



**SUSTAINABLE
PLACES 2025**

8-10 October 2025

Milano



Data-Driven Circular Construction

WORKSHOP

Ctrl+ Rebuild:
Supporting Circular Construction Through Data-Driven Solutions



DATAWiSE



Reconmatic



www.sustainableplaces.eu

Ctrl+ Rebuild:

Supporting Circular Construction Through Data-Driven Solutions

Day **2** Thurs. 09 Oct. 11.00 - 12.30 CEST

In-person
Workshop

Projects

- DATAWiSE •
- WILSON •
- INBLANC •
- Reconmatic •
- DeCO² •

Agenda

Ctrl+ Rebuild:

Supporting Circular Construction Through Data-Driven Solutions

11.00 Introduction

Ioannis Karvelas
SingularLogic



11.05 DATAWiSE Project

Ioannis Karvelas
SingularLogic



11.20 WILSON Project

Andreas Muñoz
CIRCE



11.35 INBLANC Project

Fatemeh Asgharzadeh
DEMO



11.50 Reconmatic Project

Vaclav Nezerka Ioannis Koutsos
CVUT Future Needs



12.05 DeCO² Project

Anastasios Karameros Eleni Kolovou
PwC PwC



12.20 Q&A

Each project's overview



01. Introduction

Introduction of the project

02. Current Status

Progress of each project/lessons learned/developments

03. Future Plans

Conclude with plans



DATAWISE

Ioannis Karvelas
SingularLogic

Intelligent and Sustainable Building Management Powered by Cross-Sectoral Lifecycle Data



16 Partners from
7 Countries



Innovation
Action



Start Date: June
2024



DATAWiSE



Project Duration:
39 Months

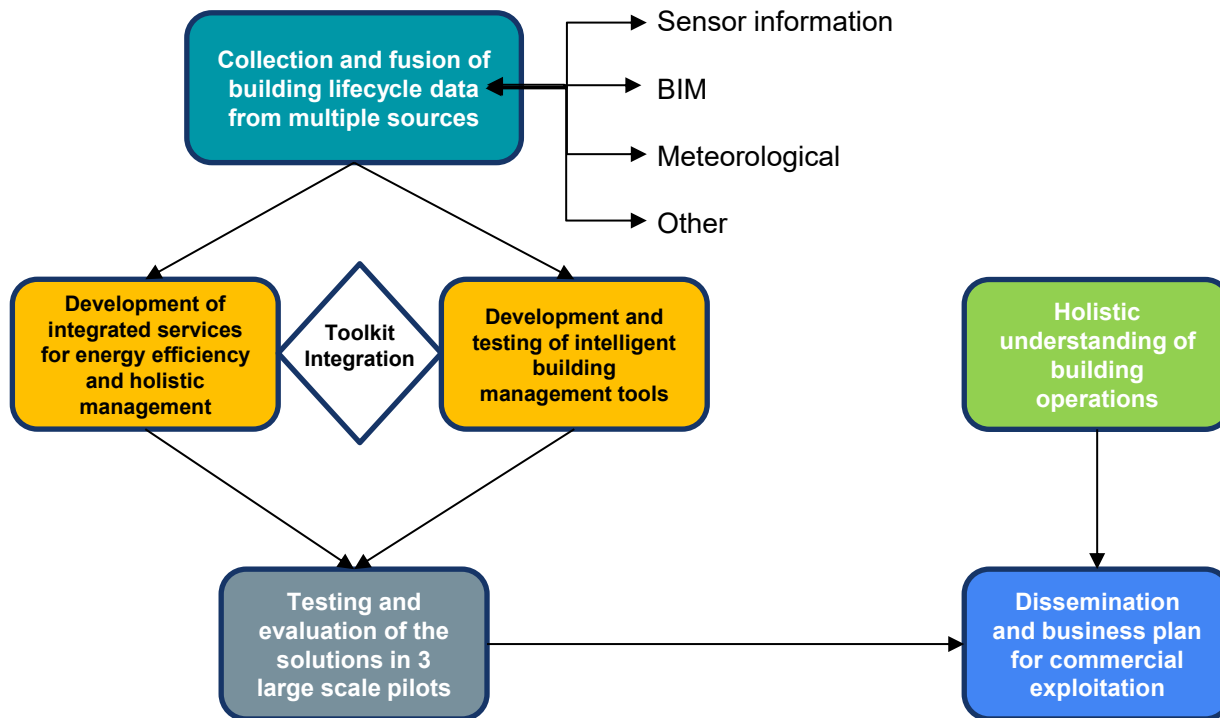


Coordinated by
the Centre of
Research and
Technology
Hellas (CERTH)

Funded by



Project Objectives



End-user Services

Data-driven Building Performance Management (DBPM)

- Electrical and Thermal Flexibility Management
- Generation, Demand Forecasting and Optimization
- Adaptive Building Risk & Resilience Assessment
- Smart Sustainability & Comfort Balancing

AI-powered Lifecycle Data- driven Decision Support (LD²S)

- Predictive Maintenance
- Integrated Sustainability Performance Management
- Circular Lifecycle Assessment
- Smart Readiness Assessment

Pilot Sites

1. Educational institutions – Riga, Latvia:
Three educational buildings, built in 1970-1982, renovated, with high demand in energy consumption and high costs. This pilot needs to optimize energy efficiency and occupants' comfort and educate users.
2. University, Hotel & Sports Center– Burgos, Spain:
Applying advanced data-driven tools to optimise energy use in the facilities, this pilot aims to balance high-performance requirements with sustainability goals.
3. Energy communities – Stanz (Mürztal), Austria:
Exploring how local energy communities can benefit from innovative solutions, this pilot will foster greater energy independence and promote community-led sustainability initiatives.



Current Status

Phase 2: Solution and Pilot Preparation Progress:

- First version of services
- Platform back-end prototype data flow
- Pilot preparation activities
- Pilot assets and services analysis

Jun-24	Jul-24	Aug-24	Sept-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sept-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26
M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23

Phase 1: Co-creation Activities, Solution Design & Development Milestones:

- ✓ Project vision
- ✓ KPI analysis
- ✓ DATAWiSE platform architecture
- ✓ Toolkit infrastructure conceptualization
- ✓ User requirements analysis
- ✓ Technical requirements
- ✓ Start of pilot data collection

Future Plans

2025

Phase 2

- Development of the 1st prototype version of the DATAWiSE platform back-end
- Experimentation of services with open data and provisional data from pilots
- Service integration into DBPM and LD²S toolkits

2026

Phases 2 & 3

- Progress in the services development – testing on open & simulated data
- Integration of solutions on the pilots
- Iterative testing on pilot use cases

2027

Phases 3 & 4

- Refinements of deployment strategies
- Service and back-end improvements
- Upscaling and replication of solutions



Thank you!

Ioannis Karvelas
ikarvelas@singularlogic.eu

Singular Logic



Andreas Muñoz
CIRCE

Introduction

Lump Sum

Call: HORIZON-CL5-
2023-D4-02-01 (RIA)

