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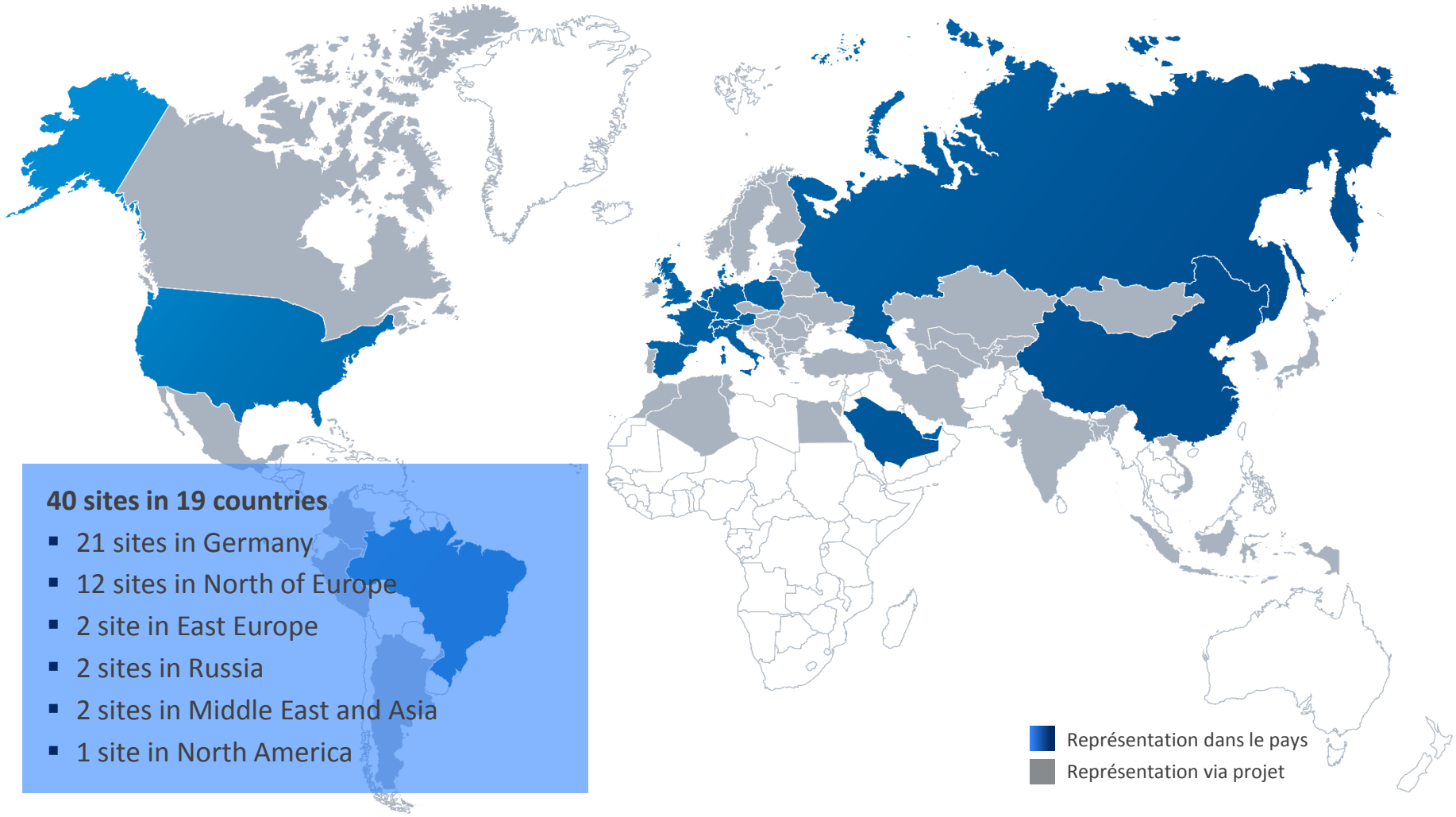
Building as Material Bank

Michael Moradiellos del Molino

October 2019

DREES & SOMMER WORLDWIDE

Close to our clients and projects



40 sites in 19 countries

- 21 sites in Germany
- 12 sites in North of Europe
- 2 site in East Europe
- 2 sites in Russia
- 2 sites in Middle East and Asia
- 1 site in North America

