GO INTERNATIONAL

Benelux Circular Economy Business Forum

4 & 5 October 2022

THEMATIC WORKSHOPS

14h00 – 15h15 / Room C2

Thematic Workshop N°2:

Sustainable construction in the Benelux: Building construction projects with eco-friendly and recyclable resources and materials

moderated by:
Ms Yvonne Havenga, General Secretariat of the Benelux Union

Benelux

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Groß — Grande REGION
Französische Präsidentschaft
Présidence française
2021 — 2022

Thematic Workshop N°2:

Sustainable construction in the Benelux: Building construction projects with eco-friendly and recyclable resources and materials

Mr Michael Moradiellos del Molino

Head of Real Estate,
EPEA – Part of Drees & Sommer (LU)

Mr Hugues Kempeneers

Manager
Embuild – Brussels (BE)

Ms Annie Guerriero

Senior R&D Engineer
LIST (LU)

Mr Jean-Yves Marié

CEO,
BIM-Y (LU)

Mr Guillaume Dubois
Cadre dirigeant
Schroeder & Associés (LU)

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Digital Deconstruction

Interreg North-West Europe Digital Deconstruction

European Regional Development Fund

Thematic workshops 2 : Sustainable construction in the Benelux

BIMY

SCHROEDER & ASSOCIÉS

LUXEMBOURG INSTITUTE OF SCIENCE AND TECHNOLOGY LIST

Image: Annie Guerriero

Image: Annie Cherubini

Construction & demolition waste

35%

of all waste produced in the EU

Construction & demolition waste

Construction & demolition waste

Less than **3%**

considered for reuse & upcycling in NW EU

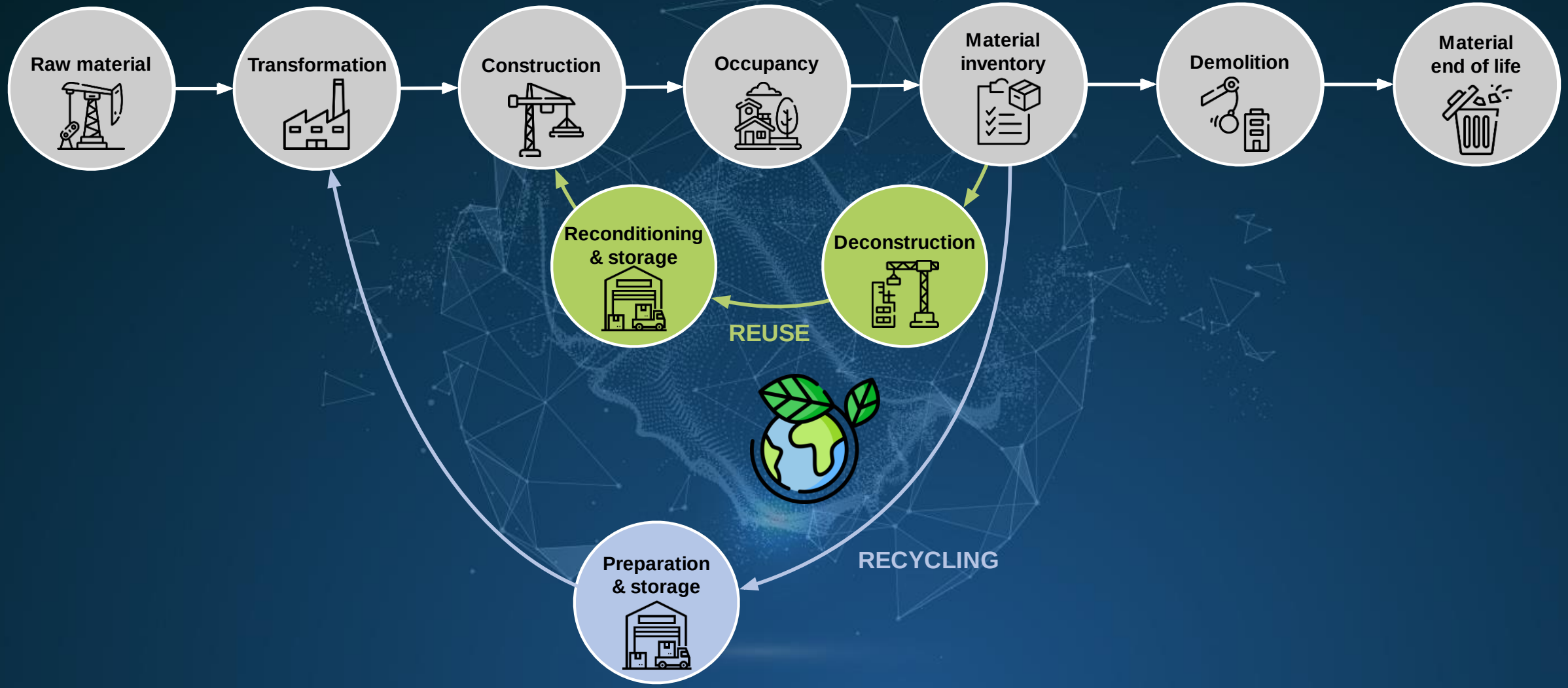
Opportunity for circular economy & innovation

