



## BuiltHub - A roadmap, community and web-based data platform to monitor and transform the European building stock

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Sustainable Places 2021 Conference  
Renewable Energy Modeling paper session  
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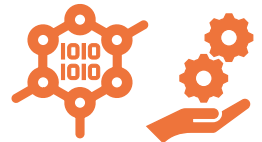
# BuiltHub in a nutshell

## Coordination and Support Action (CSA)

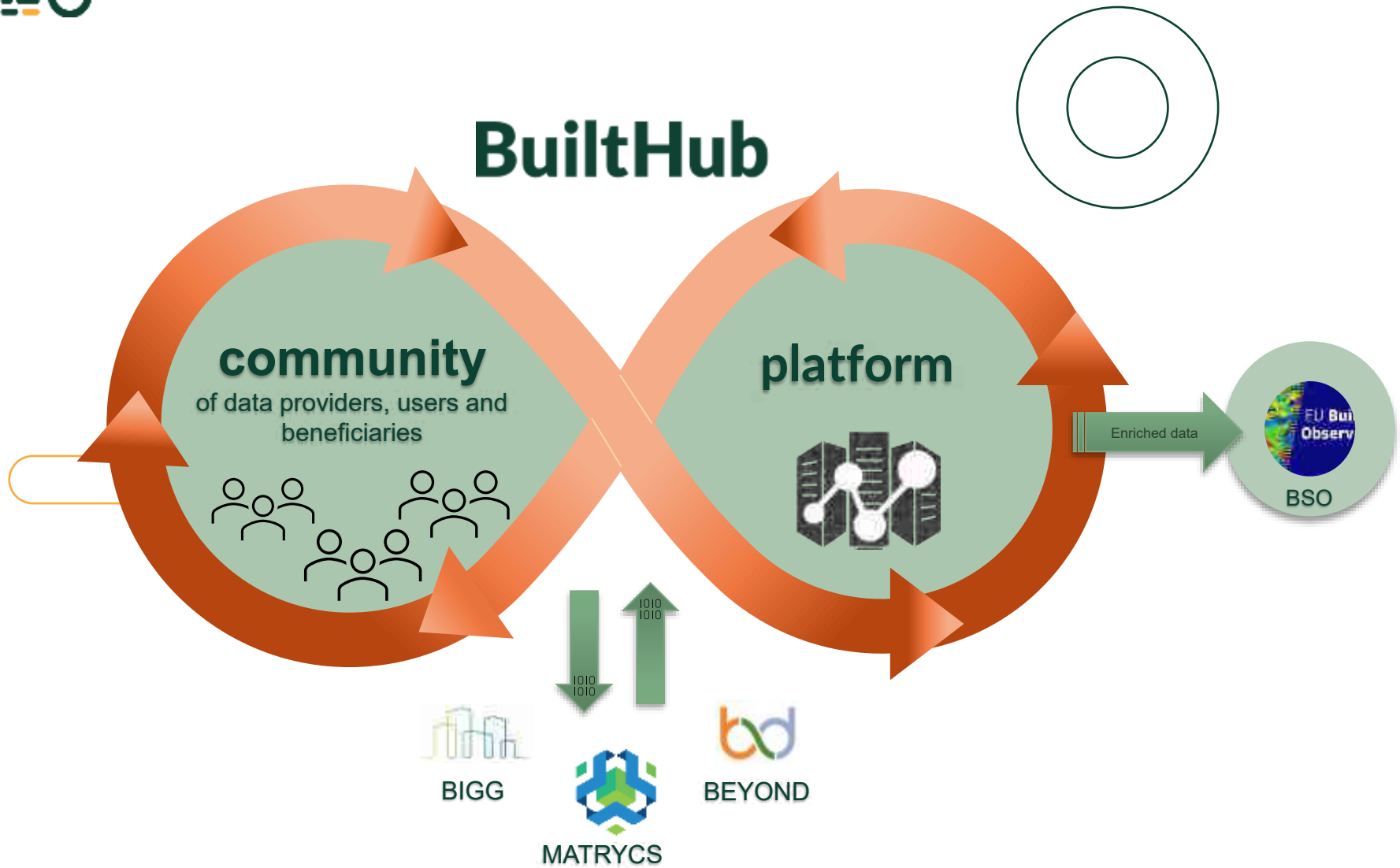
4 year-project, October 2020-September 2024

## BuiltHub's main roles

- Develop **roadmap for sustained dataflow** to EU Building Stock Observatory (BSO)
- **Build and engage community** for data collection, exchanges, data-to-knowledge processes
- **Standardized data governance and services offered** demonstrated through **BuiltHub platform**
- **Coordinated action** among associated projects



# BuiltHub



BuiltHub positioning, see <https://builthub.eu/about/project>



# The roadmap

## • Re-define purpose of BSO

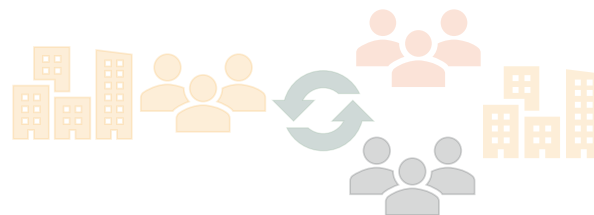
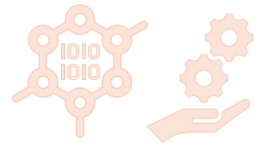
### –Monitor building stock related asset evolution over the years

