Demo-BLog

Development and Demonstration of Digital Building Logbooks

A Horizon Europe project

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Co-funded by the European Union

This project has received funding from the European Union's Horizon Europe research and innovation programme, under grant agreement No. 101091749

Project Vision

Demo-BLog brings together:

- **5 different DBLs** with a total of 4.5 million registered units and a wide variety of target groups offering scale and diversity
- **4 diverse functionalities** addressing key societal challenges, ranging from ‘quick wins’ (renovation and advice and (community driven) decarbonisation pathways) to complex industrial transaction objectives (circularity)
- Partners, frontrunners in R&D, policymaking and market implementation in highly visible platforms over the last 5 years
- **Substantial opportunities** to build and leverage parallel projects and activities focussed on evolving/scaling the participating DBLs

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The 5 DBLs

Demo Blog

Woningpas (BE)

WONINGPAS Vlaamse overheid

- ***Flanders (Belgium)***
- **Public** (Owned by 4 government bodies: VEKA, OVAM, Wonen-Vlaanderen and Departement Omgeving)

CIRDAX (NL)

- ***The Netherlands*** *and Belgium*
- **Private** (Owned by Re-Use Materials)

CLÉA (FR)

CLÉA

- ***France***
- **Private** (Owned by QUALITEL)

CAPSA (DE)

CAPSA

- ***Germany****, Scotland, the Netherlands, Italy, India etc.*
- **Private** (Owned by Chillservices)

TBD (UK)

- ***The United Kingdom***

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The 5 DBLs

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Comparisons in operational nature

		Woningpas	CIRDAX	CLÉA	CAPSA	UK DBL
Data owner	Homeowner (H); DBL owner (D); Governing body (G)	H; D; G	D	H	H	
Access to data	Homeowner (H); Authorised third parties (A); Public sharing (P)	H; A; P	H; A	H	H; A	
Initiative	Public (PU); Private (PR)	PU	PR	PR	PR	
	Mandatory (M); Voluntary (V)	M	V	V	V	
Service fee	YES or NO	NO	YES	YES	YES	
Building typology	Single-family home (S); Multi-family home (M); Others (O)	S; M	M; O	S; M	S; M; O	

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The 4 Functionalities

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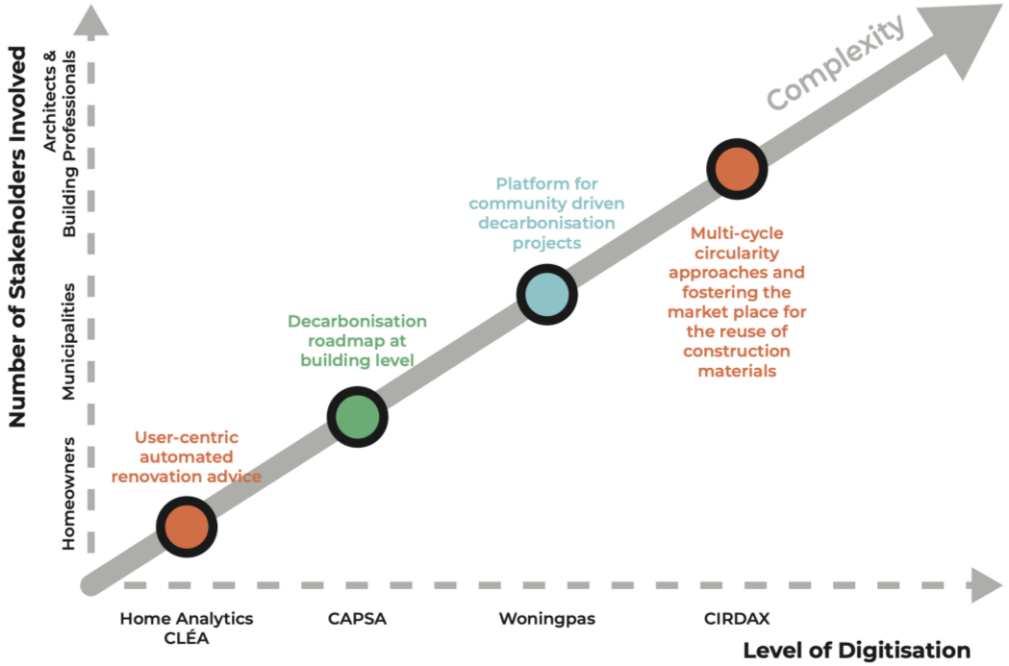

1. User-centric automated renovation advice *(via UK DBL and CLÉA)*
2. Decarbonisation roadmap at building level *(via CAPSA)*
3. Platform for community driven decarbonisation projects *(via Woningpas)*
4. Multi-cycle approaches and fostering the marketplace for the reuse of construction materials *(via CIRDAX)*

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Our Partners

Demo-BLog Team:

- 14 partners
- 5 countries

No.	Partner Organisation	Abbrev.	Country
1	Delft University of Technology	TUD	NL
2	Chillservices	CHILL	DE
3	Vlaamse Instelling voor Technologisch Onderzoek	VITO	BE
4	Buildings Performance Institute Europe	BPIE	BE
5	R2M Solution	R2M	FR
6	Flemish Energy and Climate Agency	VEKA	BE
7	Centre Scientifique et Technique du Bâtiment	CSTB	FR
8	QUALITEL Espace Numérique du Logement	QUAL	FR
9	Leap Forward LF BE	LF	BE
10	Re Use Materials	RUM	NL
11	ACA Group	ACA	BE
12	Energy Saving Trust	EST	UK
13	TrustMark	TM	UK
14	Solstice Associates	SA	UK

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Our Partners

Demo BLog

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- 5 countries

Research (RO) partners

TU Delft · vito · CSTB le futur en construction

Independent innovation, standardisation and certification organisations

BPIE · energy saving trust · Association QUALITEL pour la qualité du logement

Commercial / Industry partners

R2M Research to Market Solution · ChillServices · re use materials · A.C.A. Group · TRUSTMARK Government Endorsed Quality · Solstice Associates

