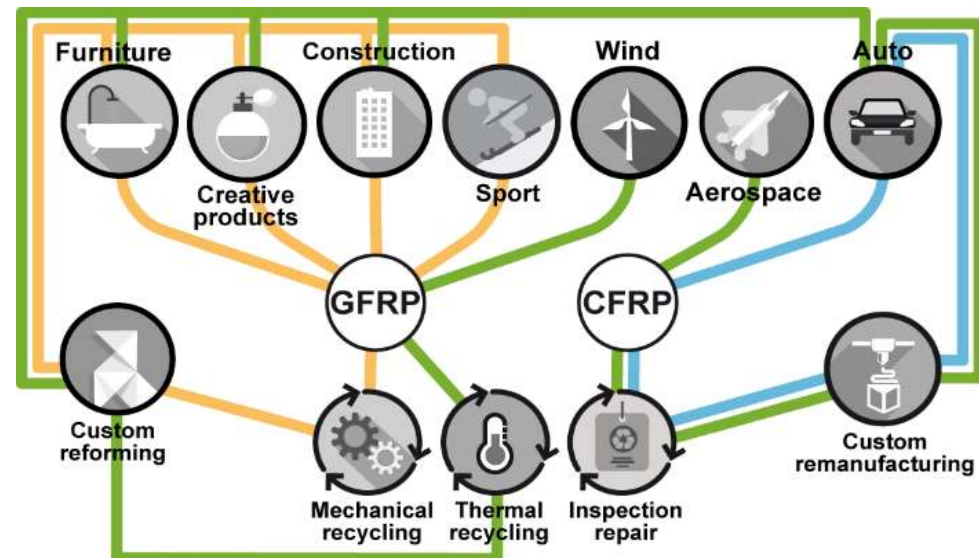
FiberEUse Concept

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FiberEUse is based on the realization of three macro use-cases, further detailed in eight demonstrators:

- **Use-case 1:** **Mechanical** recycling of short GFRP and re-use in added-value customized applications, including furniture, construction, sport and creative products

- **Use-case 2:** **Thermal** recycling of long fibers (glass and carbon) and re-use in high-tech, high-resistance applications

- **Use-case 3:** Inspection, repair and **remanufacturing** for EoL CFRP products in high-tech applications

FiberEUse Use-Cases and involved industrial sectors

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FiberEUse project – a circular value chain example