4,1 M€

Max Grant amount

48 months

1 May 2024 –
30 April 2028

16

partners

1 Living Lab + 4 Pilots

for demonstrations in IT, ES, UK and CH

Introduction

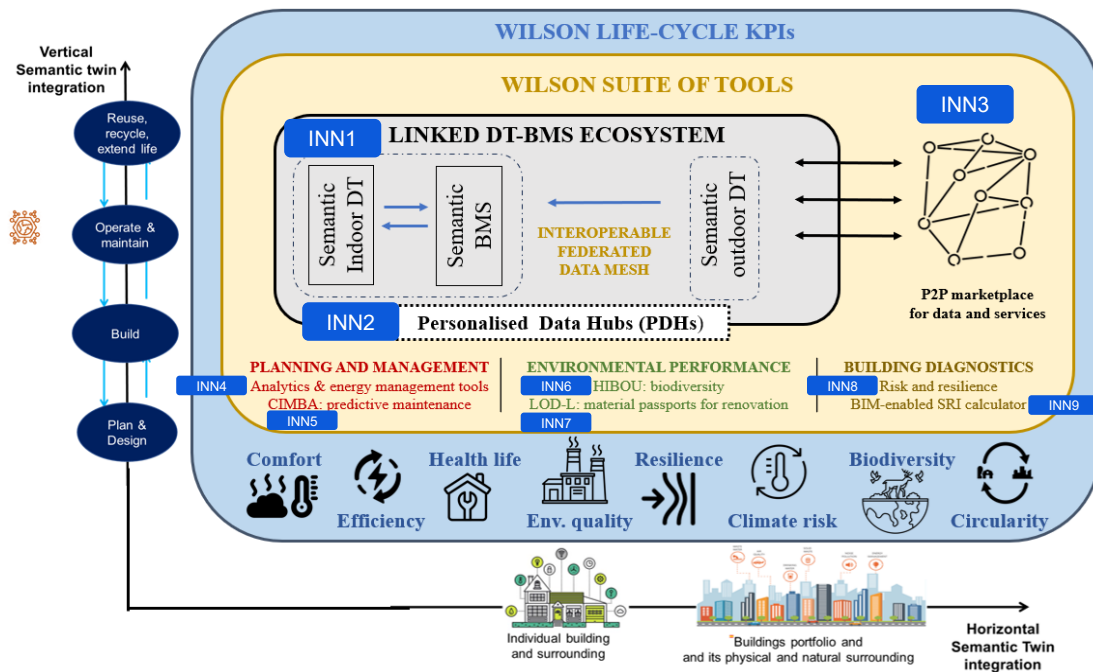
The main objective of WILSON is to enable **more efficient and sustainable data** use in the built environment by leveraging cutting-edge technologies and innovative management practices.

How?

To do so, WILSON presents a **holistic, extensible, and decentralised approach to data management**, agnostic to and interoperable with existing proprietary BMS and Digital Twin (DT) systems. This is integrated together with a set of tools for both **energy and non-energy applications**, aiming to **increase availability** of performance indicators relevant to the built environment as well as supporting creation of new services and sustainable **financing schemes**.

To ensure integration and market uptake across the data lifecycle, WILSON will be **demonstrated in 4 different countries and mixed typologies**, showing its adaptability and performance in **real-case scenarios**.

Introduction



12 KEY EXPLOITABLE RESULTS

- 1** District DT: federation and data mesh
- 2** Personalised Buildings Data Hubs
- 3** P2P data and services marketplace
- 4** Semantics-aware energy management
- 5** CIMBA: predictive maintenance
- 6** HIBOU: biodiversity tool
- 7** LOD Lifter: sustainable renovation
- 8** Risk and resilience
- 9** BIM-enabled SRI calculator
- 10** Investment planning tool
- 11** New business models
- 12** Policy recommendations

Introduction

**16 PARTNERS
10 COUNTRIES**

**50% SMES
AND INDUSTRIES**



LIVING LAB



**SCIENCE &
TECH PARK**

4 LARGE-SCALE DEMONSTRATORS



**CITY
RENOVATION**



**HOSPITAL
EFFICIENCY**



**DISTRICT
MAINTENANCE**



**RURAL
DISTRIBUTION**

WILSON SUITE OF SOLUTIONS



**Data management
& interoperability**



**Operation and
management**



**Environmental
performance**



**Building
diagnostics**

12 KEY EXPLOITABLE RESULTS

- 1** District DT: federation and data mesh
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- 12** Policy recommendations

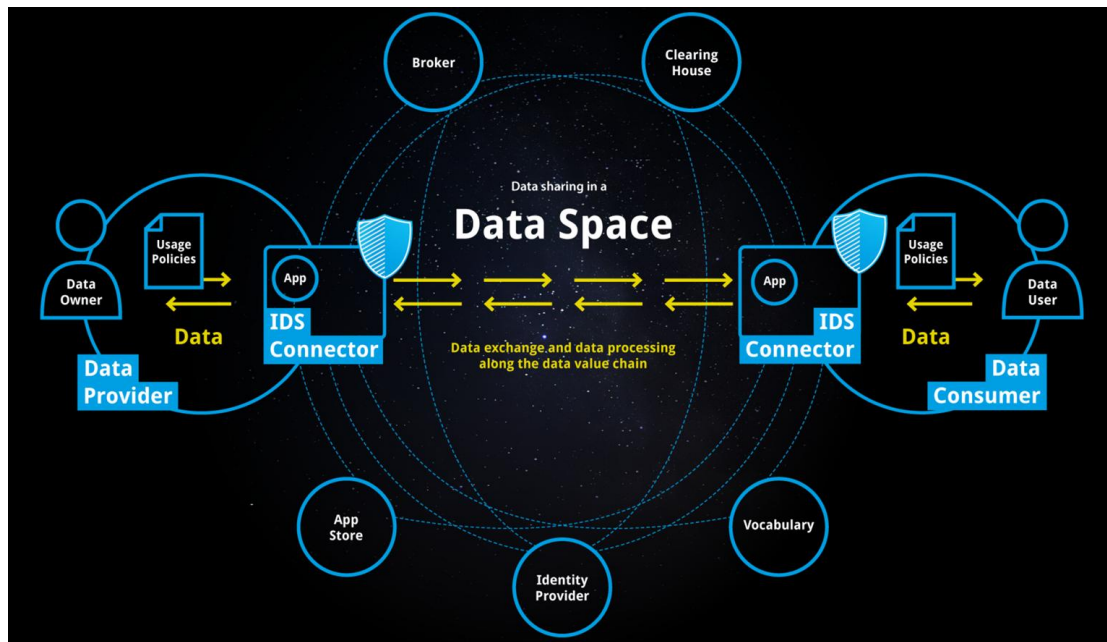
Current Status

After the first year...

- We have a project Data Space!!
 - IDSA Reference Architecture Model as the standard

•Why Data Spaces?

- Data sovereignty
- Interoperability
- Standardization
- Security & privacy
- Decentralization
- Scalability



Current Status

After the first year...

- Definition of demo sites & use cases



- Energy optimization
- Investment planning tool



- Tools for network operators
- Boost green Energy investments



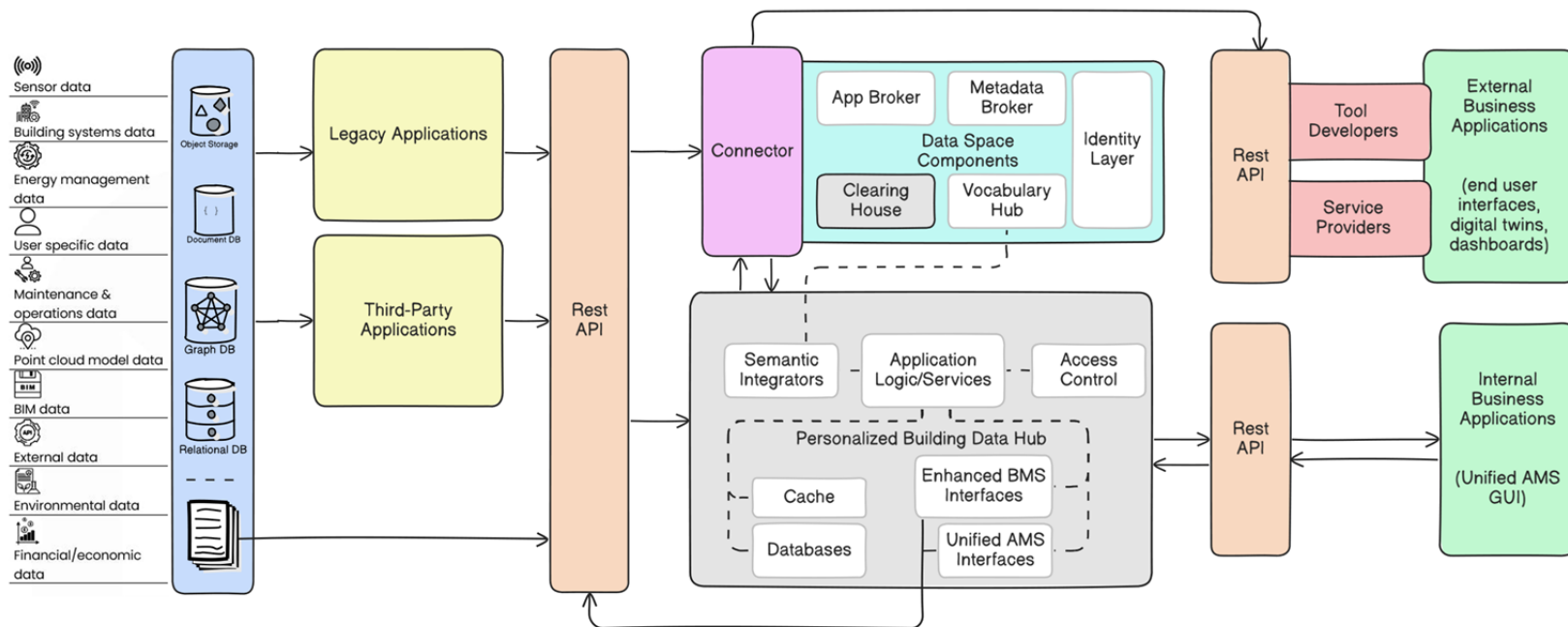
- Decentralized data management
- Predictive maintenance



- Risk management
- Renovation planning and design

Current Status

Architecture of the project



Current Status

Project tools => under development!!