Society and user represent

leapforward

Policy makers

Vlaanderen verbeelding werkt

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Objectives

1. Help establish and further develop existing DBLs able to act as **a catalyst for climate neutrality transition of the European building stock**; establish DBLs as **a central tool to drive net-zero carbon building** design, construction, management and renovation
2. Demonstrate **multi-cycle approaches** and fostering the marketplace for the **reuse of construction materials**
3. Improve DBLs in terms of **data generation**, **data import**, **data management** and **data governance** and address the technical solutions required to fill data gaps related to a selection of relevant functionalities
4. Enable the **roll-out of DBLs in EU markets** by exploring and forging **links with supportive frameworks and other initiatives** (EPC, renovation roadmaps, material passports), demonstrating the potential of new DBL functionalities
5. Ensure Demo-BLog identifies and meets **the needs of the targeted actors and users** of the DBLs
6. Foster **market deployment** and develop concepts for **incentivising uptake** of the proposed DBL solutions by different stakeholders
7. Ensure dissemination and communication of the project results

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State of Play Report (M1-6)

Methodology

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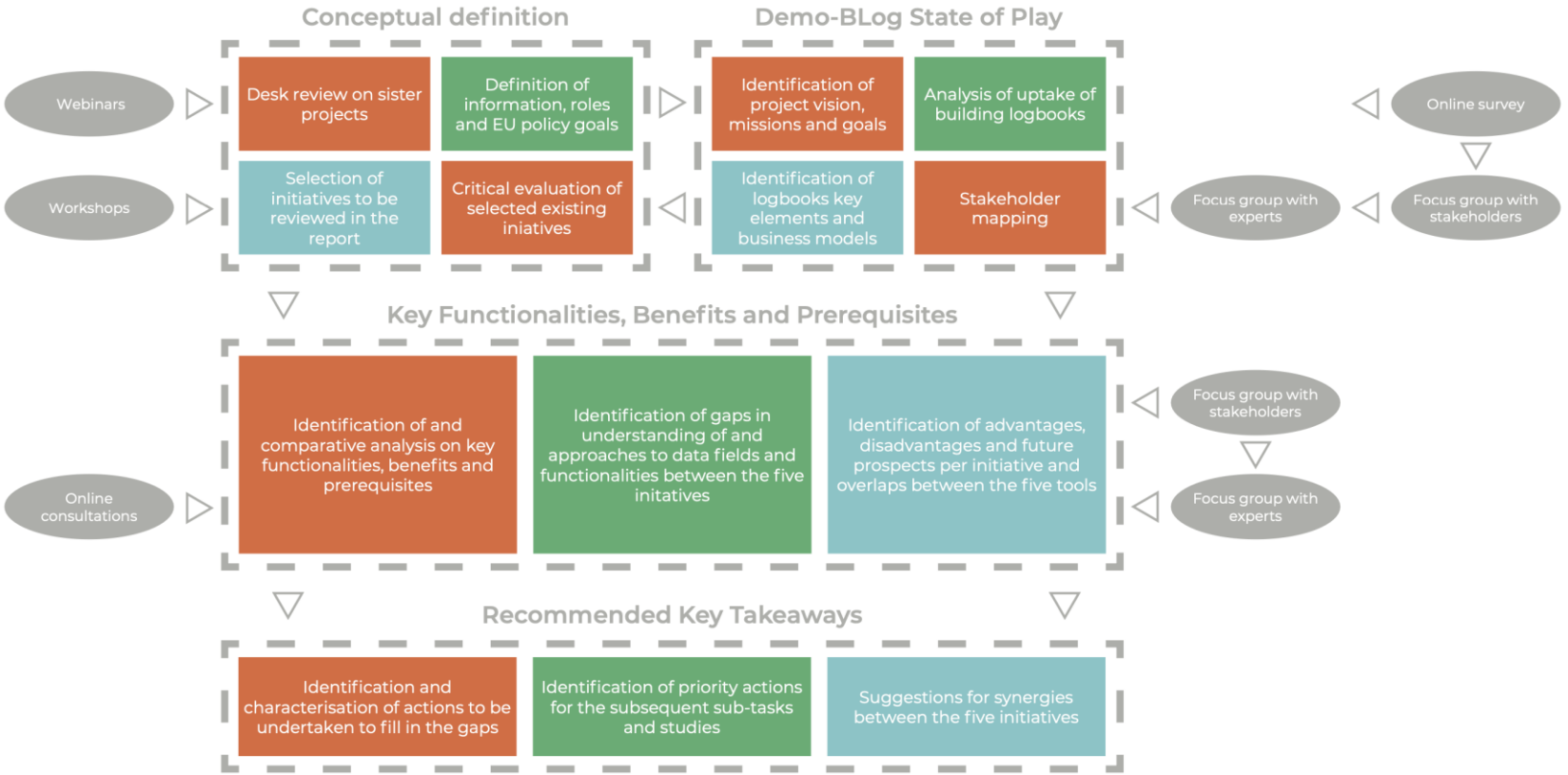
Methodology



Demo Blog

Market Overview

Survey Findings

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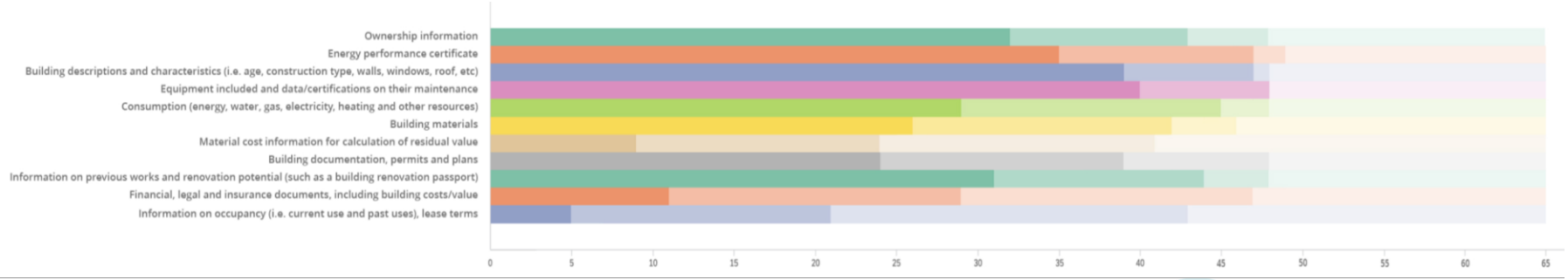
Market Overview

Demo Blog

Data fields in terms of significance

Legend: From very important (darkest) to not at all important (lightest).



