

CONCEPTUALISING A CO-OPERATIVE BUILDING EVOLUTION DASHBOARD ON CITY REGIONS OVER THE PAST DECADES FOR DENSIFICATION STUDIES



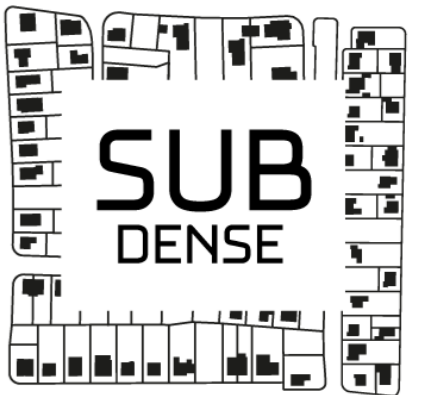
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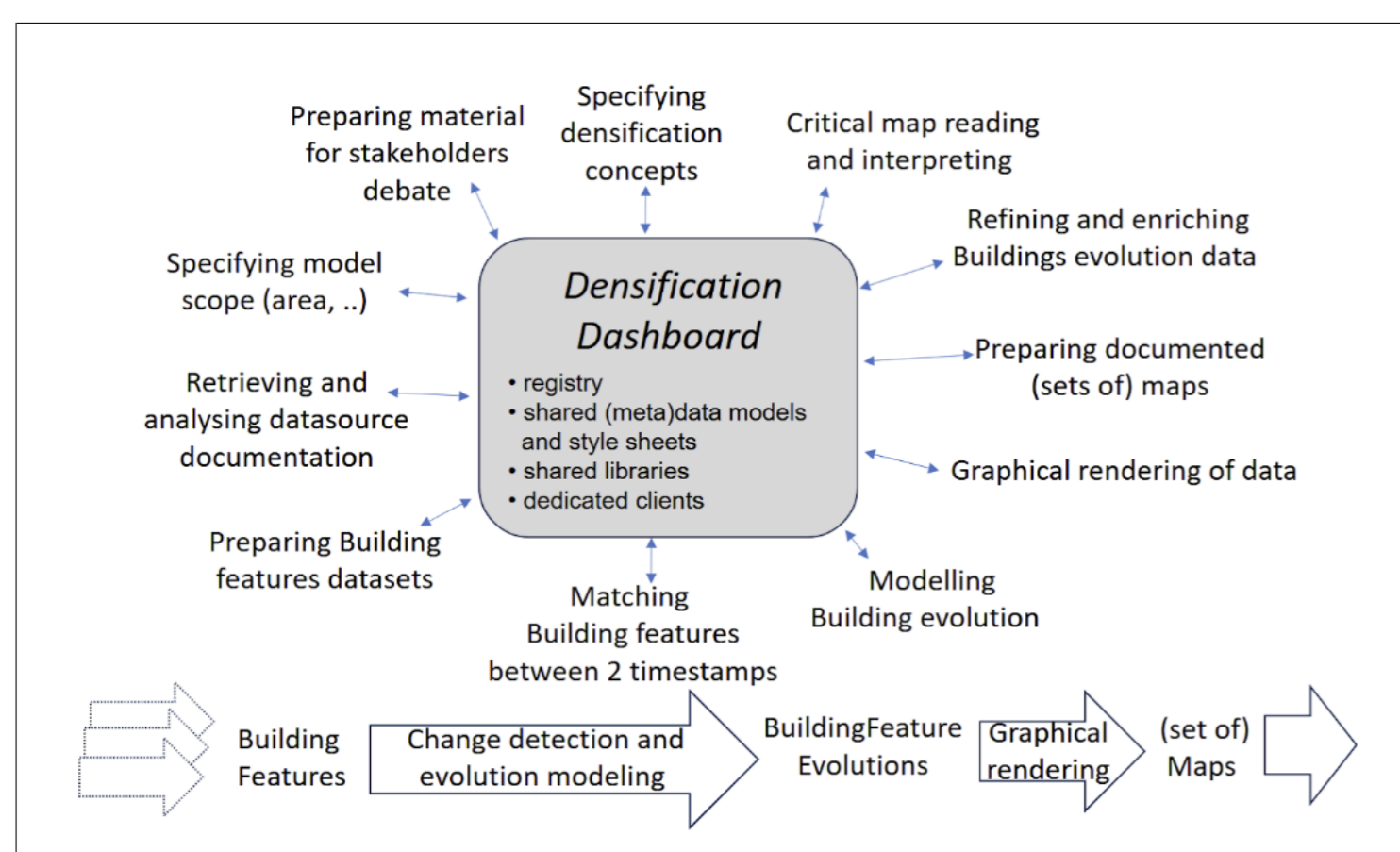
Context: The SubDense project

- Suburban densification can yield more *sustainable cities* while avoiding issues linked to over-densification in centres.
- *Multiple rationalities* of involved stakeholders (landowners, policy-makers) imply considerable *planning challenges*.

The **SubDense** European project aims at better understanding how diverse **strategies of land policy** shape suburban densification across different **planning systems** (France, Germany, UK), from qualitative and quantitative viewpoints, looking in particular at **urban change dynamics at the building level** in 6 comparable city regions in these countries.