BUILDING MANAGEMENT



Energy management



Predictive maintenance

ENVIRONMENTAL PERFORMANCE



Biodiversity



Material passport

BUILDING DIAGNOSTICS



Risk and resilience



BIM SRI

FINANCIAL SOLUTIONS



Investment tool

Future Plans

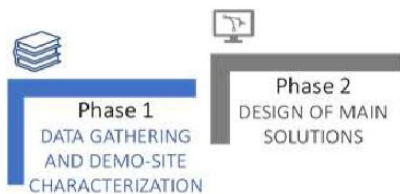
2025

Future Plans

Consolidate the first version of the technical developments

Test of Data Space

Start of testing phase in the living lab



2026

Future Plans

Development of technologies finished

Set-up of demosites to start the integration phase



2027

Future Plans

Focus on demonstration phase

Result gathering and analysis

Interoperability with other platforms, Data Spaces and project solutions





Thank you!

Andreas Muñoz
amunoz@fcirce.es





Fatemeh Asgharzadeh
DEMO

Introduction

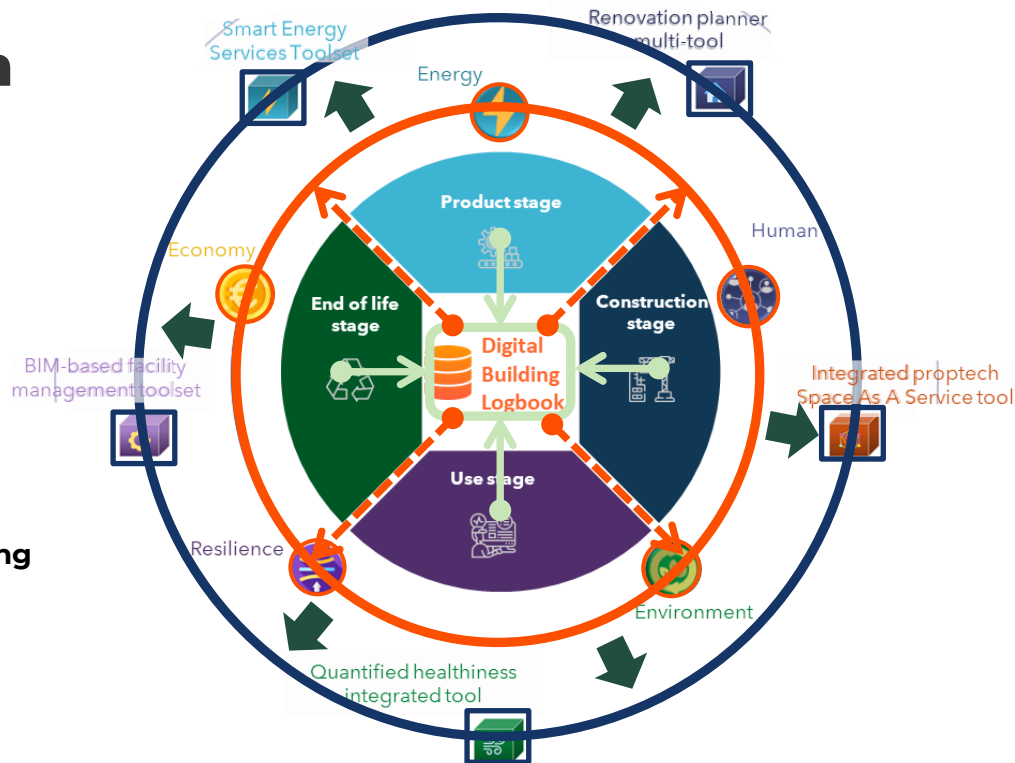
INDustrialisation of Building Lifecycle data Accumulation, Numeracy and Capitalisation

- Type of action: HORIZON Innovation Actions
- Project starting date: 1 January 2025
- Project duration: 42 months
- 22 partners
- Coordinator: DEMO Consultants