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Market Overview

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Functionalities in terms of significance

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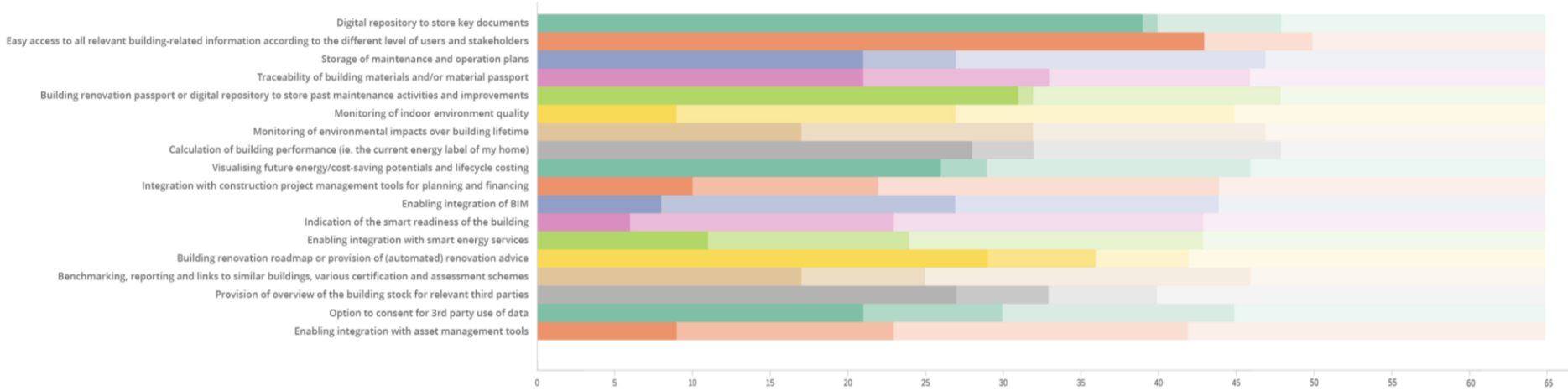

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Market Overview

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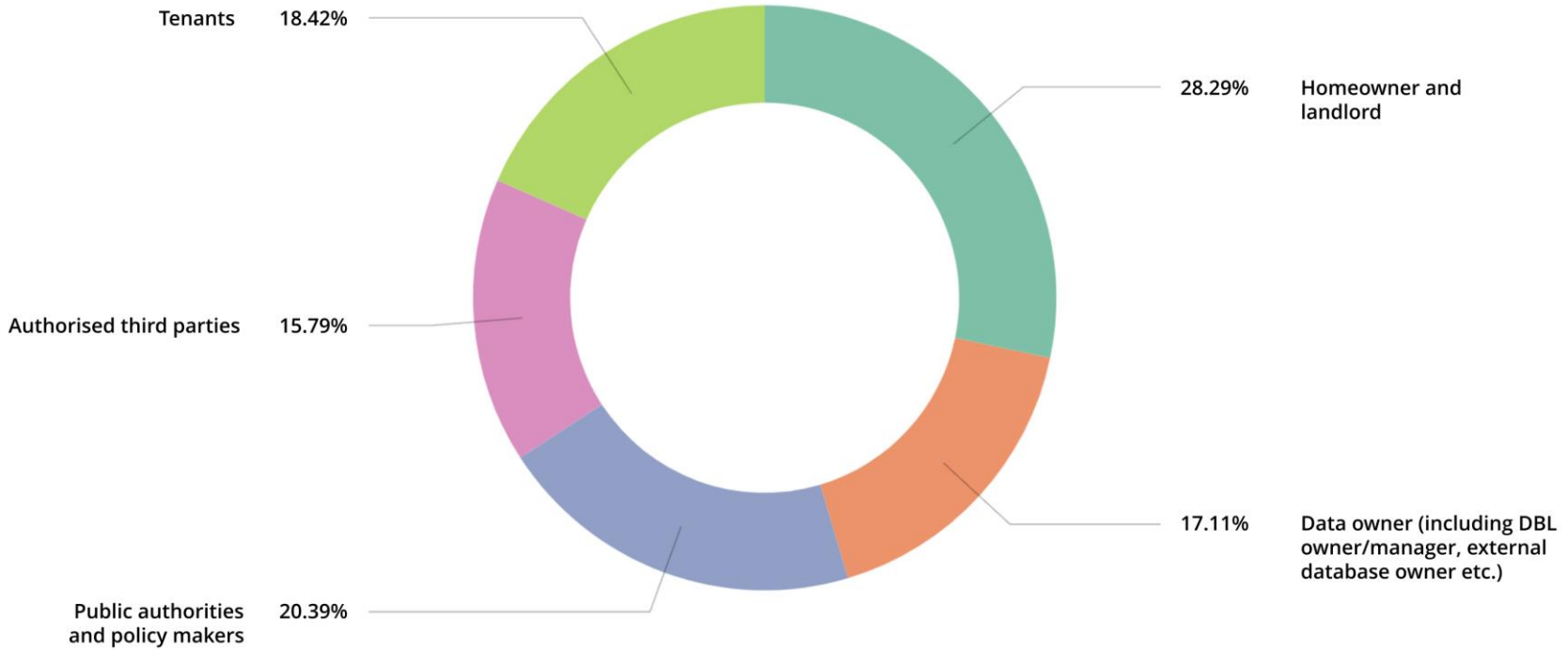
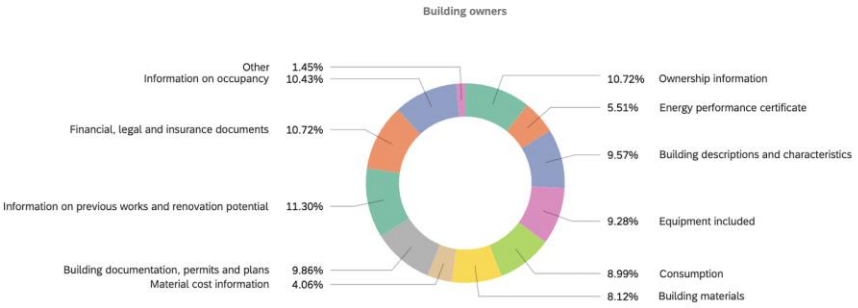
Breakdown of stakeholders that should be granted access to data