IN THE PAST

Brussels, 1928, Demolition of the Palais Granvelle, Building from 1550
KIK-IRP, cliché A105361

TODAY


Material inventory
Low reuse level
High quantity of wastes
Icon Flaticon



Icon Flaticon

DIGITAL DECONSTRUCTION PROJECT

Interreg North-West Europe Digital Deconstruction

European Regional Development Fund

Brightlands

Brightlands Smart Services Campus

gtb lab

provincie limburg

Kempens Landschap

vilogia

SCHROEDER & ASSOCIÉS

GreenFlex

bbri.be

BLOCK MATERIALS

BIMY

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AREP

SNCF

Nobatek INEF4

Digitalization is key to improve the reuse strategy

Decision support system

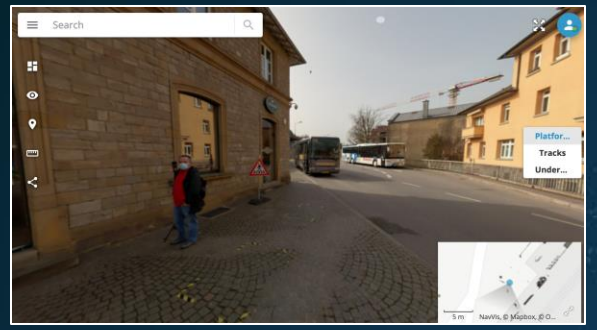
+ Environmental criteria

+ Economic criteria

Icon Flaticon

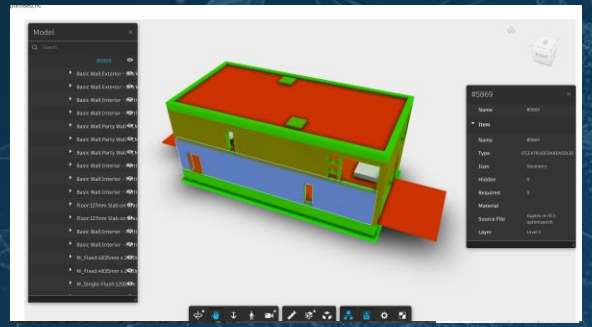
M1

3D SCAN & SCREENING



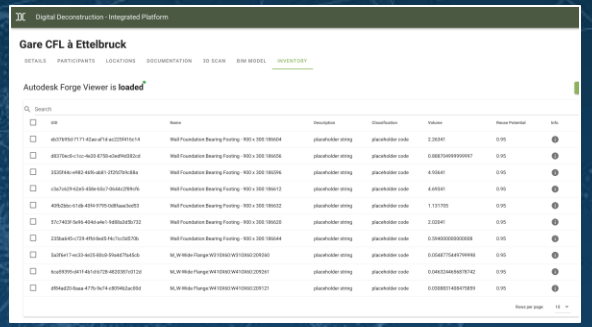
M2

REVERSIBLE BIM



M3

MATERIALS INVENTORY



M4

MATERIAL PASSPORT / BLOCKCHAIN

DigitalDeConstruction Platform

Decision support interface for deconstruction & reuse strategies

- BIM visualization
- Economic indicators
- Material data
- Sustainable indicators
- Material passport
- Scenarios analysis