- Building stock characteristics
- Building shell performances
- Technical building systems
- Building energy consumption
- Certifications (EPCs)
- Financing – economical parameters
- Energy market (energy prices)
- Smart grid and e-mobility readiness, IEQ (Indoor Environmental Quality)
- Auxiliary: censuses, cadastres, climatic data



### –Provide insight

- Semantic datasets assembly, quality checks (gaps, consistency), high-quality metadata
- Analytics on evolution of building stock over the years
- Visualisations
- Projections
- Evaluation of policies
- Plans and scenarios
- Spatial scaling
- Benchmarking





# The roadmap

- **Stakeholder and data map**

- Data providers
- Users of BuiltHub services
- Datasets

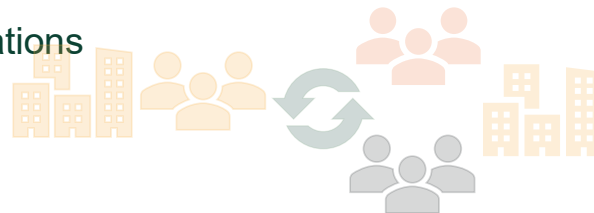
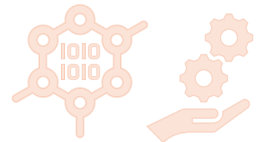
- **Sustained data collection and sharing strategies**

- **Identify barriers**

- Data lacks
    - Fragmented, untapped data
    - Non-comparability
    - Privacy
    - Business model
    - Lack of resources

- **Propose solutions**

- Data value chain and FAIR (findable, accessible, interoperable, re-usable) data best practices
    - Machine-readable, semantics-rich, standardised data and metadata
    - GDPR and IP compliant data-sharing
    - Data-sharing enablers/incentives/obligations

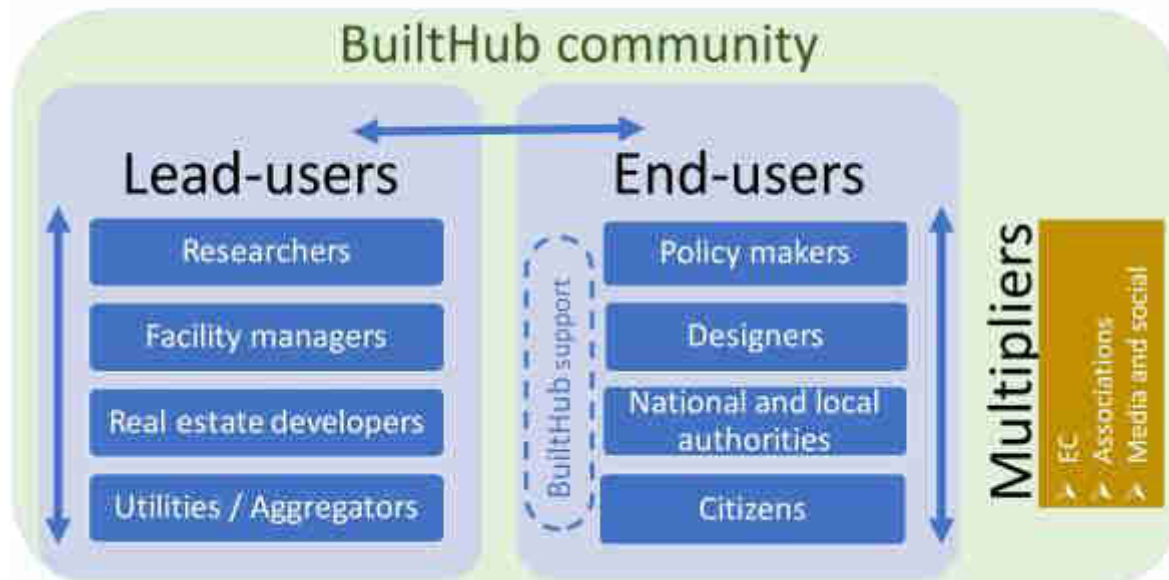




# Building and engaging the community

- Stakeholder mapping and invitations
- Surveys
- Expert interviews
- Workshops
- Strategic panels
- Webinars
- Stakeholder dialogues
- One-on-one meetings
- Pioneer users
- Ambassador program
- Trainings

- Platform co-devel and testing
- Get needs and requirements
- Get feedback
- Thematic discussions
  - Standardisation
  - Policy and regulation
  - IEQ
  - Economic and social impacts