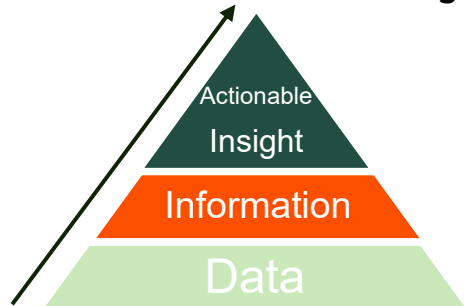


Co-funded by
the European Union

Introduction



Informed Decision making



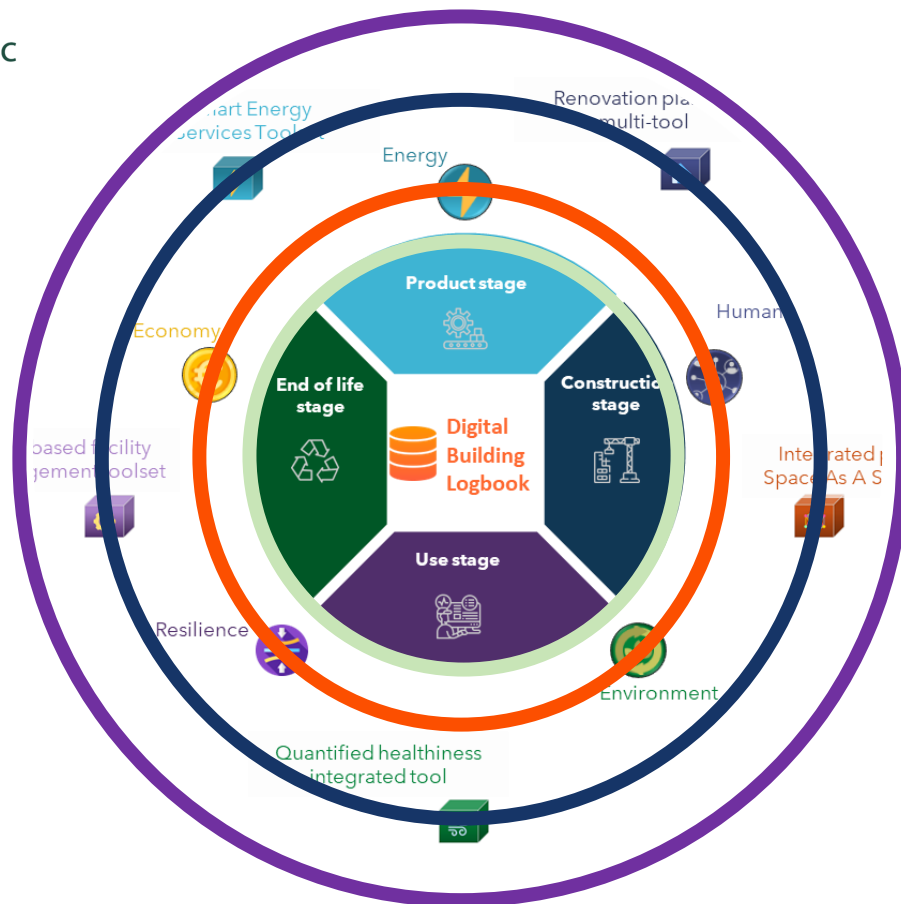
Introduction

**KER1
Accumulation**

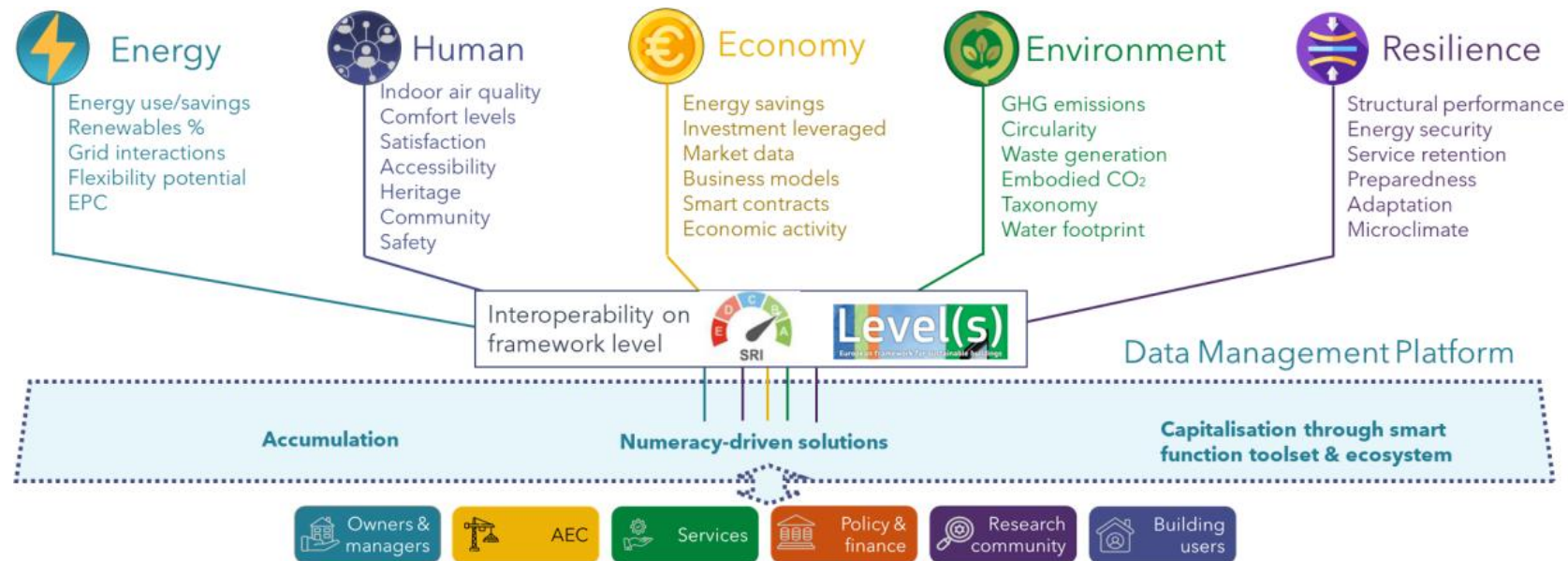
**KER2
Numeracy**

**KER3
Capitalisation**

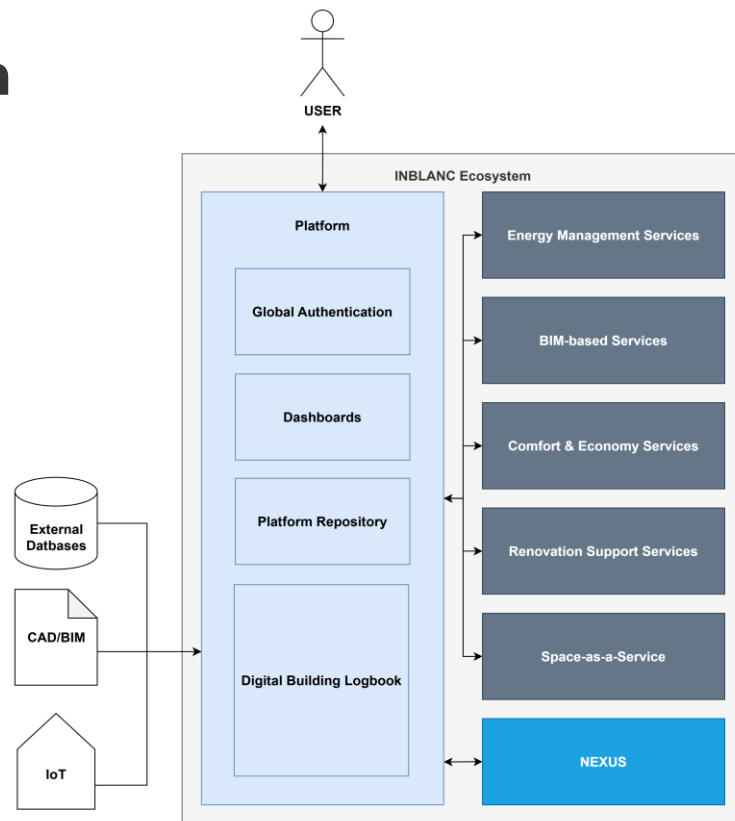
**KER4
Ecosystem**



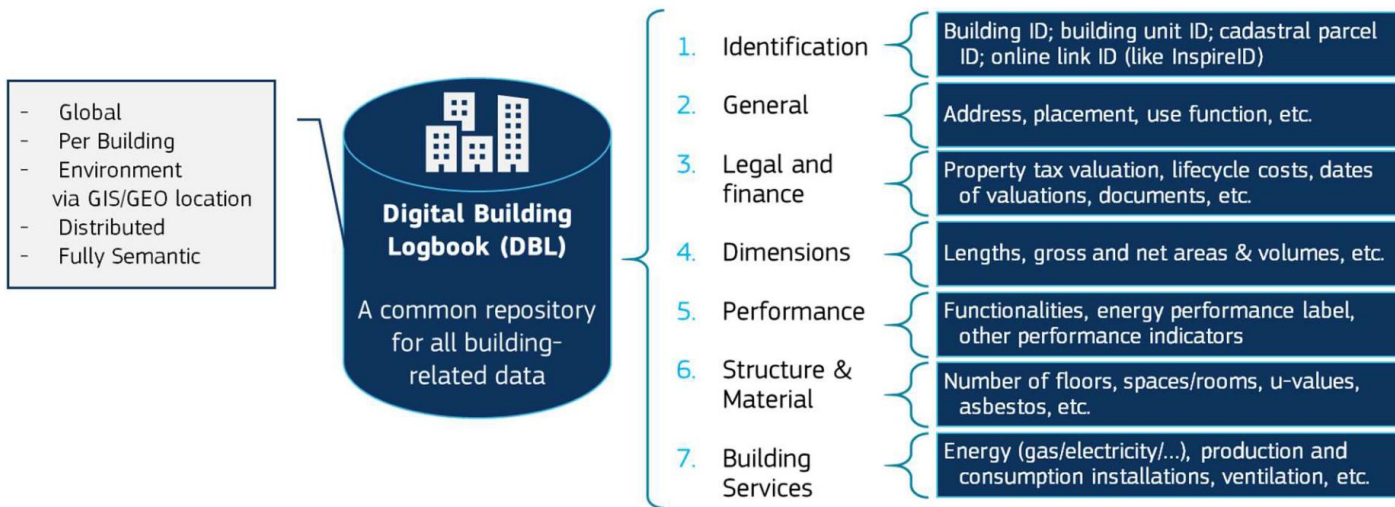
Introduction



Introduction



Introduction



Introduction



The Netherlands
Hazemeijer complex
heritage site



Cyprus
Frederick university
campus



Switzerland
Geneva university
hospitals



Greece
Public buildings of
Thessaloniki



Spain
Joven Futura
neighbourhood



Denmark
City of Aalborg



Current Status

DESIGN

DEVELOPMENT

DEPLOYMENT

2025

2026

2027

2028



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the European Union

Future Plans

2025

Future Plans

- Data management architecture
- Indicator catalogue
- Engagement & acceptance strategy

2026

Future Plans

- Data accumulation
- Platform and DBL
- Service toolset integration into platform
- Solution acceptance in value chain

