

Interreg 
North-West Europe
Digital Deconstruction

European Regional Development Fund



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Welcome

Transnational
Innovation
Hub

06.10.2021

Agenda





- Intro
 - Digital Deconstruction
 - Transnational Innovation Hub
 - Miro
 - User roles
- Working session
 - The DDC Platform : creating projects
 - Mock-ups & project views
 - Use cases
- Outro

Digital Deconstruction - Advanced Digital Solutions Supporting Reuse and High-Quality Recycling of Building Materials

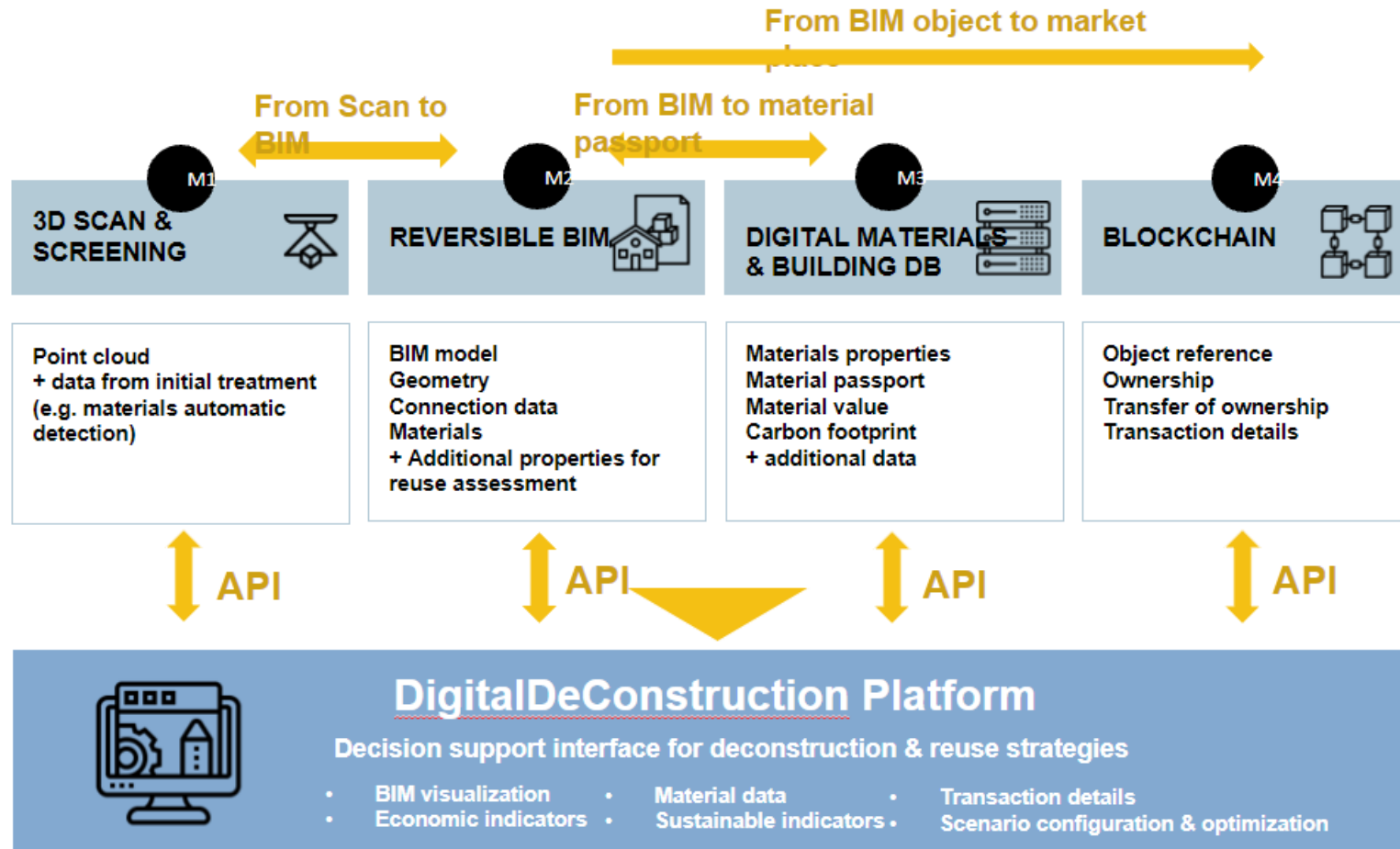
Digital Deconstruction is a NWE Interreg project, developing advanced digital solutions supporting reuse and high quality recycling of building materials. The main goal is to create an open source innovative digital decision support system, integrating various digital tools (3D scanning, Building Information Modelling, a digital materials & buildings database, blockchain technology, ...), that helps to define the most sustainable and economical deconstruction and reuse strategy for buildings.