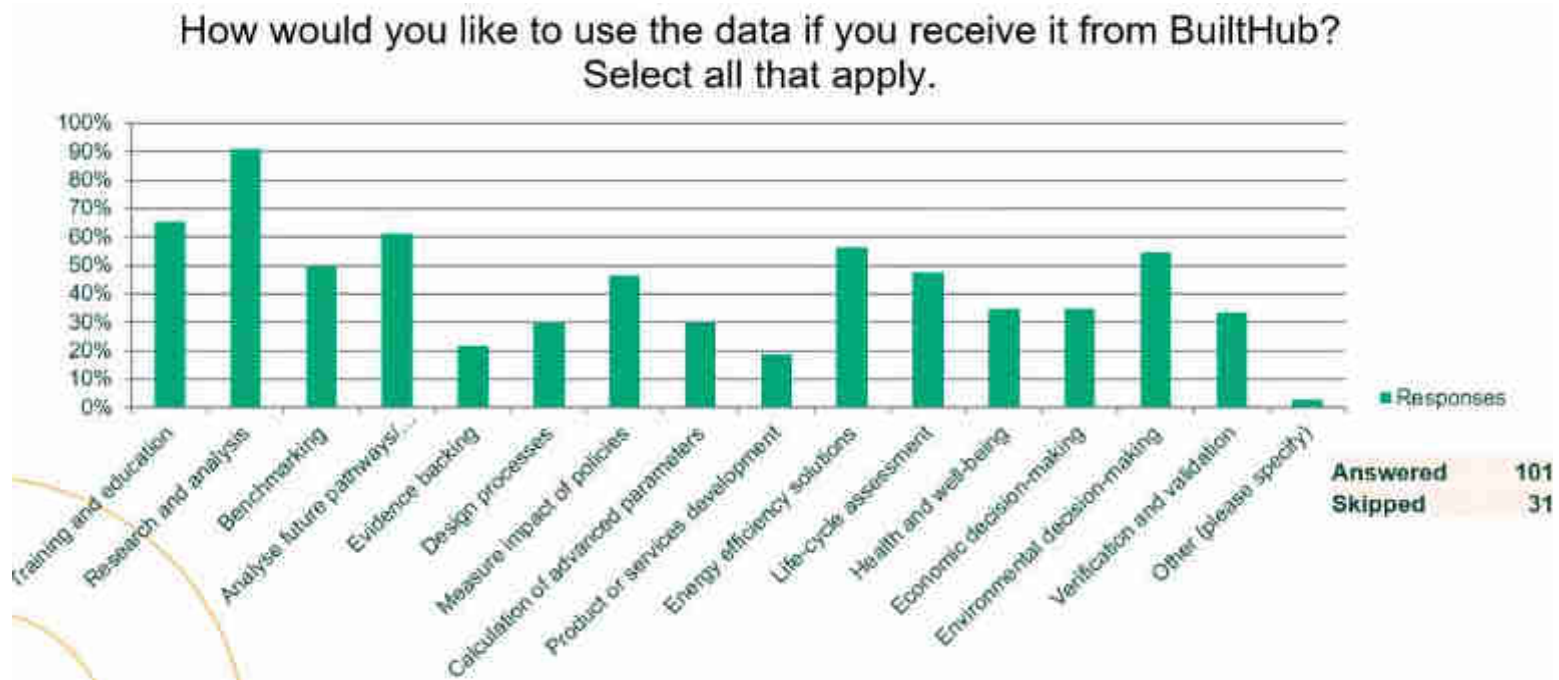




## Community building – survey results

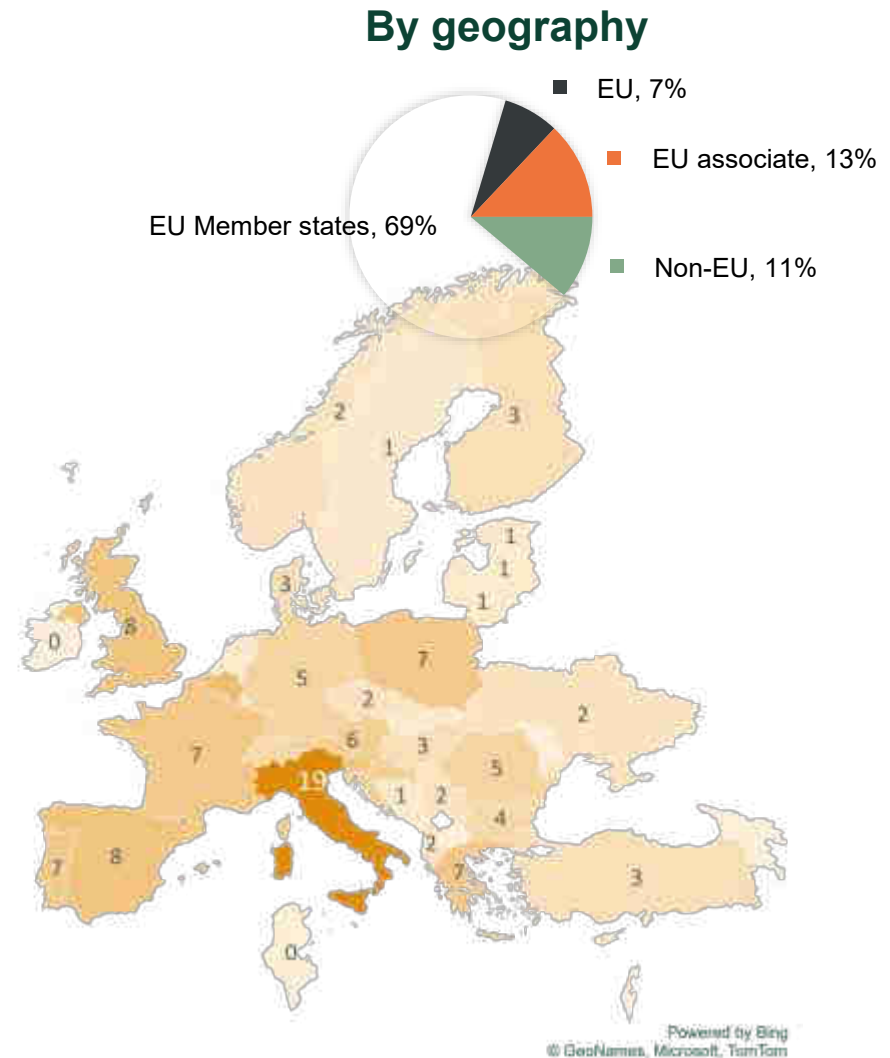
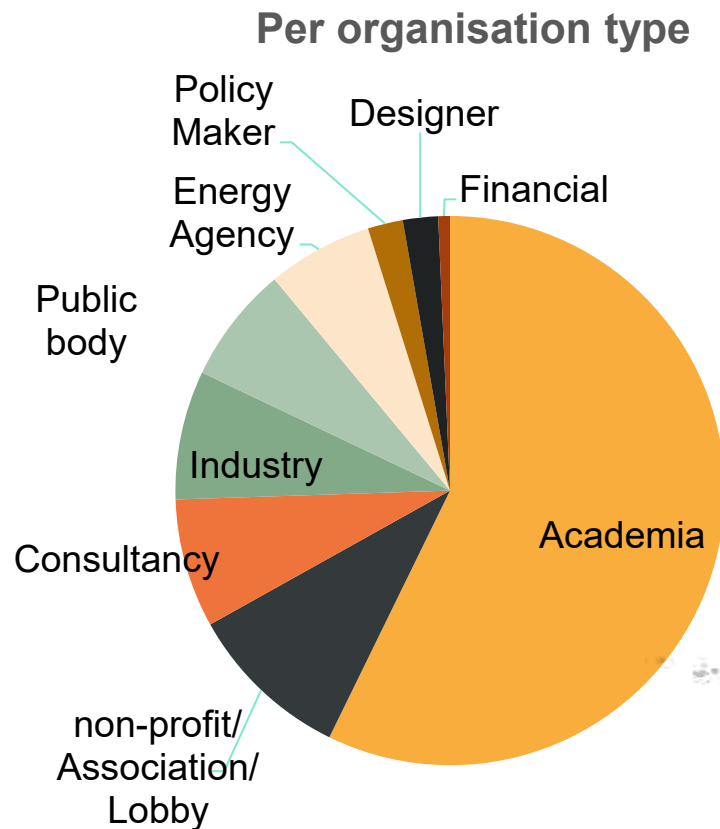
Total responses	Completion rate	Typical time spent	Contact details provided
132	70% (92)	13 min	79

