

# A VISION FOR DATA IN THE BUILT ENVIRONMENT

## TRANSFORMING SUSTAINABILITY REPORTING



Kell Jones, Karim Farghaly, Zsolt Toth

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## INTRODUCTION

Significant hurdles impede the effective reporting of buildings' performance across the real estate value chain. The increasing demands for transparency from the finance sector and built environment investors are creating an **increased information burden at the building level**. These challenges are worsened by the **proliferation of unaligned reporting standards** focused on real estate, at both national and international levels. The demand for building and product information is highly fragmented. Yet, limited data availability and the absence of a common digital structure are driving up costs and creating inefficiencies in designing, constructing, operating, and financing buildings.

The digital capture, storage and transfer of building and product information offers a potential solution to this data collection, management and reporting challenge.

Indeed, digital building logbooks (DBLs), or passports, are designed to capture building information for stakeholders. However, building and product passports are typically proprietary and are created bottom-up for specific purposes and often specific jurisdictions, which means there is no certainty that the information needs of all stakeholders in the real-estate value chain will be met. There is extensive fragmentation on the supply of building and product information.

Funded by the Circular Buildings Coalition, The **Building Passport Alignment Project** aims to fix this disconnection and fragmentation by identifying and aligning the data points needed to meet these multiple market and regulatory requirements. By developing a comprehensive data dictionary, or ontology, we can provide building logbook developers with a comprehensive set of data points that can be captured to meet any reporting requirements. You can read more about the project at [bpalignment.com](http://bpalignment.com)

This report presents the outputs from a cross-sector co-creation workshop "A Vision for data in the Built Environment" held in Brussels in November 2024 as part of the Building Passport Alignment Project.

The vision is presented as a focal point for discussion, and catalyst for the future development of the global information ecosystem for the Built Environment.

## About the Authors

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### Zsolt Toth, BPIE

Zsolt Toth is Team Leader at BPIE (Building Performance Institute Europe) where he is responsible for steering BPIE's work across several policy and research projects including building stock decarbonisation, and sustainability of the built environment, more generally.

# BRUSSELS WORKSHOP

In November 2024, the Building Passport Alignment Project joined forces with BPIE - Buildings Performance Institute Europe, the Global Alliance for Buildings and Construction (GlobalABC) and Demo-BLog to convene a workshop to define a Vision for Data in the Built Environment.

The workshop brought together representatives from across the built environment value chain from product suppliers, through to policy makers and standard setters to explore some of the data challenges that exist today in the built environment. A full list of participating organisations is included below.

Throughout the day, participants were challenged to develop and explore sub-sectoral visions for data: for policymakers, investors, real estate participants, and digital services providers. We asked these groups what the world could look like if all their data problems were addressed? These visions were explored, and priority actions identified to deliver on that vision.

This report presents the framing of the challenge, (page 3) sectoral visions for data in the built environment (pages 4-7) which have been combined into a unified vision (page 8). Page 9 provides a series of prioritised policy and standardisation recommendations to deliver on that vision.

The organisers would like to thank all the workshop attendees for their input to this exercise.