logistical operator
Saubermacher

export the developed
technologies

technology provider
PoliMi   *Greencoat*

material supplier
Rivierasca

GFRP

mechanical
recycling

co-design
designaustria

export the
design model

sorting

end user
Furniture   *Construction*

new markets

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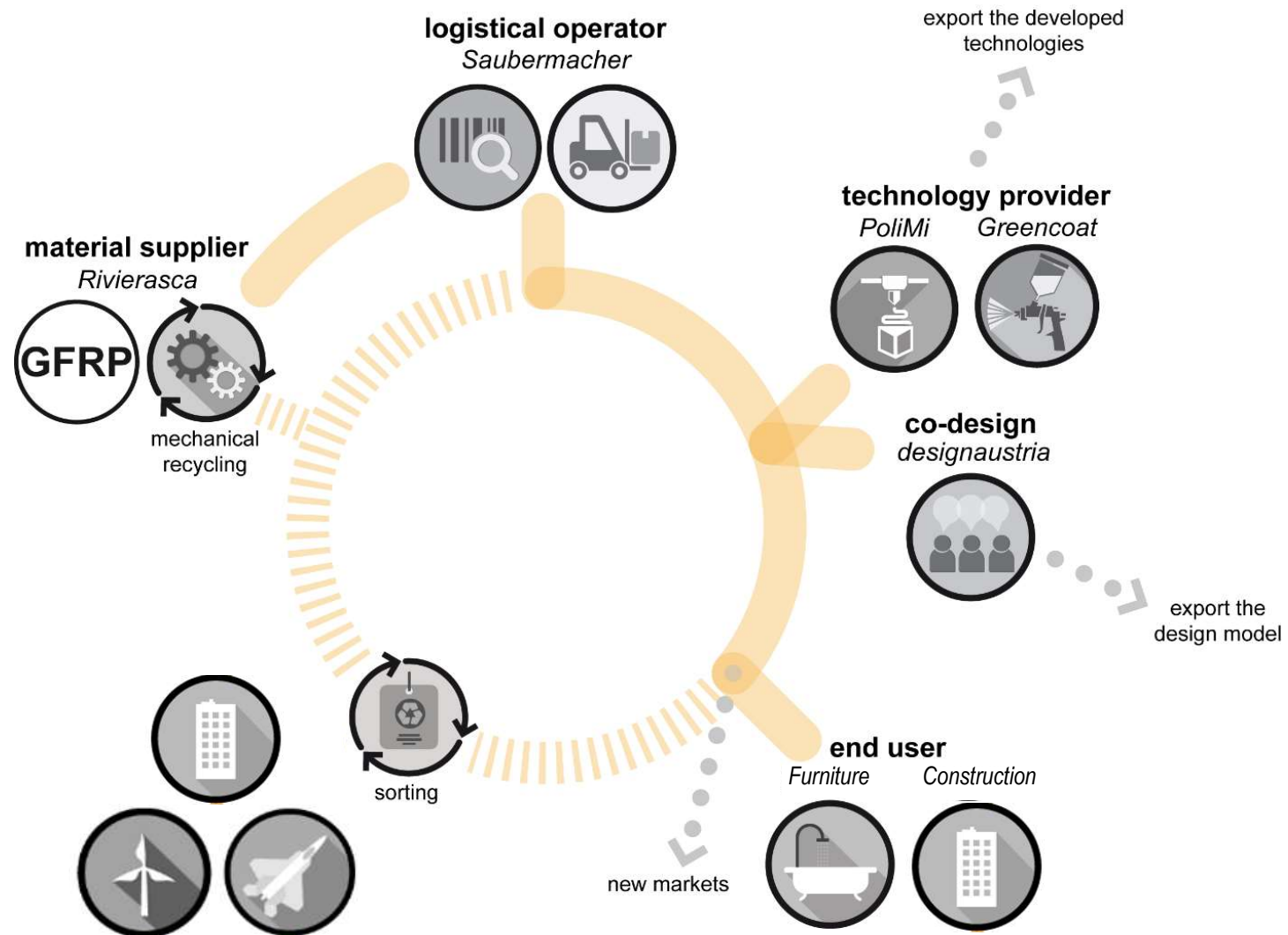
Construction: how we can improve future

GFRP manufacturers need to be encouraged and stimulated to

take back their products at the end of their useful lives,

and shown how to make **profit** from this.

New business opportunities can be realized by careful evaluation
and minimization of logistical costs.

New product concepts based on **recyclates**

need to be developed for a wider market and social acceptance,

making possible the realization of new circular economy business cases
making profit
and at the same time saving raw materials,
energy and reducing emissions.

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Stakeholders needs

«I am a Waste provider»

«I am a ByProduct provider»:

- I need to dispose my end of life products
  - I want to reduce costs
  - I cannot send them to landfill anymore...
  - I want to do that in a sustainable way
- BUT...
  - I do not know who to offer them
  - Should I pre-process my waste? How?

Stakeholders needs

«I am a Producer»:

- I am interested in new materials that
    - Are less expansive then traditional ones
    - Offer the same/similar properties then traditional ones
    - Whose availability meets my production needs
- BUT…
    - I cannot compare traditional and new materials
    - I do not know how to purchase them…who can provide me the material?

Stakeholders needs

«I am a process provider»:

- I can process end-of-life products
- I can create new materials
- I can offer technologies to use new materials (i.e.: additive manufacturing,…)

- BUT…
  - I do not know who can provide me waste
  - I do not know who is interested in the new materials/technologies

Stakeholders needs

«I am a logistic operator»:

- I can pre-process end of life products
- I can organise national/international transport

- BUT...

  – Who needs my services?

  – Which are the regulations that are applied to waste and new materials in each country?