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DREES & SOMMER ADVANCED BUILDING TECHNOLOGIES

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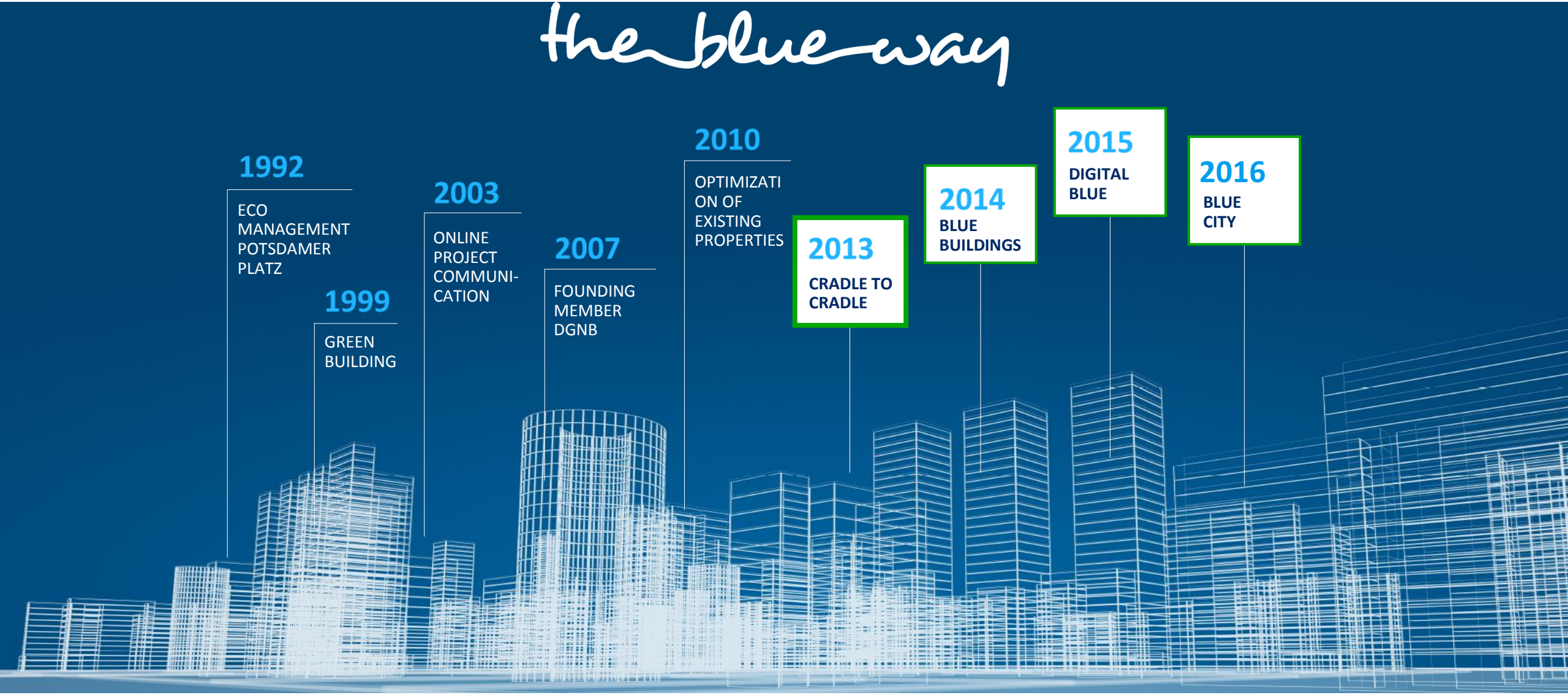
DREES & SOMMER - COMMITMENT



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EPEA – PART OF DREES & SOMMER

"Drees & Sommer and the former EPEA Internationale Umweltforschung GmbH joined forces on January 1, 2019. After five years of close partnership advising clients and investors, Drees & Sommer and Professor Dr. Michael Braungart have formally teamed up to create a new company under the name of EPEA – Part of Drees & Sommer. The objective of the combination is to establish Cradle to Cradle® design principles for the circular economy in all sectors of industry."

EU-DIRECTIVES

Material Passport for Products > Buildings

In resource-poor Europe, cycle closure is becoming increasingly important for our entire industry. For the construction sector, the introduction of a "product passport", similar to the energy certificate, is currently under discussion in Brussels. This should include appropriate requirements for ingredients and recycling

European Commission

ENVIRONMENT

Eco-innovation Action Plan

European Resource Efficiency Platform pushes for "product passports"

08/07/2013

Energy efficiency

Eu

RESOURCE EFFICIENCY

Using less, living better

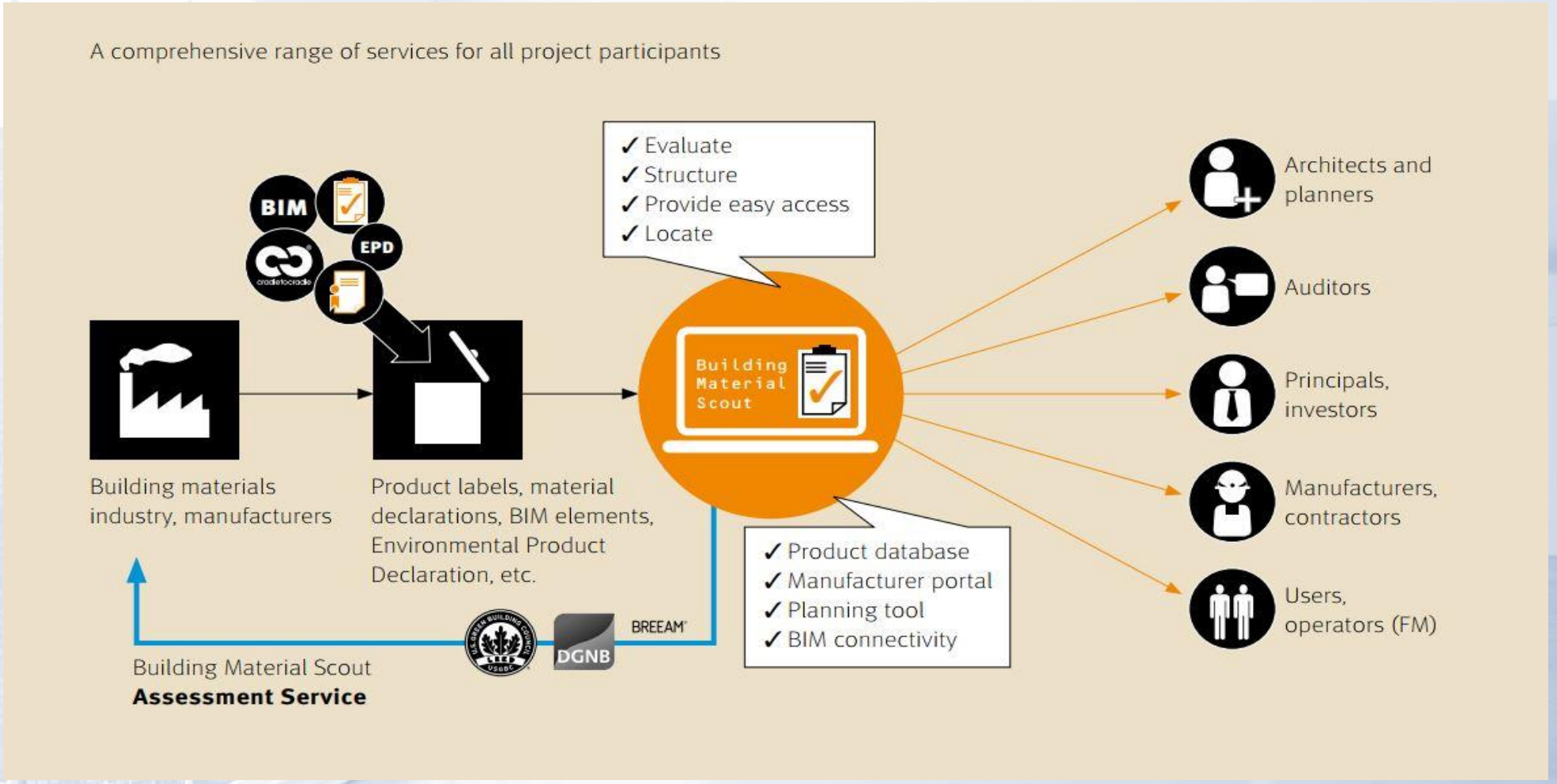
The European Resource Efficiency Platform (EREP), a high-level group set up to guide European policymakers, has published an interim set of recommendations. Among them is a proposals for "product passports" – a set of information about the components and materials that a product contains, and how they can be disassembled and recycled at the end of the product's useful life.