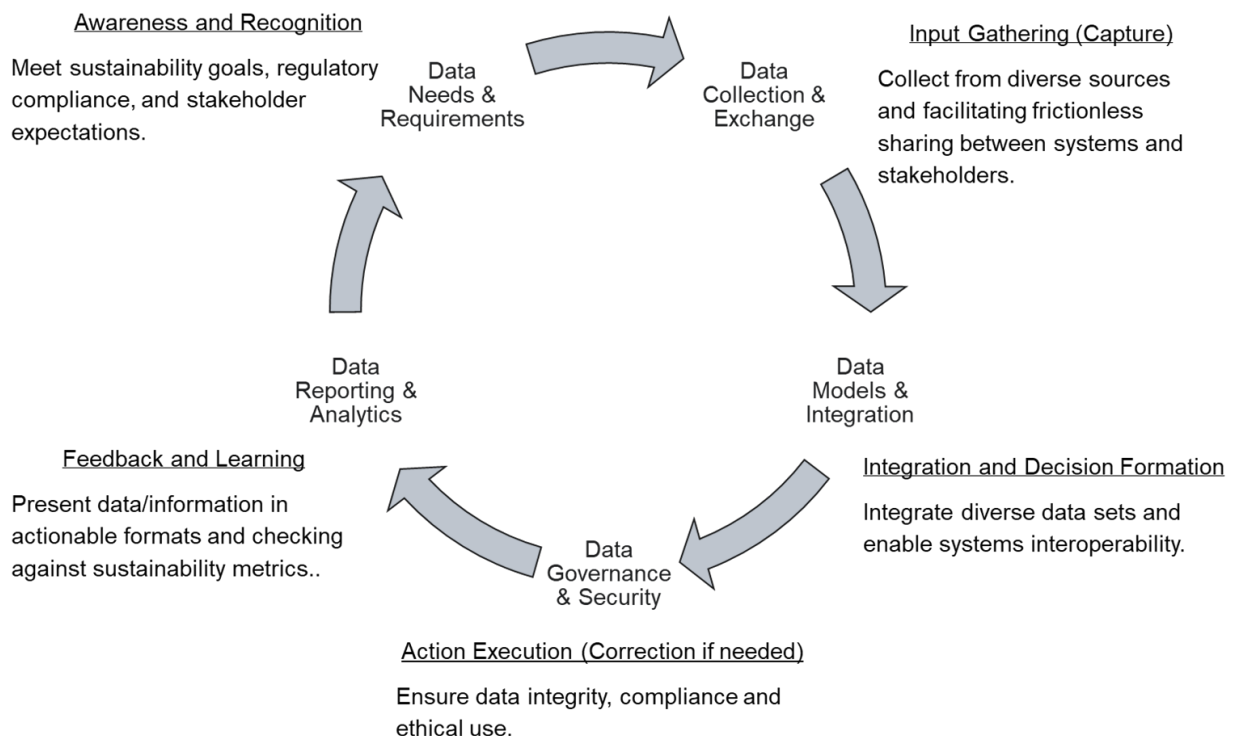


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| <ul style="list-style-type: none"> <li>• European Commission</li> <li>• DG GROW</li> <li>• DG ENER</li> <li>• DG ENV</li> <li>• HaDEA</li> </ul> | <ul style="list-style-type: none"> <li>• Climate Bonds Initiative</li> <li>• Construction Products Europe</li> <li>• European Public Real Estate Association (EPRA)</li> <li>• International Union of Property Owners (UIPI)</li> <li>• Investors in Non-Listed Real Estate Vehicles (INREV)</li> </ul> | <ul style="list-style-type: none"> <li>• AXA IM</li> <li>• BPIE</li> <li>• CBRE IM</li> <li>• ChillServices</li> <li>• Climate Positive Europe Alliance</li> <li>• DEERNS</li> <li>• ECOS</li> </ul> | <ul style="list-style-type: none"> <li>• FIBREE</li> <li>• Global ABC</li> <li>• ING</li> <li>• Madaster</li> <li>• Sumitomo</li> <li>• UCL</li> <li>• VITO</li> </ul> |
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# PROBLEM FRAMING – THE DATA LIFECYCLE

We have divided data management in built environment reporting into five pillars. We see these pillars forming a virtuous loop, and they formed the structure of the vision and how to reach it.

1. **Data Needs and Requirements:** Identifying the data necessary to meet reporting goals, regulatory compliance, and stakeholder expectations.
2. **Data Collection and Exchange:** Collecting data from diverse sources and facilitating frictionless sharing between systems and stakeholders.
3. **Data Models and Integration:** Designing and implementing structured frameworks for integrating diverse data sets, enabling systems interoperability.
4. **Data Governance and Security:** Establishing oversight, policies, and protections to ensure data integrity, compliance, and ethical use.
5. **Data Reporting and Analytics:** Analysing and presenting data in actionable formats and checking against key performance metrics.

