Interreg North-West Europe
Digital Deconstruction
European Regional Development Fund

Digital Deconstruction

Presentation of the primary results of the Cost Benefit Analysis and of the Navigator

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Cost Benefit Analysis

Learnings from the pilots of Digital Deconstruction project

Pilot Project presentation

Deconstruction of the passenger building at Ettelbruck station

Information about the building

Year of construction: 1873

Owner (manager): CFL

Basement + ground floor + 1st floor

Offices; flats; shops; waiting room

Volume: 4 500m^3

Date of work : February 2022 – October 2022

Total demolition

Pilot Project – Global Results

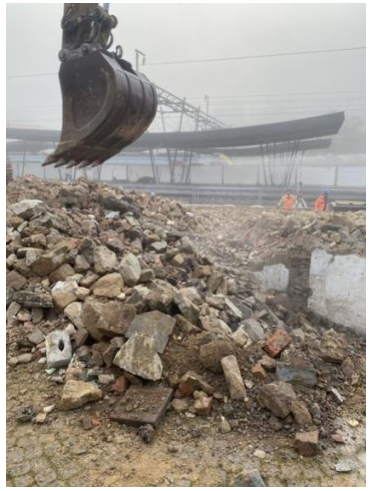
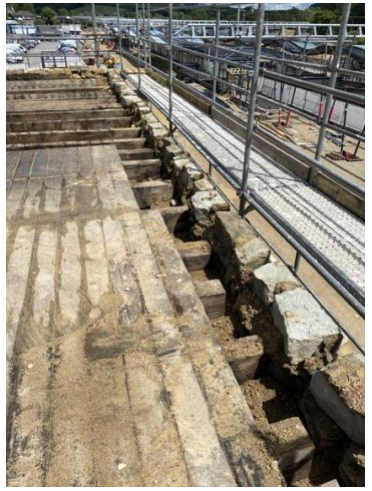
Deconstruction of the passenger building at Ettelbruck station