2027

Future Plans

- Operational demonstration
- Uptake and finalisation





@inblancproject



INBLANC EU Project



www.inblanc-project.eu

Thank you

Fatemeh Asgharzadeh

fatemeh@demobv.nl



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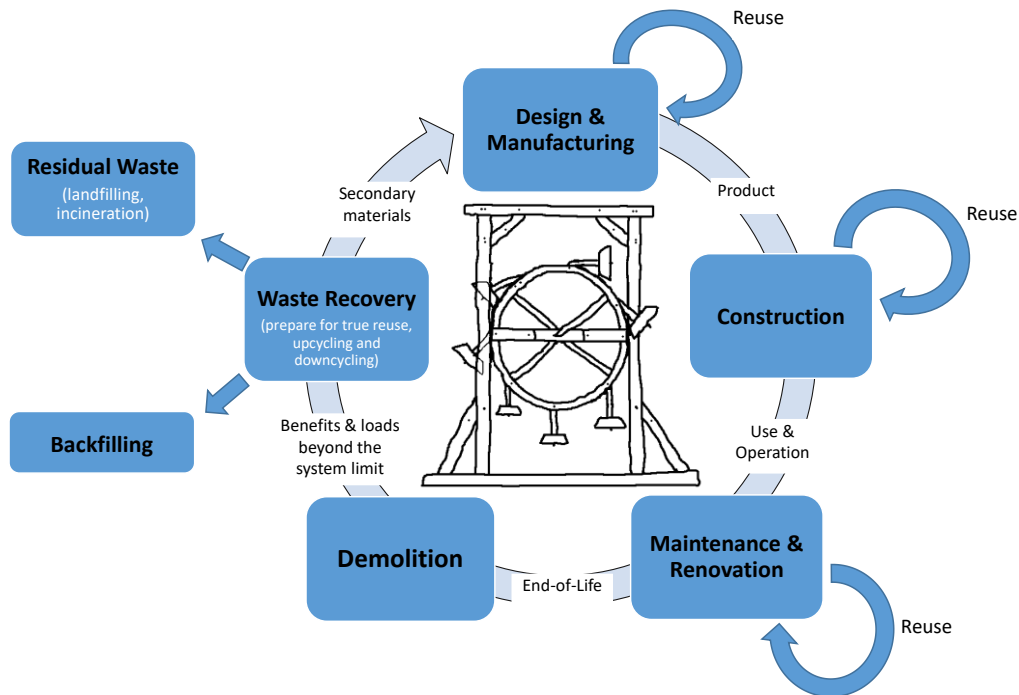


Vaclav Nezerka
CVUT

Ioannis Koutsos
Future Needs

Introduction

- Which call do we address: HORIZON-CL4-2021-TWIN-TRANSITION-01-11 (RIA)
- What is the budget: **EU countries = 6,09 MEUR**; UK = 2,5 MEUR; China = approx. 1 MEUR
- Project duration: 48 months (07/2022-06/2026)
- Coordination: Czech Technical University in Prague
- Who else participates: 5 partners from the UK, 16 partners from EU countries and 2 partners from China (whereas CACE is a roofing organization for participation of approx. 9 organizations/institutes)



Introduction

Mission #1 | Avoid Waste

- Integrate secondary materials in design
- Mitigate future waste generation using smart design (LCA)



Mission #2 | Minimise Waste

- Reuse recycled products and by-products
- Prefer durable materials
- Employ digital construction planning
- Segregate waste on site and reuse



Mission #3 | Reduce Waste

- Asset management using digital twins
- Continuous structural health monitoring
- Mitigate waste and segregate
- Force reuse during refurbishment



Mission #4 | Presort Waste

- Deconstruction planning using digital twins
- Enforce selective waste selection
- Dismantle when possible



Mission #5 | Sort and Treat Waste

- Use effect logistics concept and digitalised waste management in plants
- Introduce automated solutions for waste sorting and treatment



Mission #6 | Valorize Waste

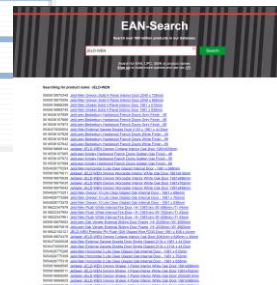
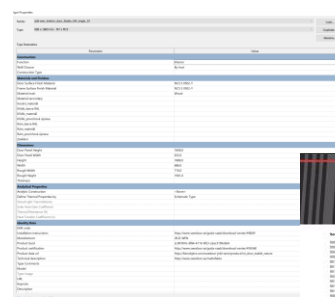
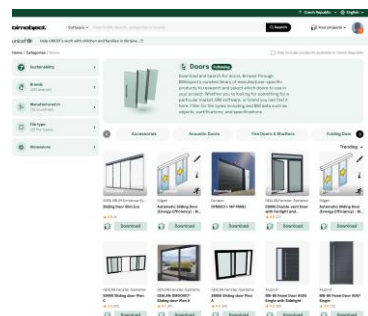
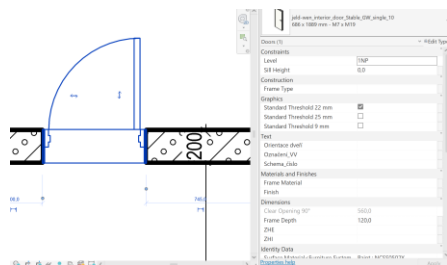
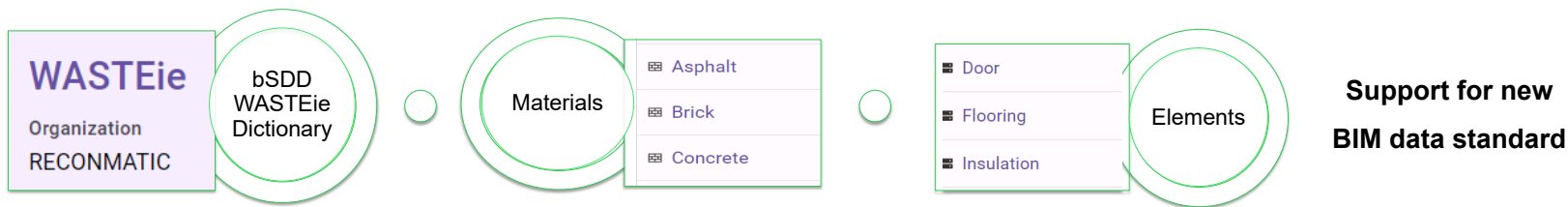
- Develop and produce new competitive recycled materials
- Avoid inefficient recycling solutions
- Use products from locally recycled materials





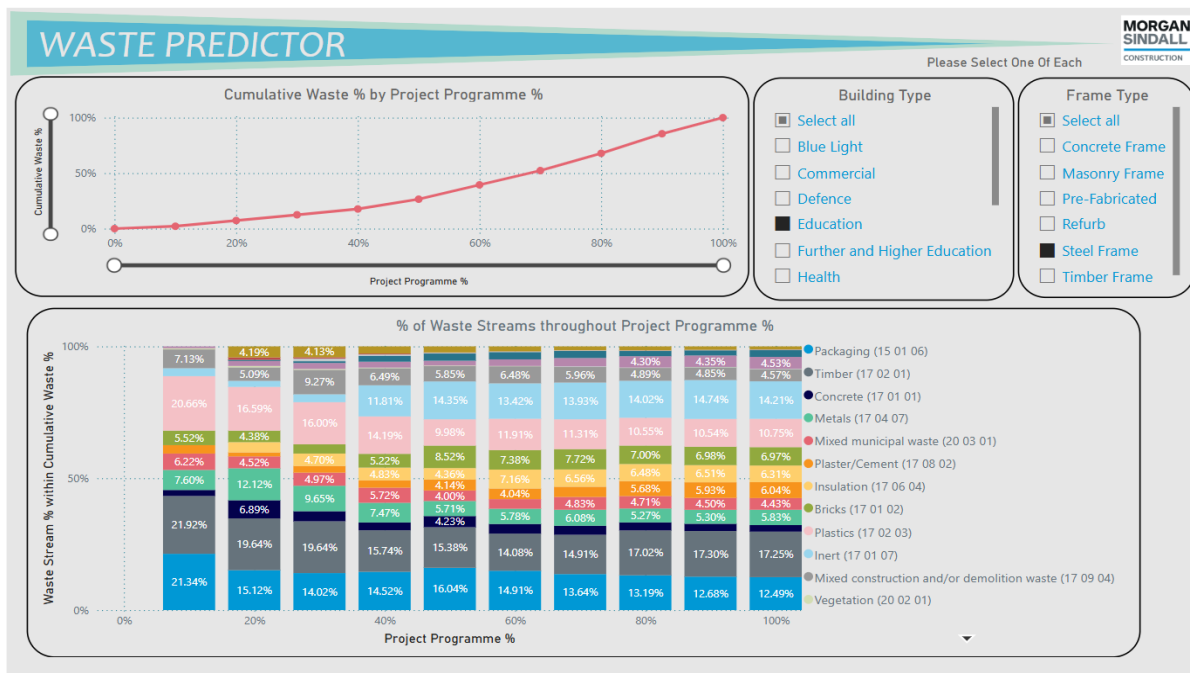


Current Status – minimize or avoid CDW



Product data banks including information about recyclability and carbon footprint