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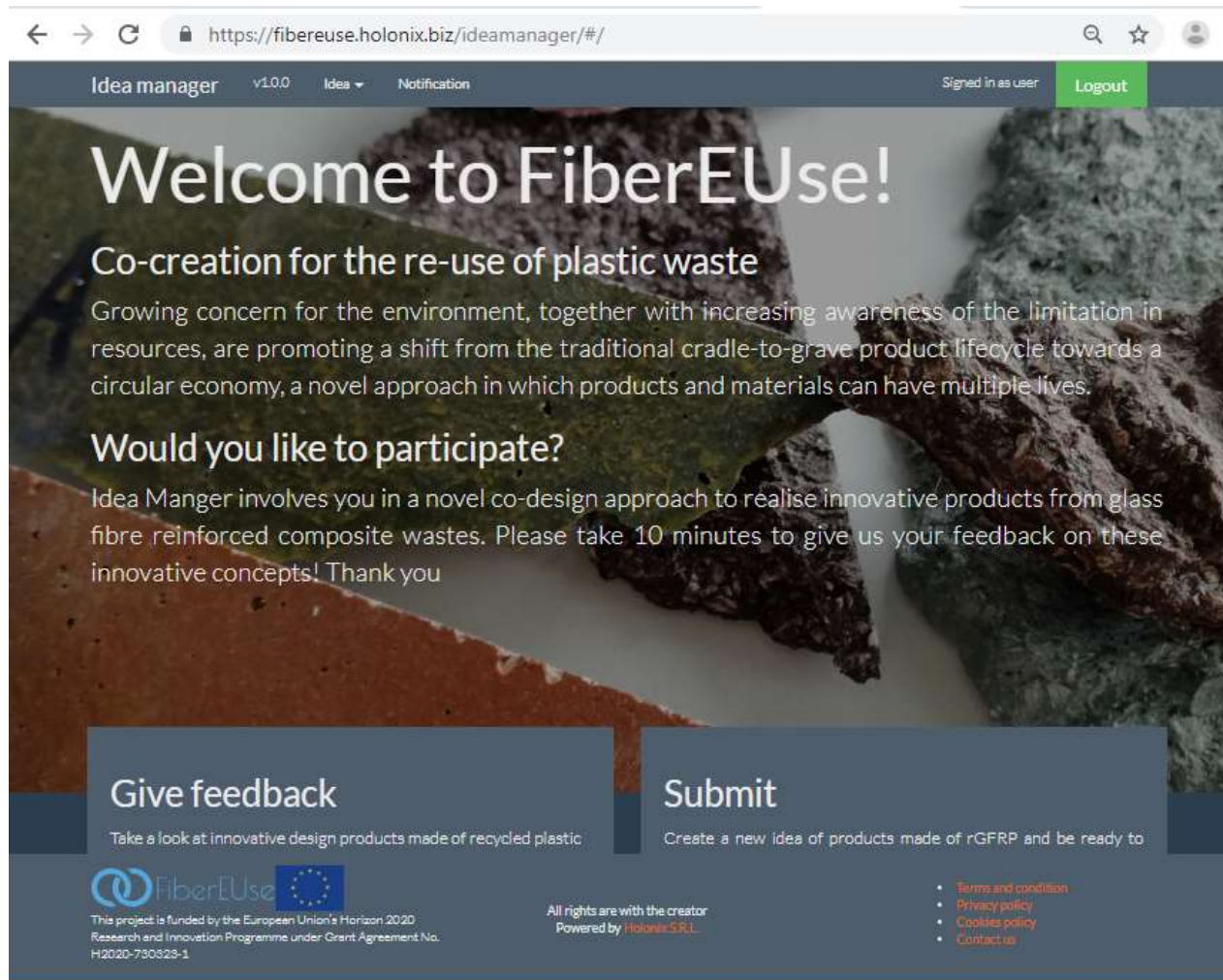- Solutions: Idea Manager, Eco-System Management Platform