The Regional Innovation Hubs are set up as an innovation network of actors in the digital deconstruction sector. They will provide hands-on experience with innovative technology, enable the networking of front-runners and the co-creation of DDC tools with actors along the value chain

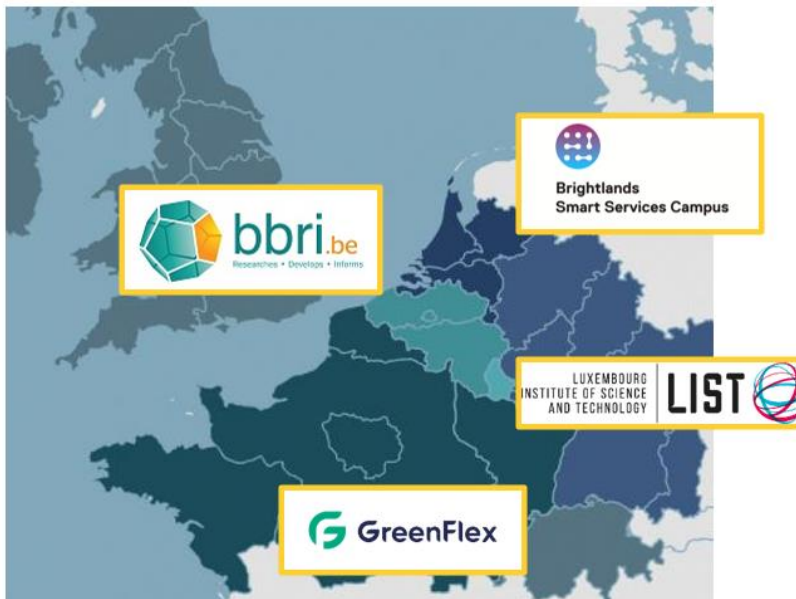
-  Scope : 2019 - 2023
-  Find DDC [online](#)
-  Countries : BE | FR | LX | NL
-  Partners





Transnational Innovation Hub


- Objectives
 - Interface between the technology & the end-users/stakeholders
 - Broad movement in the domain of deconstruction, reuse, recycling and the use of digital tools to support this
- Innovation Hubs?
 - Regional Innovation Hubs
 - 1 Transnational Innovation Hub
 - Exchange with frontrunners
 - Run ahead, vision
 - Testing,



Transnational Innovation Hub

- 1st session:

Current needs and barriers to more circular demolition ?



- Many systemic barriers in other organisations
- There is the potential for DDC and RH to address specific practical barriers
- Barriers not addressed by DDC or RH

Systemic issues

- Mindset change towards reuse: client incentives, construction managers & or lack of knowledge → sensibilisation and education through BIM
- Stakeholders in construction have difficulties with digital tools and BIM → propose "user-friendly" digital tools in BIM
- Lack of uniform system → object classification; workshops in BIM
- Legal and financial incentive (tax, public tendering criteria, cost-benefit issues)
- Liability/responsibility: guarantee/technical indicators
- Circular project certification system

Practical barriers

- Quick demolition/short cycle on site → Scan, MO, tools in BIM
- Assessing reuse and high quality recycling: CO₂ and energy saved, economic difficulties to estimate cost at the beginning of the project, easy indicators needed → DDC tools
- User-friendly tool for all actors, interoperability and information exchange between stakeholders → the DDC IP
- Specific reuse (historic values) → Scan
- Identification of stakeholders/users → networking in BIM
- Not enough pragmatic use cases of reuse → experience sharing in BIM
- Revolving platforms, logistics, ensure flow of reused materials, link supply and demand
- Setting a common goal amongst all stakeholders from initial to execution
- High capacity of integration of their operational flexibility in the agreement/decision
- No skilled manual knowledge, training needed
- Topic RH (lead and assistant)