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Image Freepik / Icon Flaticon

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DDC PLATFORM END USERS

PUBLIC OR PRIVATE OWNER

Owner

DECONSTRUCTION EXPERT

RBIM expert

3D SCAN EXPERT

Scan

ARCHITECT, ENGINEER
INVENTORY EXPERT

Inventory

BUYERS

Buyer

CONSTRUCTION FIRMS

Construction firm

Image Freepik

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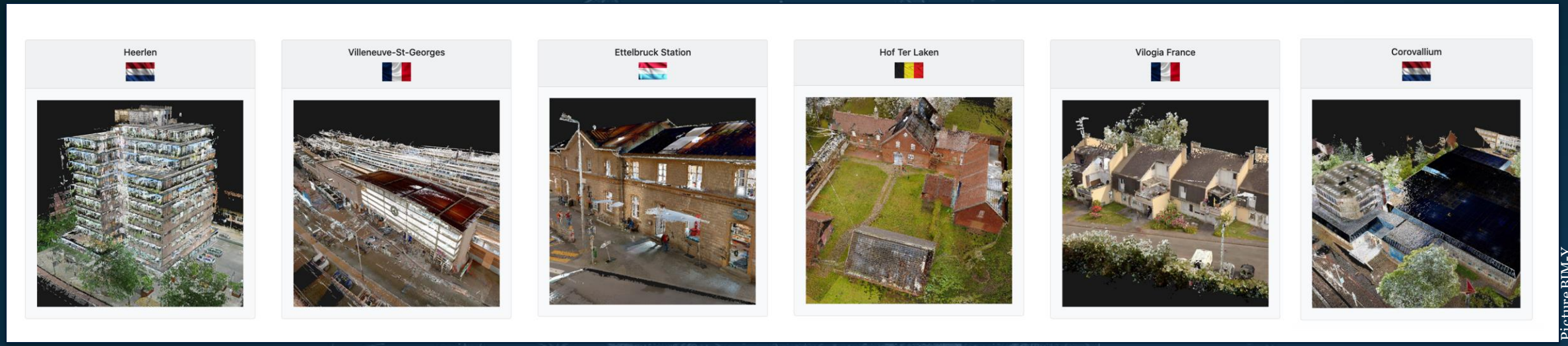
SEVERAL PILOTS