424 Tons – 12 %

of materials and equipment reused

682 000€

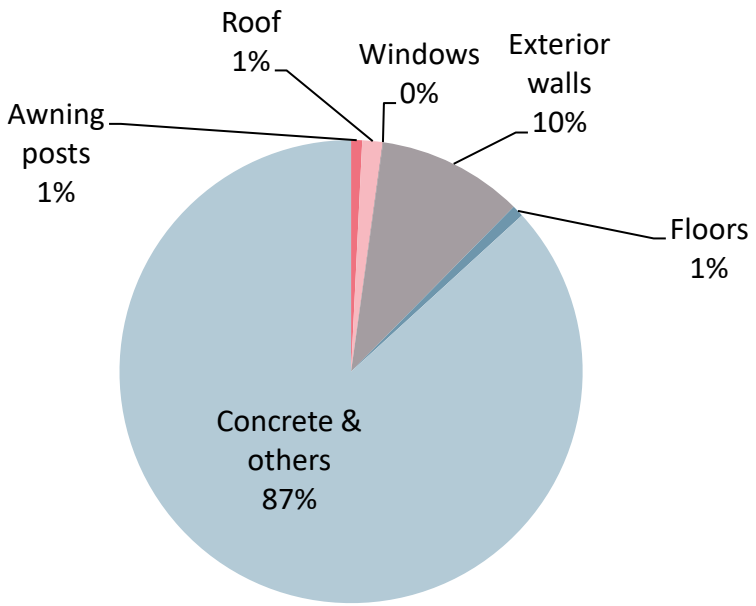
Of total project costs

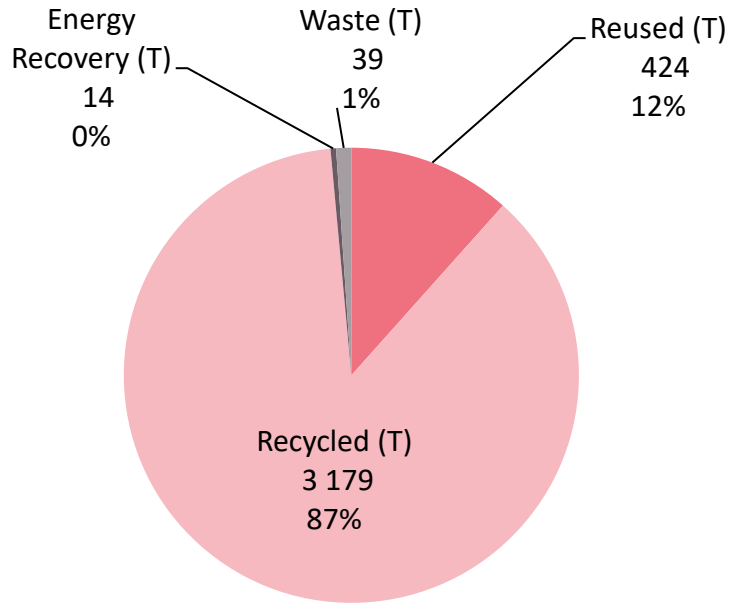

Characteristics of the materials

Deconstruction of the passenger building at Ettelbruck station

Mass distribution of materials



End of life of materials

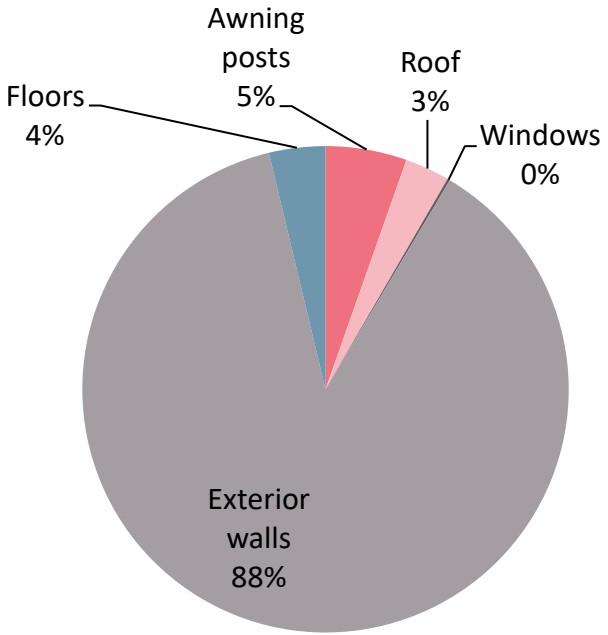


Some materials, identified through the inventory, were **selectively deposited** with the aim of recovering them at the end of their life, with different treatment: **reuse** for the roof, part of the floor, external walls, windows and awning posts and **energy recovery** for part of the floor
The other materials (mainly concrete), which represent the large majority of the project's tonnage, were recycled (quarrying as backfill)

Focus on the reused materials

Deconstruction of the passenger building at Ettelbruck station

Overall repartition of the materials reused by type



420 Tons of materials and equipment reused

Type of materials	% of reuse / total available
Exterior walls	100%
Canopy poles	81%
Windows	71%
Floors	53%
Roof	24%
Concrete & others	0%

The materials with the highest reuse rate are the **exterior walls**, followed by the **awning posts** and the **windows**. The floor and roof were given less priority in the reuse strategy, as they were not initially identified for reuse and were mostly deposited to grant access to the exterior walls.

Overall, it is around 88 % of the materials carefully deposited (without concrete & others) that was reused