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DDC SWOT




- Strengths**
 - Low competition: Need for digital revolution in (de)construction, a lot of potential for DDC
 - DDC-IP: good information overview, able to make links with modules
 - Uniformity of material database
- Weaknesses**
 - Usability: size of 3D files, different modules/kernels
 - Availability: Generated knowledge available to a wider public? Output available for everybody?
 - Restricted to big demolition sites: quick small, automation possible with historic buildings?
 - Assessing reuse potential requires detailed analysis (not only reversibility potential)
 - Non geometric element info → operational constraints integrated?
- Opportunities**
 - For the reuse sector: dypst, visibility boost, access a large market of reusable elements
 - Integration with other tools: AI (element identification), BIM, digital twin, material passports, transfer with other data services
 - Attract (young) talents/programmers that have made digital work for other themes
 - Collaboration: U-mine
- Threats**
 - Too long project duration
 - Risk of no adhesion by user
 - Complex structure
 - Need for continuous updating of the DDC automated 3D aggregation
 - Lack of relevant info about the products
 - Competitors
 - Threats to circular eco.: maintaining the status quo

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Next steps

- Objectives next time(s)
 - More time for detailed discussions
 - Link to Regional Innovation Hubs
- Feedback from participants on their objectives/wills for the next TH (Miro):
 - Specific objectives to present something:
 - Charmagne (France) / ALLEYA: currently developing digital tools to help depl of new processes of resource efficiency in construction
 - Edith Vermeiren (BE) / Lisa Camerlinck (BE) : Erdogru and Vise, U-mine: present something → collaboration
 - Simon BLM: present blockchain and law-economics



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• 2nd session

First experiences and lessons learnt of 3D scanning on Heerlen pilot site - BIM-Y

COMMENTS/ QUESTIONS	ANSWERS
Johan D'Hooghe: sees an opportunity to use the 3D model to make a demolition audit	BIM-Y: - 3D model is an in-between solution to digitalise while avoid building a BIM. - Automatic segmentation provides additional opportunity
Steven Meersman: recognition of the different materials (composition)	BIM-Y: not possible to recognise composition only using the 3D model. Supplementary data is needed (AI, plans, drawings, ...)
What's next?	BBRI: More Detailed demo in RIH?

First experiences and lessons learnt of 3D scanning on Aerp pilot site - GTBLab

COMMENTS/ QUESTIONS	ANSWERS	OPPORTUNITIES IDENTIFIED	COMMENT
Johan D'Hooghe: Time required to build RBIM? Is it economically realistic to build?	GTBLab: There has been a lot of research for the last 10 years. From data collection for digital twin for deconstruction	Johan D'Hooghe: sees an opportunity for sequencing demolition to avoid destruction of neighbouring elements	GTBLab: RBIM provides opportunity for sequencing demolition to avoid destruction of neighbouring elements
Johan D'Hooghe: are visits needed to create the RBIM model?	GTBLab: Visits are needed to confirm the model. 3D mapping (to BIM-Y) with automatic segregation of elements is expected to facilitate the RBIM construction	Astrid Heytze: BBRI: is a shop for 3D BIM. Elements easy to integrate on new constructions?	Output of RBIM = BIM object. Possible use: before demolition of building, you can post the catalog of BIM elements on a website for selling. 'Nico to have'
Astrid Heytze: is element quality assessment done through the RBIM?	BBRI: does not identify chemical composition but focus on technical damage, edge geometry/composition, influence the damage level, which process, deslating, connectors are cataloged. Technical inspection tool or the durability of materials. - indicator which looks at quality	GTBLab: Heritage buildings have elements with natural value -> easy to integrate in architecture projects. Catalog of BIM elements to be integrated to products to be integrated to catalog of new products	GTBLab: Heritage buildings have elements with natural value -> easy to integrate in architecture projects. Catalog of BIM elements to be integrated to products to be integrated to catalog of new products
David Garcia: Reuse potential is being evaluated from the number and type of connections with other elements. From my perspective it is more driven by existing market demand, technical specifications and quality.	GTBLab: RBIM gives an indication on reuse potential. Other information is needed: incidents, chemical quality of elements -> need with IOT	GTBLab: in the editor code performance as a basis for decisions. It is easy to use	GTBLab: in the editor code performance as a basis for decisions. It is easy to use
Astrid Heytze: is the age of the building taken into account?	GTBLab: Yes, lifetime is taken into account. If materials have the potential to last longer -> higher reuse potential	GTBLab: (work going on outside of DDC) Creation of data on circular Economy. Overview of building projects refurbishments...	GTBLab: (work going on outside of DDC) Creation of data on circular Economy. Overview of building projects refurbishments...
Lisa Commerlock: Practical issues of the dismantling, transport, selling, lifetime. Transport etc has to be taken into account when calculating CO2 impact	GTBLab: CO2 calculation for the transport between deconstruction location and new site -> new functionality for RBIM		

