

Shaping Resilient Buildings for Tomorrow

Addressing challenges and driving progress with Services 1 and 2

BUILDSPACE offers five distinct Services designed to improve building and urban sustainability, helping cities become more resilient to climate risks. In this factsheet, we will explore the services at the building level: Service 1 and Service 2.

Both use Digital Twin technology to visualise and assess the current condition of buildings in terms of their climate resilience.

Service 1

Digital Twin Generation



Partnerships



Key challenges: Automating object detection from point clouds, converting “raw data” into standardized industry foundation class models and enabling seamless mixed reality visualization.

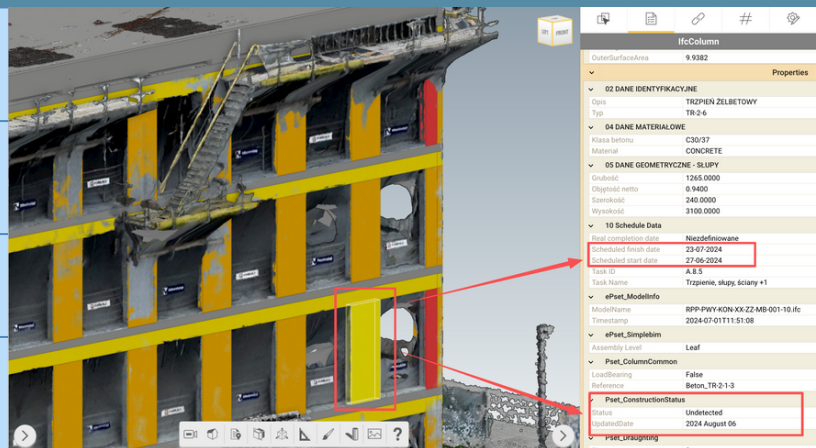
Main features

Automated detection of building elements

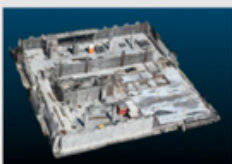
Digital Twin Updates, integrates new construction-phase point cloud data

Geolocation integration

Digital Twin Generations, through 3D model



Specific timeslot
For scanned data collection



2024-05-02



2024-05-27

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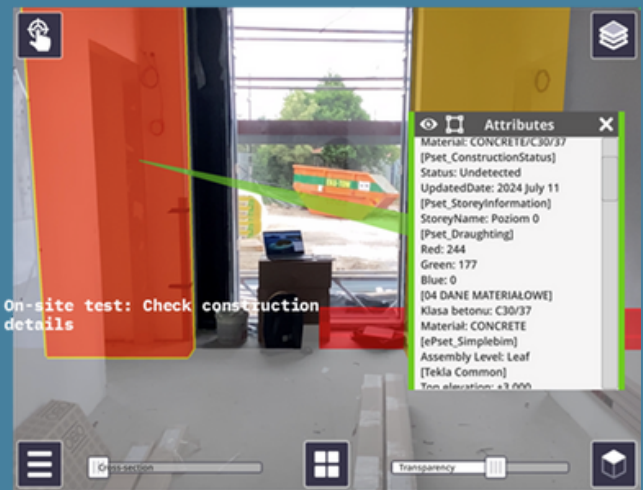