Current Status – minimize CDW by prediction in design



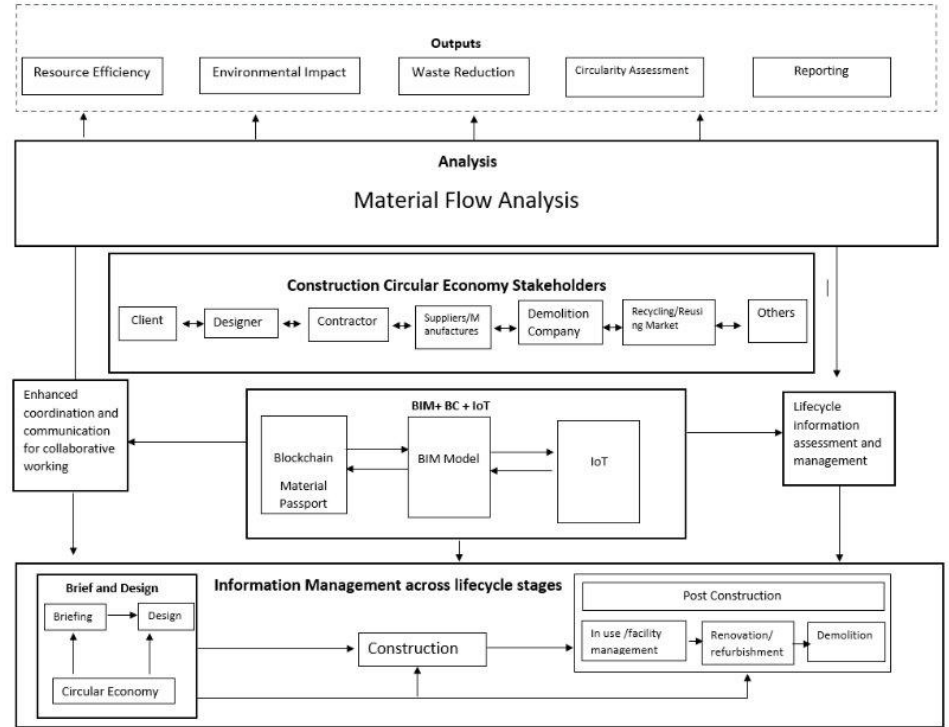
Current Status – data integration in a Digital Information Management System (DIMS)

Steps followed:

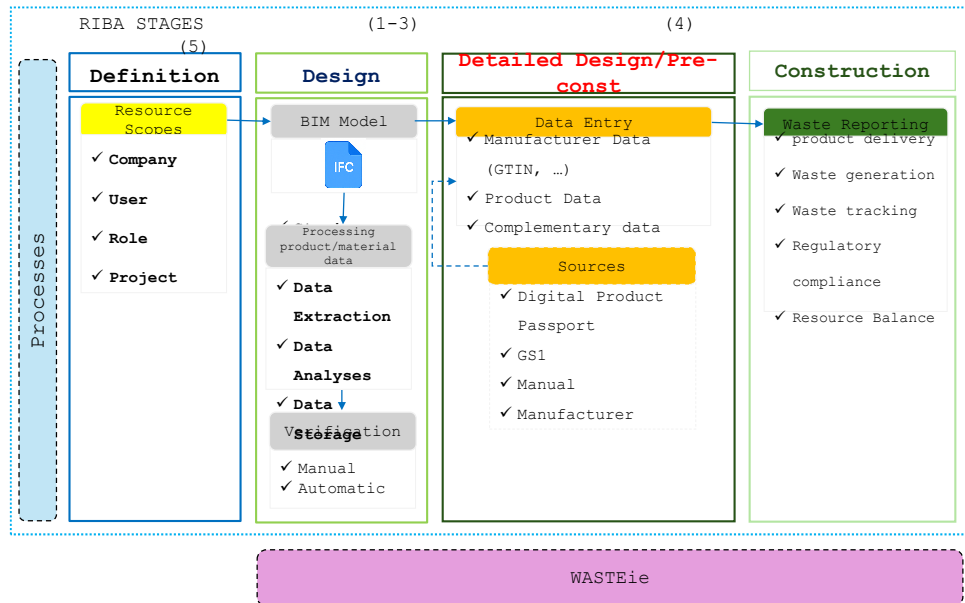
- Consultation process
- Reformulation of framework
- Data flows
- Sources
- Interactions

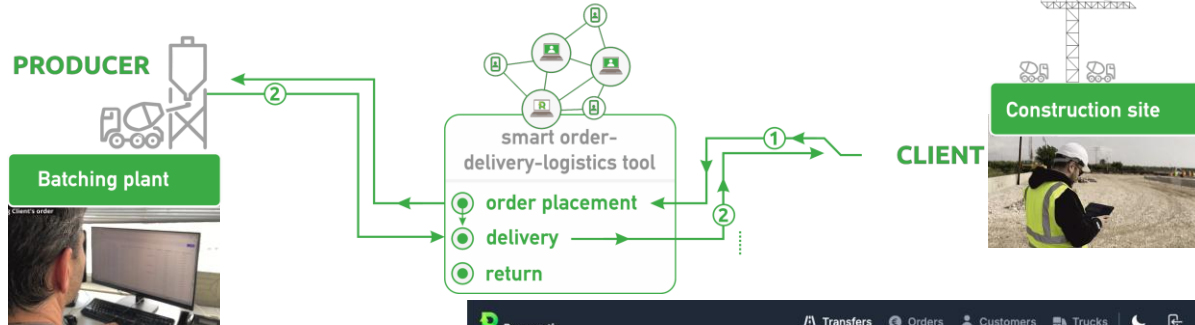
Working currently:

- Initial validation
- System architecture

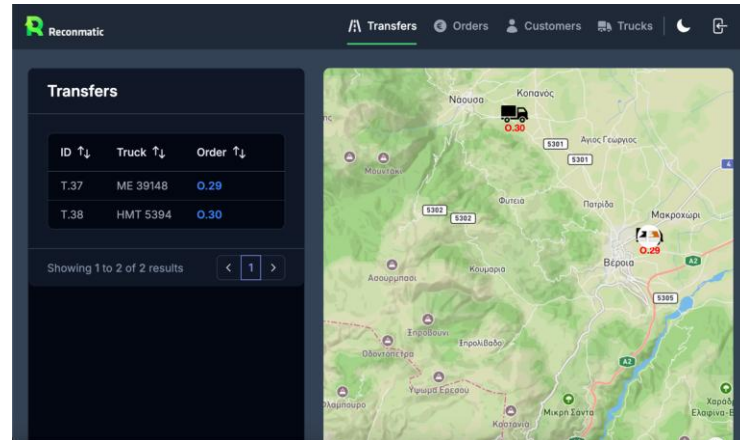


Current Status – data integration in a Digital Information Management System (DIMS)