- ~50 (25) collected (generated) data in past 5 years
- ~50 (50) plan to collect (provide/share/use) data in next 2 years
- ~30 plan to generate data in next 2 years
- ~25 (25) are willing to completely (partially) share data with BuiltHub





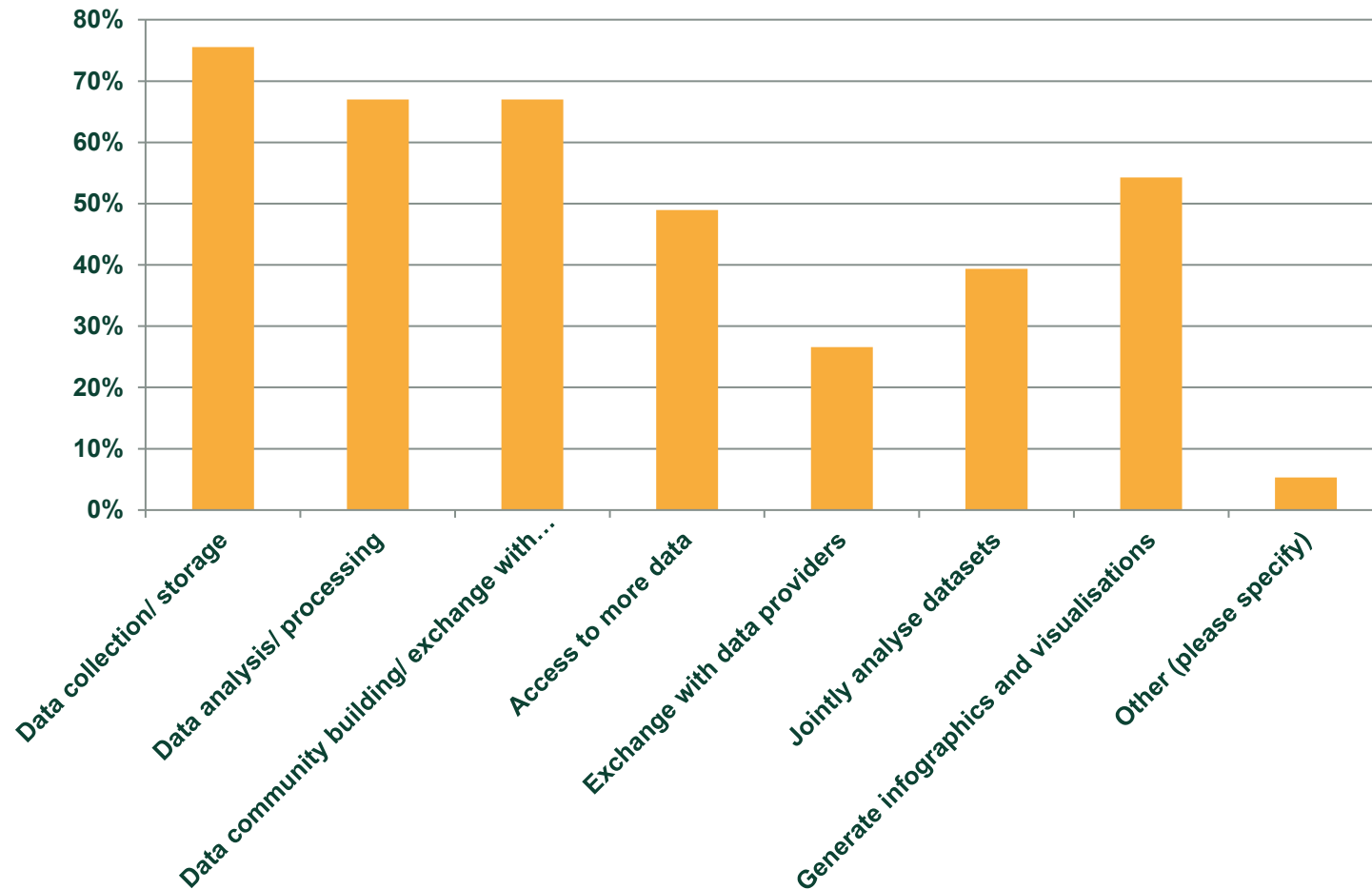
# BuiltHub stakeholders overview







## Survey result: Ideal functions and benefits of a data sharing hub and community (n=94)





# Survey results – stakeholder needs

## Highest importance

- Access to **more data**
- **Comparable data** for other countries/cities/municipalities
- Access to **benchmarks, scenarios, plans and goals**