EREP chair **John Bruton**, the former Irish prime minister and European Union Ambassador to the United States, said that the product passport idea is an "innovation of some importance." He added that "our model of economic development is absolutely based on intensive resource use," and product passports would encourage a move to a circular economy in which the material content of obsolete products re-enters the production cycle.

In a statement accompanying its interim recommendations, EREP said that the product passport would tackle the problem of "inadequate business-to-business information on what resources a

BUILDING MATERIAL SCOUT

The intelligent platform for circular materials



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BUILDING MATERIAL SCOUT

The intelligent platform for circular materials

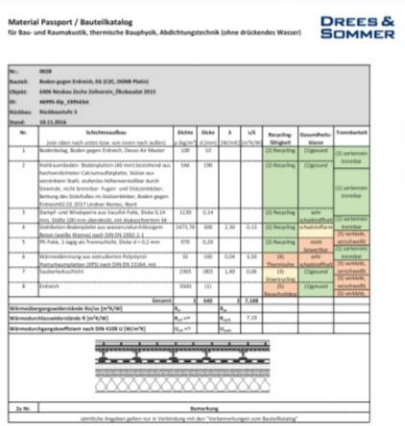
Product information ⟷ **Element information** ⟷ **Building information**

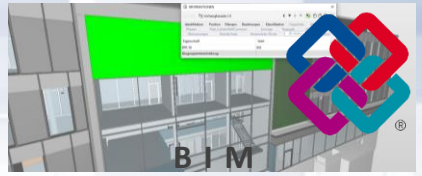
Building Material Scout

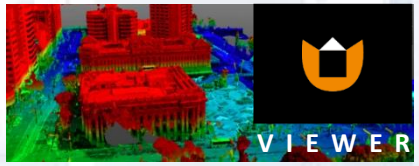
BAMB BUILDINGS AS MATERIAL BANKS

Paramètres circulaires

CONCLUDE







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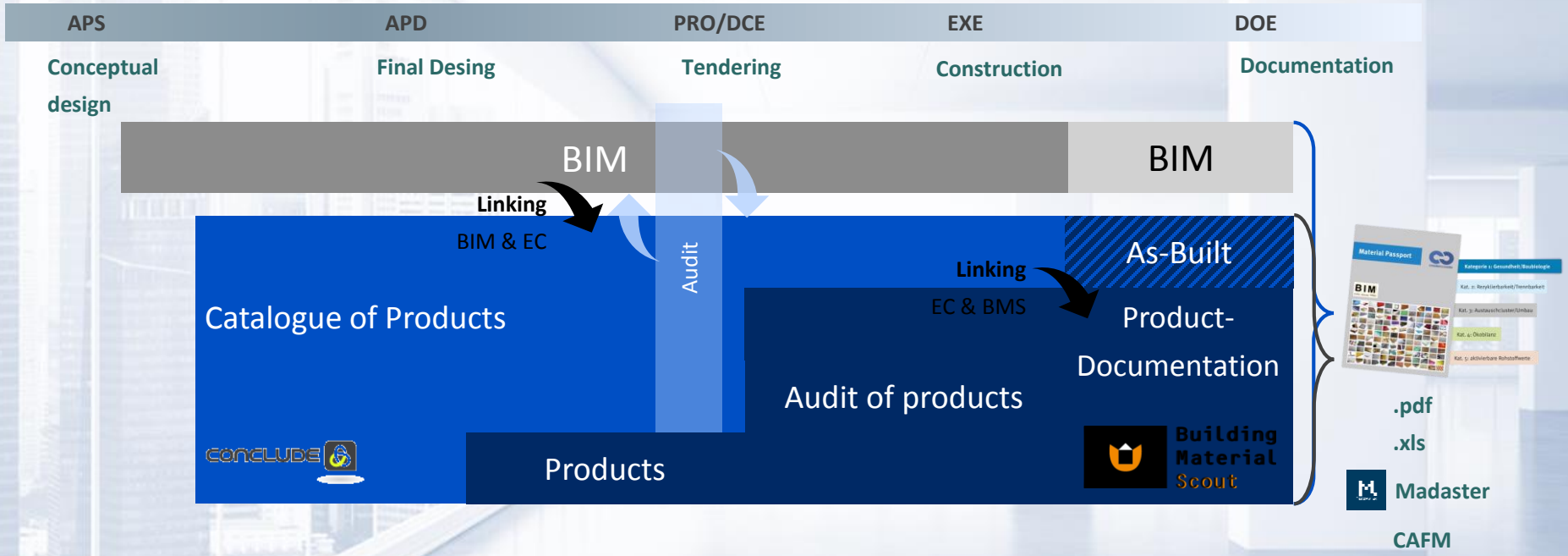
BUILDING MATERIAL SCOUT