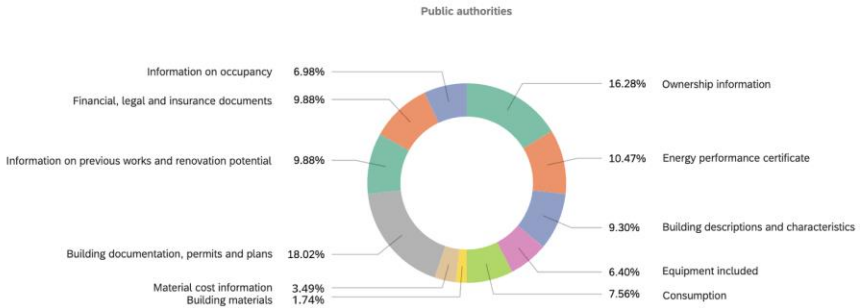


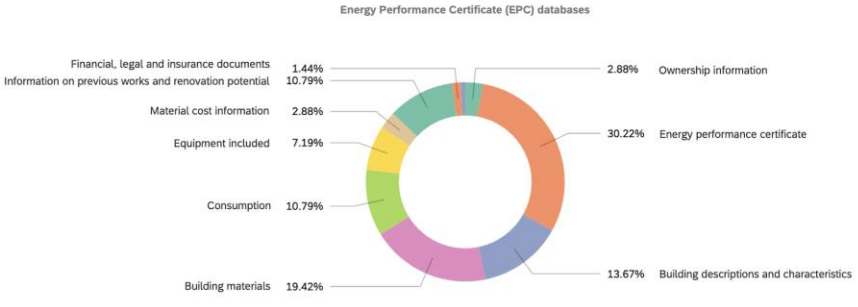
Market Overview

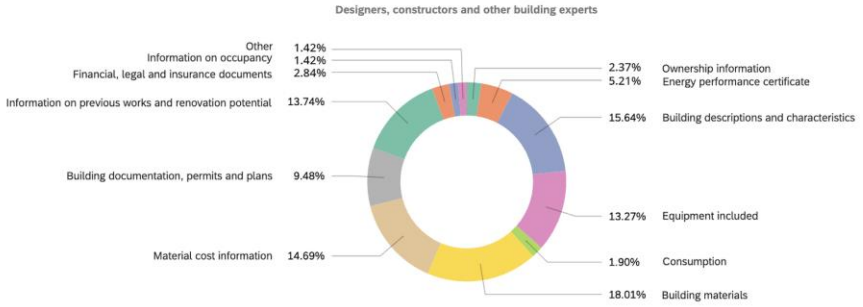
Demo Blog

Potential data sources









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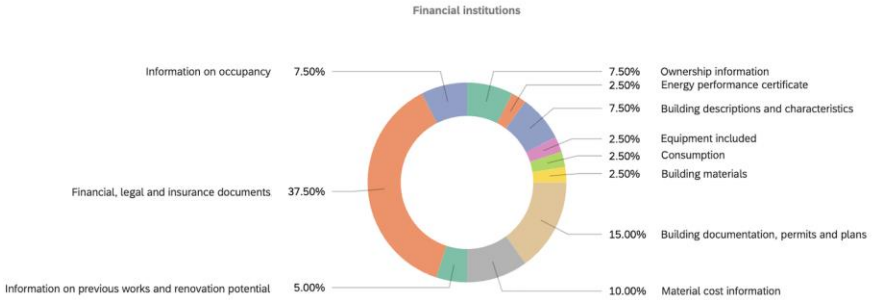

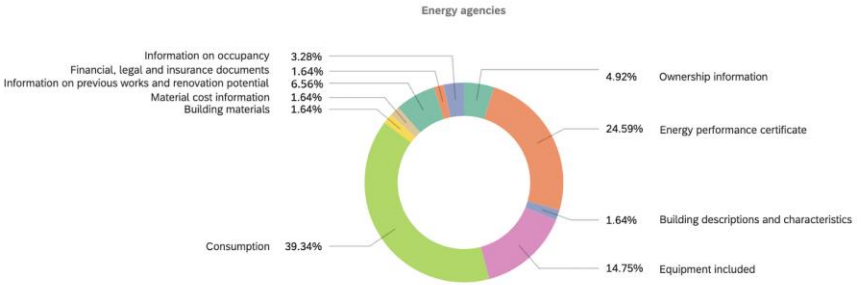

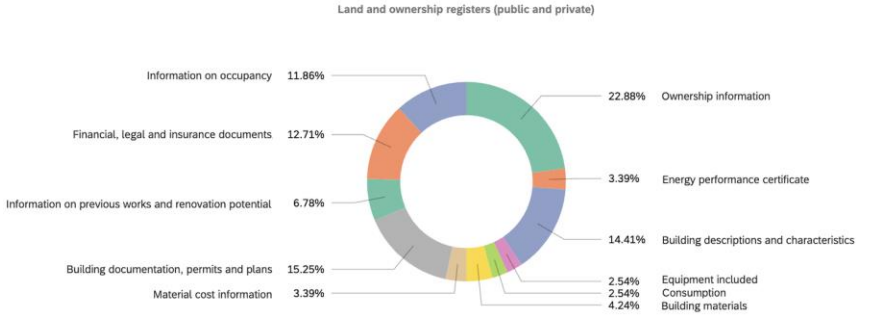

Ownership information
Energy performance certificate
Building descriptions and characteristics (i.e. age, construction type, walls, windows, roof, etc)
Equipment included (for heating, cooling, control of interior environment) and data/certifications on their maintenance
Consumption (energy, water, gas, electricity, heating and other resources)
Building materials
Material cost information for calculation of residual value
Building documentation, permits and plans (i.e rental status, état des lieux, authorisations, renovation/improvement works, etc)
Information on previous works and renovation potential (such as a building renovation passport)
Financial, legal and insurance documents, including building costs/value (annual rent, annual maintenance charges, property value, etc)
Information on occupancy (i.e. current use and past uses), lease terms
Other:

On the Roles of the EC

Demo Blog

- A DBL should also be regarded as **a medium to reduce information asymmetry** between buyers and sellers for secondary materials, and as **an enabler for process innovation** with regards to future changes for the build environment.
- The EC should correspondingly:
  1. **Require the mandatory use of DBLs** with
  2. **A minimum list** of information, data structure, and functionalities **that must be included**, and
  3. Move towards **establishing a European DBL register** that is aimed to verify the unicity of the various DBL initiatives across the EU.
- Above all, **all buildings owned by the EC should have a DBL** to encourage and promote the concept and increase buy-in.

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On the Roles of the EC

- The market further calls for **multiple competitive DBL providers** that can offer **a variety of features and functionality** across **the different kinds of housing stock**.
- There is an opportunity for the EC to push for:
  1. Minimum **data standards** at the core of each DBL;
  2. Clarity of **ownership rules** for DBLs; and
  3. The standardisation of approaches and information requirements to **make public data available to DBLs**.
- Promoting **cross sectoral collaborations** between homeowners and public entities via the development of **centralised systems that link information** available to public authorities with data of individual homes and buildings is hereby proposed.