## High importance

- Data **collection**/storage
- Data **analysis**/processing
- Data **community building**/exchange with community/data **sharing**
- Complementary **data from other sectors** that interact with buildings (e.g. energy, manufacturing industry)
- Cross sector analysis that BuiltHub will provide based on the size of database
- Comparison tools for your dataset with other datasets
- Quality analysis of data
- Check/clean data
- Import/integrate data into other platforms
- Validation tools for your dataset, for example across different time periods
- **Privileged access to a live data-sharing community**



## In-depth interviews with experts

**>10 interviews performed**  
**Under analysis**

Topic	Questions
1) Expected support to/ from BuiltHub	<ul style="list-style-type: none"><li>• What do you consider the benefits of a data-sharing platform and community?</li><li>• What would be your organization's conditions to share data with BuiltHub?<ul style="list-style-type: none"><li>◦ What (type of) data (if any) would you like to share with BuiltHub?</li></ul></li></ul>
2) Key data/ metadata for effective building stock transformation	<ul style="list-style-type: none"><li>• Which kind of data analysis you think BuiltHub should deliver?<ul style="list-style-type: none"><li>◦ E.g. BuiltHub could take over part of the work an organization currently has to do, so that they can focus on other activities</li></ul></li><li>• How do you think BuiltHub can establish links with other data communities?</li></ul>
3) Collection of data easily, reliably and responsibly	<ul style="list-style-type: none"><li>• With regard to the benefits, do you have quality requirements for the data or analysis that you receive?</li><li>• Do you consider transparency and accessibility in a data-sharing community as beneficial?<ul style="list-style-type: none"><li>◦ What measures could be taken to establish these in the data-sharing community?</li></ul></li></ul>
4) Filling the gaps	<ul style="list-style-type: none"><li>• What datasets/ indicators/ data-related services would be valuable for your organization?</li><li>• Where is more quantitative evidence needed in the building sector?</li></ul>
5) Concluding remarks	<ul style="list-style-type: none"><li>• What would be the single key area that would have the greatest impact on moving the implementation of the BuiltHub platform forward?<ul style="list-style-type: none"><li>◦ E.g. self-service (analytics, visualization and AI services), community support, third-party monetization, democratizing data, capability to provide services, open API, user privacy control, agility</li></ul></li><li>• Do you see interaction of BuiltHub with any of your projects? or other projects or initiatives?</li></ul>

## Networking and outreach

### Collaboration for next-generation building data collection and sharing

- Eurostat, JRC, CA EPBD
- H2020 big data projects BEYOND, BIGG, MATRYCS
- Liaising with other projects, initiatives, associations, institutions, e.g. X-tendo, SmartBuilt4EU, Big Data Alliance, TightVent Europe, AIVC, EUREC, CLAIRE, DLR, UPV