First feedback on DDC Integrated Platform - LIST

COMMENTS/ QUESTIONS	ANSWERS/DISCUSSION
Lisa Commerlock: An AI is useful, opportunity to help data sharing	GTBLab: AI is useful, opportunity to help data sharing
Lisa Commerlock: Practical issues of the dismantling, transport, selling, lifetime. Transport etc has to be taken into account when calculating CO2 impact	GTBLab: CO2 calculation for the dismantling, transport, selling, lifetime. Transport etc has to be taken into account when calculating CO2 impact
Astrid Heytze: is there a feedback loop (what to use with the old BIM model)? what happens to the obsolete data after the building has been demolished?	GTBLab: Also please collect info on the environmental and economic indicators. Product catalog information can be fed back to the marketplace (price definition of the product, composition)
BBRI: Breakdown method -> you have to create the BIM with the DDC data	GTBLab: BBRI: Breakdown method -> you have to create the BIM with the DDC data
Can BBRI LIST: Question to the panel: "What have we missed or got wrong?" -> what do we need to do as deconstruction, and what are the external elements from today?	GTBLab: Can BBRI LIST: Question to the panel: "What have we missed or got wrong?" -> what do we need to do as deconstruction, and what are the external elements from today?

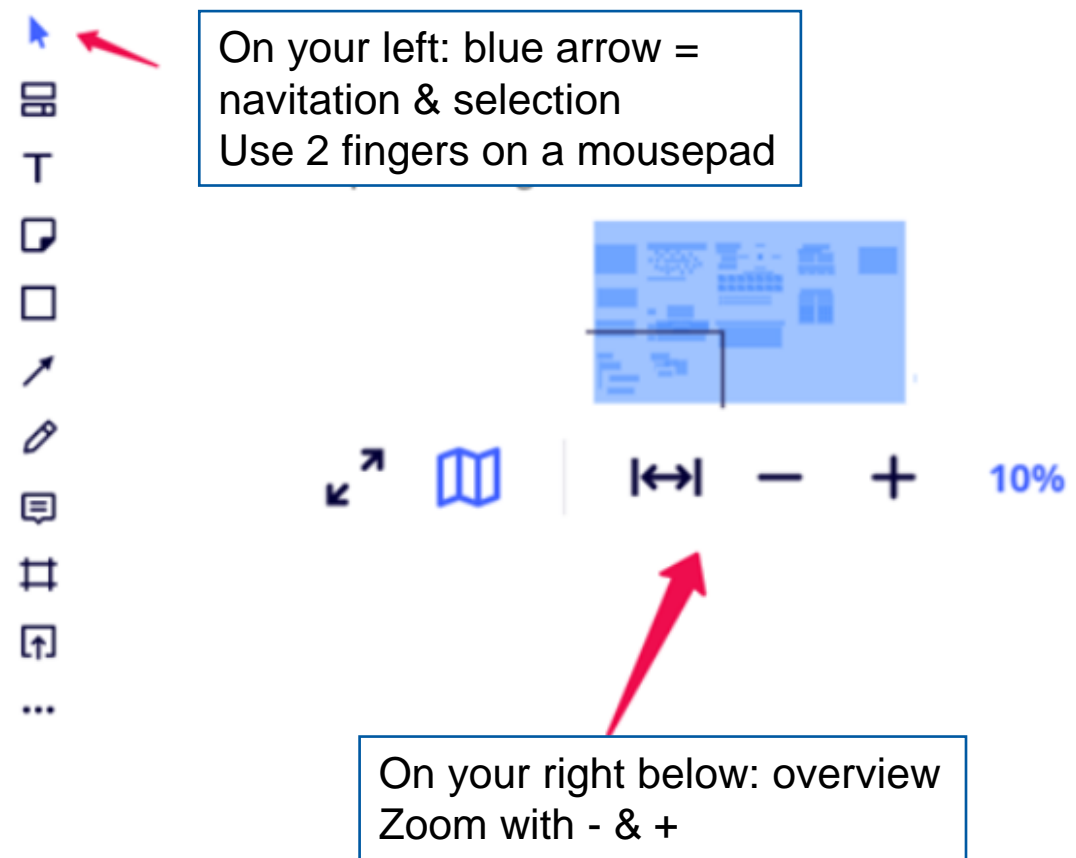
Lessons learnt of Material Database (Cridax) and Blockchain technology - BlockMaterials