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On the Roles of the EC

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- Nevertheless, keeping in mind the (significant) differences between DBLs of different Member States and also within from within, flexibility in the way the EC should approach the mandatory implementation of a DBL is called for:
  - The EC could **allow various DBL templates** to prevent hyper-centralising operations of individual DBLs that is tailored to each MS;
  - The EC could **play the role of developing standardised information** in terms of the architecture and data processing protocols in DBLs, based on best practices observed across member countries; and
  - The EC could help **establish a protocol to verify stakeholders** that seek to access private data and that they indeed have a legitimate relationship with the building (owner).

Focus should therefore be placed on **providing guidelines, protocols, minimum standards and quality control** rather than centralising the operations of the tools itself.

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The 5 DBLs

Validation Methodology

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Stakeholder Mapping

Stakeholder Identification

- Gathered from online survey and a series of focus group sessions with key stakeholders and DBL experts.
- The categorisation of key stakeholders is largely two-part:
  - Distinguishing the role of a stakeholder as a **data user** and/or **provider**
  - Identifying the **phase(s) in the building lifecycle** in which the stakeholder is engaged

- **Owner-occupiers** *(27 counts)*
- **Architects and designers** *(17 counts)*
- **Construction contractors** *(15 counts)*
- **Certifiers** *(14 counts)*
- **Public authorities** *(14 counts)*
- **Policy makers** *(27 counts)*
- **Facility and/or building managers** *(13 counts)*
- **Landlords and/or leaser** *(10 counts)*
- **Researcher** *(10 counts)*
- **Banks and/or insurers** *(10 counts)*
- **Utilities providers** *(8 counts)*
- **Building material suppliers** *(8 counts)*
- **Developers (Real-estate)** *(7 counts)*
- **Tenants (Lessees)** *(7 counts)*
- **Valuers** *(6 counts)*
- **Data companies (Inventories and registering)** *(5 counts)*
- **Demolition contractors** *(4 counts)*
- **Energy experts** *(4 counts)*
- **Lawyers, solicitors and/or conveyancers** *(4 counts)*
- **Real estate agents** *(4 counts)*
- **Investors** *(4 counts)*
- **IT providers** *(3 counts)*
- **Local authorities** *(3 counts)*
- **OVAM material information** *(3 counts)*
- **Distribution network operators (DNOs)** *(2 counts)*
- **Guarantee bodies** *(2 counts)*
- **Renovation advice providers** *(2 counts)*
- **Service designer (UX)** *(2 counts)*
- **Service providers (retrofit)** *(2 counts)*
- **Social housing providers** *(2 counts)*
- **Surveyors** *(2 counts)*
- **Building safety regulator** *(1 count)*
- **Competent Person Schemes** *(1 count)*
- **Energy data providers** *(1 count)*
- **Energy suppliers** *(1 count)*
- **Funding party** *(1 count)*
- **Maintenance contractor** *(1 count)*
- **International organisations** *(0 count)*