eurostat



BIGG



MATRYCS



BEYOND



DLR

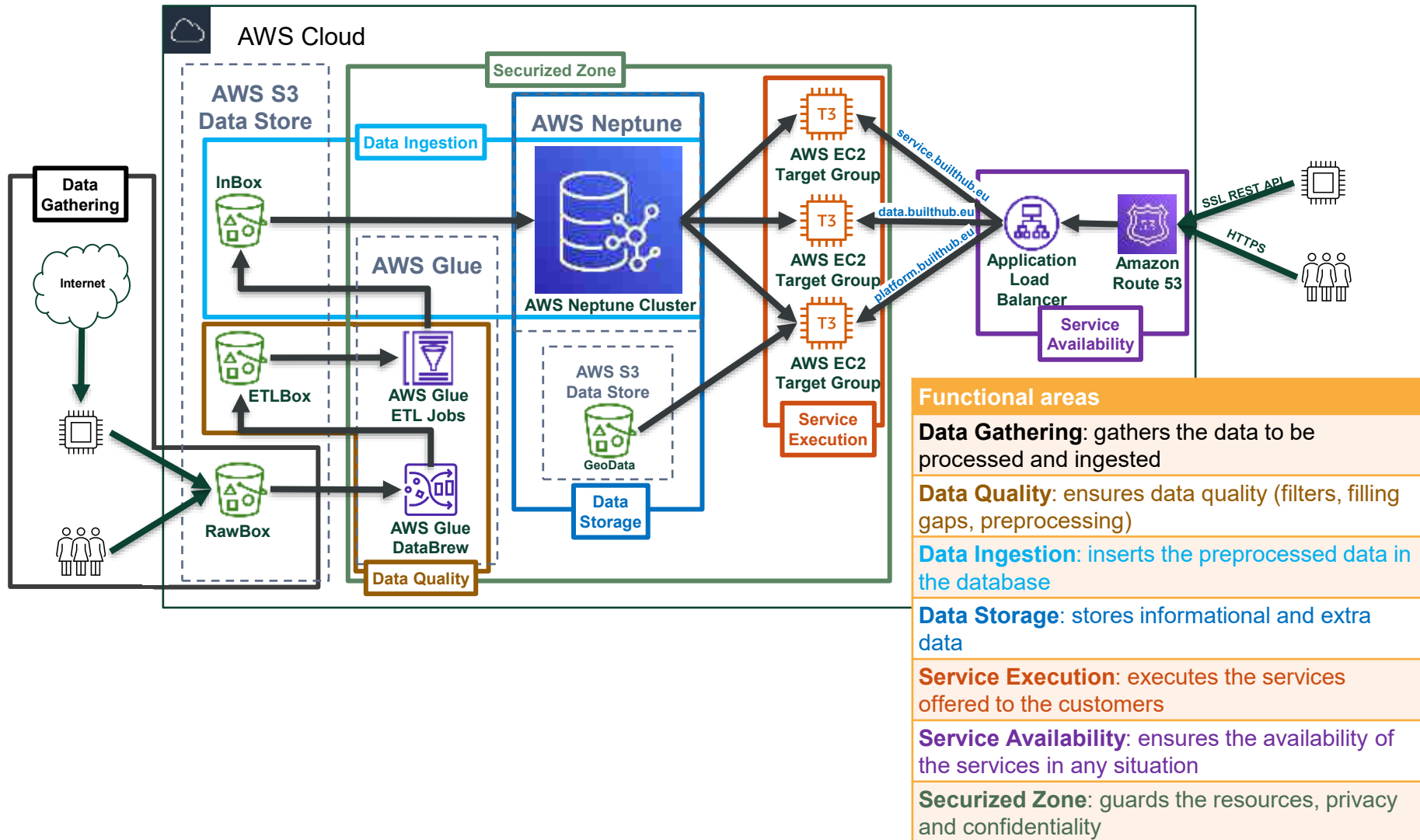


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# Web-based data platform - architecture





## BuiltHub platform datasets

### Legend

A

Building stock related datasets

B

Socio-economic datasets

C

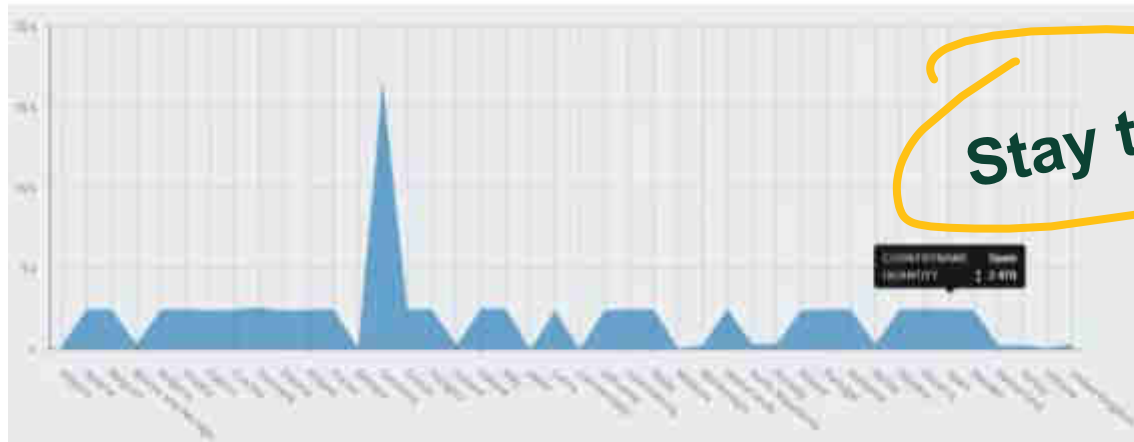
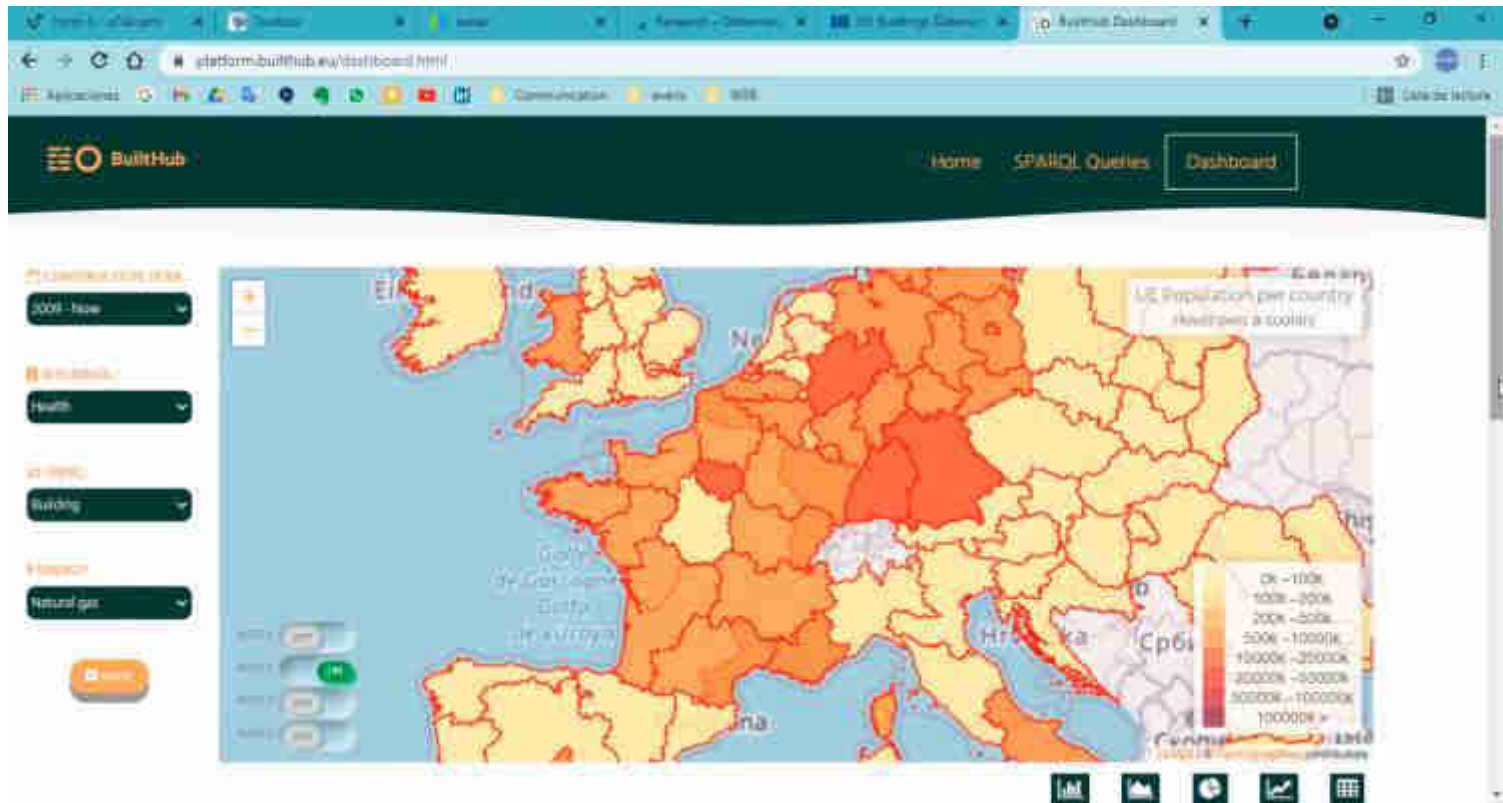
Climatic datasets