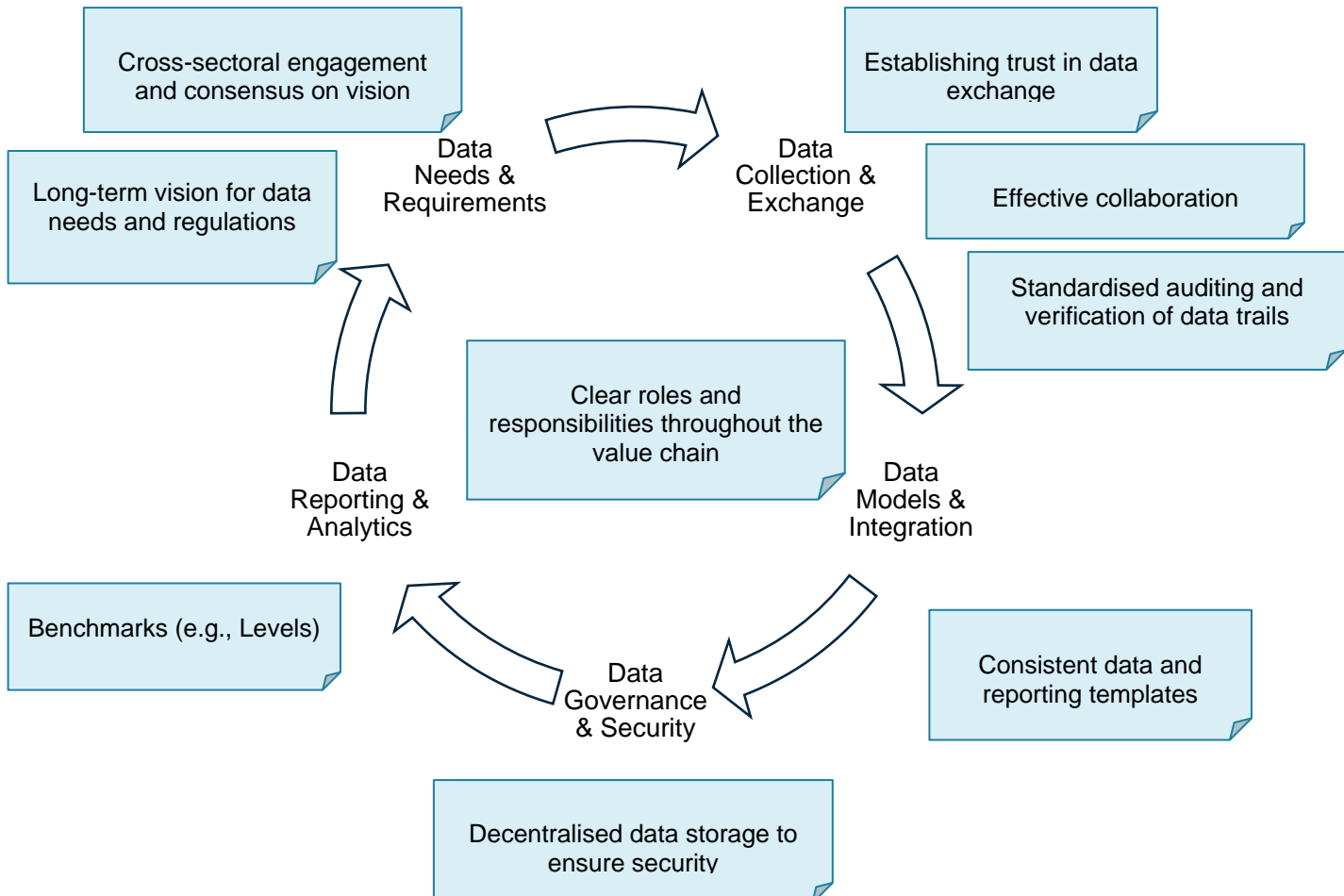


## SECTORAL VISION: POLICY

The policy vision aims to develop effective policy instruments and ensure robust monitoring of their implementation. It also focuses on securing and enhancing the accessibility of information systems, ensuring they are protected and easy to use. This approach prioritises security and user accessibility, aiming to build a trustworthy environment where data is safely managed and readily available.

- **Data Security:** Implementing robust security measures to protect data integrity and prevent unauthorised access.
- **Accessible and User-friendly Systems:** Developing systems that are easy to use for a broad range of users while maintaining high security standards.
- **System Verifiability and Updates:** Ensuring systems are verifiable and can be updated with real, assessed data to maintain relevance and accuracy.

Foster an environment where security and accessibility drive continuous improvement and trustworthy data management.