Information Management



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Case Study

Refurbishment of WTC 1&2, Brussels, Belgium

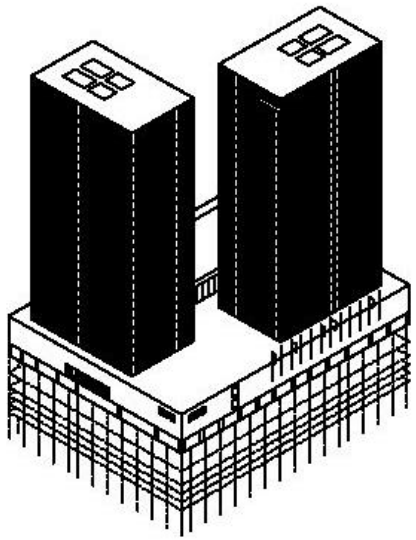
Befimmo is launching the renovation of the 110,000 m² of WTC 1 & 2 towers in order to introduce diversity in the North district of Brussels. Selective demolition is underway in the first phase of construction to promote the reuse of finishing materials, while a C2C project is expected to be created by 2023.
110.000 m² / 2019 – 2023 / Befimmo

Drees & Sommer services :

- Integration of circular economy specifications for the design team's tendering phases
- Identification of available materials and solutions and collaboration with companies to provide innovative solutions
- Demolition support according to C2C
- Implementation of the Material Passport
- Proposal for efficient ecosystems

D&B TEAM PROPOSAL

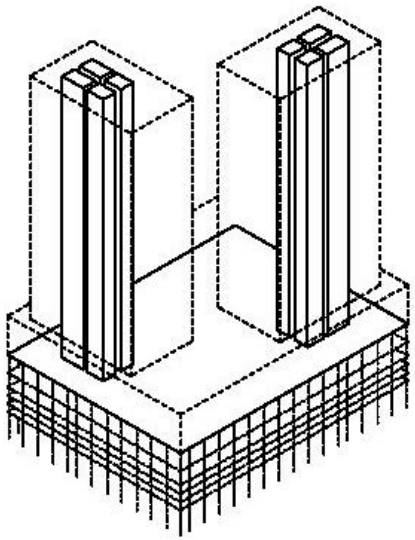
1972



Vloeroppervlak: 170 000 m²
Gewicht : 275 000 T

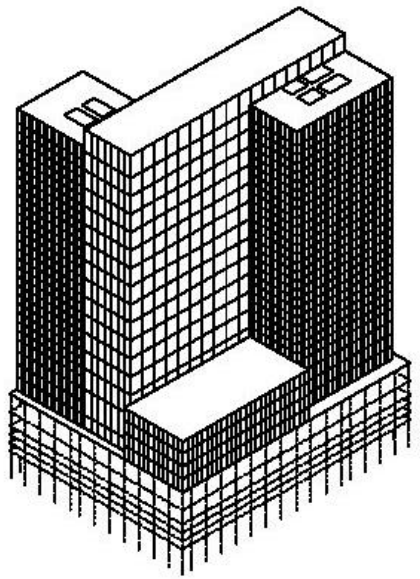
Nieuw:	275 000 T
Grond:	400 000 T
Afval:	41 000 T

2020



Behouden:	193 000 T
Gerecycleerd ter plaatse:	15 000 T
Gerecycleerd elders:	52 000 T
Afval:	15 000 T