PLM Phases from Concept to EoL... to Waste

Concept | Plan | Develop | Launch | Sustain | EndofLife

Waste

Linear economy
From extraction to waste

The new Circular Information Management
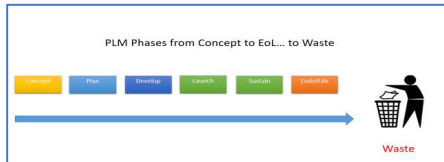
Circular economy
From object to object
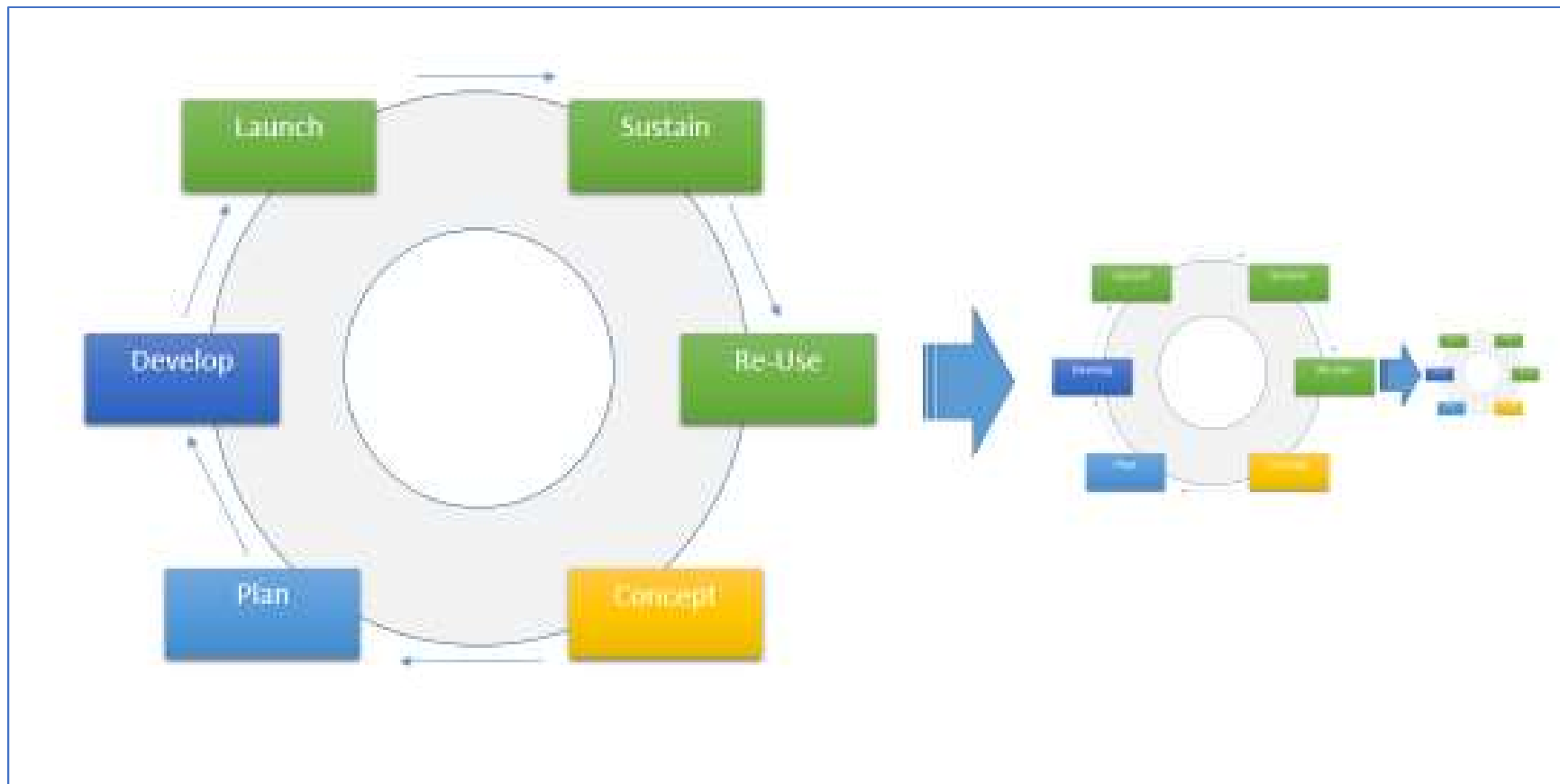
Matrioska approach
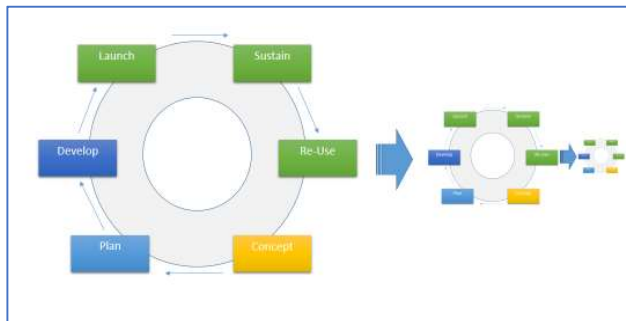
Multi-Actor involvement