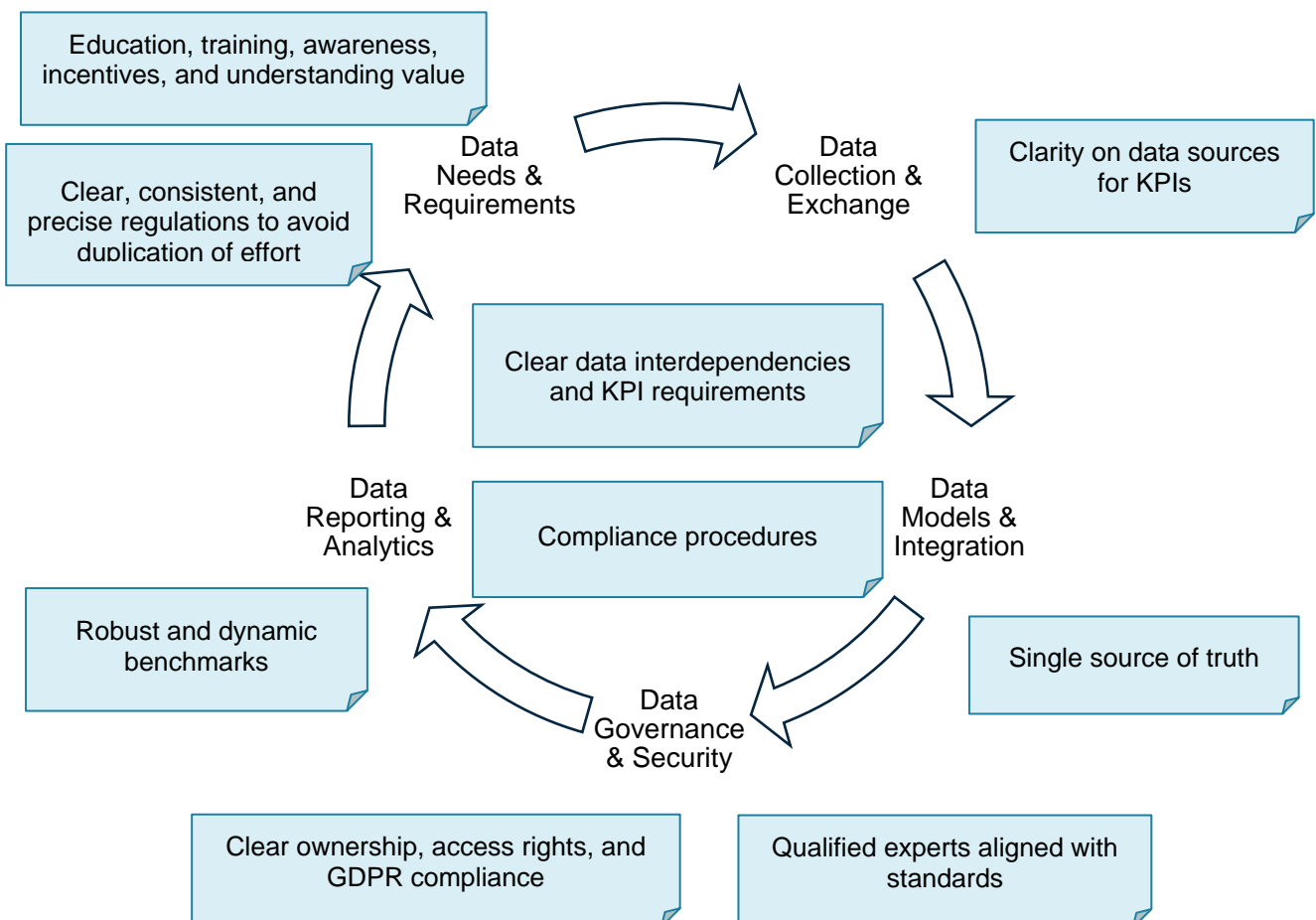


# SECTORAL VISION: INVESTORS

The finance vision advocates for a sustainable and comprehensive approach to data management that considers the entire lifecycle of information. It focuses on enhancing the transparency and robustness of data processes, ensuring that data serves as a reliable foundation for decision-making

- **Whole Lifecycle Data Management:** Emphasising the importance of managing data from creation to application.
- **Consistency in KPIs:** Ensuring key performance indicators remain consistent across different systems and reports.
- **Integrated Reporting Models:** Developing unified data sets for clear and coherent reporting.
- **Tailored Data Translation:** Customising data interpretation to meet specific user needs, enhancing relevance and impact.

Establish a culture of precision and sustainability in data management, enhancing decision-making and strategic effectiveness.