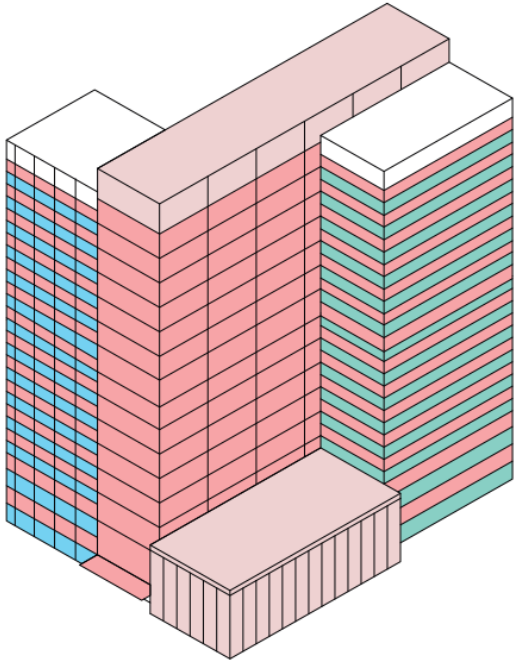
Geen vernietiging van groene ruimte



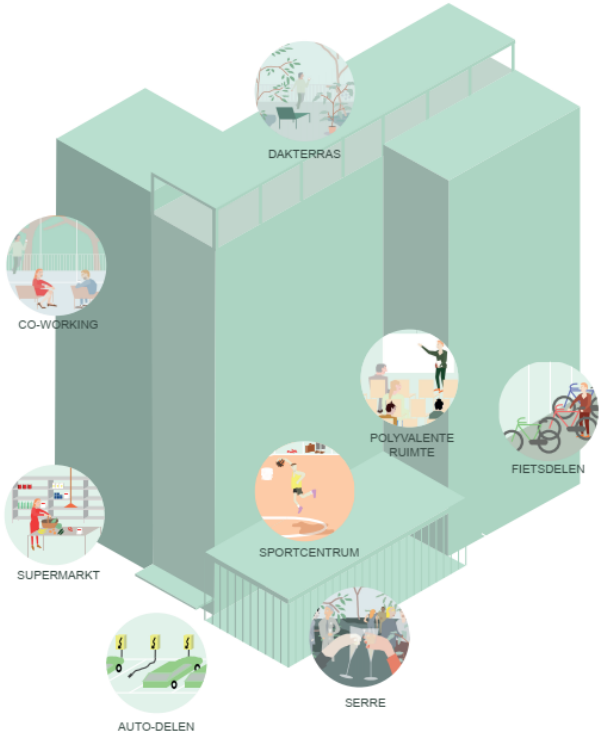
Vloeroppervlak: 170 000 m²
Gewicht : 315 000 T

Nieuw:	107 000 T
Behouden delen:	193 000 T
Gerecycleerd ter plaatse:	15 000 T
Afval:	7 512 T
Grond :	0T

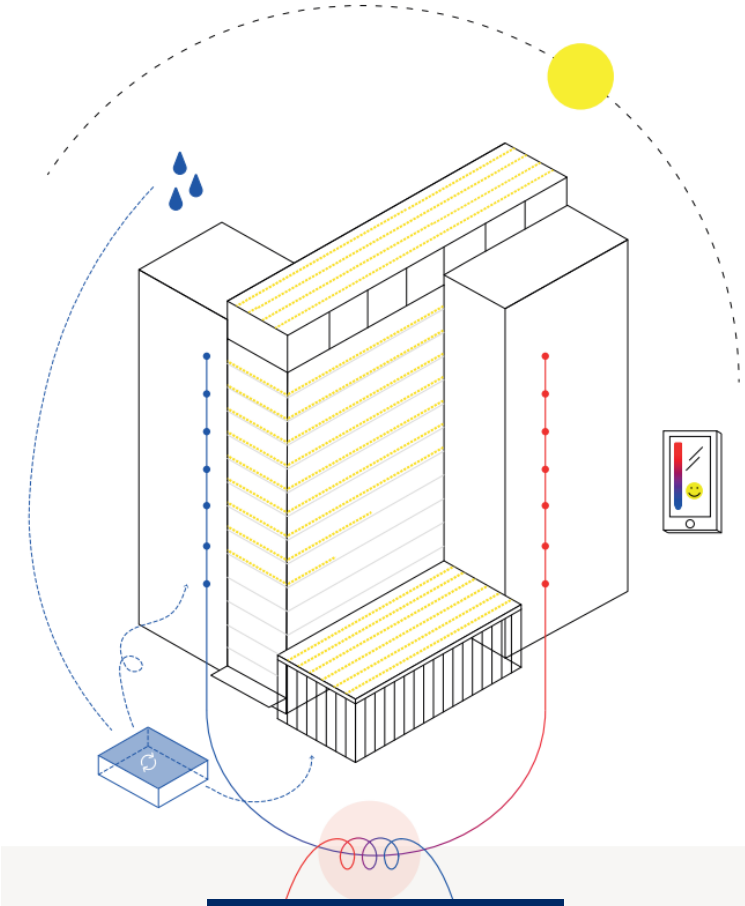
ZIN – FLEXIBILITY & ADAPTABILITY



Physical Flexibility : building elements can be adapted.



Functionnal Flexibility : space can be adapted.



Technical Flexibility : technics can be adapted.

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ORGANIGRAM

Befimmo / Besix

- Owner : Befimmo (2,6 billions portfolio)
- Constructor : Besix (2,15 billions revenues)
- BouwTeam

Architects & Engineers

- Jaspers&Eyers (big Firm)
- N54E5 (local firm in the building)
- AU (Paris firm)
- VK Engineering
- Dstudio (BIM)

Drees & Sommer

- C2C Products & others
- Data Management
- Quantities & Focus
- In charge of the deliverable
- Build for Desassembly

Befimmo

BESIX

JASPERS-EYERS ARCHITECTS

Vlaamse overheid

2018
Permit + Demolition
on going

2023
End of construction

70.000sqm Potential
tenant asking for C2C
Full Building
Tender > december 5th

Material Passport / BOM
C2C Vision
Demolition Inventory
Leasing solutions
Clean Air Building
(…)