Dataset number	Topic type	Name	Content
1	A	Horizon 2020 HotMaps project: Building stock analysis	Complete building stock analysis for the EU27+UK. Values related to final energy consumption and useful energy demand for space heating, space cooling and domestic hot water, construction materials and methodologies, technologies used and building stock data/information (thermal transmittancy, building stock vintages and characteristics, household occupancy related data, etc.) can be found both for the residential and the non-residential sectors per building types and construction vintages.
2	A	IEE TABULA project: Typology Approach for Building Stock Energy Assessment	Building stock data and data focused on technical systems for heating, cooling and domestic hot water production in different buildings types are the main outputs of this dataset. Final energy consumption and envelope performance data are available as well.
...	...	...	...
28	C	EDGAR (Emissions Database for Global Atmospheric Research) CO2 Emissions	Carbon Dioxide (CO <sub>2</sub> ) emissions by country and sector (Buildings, Transport, Other industrial combustion, Power Industry and other sectors) have been collected for the years between 1970 and 2018 and are reported expressed in MtCO <sub>2</sub> /year.
29	C	CORDEX - Regional climate model data on single levels for Europe	Climatic data for Europe expressed in daily, monthly and seasonal mean values as well as 3 or 6 hours resolution. Data for air temperature at 2 m, wind speed, atmospheric pressure and humidity can be found.
30	C	PVGIS - Photovoltaic Geographical Information System	This GIS dataset contains data related to the solar radiation. It takes into account both day and night-time periodsexpressing the solar radiation raster map in W/m2.
...	...	...	...