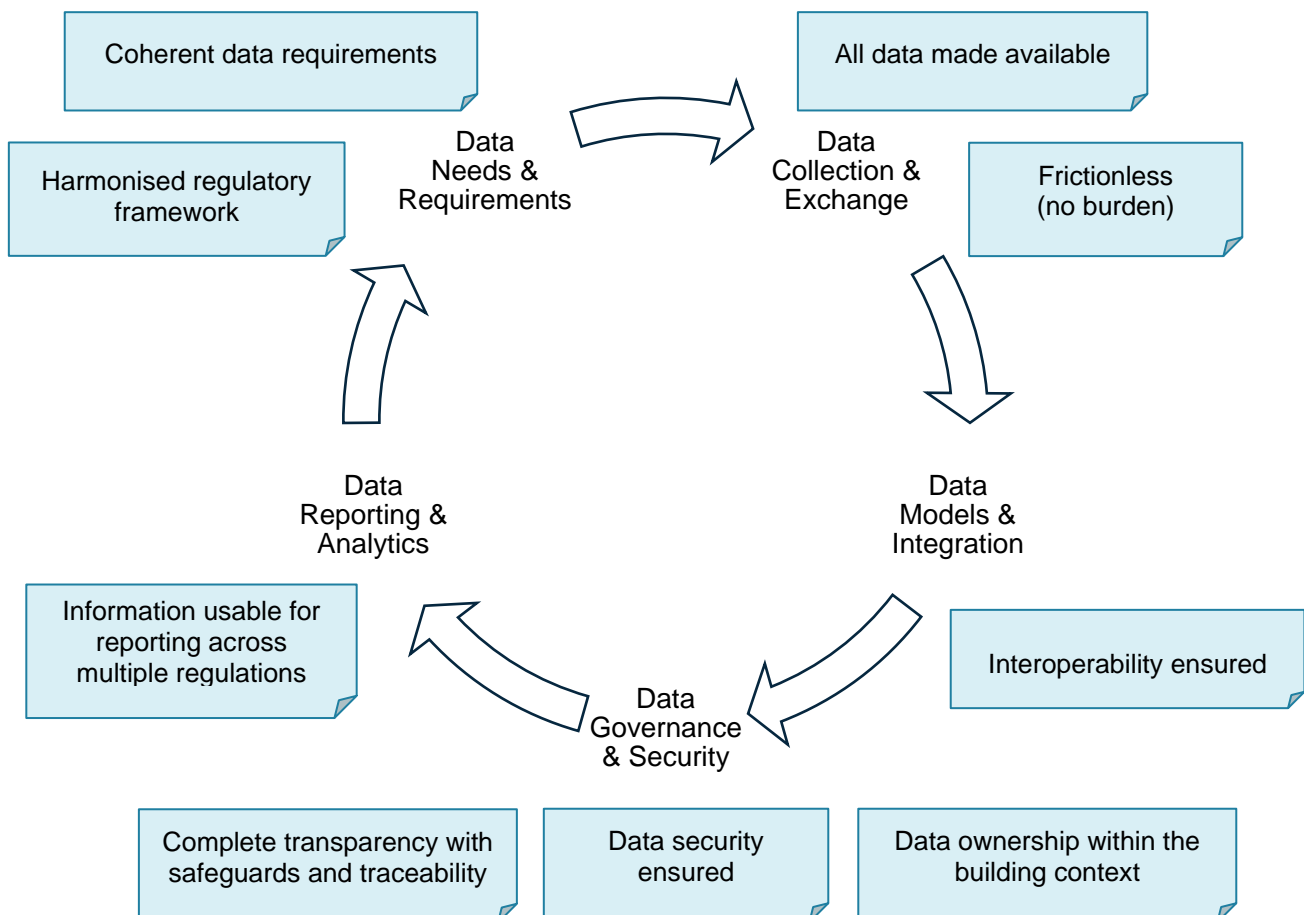


# SECTORAL VISION: REAL ESTATE

The real estate vision focuses on constructing a robust information value chain that prioritises data integrity and facilitates effective management. It enhances system usability and reliability, ensuring that all levels of the organisation can trust and utilise the data provided.

- **Responsible Information Value Chain:** Creation of a value chain that ensures integrity and usability of data.
- **Levels of Certainty in Data:** Documenting the reliability and quality of data to enhance decision-making processes.
- **Systems Simplification:** Streamlining systems to improve usability and efficiency.
- **Data Verifiability and Reliability:** Ensuring that data can be verified, consolidated, and relied upon for accurate applications.

Develop a framework that supports precise, reliable, and actionable data usage across organisational levels.