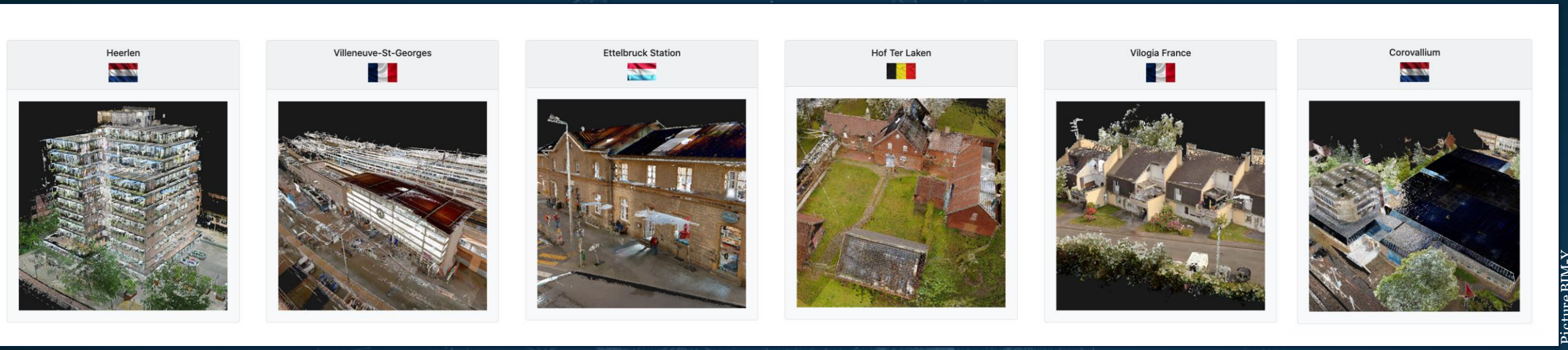
Picture BIM-Y

Test of technologies

User feedback

Cost/benefit analysis

3D SCANNING



Picture BIM-Y

	Hof Ter Laken (BE)	Heerlen (NL)	Ettelbruck (LU)
Duration	1 h 13 min	12 h 30 min	46 min
# picture	1.073	5.063	522
Ratio	1.342 m2/hour	1412 m2 /hour	3.353 m2/hour

SCREENING

Picture BIM-Y

Main features

- Virtual tour
- Geolocated inventory data
- Automatic 2D map
- Measurement tools
- Crop and download point cloud