Distribution of project costs by phases

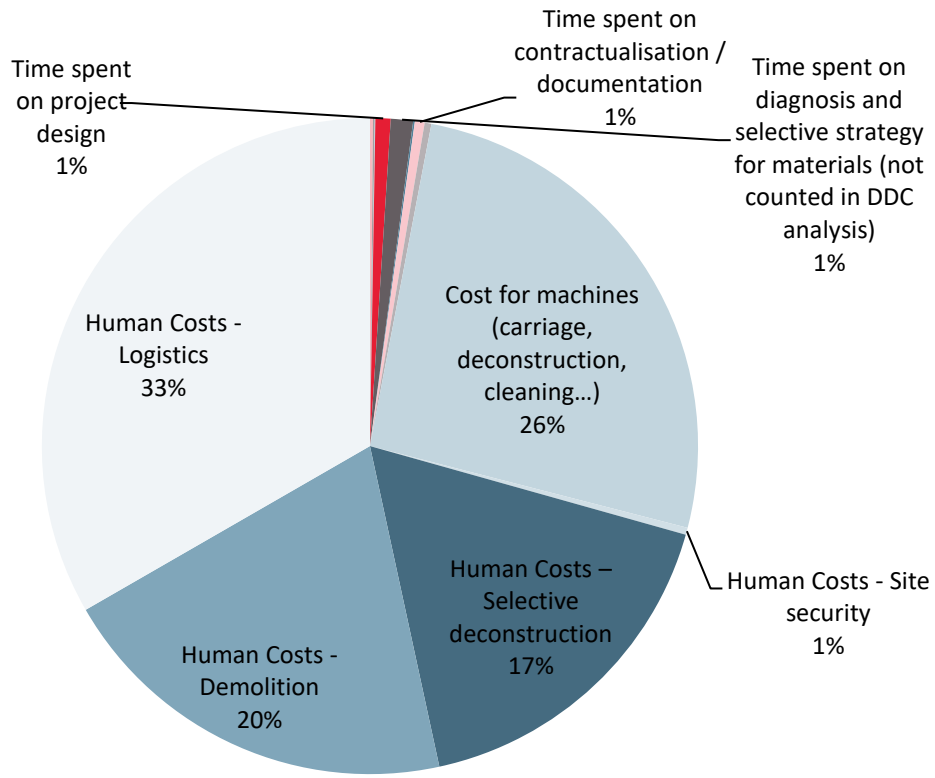
Deconstruction of the passenger building at Ettelbruck station

682 000€ of project costs

Phase	Cost per phase
Inventory Cost	1 809 €
Strategy and Programmation Costs	18 671 €
Deconstruction Cost	661 561 €

It can be seen that the **deconstruction phase represents more than 97% of the costs** of the project. However, the deconstruction costs not only include specific costs induced by the selective deconstruction and reuse strategy.