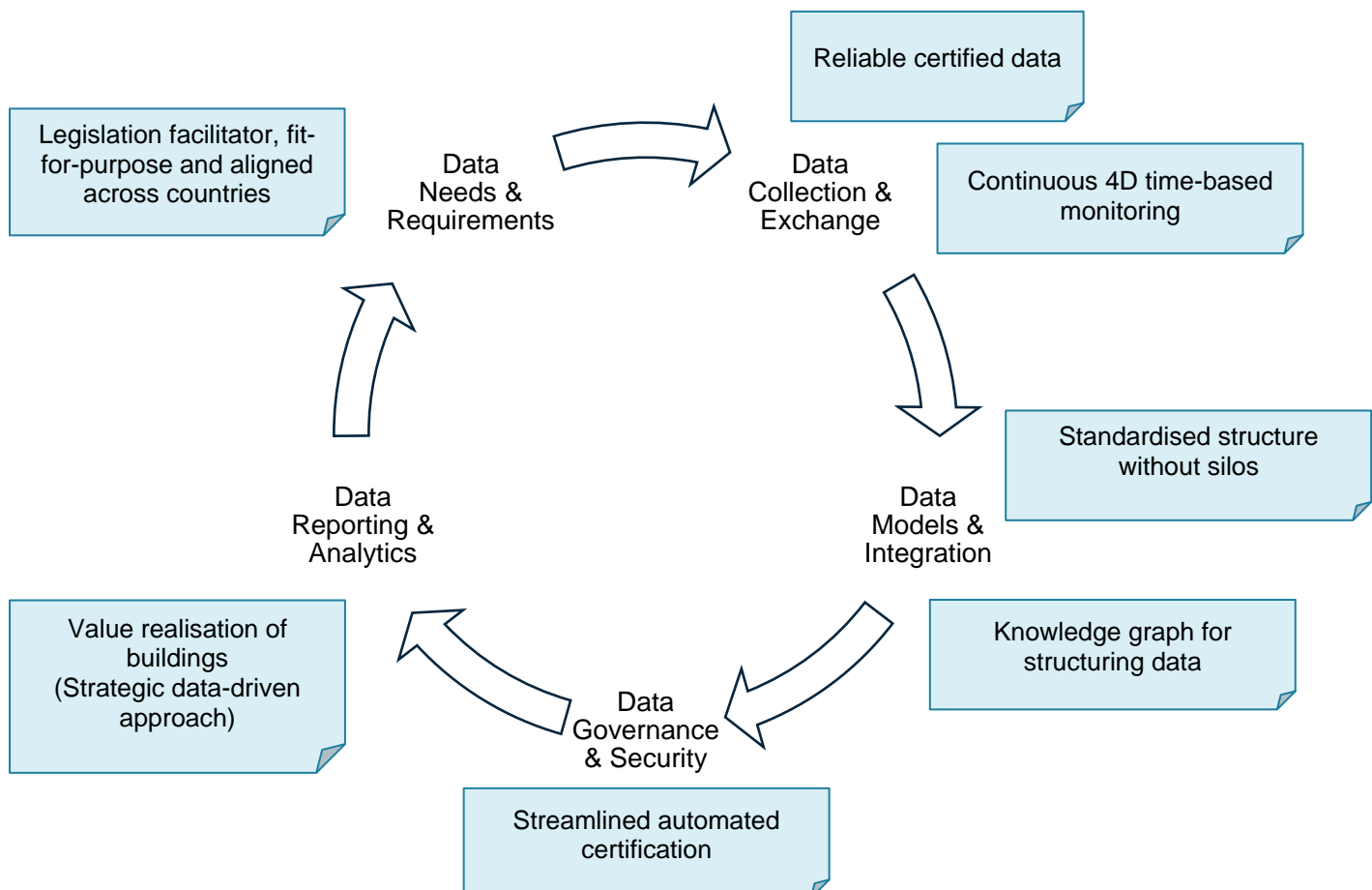


## SECTORAL VISION: DIGITAL TECHNOLOGIES

The digital technology vision centred on leveraging advanced technology to create an integrated, interoperable infrastructure that spans local and global contexts. It aims to enhance data accuracy, operational efficiency, and collaborative potential through innovative digital solutions.

- **Digital Twin Lifecycle Management:** Comprehensive management throughout the entire lifecycle to ensure data accuracy and usefulness.
- **Local and Global Data Integration:** Seamless integration of local and global databases.
- **Transparency and Collaboration:** Development of an organisational model that promotes transparency and international collaboration.
- **Multi-criteria Decision-making:** Use of diverse indicators to facilitate effective and efficient worldwide operations.

Establish a globally interconnected infrastructure that optimises data utilisation and fosters innovation across borders





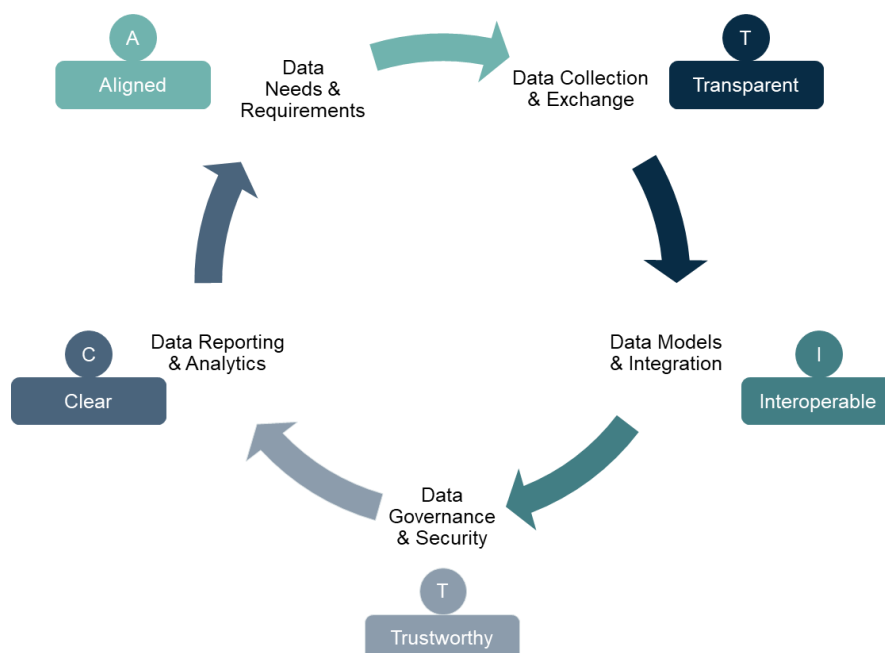
# A VISION FOR DATA IN THE BUILT ENVIRONMENT