INVENTORY

Asset detection

Pictures BIM-Y

Geolocation

Ettelbruck train station

ETTELBRÜCK TRAIN STATION

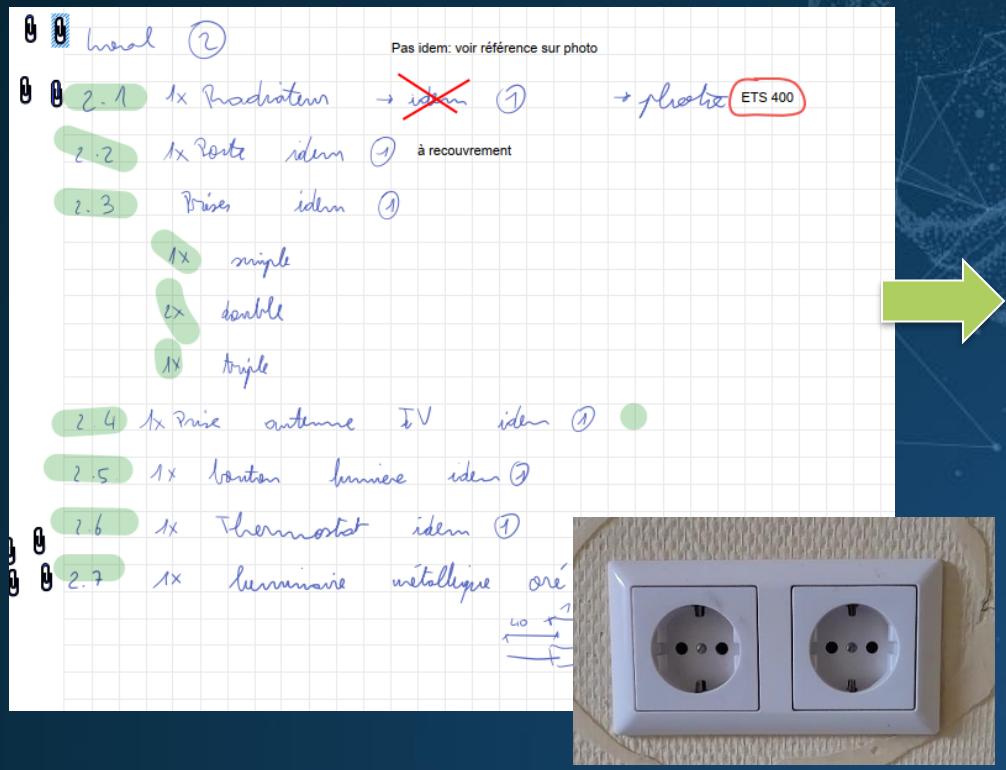
In the North of Luxembourg

Building owner CFL

Building from 1873

ETTELBRÜCK TRAIN STATION

Manual inventory of building components



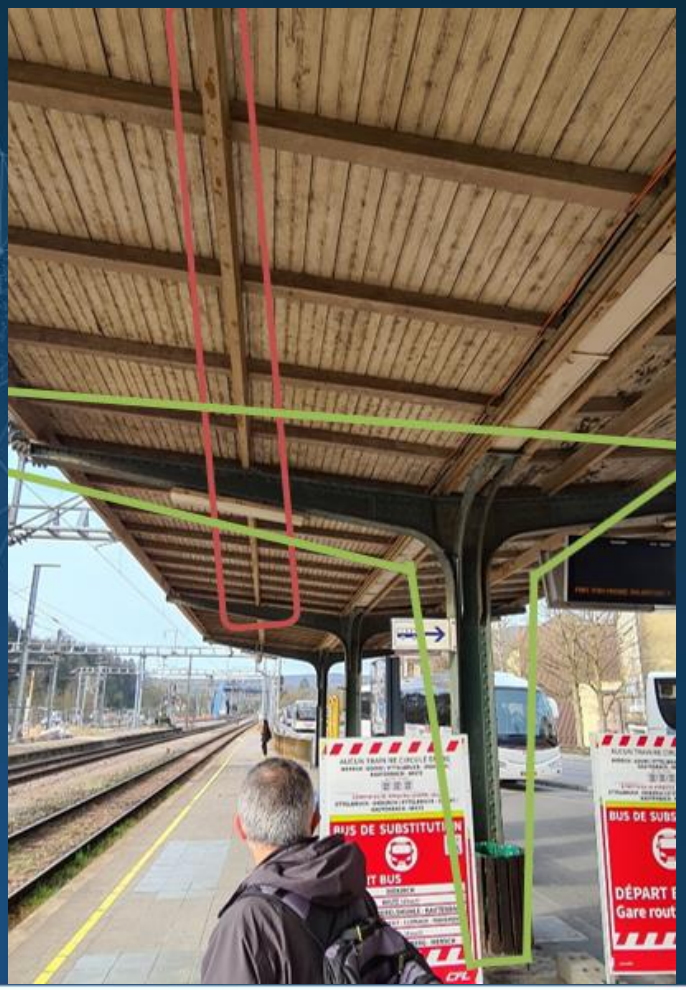
Déconstruction du Bâtiment Voyageurs en gare d'Ettelbrück

2. Inventaire - Type et quantité des matériaux survenant lors du démantèlement

Désignation et code du matériau		Description du matériau (par ex. indications précises concernant le composant)	Type de matériau (inerte, non dangereux, dangereux)	Qualité du matériau	Position dans le bâtiment (par ex. étages inférieurs, étages supérieurs, toit)	Dimensions	Quantité (en tonnes) = estimation	Contamination du matériau avec des polluants (cf. aussi liste de contrôle relative à l'étude sur les polluants)	Le matériau est-il collecté séparément sur le chantier ?	Comment le matériau va-t-il être traité ? (par ex. réutilisation, recyclage, valorisation énergétique, élimination et/ou autre)	Notices, remarques, liens vers les photos
17 01	**béton, briques, tuiles et céramiques**										
17 01 01	béton armé	Fondations	inerte		Fondations au sous-sol	non connues. Estimation : 100ml à 0,40m3/ml = 40 m3	40 m3 * 2,5 t/m3 = 100 t				Partiellement démolies dans ce marché (voir plan)
17 01 01	béton armé	Dalle	inerte		Dalle sur sous-sol	530 m2 * 0,25 m = 132,5 m3	132,5 m3 * 2,5 t/m3 = 331,25 t				
17 01 01	béton armé	Voiles	inerte		Murs extérieurs sous - sol	(70m*0,3*2,5 m)+(40m*0,3*1,5m) = 70,5 m3	70,5 m3*2,5 t/m3 = 176,25 t				Partiellement démolis dans ce marché (voir plan)
17 01 01	béton armé	voiles extérieurs	inerte		voiles extérieurs locaux WC	17,60m*0,2*3 m = 10,56m3	10,56 m3 * 2,5 t/m3 = 26,4 t				isolant extérieur
17 01 01	béton	Dalle	inerte		Dalle de fond au sous-sol : à priori non armée	400 m2 * 0,25 m = 100 m3	100 m3 * 2,5 t/m3 = 250 t				Partiellement démolie dans ce marché (voir plan)
17 01 02	briques	Murs extérieurs en pierres de pays	inerte		4 façades du BV	(2*88,5m2+2*330m2)*0,50=418,5 m3	418,5 m3 * 2 t/m3 =837 t		oui : voir colonne "Notices"	réutilisation	Pierres brutes pour AC Ettelbrück Pierres taillées (tours de fenêtres ; corniches) pour récupération CFL