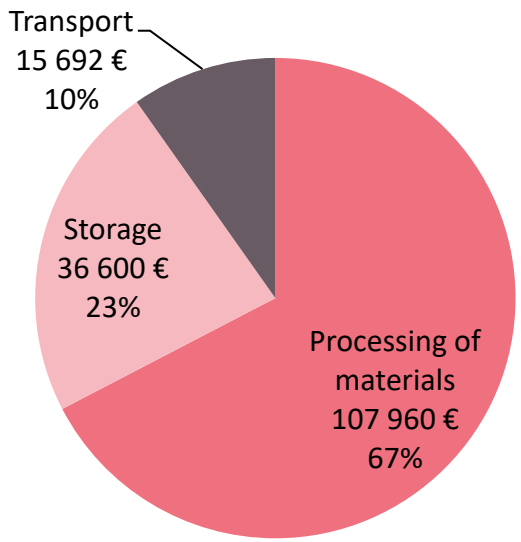
Project costs by category and phases



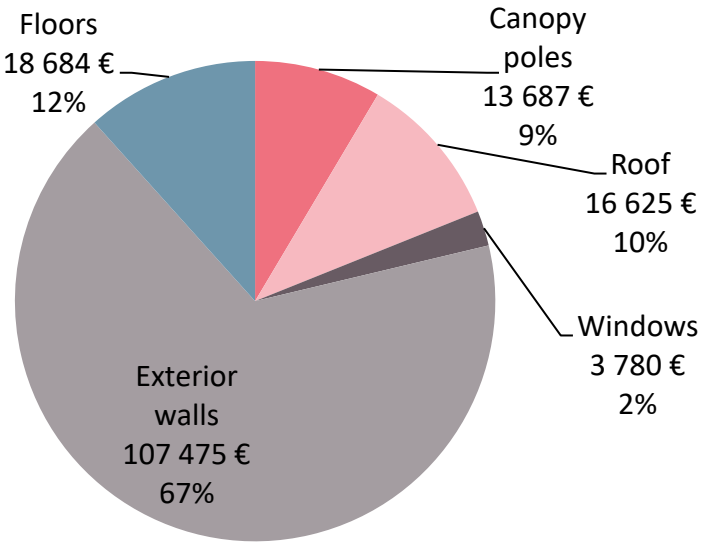
Focus on the costs for reused materials

Deconstruction of the passenger building at Ettelbruck station

Breakdown of costs per stage of the reuse process



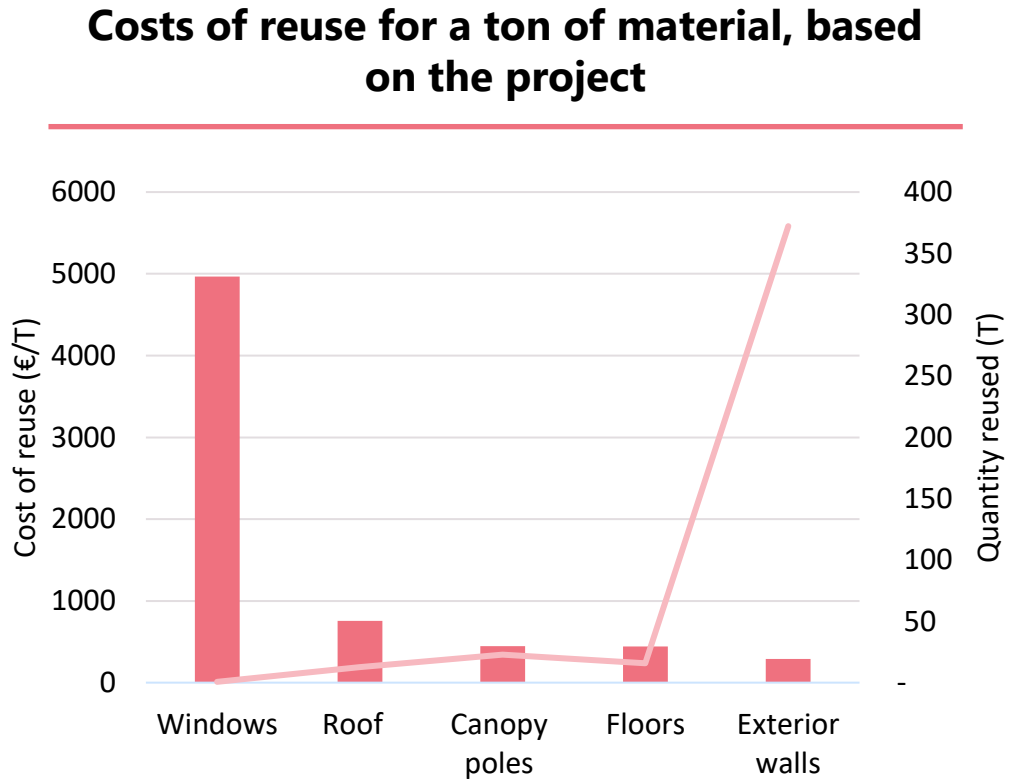
Distribution of costs by type of material



As they represent the highest tonnage of materials, the **exterior walls** are responsible for most of the costs. This is also explained because the storage costs are entirely linked to the reuse of these exterior walls (in plastic pallets), whereas other materials only induce processing and transport costs.

Different materials inducing various costs, based mainly on quantity available

Deconstruction of the passenger building at Ettelbruck station



The study of the costs for the reuse of the various materials present in the building shows **how the quantity of material available influences the costs induced by reuse.** Regarding financial indicators, the **exterior walls** are the **most interesting** to reuse, even with the storage costs of the high quantity of stones.

On the opposite side, the reuse of **windows**, due to a low quantity and harder processing, leads to **high costs for a single ton of materials.**

This fosters the idea that having a large number of a specific equipment or material is important to achieve high rates of reuse while limiting additional costs.