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A Matrioska approach: circular entities

Re-use, Re-cycle, and Re-something again

We need to
create knowledge and match needs
to know IF, HOW, WHAT, WHEN
I can use, reuse, recycle, remanufacture

How?
Let people know
Search
Enter in touch
Match
Suggest
Visualize
Keep history tracked

#circularentity
#eco-system

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A Multi-Actor involvement: co-creation

Share and **collaborate** is the new mantra

We need to involve actors
And to introduce
the social approach
across the Value Chain

How?
Propose ideas
Tag
Like
Comment
Score
Poll
Search
Match

#circularITplatform
#cocreation
#openinnovation

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- **Challenges**

- Solutions: Idea Manager, Eco-System Management Platform

1. How to go from one Entity to the next Circular Entity?

New collaborations

New ideas

New processes

New materials

Solution:
Idea Manager tool
#openinnovation
#cocreation

2. How to actively involve users?

New collaborations

New deals

New connections

New ecosystem

Solution:

the Eco-System Management platform
#matchmake
#Re-cursion

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- **Solutions: Idea Manager,** Eco-System Management Platform

Solutions: The Idea Manager tool

Solution:
Idea Manager tool
#openinnovation
#cocreation

Idea Manager is a web-based software-tool designed to provide and support activities along the idea generation process, which is part of the **open innovation** approach.

not solely firm-centric

multi-actor (employee, designers, customers, providers, …community)

Solutions: The Idea Manager tool

Solution:
Idea Manager tool
#openinnovation
#cocreation

Solutions: The Idea Manager tool

Solution:
Idea Manager tool
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#cocreation

Solutions: The Idea Manager tool

MODUL X^3

Description
THE DESIGN CONCEPT IMPLIES A DEVELOPMENT OF A MULTIFUNCTIONAL, TEMPORARY MODULAR VOLUME WITH AN EXTE...read more

Author
MikSmol

Attachments
SMOLSKI_Mikhail_SS18_Final_Presentation.pdf

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Feedback survey

FIBREBENCH

Description
You choose which direction you would like to look at or how close you would like to sit to another p...read more

Author
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👍 Unlike it 23   💬 comments 6

Feedback survey

BICYCLE RACK

Description
The aim is to develop a functional, safe and attractive place where bicycles can be stored and locke...read more
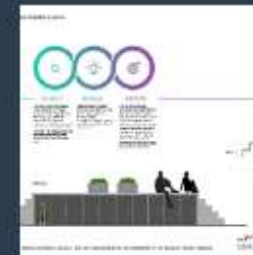
Author
saracramer

Attachments
Cramer_Bicyclerack.pdf

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Feedback survey

Solutions: The Idea Manager tool

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Solutions: The Eco-System Management Platform

The Holonix Circular IT platform is a cloud based multi-sided platform

where multiple potential users can be enabled to manage and access relevant information.

It connects two or more interdependent user groups, by playing an intermediation or a matchmaking role.

This solution minimize transactions costs between market sides.

The platform must achieve a network effect, involving many users and stakeholders.

Solution:
the Eco-System Management platform
#matchmake
#Re-cursion

Solutions: The Eco-System Management Platform

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