ETTELBRÜCK TRAIN STATION

Manual identification of reuse potential



Reality

3D Scan

Reality

Picture from BIM-Y

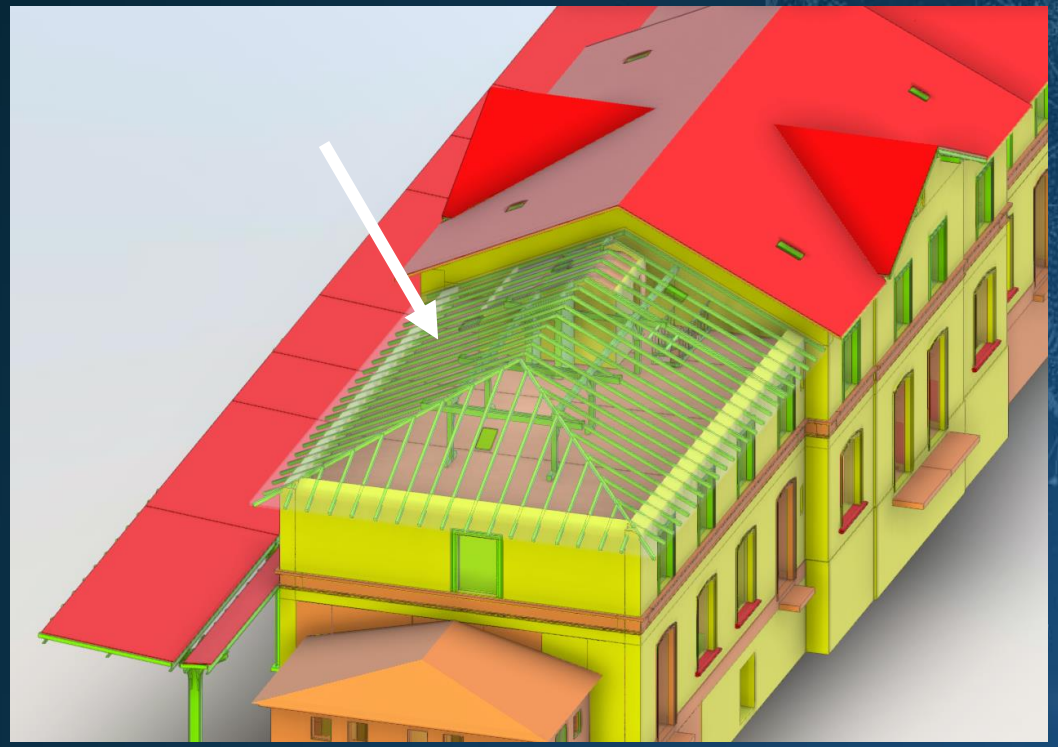
Reversible BIM

ETTELBRUCK- Luxemburg

Dr. Elma Durmisevic, developer of Reversible Building model

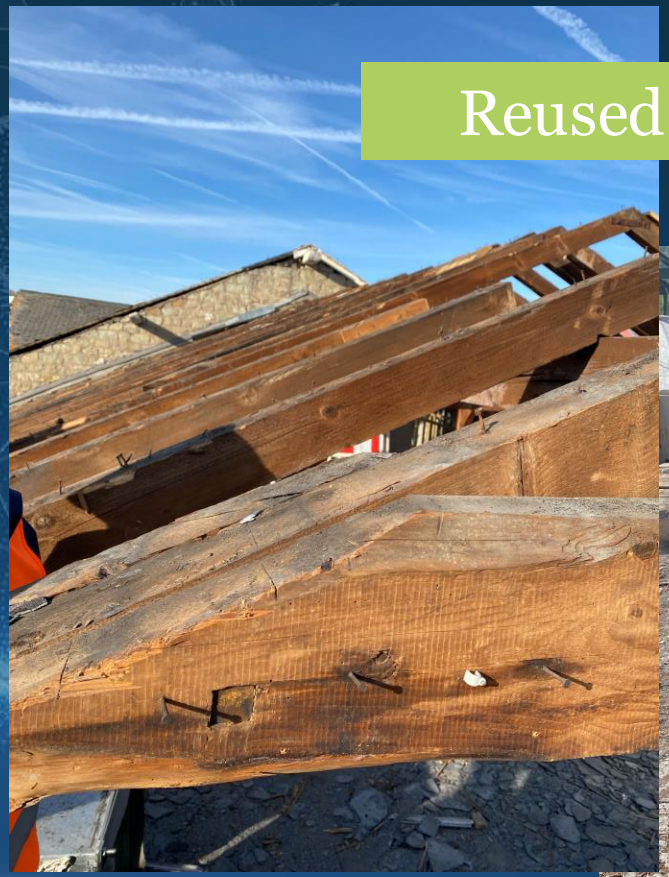
ETTELBRÜCK TRAIN STATION

Total : 14 % of reused elements



Dr. Elma Durmisevic, developer of Reversible Building model

Reused beams



DDC Platform