COMMENTS/ QUESTIONS	ANSWERS/DISCUSSION
BBRI: Can I have more info on the material? Do you have a list of materials for -> materials?	BBRI: Can I have more info on the material? Do you have a list of materials for -> materials?
BBRI: Can I have more info on the material? Do you have a list of materials for -> materials?	BBRI: Can I have more info on the material? Do you have a list of materials for -> materials?
Johan D'Hooghe: what is the meaning of Blockchain technology	BBRI: Can I have more info on the material? Do you have a list of materials for -> materials?
Demien Verwey: Any info with other apps such as Cridax?	BBRI: Can I have more info on the material? Do you have a list of materials for -> materials?
Demien Verwey: Average cost of Cridax? Invoiced?	BBRI: Can I have more info on the material? Do you have a list of materials for -> materials?
Thomas Bergsma: Cost to register 1 Blockchain?	BBRI: Can I have more info on the material? Do you have a list of materials for -> materials?
Thomas Bergsma: How can we use the data on Cridax to create a cost-benefit analysis?	BBRI: Can I have more info on the material? Do you have a list of materials for -> materials?

How does MIRO work ?

https://miro.com/app/board/o9J_IShYcjc=

NAVIGATE



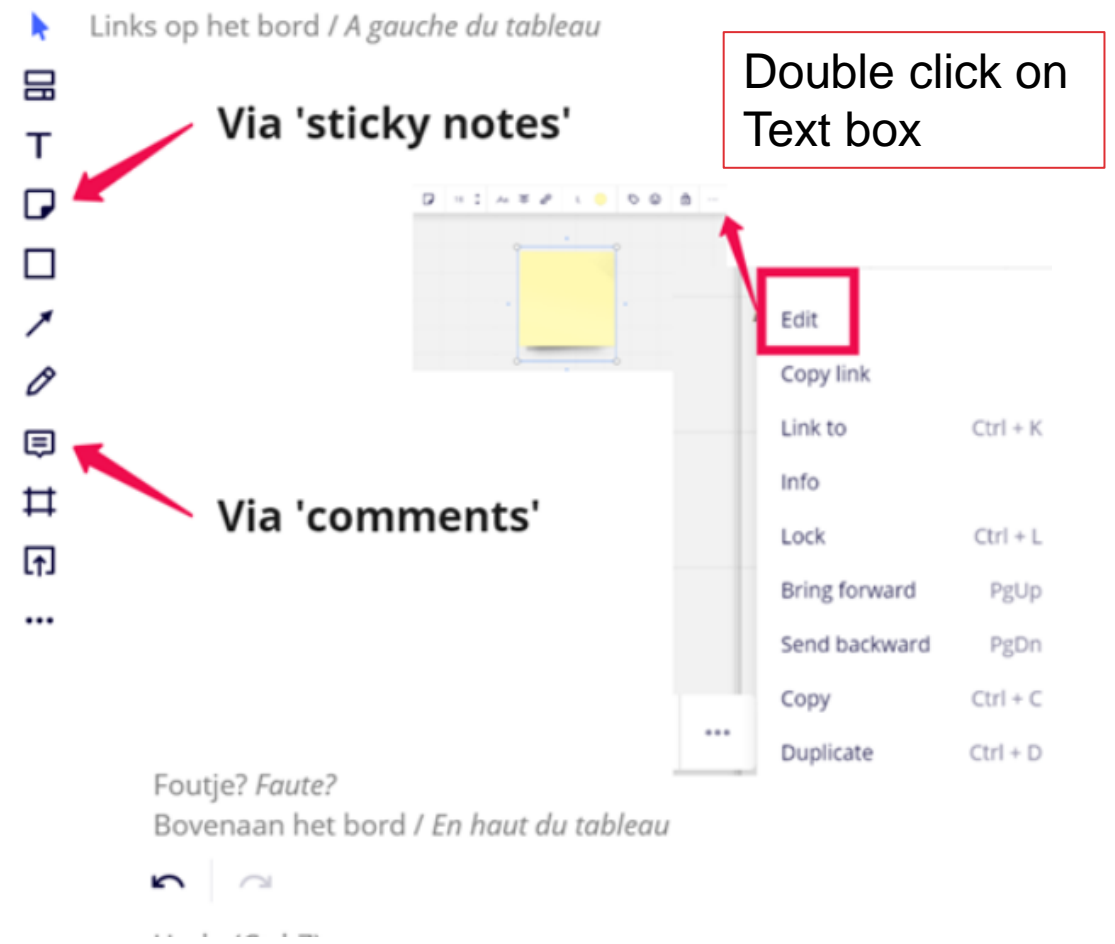
On your left: blue arrow = navigation & selection
Use 2 fingers on a mousepad

On your right below: overview
Zoom with - & +

10%

The image shows a vertical toolbar on the left with icons for navigation and selection. A red arrow points to the top icon, a blue arrow. Below the toolbar is a zoom control area with a blue arrow icon, a magnifying glass icon, and minus/plus signs. A red arrow points to the zoom controls. A small inset image shows a blue-tinted overview of a dashboard.

TO GIVE INPUT



Via 'sticky notes'

Via 'comments'

Double click on Text box

Edit

Copy link

Link to Ctrl + K

Info

Lock Ctrl + L

Bring forward PgUp

Send backward PgDn

Copy Ctrl + C

Duplicate Ctrl + D