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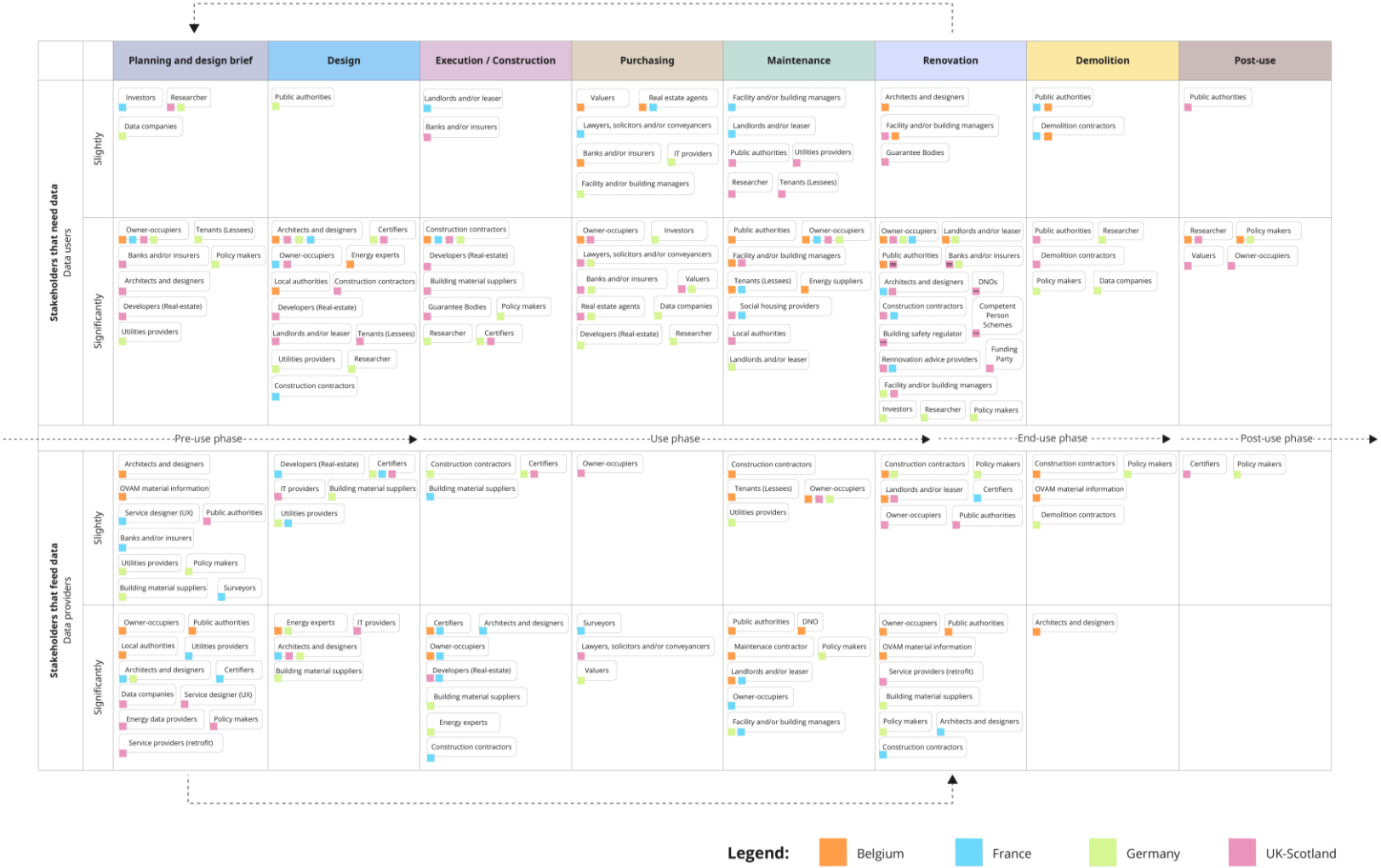
Planning and design brief
Design
Execution / Construction
Purchasing
Maintenance
Renovation
Demolition
Post-use
Stakeholders that need data
Data users
Slightly
Investors
Researcher
Data companies
Public authorities
Landlords and/or leaser
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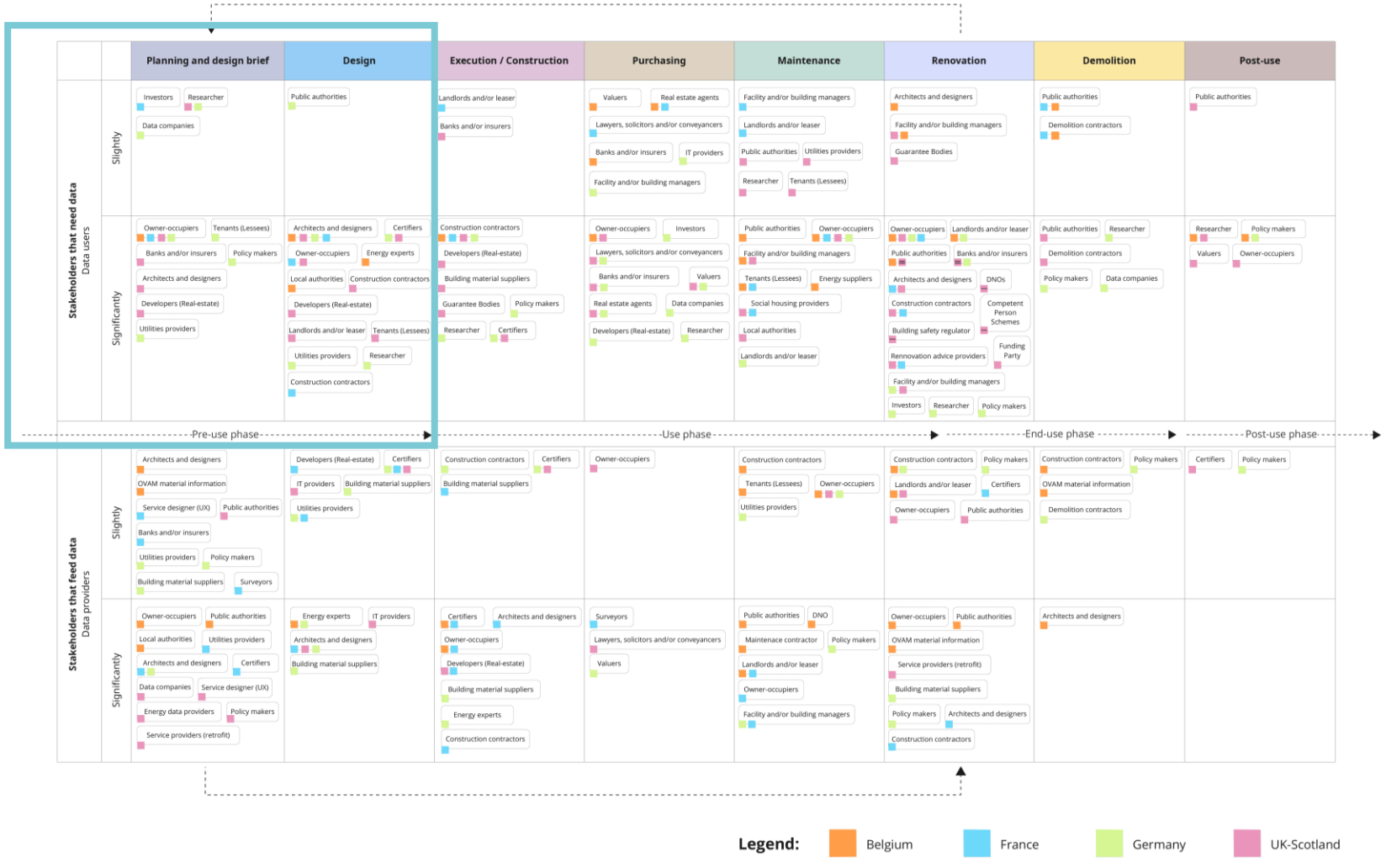
Legend:
Belgium
France
Germany
UK-Scotland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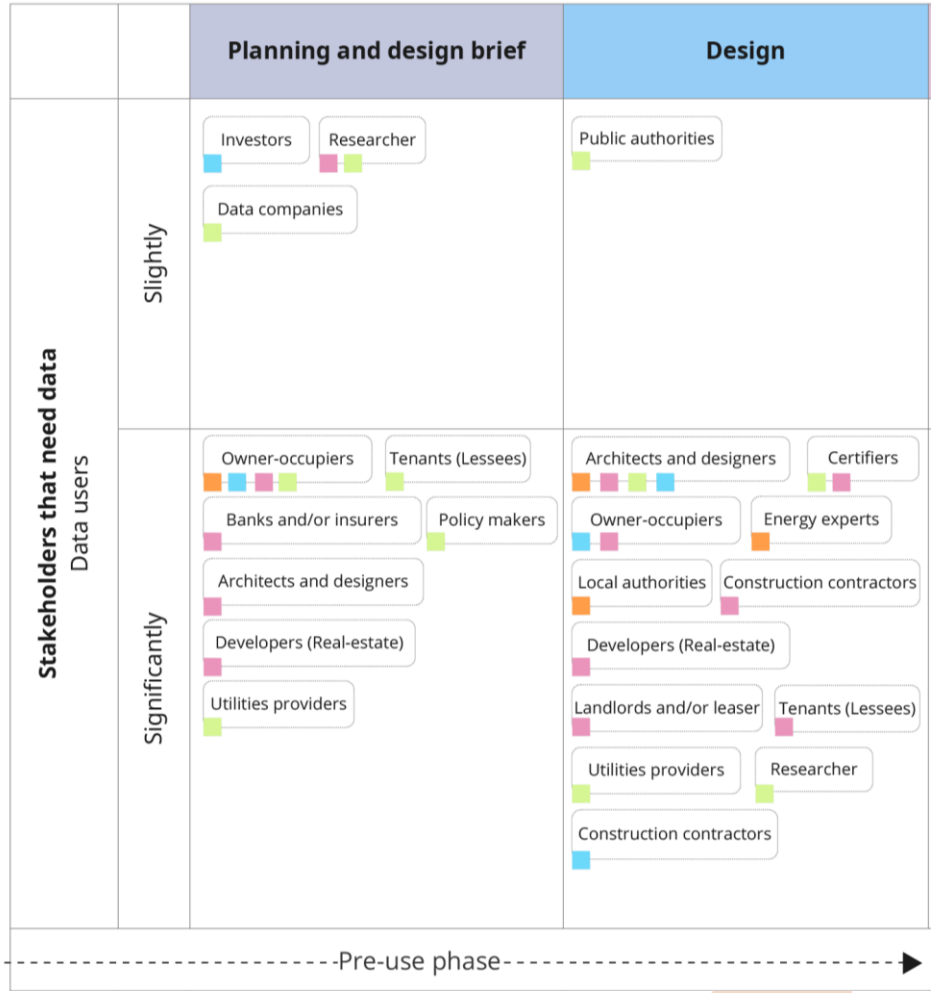
Stakeholder Mapping