https://itt-ddc.private.list.lu/#/en/project

Digital Deconstruction - Integrated Platform

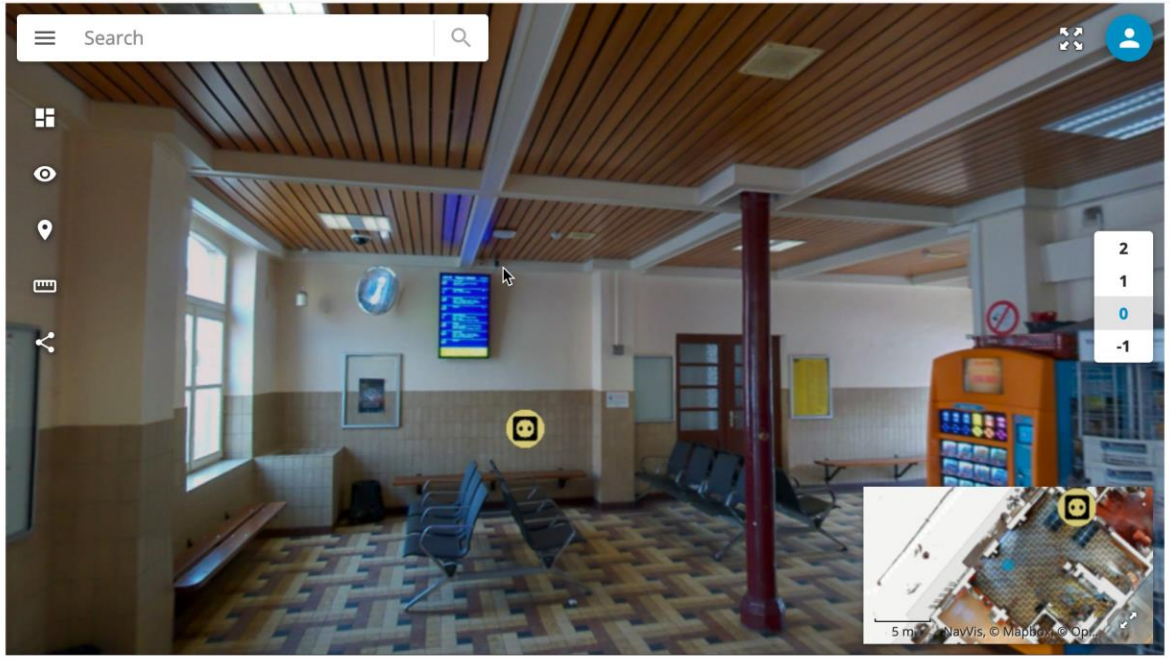
EN

Ettelbruck Luxembourg

< BACK TO LIST

DETAILS | PARTICIPANTS | LOCATIONS | DOCUMENTATION | 3D SCAN | REVERSIBLE BIM | INVENTORY | ANALYSIS

NavVis Indoor Viewer



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Website

https://www.nweurope.eu/digitaldeconstruction/

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