Comparison with a classical demolition approach

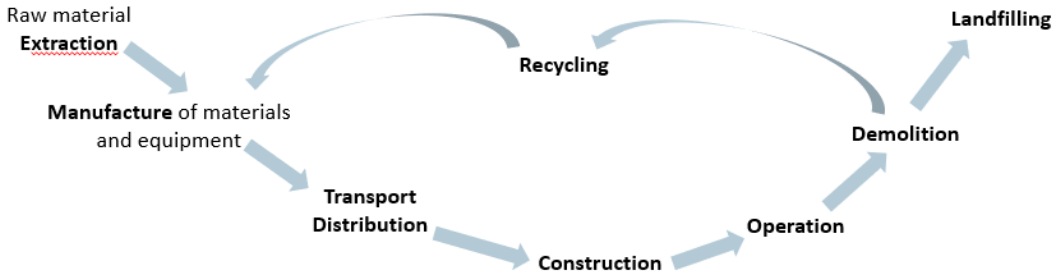
Deconstruction of the passenger building at Ettelbruck station

Business as usual

No selective deconstruction
Limited valorization
No reuse

Estimated data from past experiences of pilot operators

578 500 €
0 Tons reused



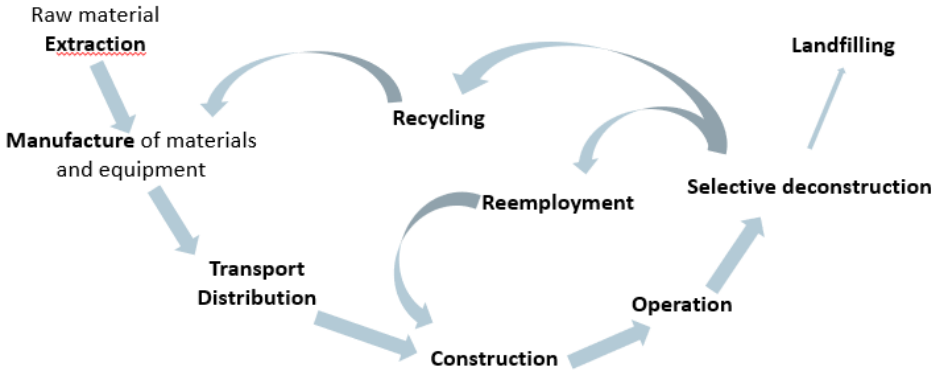
VS

Selective deconstruction

Reemployment diagnostic
Selective deconstruction
Maximum reuse

Real data from pilot sites

682 000 €
424 Tons reused



Extra costs of selective deconstruction

Deconstruction of the passenger building at Ettelbruck station

Identification of sources of additional costs

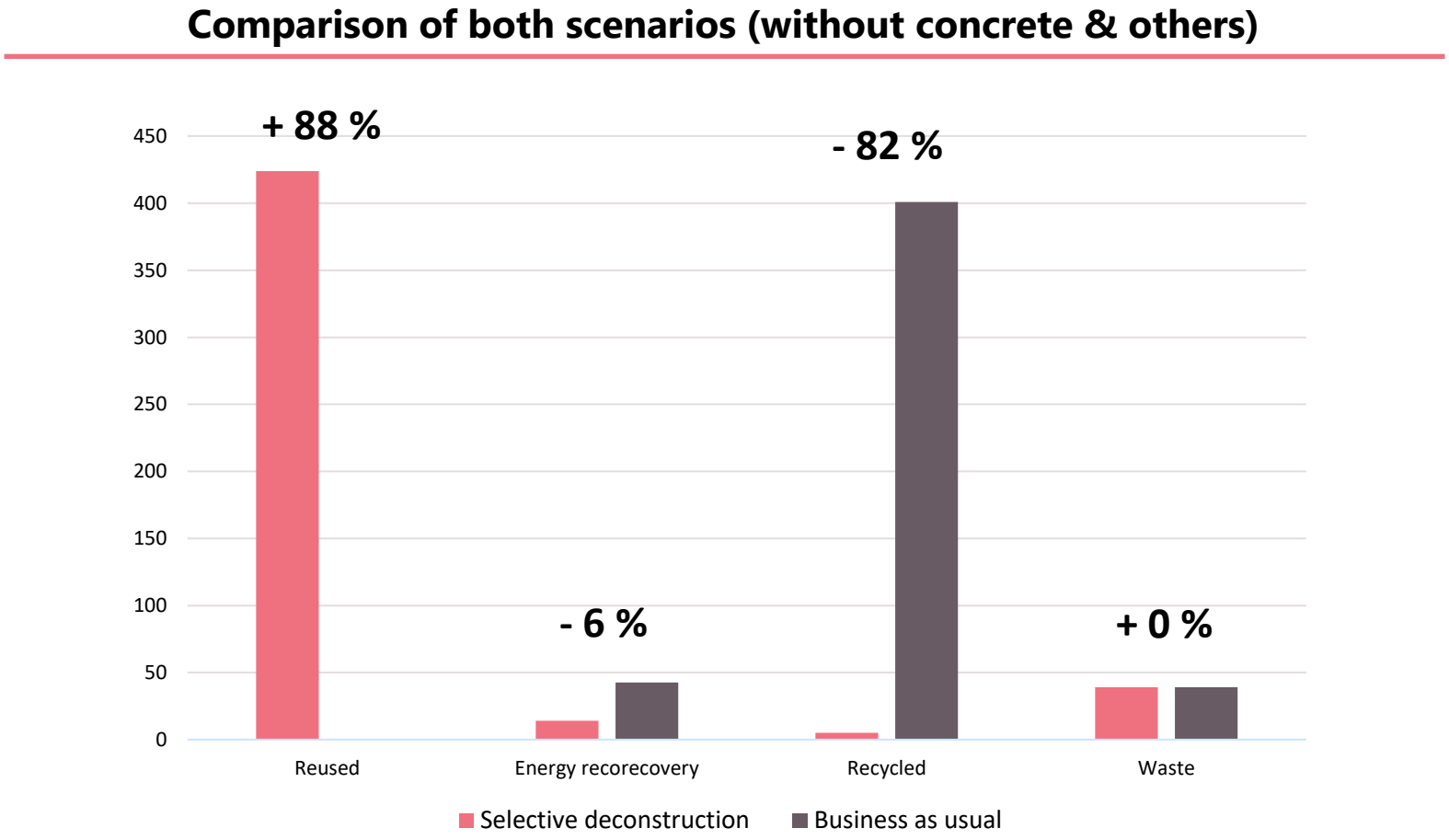
Steps	Extra Costs
Inventory costs	-1 809 €
Strategy and Programmation costs	- 7 131 €
Selective deconstruction costs	- 94 561 €
Cost for machines	*40 830 €*
Site préparation /security / soft-stiping..	*16 224 €*
Deconstruction	*- 117 639 €*
Demolition	*264 €*
Logistic	*- 34 240 €*

Comparison between a business as usual demolition scenario and a selective deconstruction scenario

Despite some cost-saving steps, the selective deconstruction implemented in the Digital Deconstruction pilot project presents an extra cost to Business as usual deconstruction of **103 500 €** i.e. an extra cost of **18%**

Environmental benefits of selective deconstruction

Deconstruction of the passenger building at Ettelbruck station



The Navigator

Ressources, tools, and tutorials from the Digital Deconstruction project

Long-lasting effects seeked through 4 activities

Work Package Long-Term

#1	#2	#3	#4
Supporting market development	Development of the DDC Navigator	Training and capacity building	Up-scaling and transnational roll-out

These activities aim at capitalising on the work and results produced throughout the project by the partners, by sharing them in an open and accessible way to all, encouraging best practices, and giving access to tools and support.