- Sample



Legend: Belgium France Germany UK-Scotland

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Functionality Mapping

Functionality Identification

- The list is the result of identifying and studying every functionality and data field employed across the 5 initiatives.
- The terms and scope generalised thereafter to encompass the varying features into one universal table.

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Digital repository to store key documents *(i.e. design plans; certifications; proof of installations)*
Easy access to all relevant building-related information according to the different level of users and stakeholders
Storage of maintenance and operation plans *(may incl. predictive maintenance; notifications and alerts)*
Traceability of building materials and/or material passport
Digital repository to store past renovations *(may incl. design plans; certifications; proof of installations)*
Monitoring of building performance *(may incl. whole life resource consumption; climate change resilience; adaptability and flexibility; health and safety; accessibility)*
Monitoring of indoor environment quality
Monitoring of environmental impacts over lifetime *(i.e. demolition and re-use of materials)*
Visualising future energy/cost-saving potentials and lifecycle costing
Integration with construction project management tools for planning and financing *(To assign roles, key performance indicators (KPIs), accountability and liabilities during the design, development and construction phases)*
Enabling integration of BIM
Indication of the smart readiness of the building
Enabling integration with smart energy services *(i.e. demand response; dynamic pricing)*
Building renovation passport or renovation roadmap
Provision of automated renovation advice
Benchmarking, reporting and links to similar buildings, various certification and assessment schemes
Provision of overview of the building stock
Option to consent for third party use of data *(Third parties may include (prospective) buyers and tenants, real estate, financing institution, construction professionals & governing bodies)*
Links to financial incentives
Estimation of environmental impacts of building lifetime
Enabling integration with asset management tools

Functionality Mapping

2 overarching data fields

1. Information storage
2. Data usage and (links to other) tools

Data Field	Functionality (x = Yes; / = In the future)	Woningpas	CIRDAX	CLÉA	CAPSA	UK DBL
Information Storage	Digital repository to store key documents *(i.e. design plans; certifications; proof of installations)*	x		x	x	
	Easy access to all relevant building-related information according to the different level of users and stakeholders	x	x	x	x	
	Storage of maintenance and operation plans *(may incl. predictive maintenance; notifications and alerts)*	x	x	x	x	
	Traceability of building materials and/or material passport	/	x		/	
	Digital repository to store past renovations *(may incl. design plans; certifications; proof of installations)*	x	/	x	x	
Data usage and (links to other) tools	Monitoring of building performance *(may incl. whole life resource consumption; climate change resilience; adaptability and flexibility; health and safety; accessibility)*	x			x	
	Monitoring of indoor environment quality				/	
	Monitoring of environmental impacts over lifetime *(i.e. demolition and re-use of materials)*		x		/	
	Visualising future energy/cost-saving potentials and lifecycle costing		x	/	x	
	Integration with construction project management tools for planning and financing *(To assign roles, key performance indicators (KPIs), accountability and liabilities during the design, development and construction phases)*					
	Enabling integration of BIM				x	
	Indication of the smart readiness of the building					
	Enabling integration with smart energy services *(i.e. demand response; dynamic pricing)*				x	
	Building renovation passport or renovation roadmap	x	/	/	x	
	Provision of automated renovation advice	x		/	x	
	Benchmarking, reporting and links to similar buildings, various certification and assessment schemes	x	/		x	
	Provision of overview of the building stock				x	
	Option to consent for third party use of data *(Third parties may include (prospective) buyers and tenants, real estate, financing institution, construction professionals & governing bodies)*	x	x		/	
	Links to financial incentives	x		/	x	
	Estimation of environmental impacts of building lifetime		x		x	
	Enabling integration with asset management tools		x		x	

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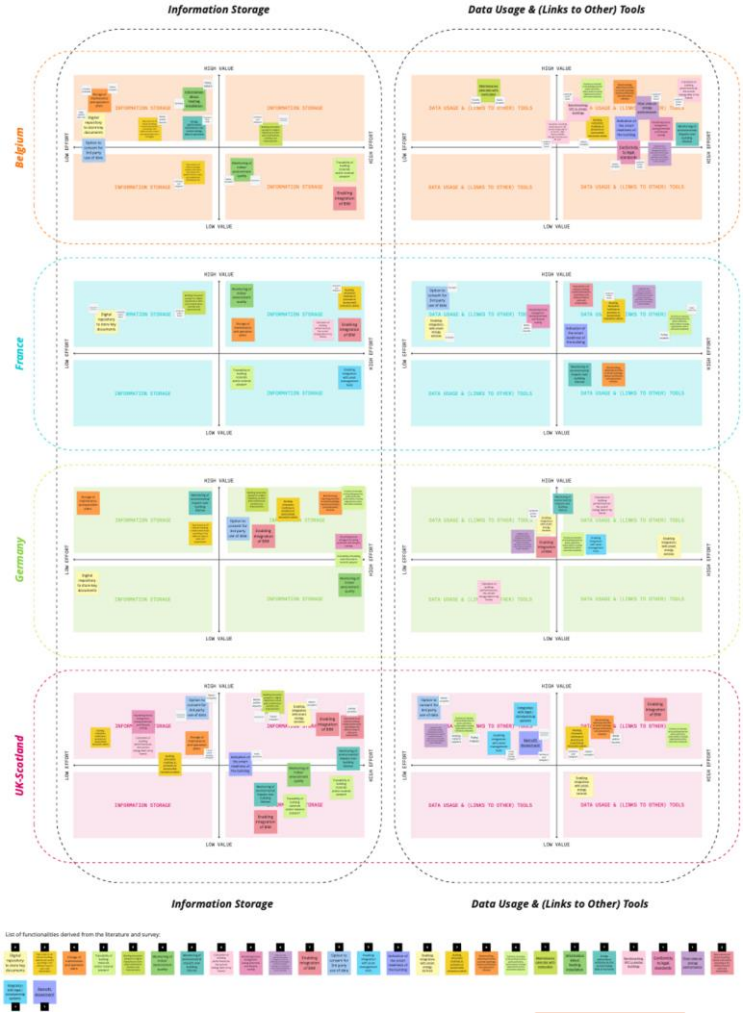
Functionality Mapping