# BuiltHub web-based data platform - first prototype



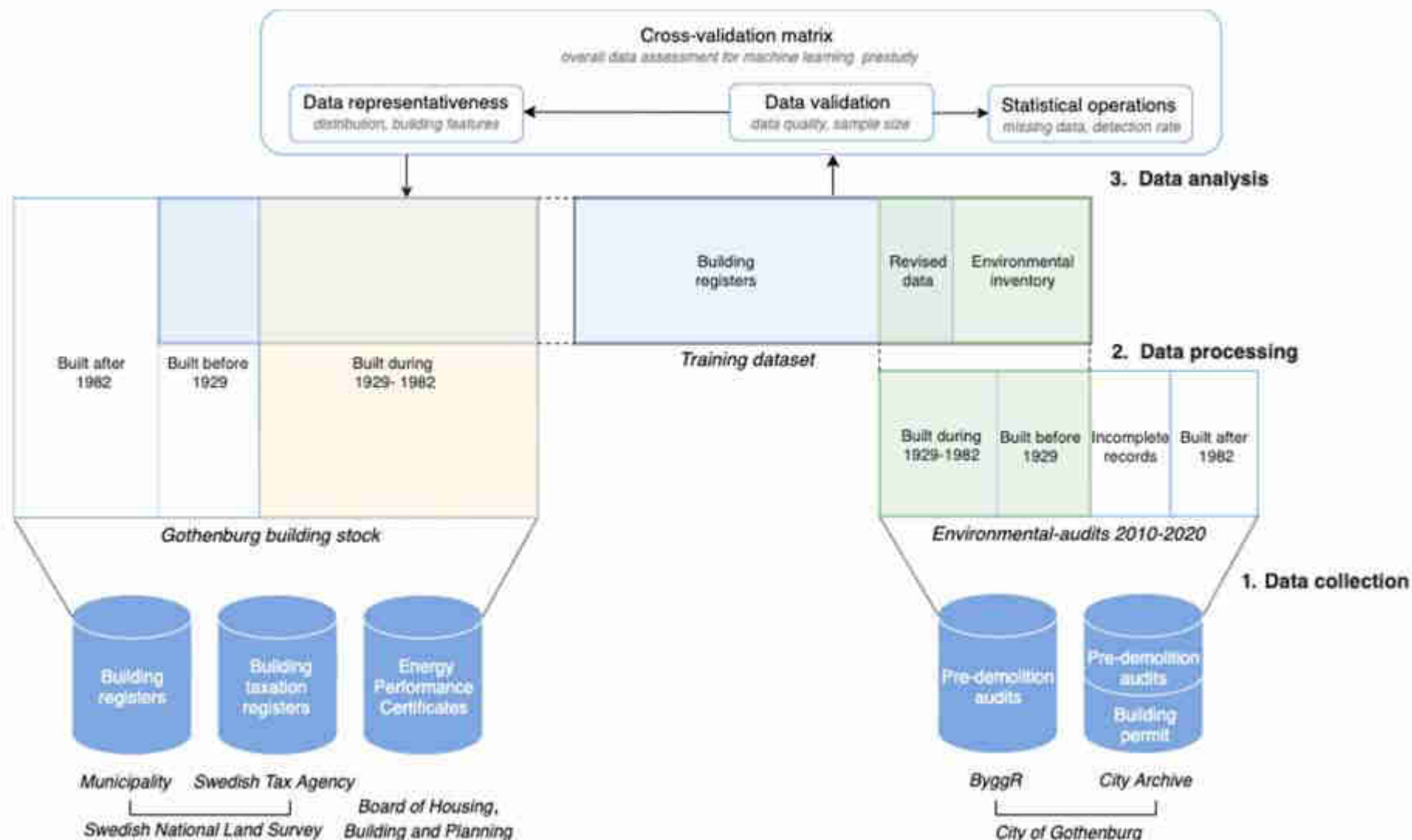


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# Estimate missing data through ML techniques





## Interested in getting involved?

<https://builthub.eu/get-involved>

### Be proactive by becoming a...

- **Pilot user** of our building data platform
- **Data provider** in exchange of services
- **Ambassador**, promoting responsible data sharing and collection
- **Networker**, interacting with our stakeholder community

### Or simply follow us.

#### Contact us under:

info AT builthub DOT eu

#### Or write me:


ulrich DOT filippi AT eurac DOT edu

## Get Engaged with BuiltHub

To make BuiltHub relevant for real-life planning needs and ensure a more sustainable and meaningful data flow for a cost

Are you interested to learn more about the BuiltHub project, its platforms or project partners, or would you like to act BuiltHub engagement opportunities below or contact us directly under [info@builthub.eu](mailto:info@builthub.eu)

- **Join as a pioneer** to exchange with key stakeholders and experts from all over Europe to discuss data and data flows you're generating, extracting or transforming data supporting you towards that objective.
- **Check out** our plan and vision for the BuiltHub platform and let us know how the BuiltHub platform can be shaped to
- **Become a BuiltHub Pioneer data hero** by joining our project Pioneer User group. The group will be composed of different BuiltHub platform functionalities to ensure it meets real-life planning needs. Pioneers will benefit from exclusive trial files! [Get in touch](#) with us for more.
- **Help us promote** the BuiltHub platform and responsible and meaningful data collection approaches by becoming a Europe committed to enabling data-based decarbonisation strategies for our homes and targeted, future-proof, resp. BuiltHub platform users! [Get in touch](#) with us to join the group.

 **Subscribe to newsletter**

## Stay in the loop!

Don't miss any news or important info on the project.  
Subscribe to our newsletter and stay updated.

By providing your details you agree to receive the BuiltHub newsletter and occasional other communications about BuiltHub events and activities. This contains information

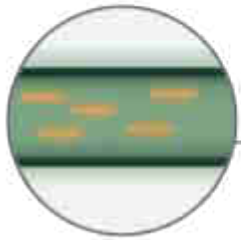
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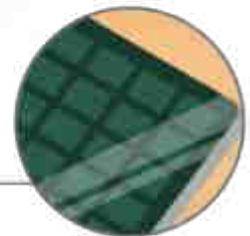
We will keep your details for up to 6 months after the end of the BuiltHub project. Your consent will form the lawful basis of our processing of your data. You won't be asked to submit your details in the future.



Introductory project video coming soon



Check it out



# BuiltHub brochure


**BuiltHub**



## Better data for EU buildings.

Working for more sustainable and meaningful data flow for a cost-effective and rapid building stock decarbonisation.




 BuiltHub has received funding from the European Union's Horizon 2020 programme under grant agreement N°957026



BuiltHub is a Horizon 2020 project that aspires to develop a community of data contributors and users, with the overarching goal of driving forward an energy transition and the decarbonisation of the EU building stock.




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## About us

The BuiltHub consortium is committed to harnessing the enormous potential of European buildings to create an intelligent and carbon-neutral built environment. Coordinated by E.ON Research, the project is composed of experts from research centres, not-for-profit and specialist consultancies.

Our individual expertise and stakeholder communities ensure the practicality and accessibility of the final outcomes of the BuiltHub project.

Want to learn more about the BuiltHub project or partners?

## Contact us

 [Twitter: @BuiltHub\\_EU](#)  
 [LinkedIn: BuiltHub project](#)




 builthub.eu



## BuiltHub consortium





# Thank you!

Ulrich Filippi Oberegger  
BuiltHub project coordinator  
Eurac Research

<https://builthub.eu/>



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