2018 Demolition

2023 Construction

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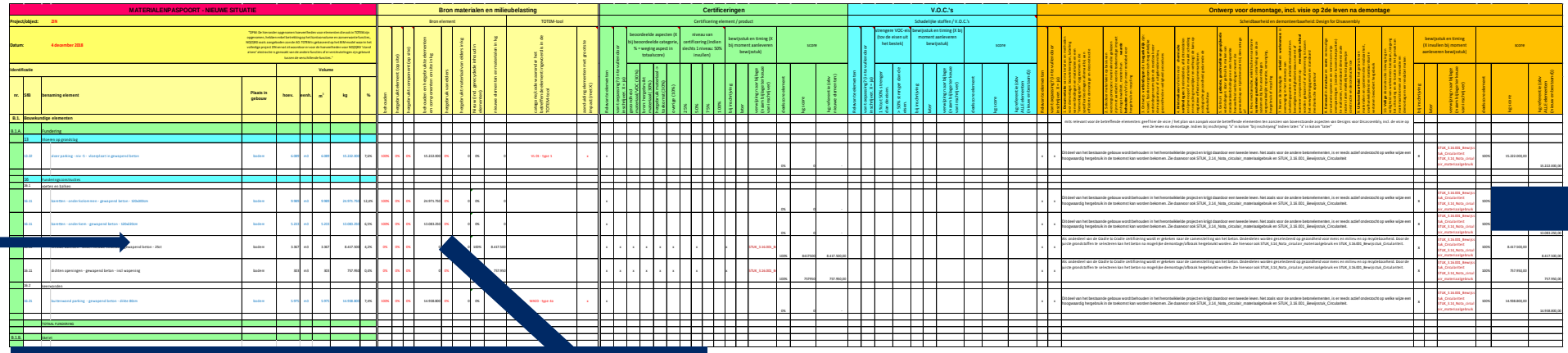
MATERIAL PASSPORT

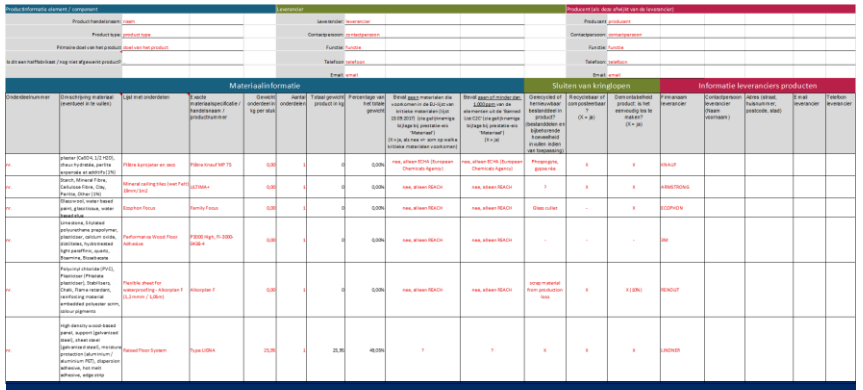
BIM > MP > BOM



Material Passport provided by the Flemish Government

EVALUATION

BIM



1 BOM X ELEMENT

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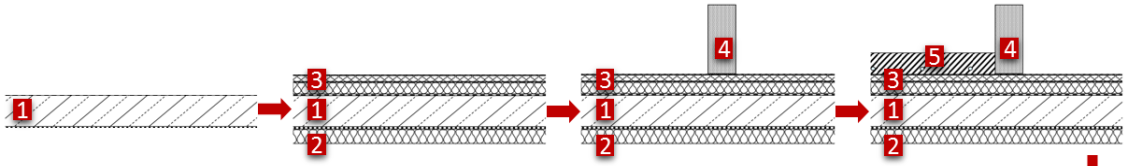
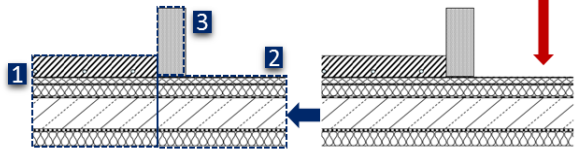
INFORMATION CHALLENGE
LOD & LOI

ID des Architekten: Vergabe erfolgt nach zeitlichem Entstehungsprozess der Zeichnung



ID_{ds} von Drees & Sommer: Vergabe erfolgt **im Anschluss** an die ID-Vergabe des Architekten **bauteilweise**

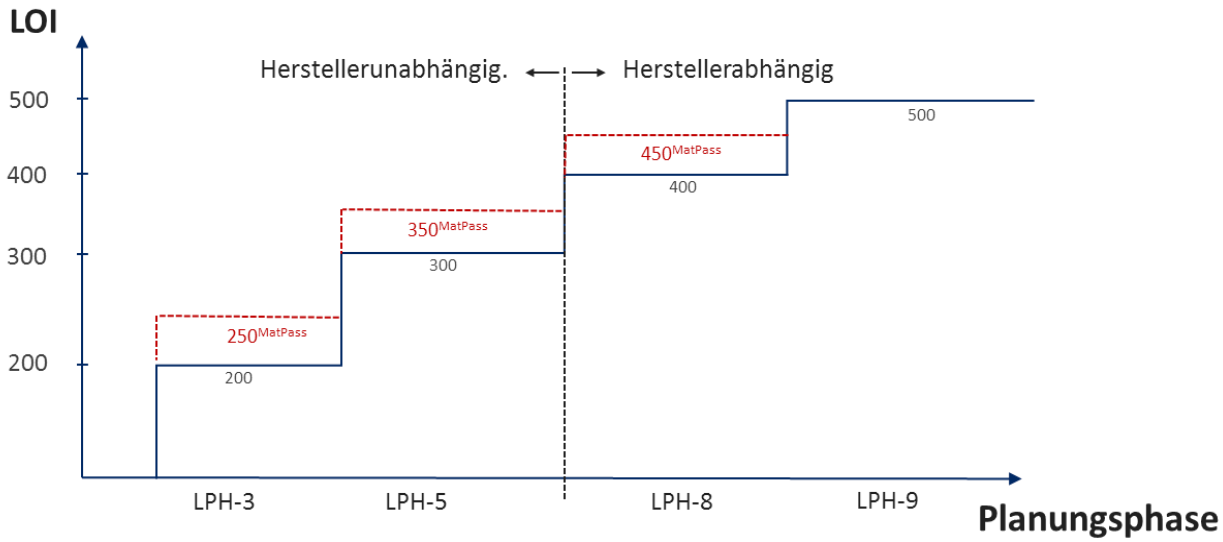


ID_{ds} setzen sich aus den IDs des Architekten zusammen:

1 = 1 + 2 + 3 + 5

2 = 1 + 2 + 3

3 = 4



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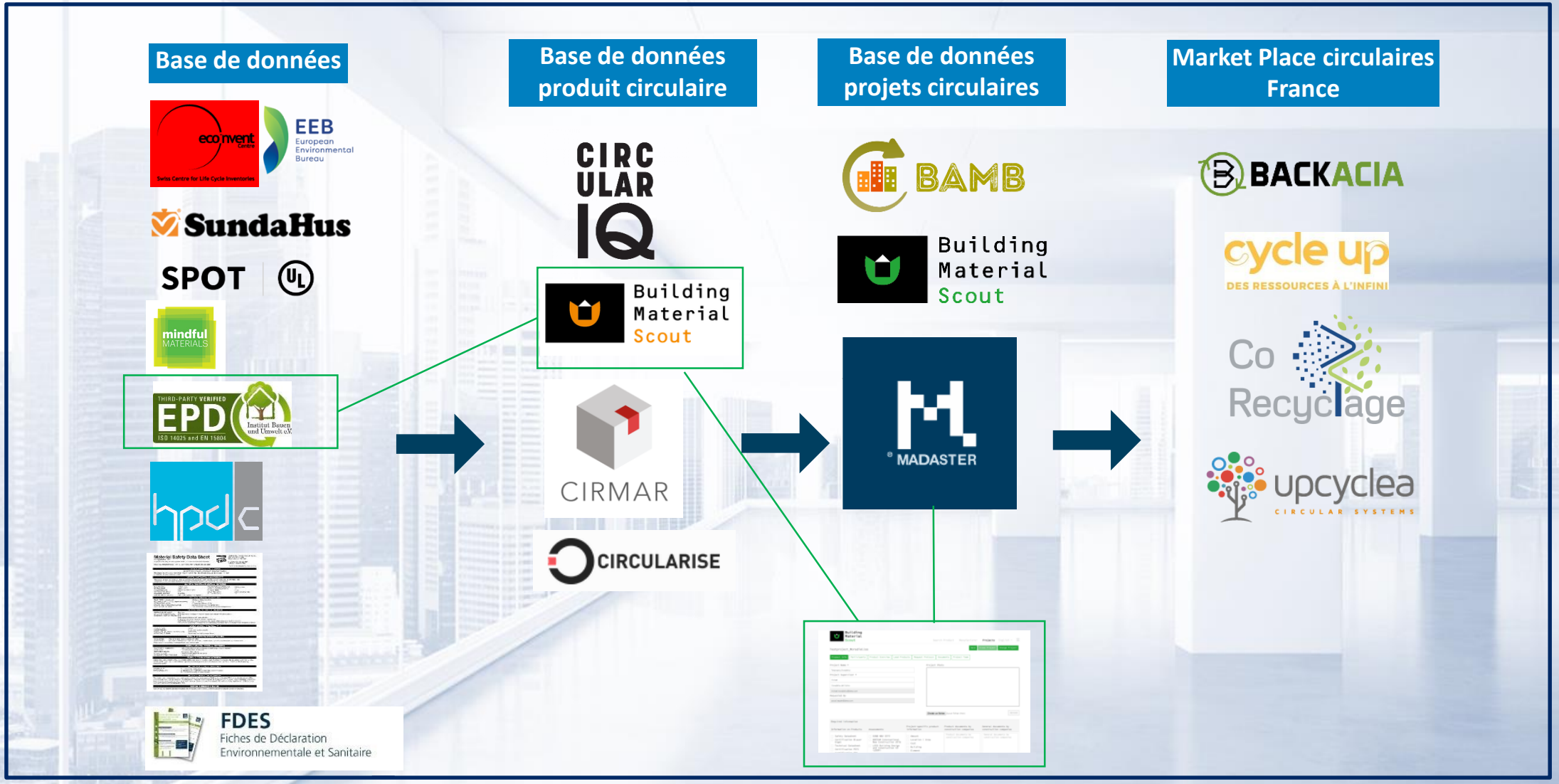
EXISTING DATA BASE ON THE MARKET

Data Base families



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COLLECTING INFORMATION

2 steps

Step 01

Step 02

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Screened by EPEA

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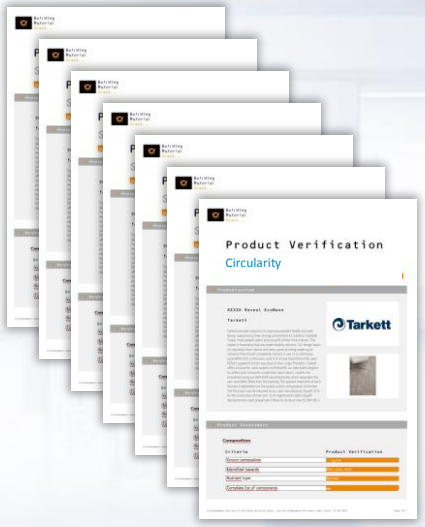