An online portal to share the results of the project

Work Package Long-Term: the DDC Navigator

#1
Supporting market development

#2
Development of the DDC Navigator

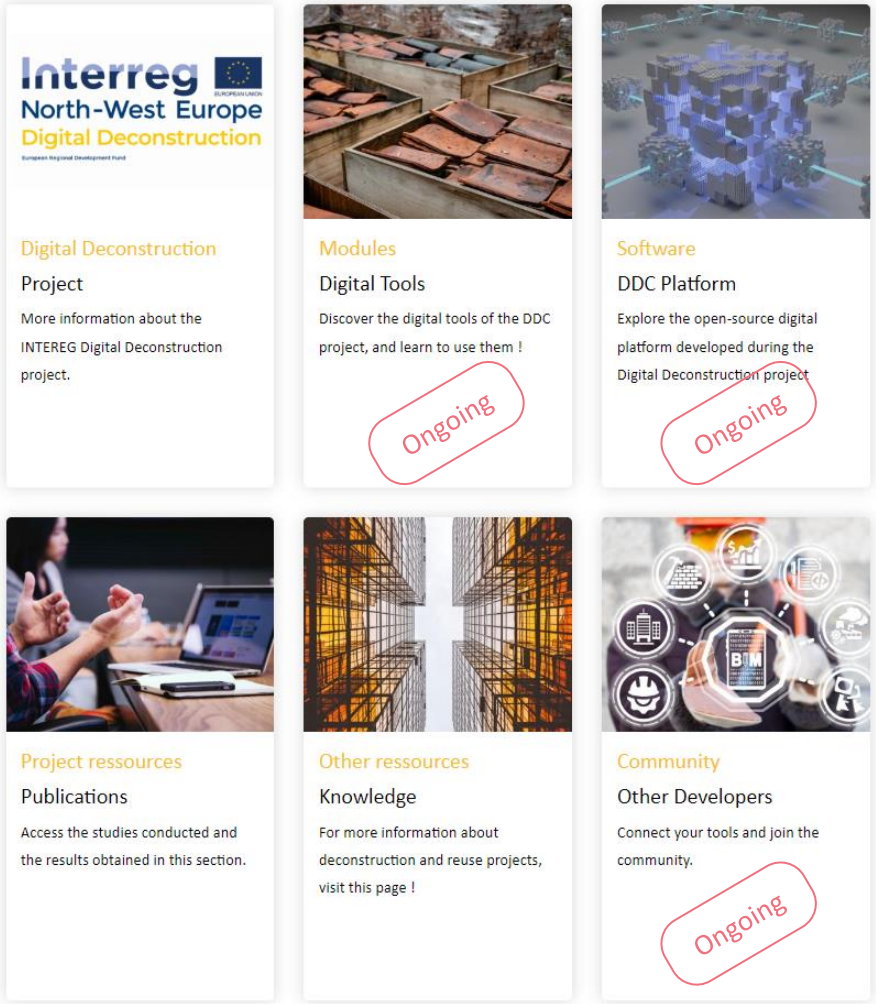
#3
Training and capacity building

#4
Up-scaling and transnational roll-out

Among those activities, the DDC Navigator is an interactive online portal developed to reach a wide community, composed of different modules with various goals.

All content related to DDC, in one place

Work Package Long-Term: the DDC Navigator



An online portal to discover more in depth the Digital Deconstruction project

- Hosted on the GTB-Lab knowledge platform:
  - Based on an existing community, increasing the attractivity.
  - Content already accessible on circular buildings, products, and materials as well as policies, guidelines and tools.
- Global information about the project, the consortium and all pilot sites, and all newsletter and press articles.
- **Demo and tutorials** for the platform developed by LIST and the digital tools introduced by BIM-Y, Block Materials and GTB-Lab.
- **Library for all resources** produced as part of the project: Regional and Transnational Innovation Hubs, economic studies, guides and manifesto, etc.
- Other relevant resources to gather all accessible knowledge and foster **international collaboration.**
- Content dedicated to **future tool developers** and other actors of the digital deconstruction.

Upcoming launch to the wider community

Work Package Long-Term: the DDC Navigator

Expected public launch by the month of June !

Feel free to follow us and to subscribe to the Digital Deconstruction Newsletter to be informed of upcoming updates !