The themes highlighted by the different sub-sectoral groups are summarised below. To deliver visions for data in the built environment our participants felt the need to:

- Foster an environment where **security** and **accessibility** drive continuous improvement and **trustworthy** data management.
- Establish a culture of **precision** and sustainability in data management, enhancing decision-making and strategic effectiveness.
- Develop a framework that supports **precise, reliable, and actionable** data usage **across organisational levels**.
- Establish a **globally interconnected infrastructure** that **optimises data utilisation** and **fosters innovation across borders**.

Together, these imply some characteristics for data. Data must be:

- **Aligned** – standardised information asks, assumptions, naming conventions and data structures support interoperability and transparency.
- **Transparent** – data should be captured once, at its most granular level. There should be a clear line of sight and audit trail from the point of reporting to the data’s appropriate home.
- **Interoperable** – capable of consolidation and seamless transfer between users, tools and reporting systems.
- **Trustworthy** – data capture and delivery systems should support automated data validation and certification.
- **Clear, consistent and unambiguous**. Information providers at all levels should know what is expected of them.



## RECOMMENDATIONS

The first step in delivering against this combined vision is the development of a common language to allow digital information to flow between silos, overcoming fragmentation, simplifying and reducing the costs of regulatory compliance. The Construction Product Regulations describe this as developing a *common data dictionary*.

**Our key policy recommendation then is for the EU to finance and support the development of a common data dictionary to harmonise and support the digitalisation of reporting across EU regulations.** To have maximum impact, this data dictionary should address the data requirements across the policy portfolio impacting the construction and real estate sectors, combining top-down and bottom-up approaches to create a comprehensive set of data points.

Work on this task has already begun with support from philanthropic organisations. However, due to the urgency and the fundamental importance of this work, we believe future efforts towards alignment should be led by regulatory bodies.

Second, we recommend that **the EU adopt a federated data solution for data for the built environment.** In this context, data can be owned and held by those responsible for the production and validation of that data and made available to authenticated information users on demand in an auditable information chain. Solutions have already been proposed to support SME organisations who may not have access to sophisticated storage solutions.

The federated data solution would be underpinned by a **data mapping exercise** which highlights appropriate data ownership and use across the built environment information value chain. This data mapping would feed into the current activities of the various building- and product-related CEN standardisation working groups.

Our final policy recommendation is to **align information requests and data points across all built environment related policies.** Currently, the policy information demand is fragmented between and within global policy environments. This adds to the quantity and complexity of the sustainability related information requests at the building and product level. By standardising the information requests within and between policy contexts, the reporting and cost burden can be reduced. We note that this is also a recommendation in the draft report on Activities and Technical Screening Criteria from the Platform for Sustainable Finance, as well as in the Budapest Declaration on the New European Competitiveness Deal.

For **practitioners**, the key recommendations relate to preparedness. In the next few years, the volume of sustainability-focused **information requests is likely to grow significantly, and the requests will be increasingly granular.** If they have not already done so, **practitioners should engage with sustainability related questions relating to their work and develop processes and systems that enable them to respond effectively to these requests.**

Further, **industry bodies in the built environment should work together to develop platforms for dialogue across the entire information value chain.** This engagement will ensure that the information needs of all participants are aligned and can be addressed.