Research question: *how to ensure in that context the sharing of expert knowledge on different data specifications across countries, of diverse interpretations, analysis methods and tools, and of concepts with multiple definitions?*

Collaborative dashboard

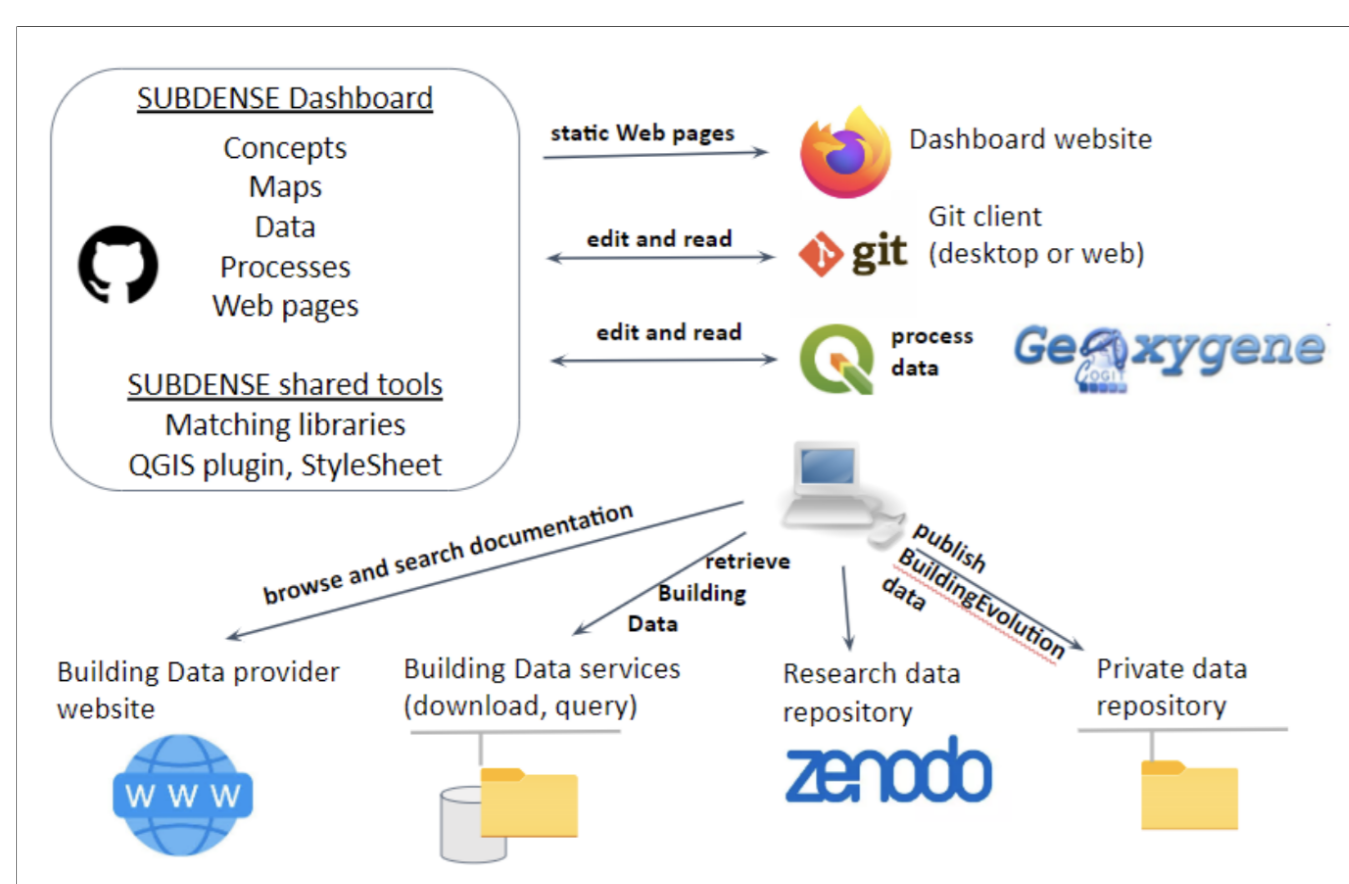


→ A **collaborative dashboard** as a medium to **facilitate collaboration** between partners, **share methods, data and metadata**, and ensure reproducibility.

→ Scope and functionalities of the dashboard defined iteratively by constructing “User Stories” with dashboard contributors and users.

→ Core components are **registries** for concepts, maps, datasources, datasets, processes; shared **models** describing these; shared **libraries and software**; diverse **clients** to interact with these.

Architecture and implementation



→ The **git-based architecture** for the dashboard ensures tractability, reproducibility, and collaboration: core registries are stored and edited in a shared git repository: <https://github.com/subdense>.

→ Clients implement interactions with the core and functionalities needed by partners for data analysis and integration (running change detection algorithms, adding data, exploring results and maps, providing Geospatial User Feedback, ...): **git clients** for direct edition; a **website** at <https://subdense.github.io/dashboard/> to explore results and provide feedback; **QGIS plugins** to run algorithms.

Application: Building change detection and Geospatial User Feedback

- **Geospatial data matching** algorithms (Geoxygene library) for **building change detection** between 2011 and 2021.
- **Geospatial User Feedback** collected from experts on produced evolution maps, to **improve** data analysis workflows.