Foutje? Faute?
Bovenaan het bord / En haut du tableau

The image shows a vertical toolbar on the left with icons for sticky notes, comments, and other input tools. Red arrows point to the sticky notes icon and the comments icon. A context menu is open over a yellow sticky note, with the 'Edit' option highlighted in a red box. The menu includes options like 'Copy link', 'Link to', 'Info', 'Lock', 'Bring forward', 'Send backward', 'Copy', and 'Duplicate'. At the bottom, there is a 'Foutje? Faute?' section with a 'Bovenaan het bord / En haut du tableau' label and navigation arrows.

Participant Role

- Are you a ...
 - Project owner / Building owner / Client ?
 - Architect / Designer / Consultant ?
 - Specialist in demolition & inventories ?
 - Contractor (demolition / construction) ?
 - Reuse expert / material reseller ?
 - ... ?

Name
Organisation
Expertise

Jeroen Vrijders
BBRI
Demolition
expert

Strike a pose !



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More information

<https://www.nweurope.eu/projects/project-search/digital-deconstruction/>

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Digital Deconstruction - Advanced Digital Solutions Supporting Reuse and High-Quality Recycling of Building Materials

Project Summary

Construction and demolition waste (CDW) accounts for about 1/3 of all waste produced in the EU. Ca. 50% of this amount is currently recycled in most EU countries, however the majority of CDW is destined for backfilling and other low value applications (downcycling). In NWE countries reuse and high-quality recycling (upcycling) of CDW remains below 3%. Poor digitisation of the construction sector is one of the key factors hindering better exploitation of circular opportunities.

Digital Deconstruction (DDC) aims to develop an innovative digital decision support system, integrating various digital tools (3D scanning, Building Information

KEY INFORMATION

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