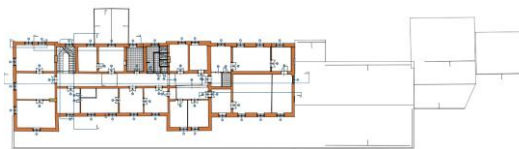
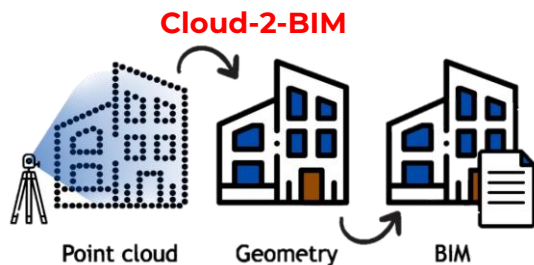
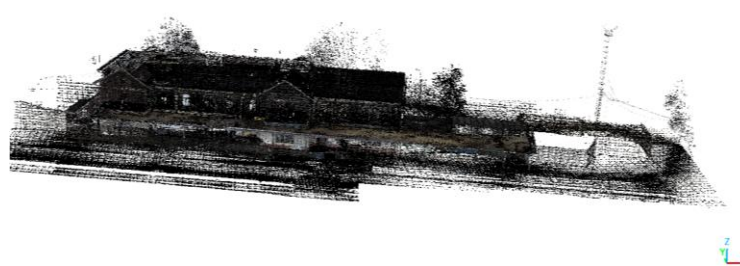




1. Order placement through the platform
2. Order delivery
(with full properties known as track fleet position, estimated delivery time, FC volume & quality in each truck, time, quantity and quality on delivery)



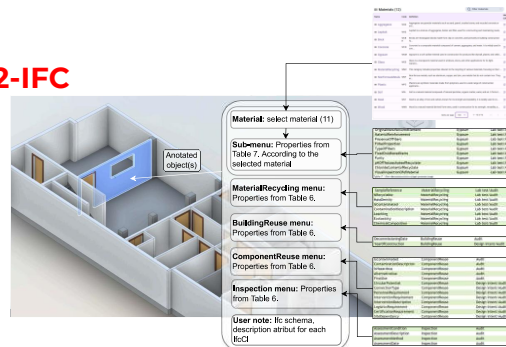
Current Status – support data-driven decision during pre-demolition process



2Dscan-2-BIM-2-BIM

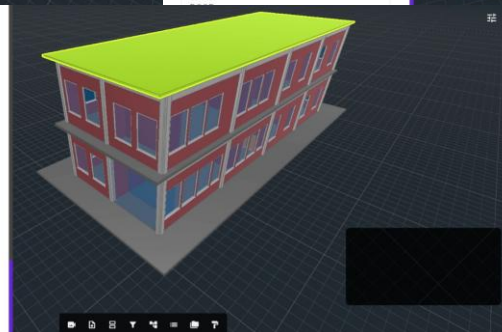
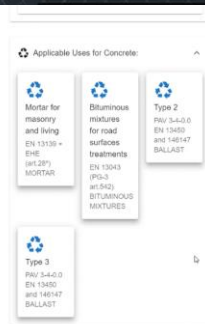
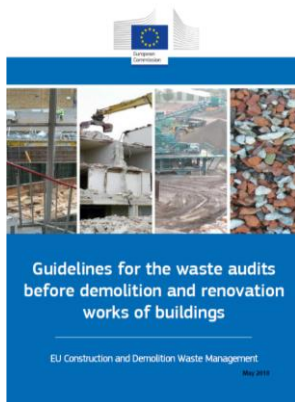
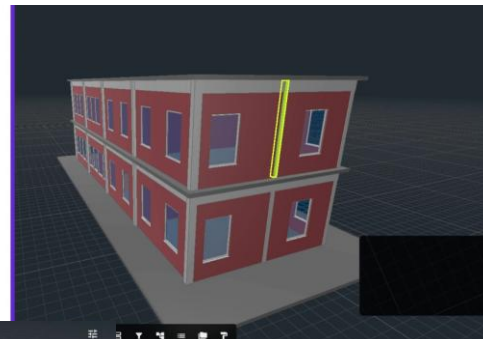
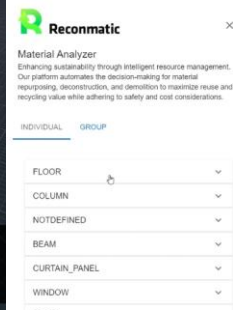
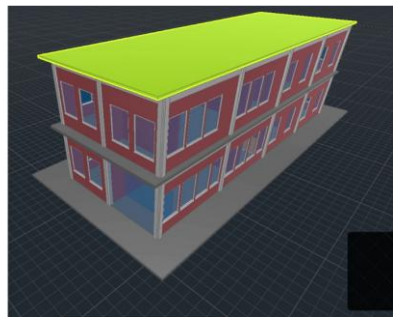
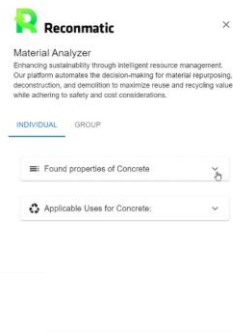


WASTEie-2-IFC



Current Status – support better valorization of CDW

- Process map
- Data flow
- Stakeholders involved
- Relationship between parameters
- Identification of critical parameters



**Recycling or reuse
options offered by
the application**

Current Status – support better valorization of CDW by effective (robotic) sorting



Current Status – novel IoT units for smart container/skip monitoring

01

...

Smart cities

Smart parking,
intelligent street
lighting

02

...

Supply chain management

Asset tracking,
condition monitoring

03

...

Engineering structures

Structural health
monitoring



04

...

Realtime CDW management

Smart containers
reporting real-time
their status



CIRCULAR
CONSTRUCTION
CLUSTER



Funded by
the European Union



UK Research
and Innovation

Synergies for Circular Construction in Europe

Giannis Koutsos,

Innovation Project Manager,

Future Needs Management Consulting



www.reconmatic.eu/circular-construction-cluster



MEMBERS



**Circular B
COST Action**



**LATIN AMERICAN ALLIANCE FOR
CIRCULAR CONSTRUCTION**





PAST SYNERGIES

The cover of the report 'Assessing Sustainability & Circularity in Construction: Circular KPIs Framework'. The background is a dark green image of a construction site with a large excavator. The Circular Construction Cluster logo is on the left. The title is in a white box on the right. Logos for the European Union, UK Research and Innovation, Reconmatic, and a circular logo are at the bottom.


CIRCULAR
CONSTRUCTION
CLUSTER

 Funded by the
European Union  UK Research
and Innovation

**Assessing Sustainability
& Circularity
in Construction:**
Circular KPIs Framework

 **Reconmatic** 



PAST SYNERGIES



CURRENT SYNERGIES



CIRCULAR
CONSTRUCTION
CLUSTER



Funded by the
European Union



UK Research
and Innovation

Glossary of terms



FUTURE SYNERGIES



CIRCULAR
CONSTRUCTION
CLUSTER



Funded by the
European Union



UK Research
and Innovation

Training materials

*Potential collaboration in development of
training material and participation in training
activities*



Reconmatic

FUTURE SYNERGIES



CIRCULAR
CONSTRUCTION
CLUSTER



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European Union



UK Research
and Innovation

Spanish initiative

*The CCC cluster is currently building synergies
among Spanish-speaking partners*

 Reconmatic


CAMACOL



LATIN AMERICAN ALLIANCE FOR
CIRCULAR CONSTRUCTION



CIRCULAR
CONSTRUCTION
CLUSTER



Funded by
the European Union



UK Research
and Innovation

Interested in joining? Contact us!