- Perception of key stakeholders, validated later by experts



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The 5 DBLs

Functionalities in place

- Functionalities further defined and categorised during focus group sessions; newly included functionalities (**bolded**), reworded (*italicised*), unincluded functionalities (~~stroked through~~).

Functionalities	Information Storage				Data Usage and (Links to Other) Tools			
	BE	FR	DE	UK-SCT	BE	FR	DE	UK-SCT
Digital repository to store key documents	x	x	x					
Easy access to all relevant building-related information according to the different level of users and stakeholders	x		x					
Storage of maintenance and operation plans	x	x	x	x				
Traceability of building materials and/or material passport	x	x	x	x				
Building renovation passport or digital repository to store past maintenance activities and improvements	x	x	x	x				
Monitoring of indoor environment quality	x	x	x	x				
Enabling integration of BIM	x	x	x	x			x	x
Building renovation roadmap or provision of (automated) renovation advice		x	x	x	x		x	x
Option to consent for third party use of data	x		x	x		x		x
Calculation of building performance and/or provision of energy performance certificates	x		x		x		x	
Monitoring of environmental impacts over lifetime			x	x	x	x	x	
Visualising future energy/cost-saving potentials and lifecycle costing			x	x	x	x		
Benchmarking, reporting and links to similar buildings, various certification and assessment schemes			x		x	x		x
Provision of overview of the building stock			x		x	x	x	x
Enabling integration with asset management tools		x					x	x
Easy access to all relevant building-related information according to the different level of users and stakeholders				x		x		
Integration with construction project management tools for planning and financing					x	x	x	x
Indication of the smart readiness of the building				x	x	x		
Enabling integration with smart energy services				x		x	x	x
Conformity to legal standards					x			
Clear view on energy performance					x			
Maintenance calendar with reminders					x			
Retrofit assessment								x
Integration with legal and/or conveyancing systems								x
~~Links to financial incentives~~								
~~Monitoring of building performance *(may incl. climate change resilience; adaptability and flexibility; health and safety)*~~								

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	Benefits	Prerequisites
Belgium	1. Woningpas being compulsory eliminates doubts about the tool itself. 2. Good collaborations and cooperation between public entities and/or databases make it possible for data to be constantly updated. 3. Possibility to grant third party access to data relieves stress in communication between stakeholders when necessary. 4. No competition in market guarantees equal access to all available data and linked databases. 5. Aids policy making in identifying areas and neighbourhoods where renovations are most needed. 6. Free of charge. 7. Profound base of trust within the systems that regulate the tool.	1. Not yet available on a single platform. Certain cities in Flanders aspire to grow into a one-stop-shop service for its citizens. 2. Improved collaborations between local authorities and private market players. 3. Simplify third party authorisation processes for local governments to proactively provide renovation advice and take on neighbourhood plannings.
France	1. Easy to get started with. Consumers can easily access the tool and customise it with the data that they want without obligation. 2. Easy and safe transfer of all building data to subsequent owners at moments of change. Also possible to duplicate the data for new owners. 3. A wider range of options in the market.	1. Ensuring that the data is fully and correctly entered by every homeowner. 2. A lot more data is needed than what is available now for an efficient transmission of data between owners and EPC bodies. 3. When appropriately implemented, the reminder feature can facilitate the pre-financing of large operations when it comes to maintenance logs of multi-family apartment complexes.
Germany	1. Very easy due to the automation of data collection processes. 2. Cost efficient. 3. Simple to use for sustainability reporting of real estate portfolios and loggings of construction materials for future redevelopment and/or refurbishment works. 4. Applicable in different climatic zones using the energy conservation codes developed by the tool.	1. Improved collaborations with local partners and public authorities for projects funded by NGOs.
UK-Scotland	1. When better implemented, local authorities will benefit from understanding the properties in their local area better. It will also aid understanding the energy use profiles of properties in their area. 2. Provides a good overview of all of properties that are mortgaged to banks, and it is in their interests to retain useful information on those properties. It is also an opportunity for banks and lenders to provide finance to fund retrofit improvements in addition to enhancing their assets.	1. Lack of demand and awareness of DBLs. 2. Support from intermediary establishments is therefore vital. 3. Endorsements from the central government is key. 4. Partners that should be involved in retrofit must be identified. 5. The EPC could be a catalyst or a starting point for any DBL data because the data can be passed straight into the logbook repository.

Key Takeaways

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- Primary focus should orbit around **developing a robust structure and UX on getting key features and the relevant functionalities right**, whilst maintaining flexibility in adding further functionalities in a modular fashion.
- DBLs should be made **available and accessible across the wide spectrum of key stakeholders**. For all authorised stakeholders, information should be provided equally in terms of ease of use, data quality and volume of data.
- The most relevant features that could be seen to simultaneously enhance the identified benefits and address the prerequisites are (1) **digital interface**, (2) **interoperability**, (3) **data synching and matching**, (4) **the storage of data and information** and (4) **user-friendly navigation and visualisation**.
- Identifying **exactly how the key functionalities are employed per initiative at which stages in the phase and the leading actors thereof** is crucial.
- **A balance between the developers, users and external third parties** should be a constant in all future qualitative studies when determining the actual representation of the tools.
- The research carried out so far shows that the DBL needs to be **further compared between the diverse local contexts, with different needs, culture, processes** —for instance on the type of data is gathered differ from country to country— as well as their **respective capacity for cross applications and market perceptions**. Walking through the user journey per DBL and comparing the findings is highly recommended to understand the differences in the phases of a building lifecycle and terminology.

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