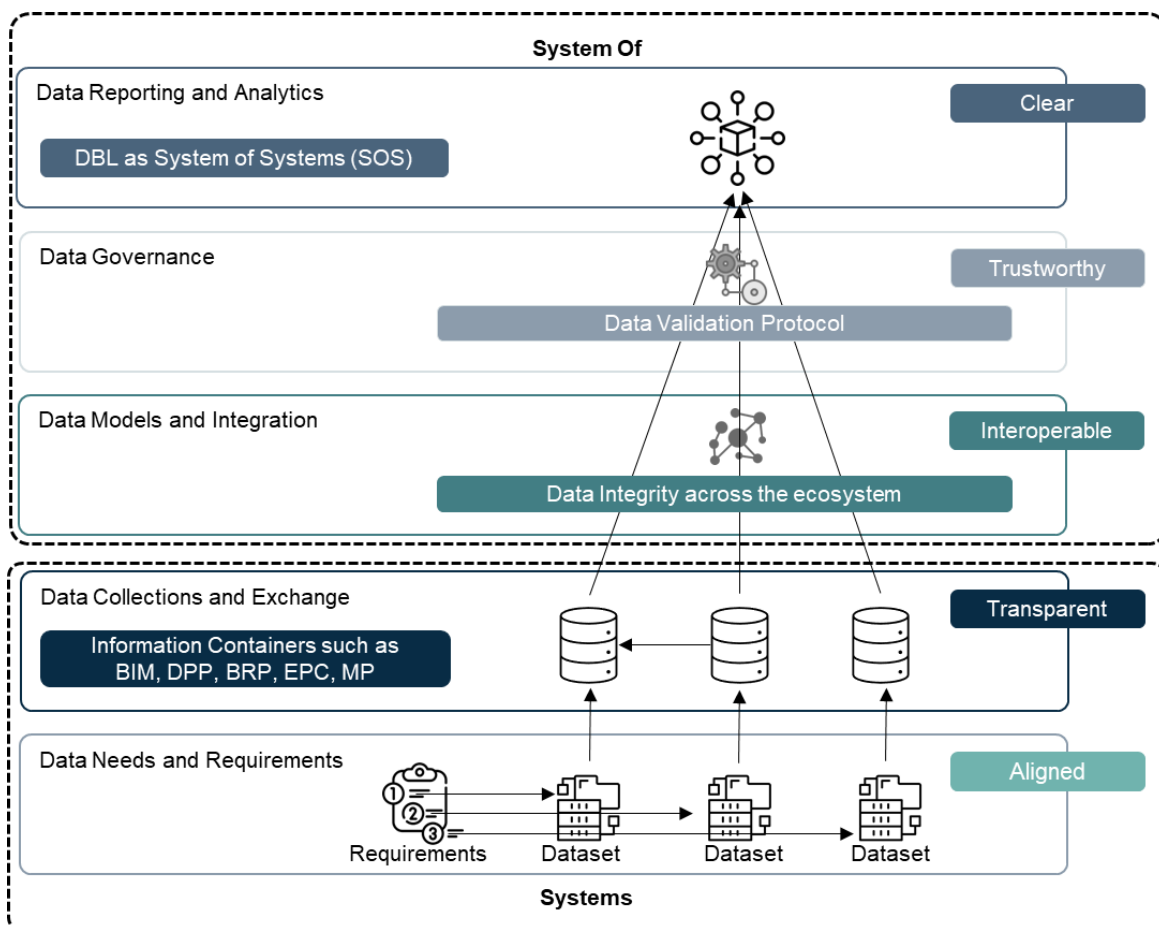


# CONCLUSION

Considerable progress has already been made to advance the development and implementation of digital building logbooks. DBLs have been referenced in multiple EU building policies, and both private and government-led frontrunner initiatives have demonstrated their potential to bridge data gaps and overcome market barriers. However, while DBLs have been introduced as a voluntary tool in the 2024 recast of Energy Performance of Buildings Directive, their broader cross-policy potential remains largely unrecognised and unrealised in the regulatory landscape.

Our co-created vision sees DBLs as enabling seamless and secure information flows across the entire real estate value chain – from the foundry to the finance. By creating the language to enable the integration of the many information tools and containers, (e.g., energy performance instruments and material passports) with data demand (e.g., financial sector requirements), DBLs could play a crucial role in reducing compliance costs, streamlining data management and decision-making. In delivering this vision, we can accelerate the green and socially just transition of the built environment.

To unlock this potential, it is essential to establish connections between DBLs and the many policy tools beyond energy performance regulations—links that are currently missing. Furthermore, expanding DBLs into additional policy areas requires identifying and aligning key building data points tailored to each policy objective such as climate neutrality, housing affordability, green finance, competitiveness and digitalisation.



*Proposed System of Systems approach to achieve the vision.*

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### Other related work:

- The Building Passport Alignment Project. <https://www.circularbuildingscoalition.org/blueprint-projects/university-college-london>
- Mindful Materials: A common Language for Impact. <https://www.mindfulmaterials.com/cmfi-reference-guide>
- Technical study for the implementation of Digital Building Logbooks in the EU. <https://www.ecorys.com/case-studies/technical-study-for-the-development-and-implementation-of-digital-building-logbooks-in-the-eu/>
- DemoBlog – Funded Project by Horizon Europe. <https://demo-blog.eu/>
- CEN TC350 Standard development related to building and product information for a circular economy in the built environment

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