Giannis Koutsos

koutsos@futureneeds.eu

Innovation Project

Manager

Christopher Aguilar

chris@futureneeds.eu

Dissemination/Communication

Manager



www.reconmatic.eu/circular-construction-cluster

 **Reconmatic**

 **future
needs**

Future Plans

2025

Future Plans

Web-based Training
platform
International Workshop
CCC activities (glossary)

2026

Future Plans

- Final project conference (May 2026)
- 2 Open Days in China
- Exploitation activities
- CCC activities (ES initiative)
- Potential to create spin-offs

2027

Future Plans

Horizon Results platform
New funding
Market entry of specific
results

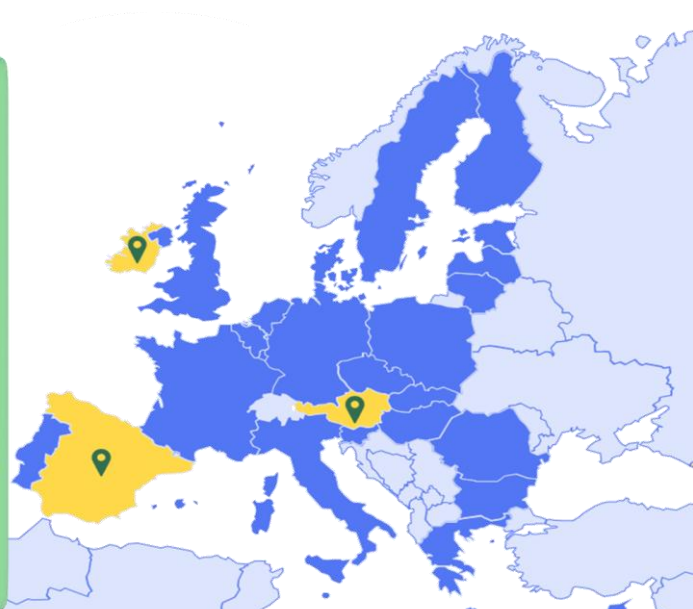
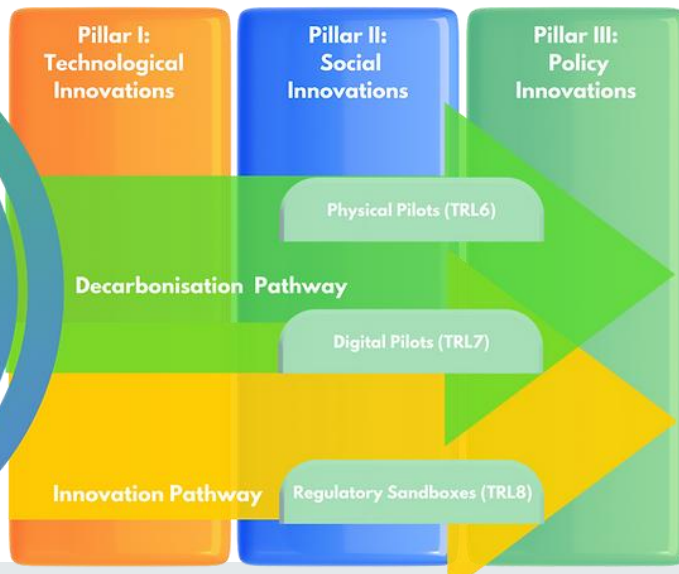


Anastasios Karameros
PwC

Eleni Kolovou
PwC



Introduction



17 Partners

8 EU Countries

48 Months

3 Living Labs

7.00 million Funding



Data-driven solutions



Material passports & traceability solutions (WSolve)



BIM-based building digital twins (CEMOSA)



Material bank & Local value chain mapping (COC)



TURIA+: Toolbox for circular construction assessment and integration (IVE)



GOM 3D scanning survey methodology of building elements (TUS)



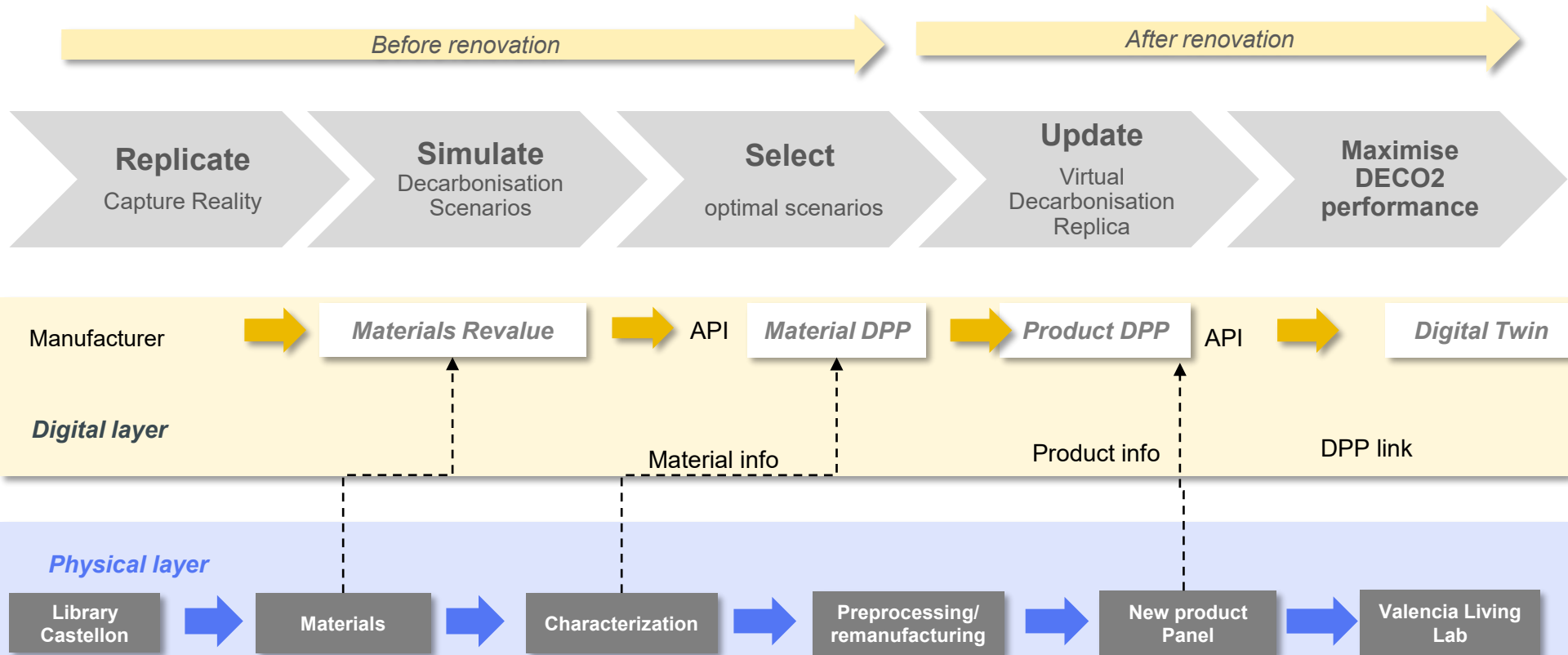
Building Scanning / Analysis & Material database (IAAC)



Ceramic Robotic Recycling (IAAC)



3D printing with recycled / excavated materials (IAAC & WASP)



Dec 2019

**European
Green Deal**

July 2024

Ecodesign for
Sustainable Products
Regulation-DPP

2026 - 2030

**Implementation
by industry**



Digital Product Passport (DPP): a mandatory digital identity card for all products, components, and materials.

DeCO2 Material passports & traceability solutions:
A Digital Layer to materials and applications able to

- monitor customers' social and environmental impact
- support compliance with new regulations
- enhance transparency to supply and value chains

Smart Contracts

are established on the Blockchain when a DPP is created

Value Chain

When the material moves in the value chain, this is hashed on the Blockchain. DPP can track where the material/product has been used

Blockchain (DLT)

All activities are immutably recorded on the Blockchain. Actors remain the owners of their own data

Extract and Report

The data on the DPP is verified. We retrieve this data for Sustainability Reporting.

Reward and Improve Reward

Preferred partners) with different ways into consideration. Analyse and improve their performance.

Future Plans

2025

Future Plans

- DeCO2 dynamic decarbonisation framework activities
- DeCO2 framework technical specifications
- Virtual demos initiation
- Exploitation Workshops

2026

Future Plans

- Dynamic decarbonisation scenarios digitalisation (Digital Twinσ)
- *Identification of Barriers for Digitalisation*



2027

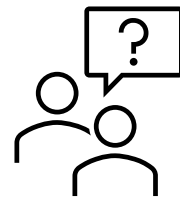
Future Plans

- Integration activities:
 - C-ToolBox
 - Material passports
 - Circular materials portfolio streamlining
 - Circular robotic construction
- Process optimisation services integration
- Certification and Standardisation activities

Scan the QR code to share your experience in what delays or prevents digitalisation in circular renovation

Ctrl+ Rebuild:

**Supporting Circular Construction
Through Data-Driven Solutions**



Q&A