Building Material Scout

BOM

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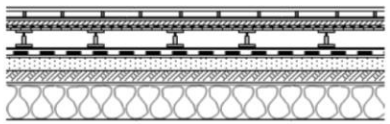
MATERIAL PASSPORT
Build for Disassembly

Material Passport / Bauteilkatalog
für Bau- und Raumakustik, thermische Bauphysik, Abdichtungstechnik (ohne drückendes Wasser)

DREES & SOMMER

Nr.:	002B
Bauteil:	Boden gegen Erdreich, EG (C2C, DGNB Platin)
Objekt:	6406 Neubau Zeche Zollverein_Ökobaudat 2013
ID:	46995-Xlp_339543zt
Rückbau:	Rückbaustufe 3
Stand:	10.11.2016

Nr.	Schichtenaufbau (von oben nach unten bzw. von innen nach außen)	Dichte ρ [kg/m³]	Dicke d [mm]	λ [W/mK]	s/λ [m²K/W]	Recycling-fähigkeit	Gesundheits-klasse	Trennbarkeit
1	Bodenbelag, Boden gegen Erdreich, Desso Air Master	100	10			(2) Recycling	(1)gesund	(1) sortenrein trennbar
2	Hohlraumboden- Bodenplatten (40 mm) bestehend aus hochverdichteter Calciumsulfatplatte, Stütze aus verzinktem Stahl, stufenlos höhenverstellbar durch Gewinde, nicht brennbar- Fugen- und Stützenkleber; Bettung des Stützfußes im Stützenkleber, Boden gegen Erdreich02.02.2017 Lindner Nortec, Norit	546	190			(2) Recycling	(1)gesund	(1) sortenrein trennbar
3	Dampf- und Windsperre aus Vacufol-Folie, Dicke 0,14 mm, Stöße 200 mm überdeckt, mit Alukaschiertem SK-	1130	0,14			(2) Recycling	sehr schadstoffhalt	(1) sortenrein trennbar
4	Stahlbeton-Bodenplatte aus wasserundurchlässigem Beton (weiße Wanne) nach DIN EN 1992-1-1	2473,70	300	2,30	0,13	(2) Recycling	schadstoffarm	(5) verklebt, verschweißt
5	PE-Folie, 1-lagig als Trennschicht, Dicke d = 0,2 mm	970	0,20			(2) Recycling	nicht bewertbar	(1) sortenrein trennbar
6	Wärmedämmung aus extrudierten Polystyrol-Hartschaumplatten (XPS) nach DIN EN 13164, mit	32	140	0,04	3,50	(4) Thermische	sehr schadstoffhalt	(5) verklebt, verschweißt
7	Sauberkeitsschicht	2365	(80)	1,40	0,06	(3) Downcycling	(1)gesund	(5) verklebt, verschweißt
8	Erdreich	3500	(1)			(5) Bauschuttdep	(1)gesund	(5) verklebt,
	Gesamt:	Σ	640		Σ 7,188			
Wärmeübergangswiderstände Rsi/se [m²K/W]		R_{si}		R_{se}				
Wärmedurchlasswiderstände R [m²K/W]		R_{erf} >=		R_{vorh}	7,19			
Wärmedurchgangskoeffizient nach DIN 4108 U [W/m²K]		U_{erf} <=		U_{vorh}				



Zu Nr.	Bemerkung
	sämtliche Angaben gelten nur in Verbindung mit den "Vorbemerkungen zum Bauteilkatalog"

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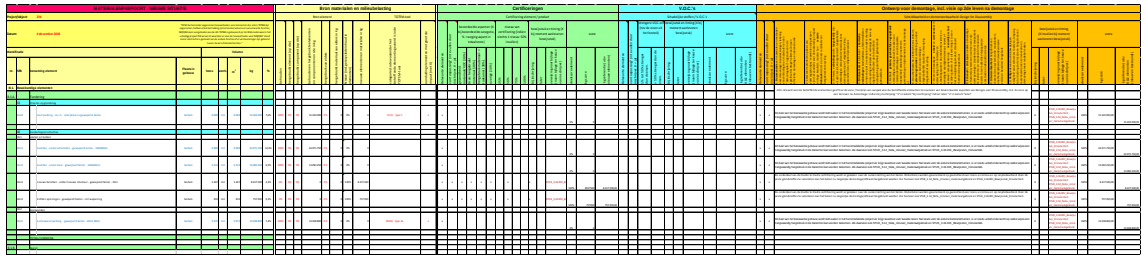

Building Material Scout

Search Product | Manufacturer | Projects | English

Testproject_Moradiellos

Save | Close Project | Change Project

Project Info | Participants | Product Overview | Lead Products | Request Protocol | Documents | Project Team

Project Name *
Testproject_Moradiellos

Project Supervisor *
Michael
Moradiellos del Molino
michael.moradiellos@dreso.com

Requested By
pascal.keppler@dreso.com

Project Photo

Choisir un fichier | Aucun fichier choisi | Upload

Required information

Information on Products	Assessments	Project-specific product information	Product documents by construction companies	General documents by construction companies
Safety Datasheet	DGNB NBV 2015	Amount	Product documents by construction companies	General documents by construction companies
Certification Blauer Engel	BREEAM International New Construction 2016	Location / Area		
Technical Datasheet	LEED Building Design and Construction V3 (2009)	Cost		
Certification PEFC		Building		
		Element		

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THANK YOU

MANAGEMENT
Investor
Finance organisation
CIRCULAR ENGINEERING
Architect
Users/Tenants
CONSULTING
Regions/Cities
ECO-DESIGN AND C2C CERTIFICATION
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