2024-08-20

Comparison

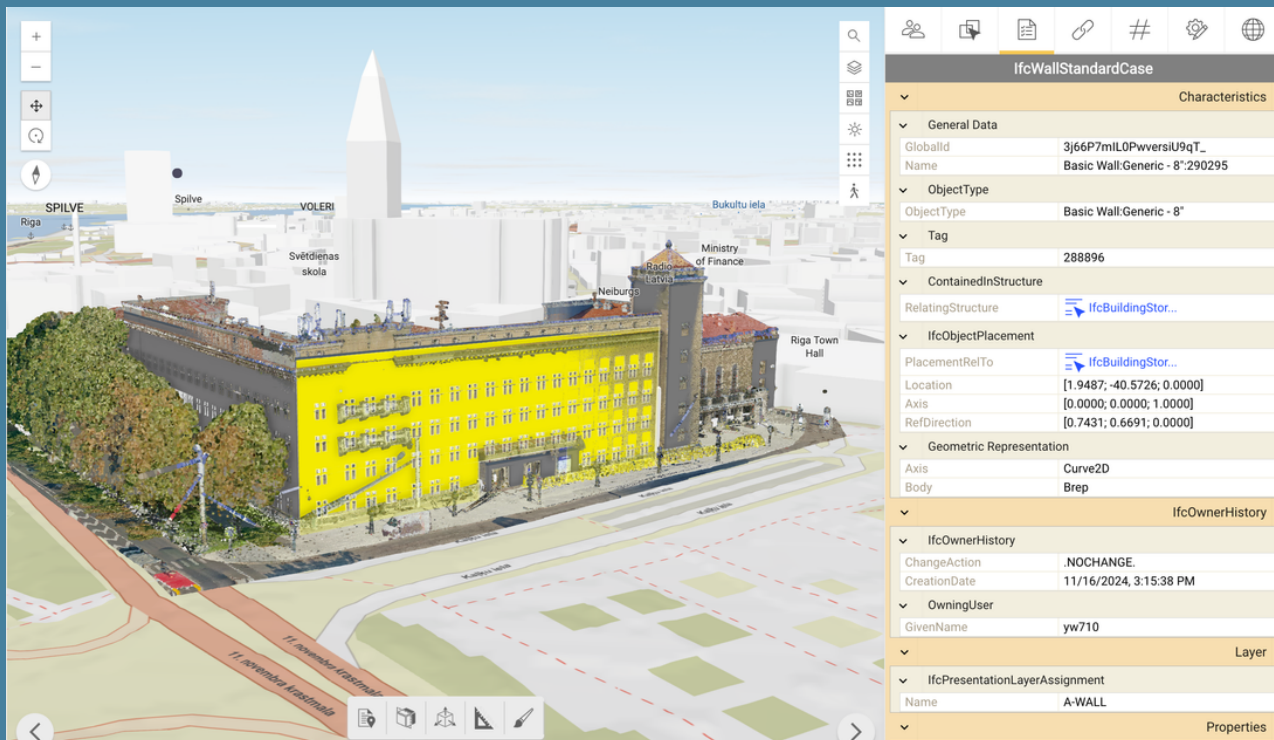
As-designed BIM model





Applicability

- Visualize, analyze, and update building structures. Enable operators to monitor health, plan maintenance, and optimize management
- Integrate Digital Twins with Geographical Information System maps to improve infrastructure development. Document heritage buildings and support energy efficiency studies.



Social Impact

- Enhancing urban development and sustainability through accurate Digital Twins.
- Contributing to smart construction sites by enabling monitoring of the project's progress.
- Fostering greater digitalisation, creating smarter and more resilient cities.

Service 2

Digital Twin Enhancement

Partnerships



UNIVERSITY OF
CAMBRIDGE

Key challenges: 3D model that enables the detection of damages in building envelopes through thermal and red, green and blue (RGB) color information. Delivers reports with actionable insights for targeted maintenance.

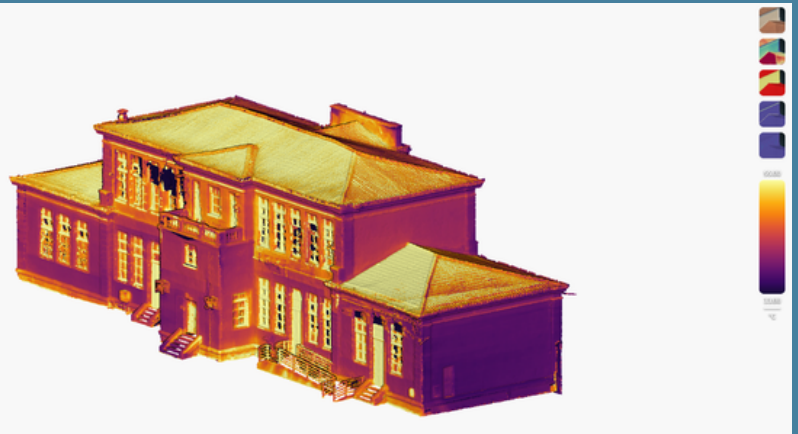
Main features

High-resolution 3D models captured by drones with visual and thermal imaging

AI damage detection on building envelopes

Detection of inefficiencies or malfunctions in solar panels

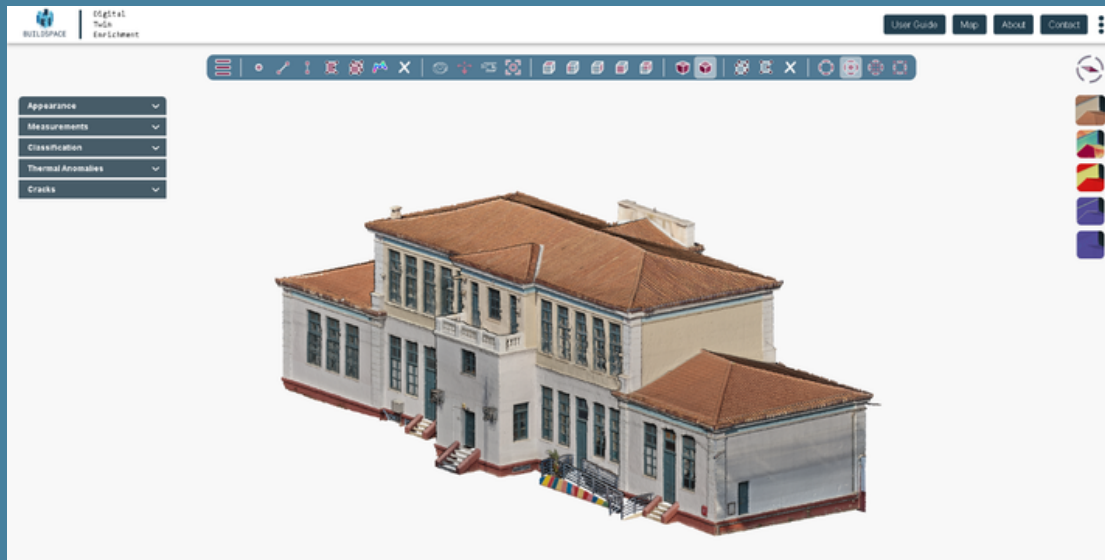
Detailed reports, providing clear guidance for maintenance



Applicability

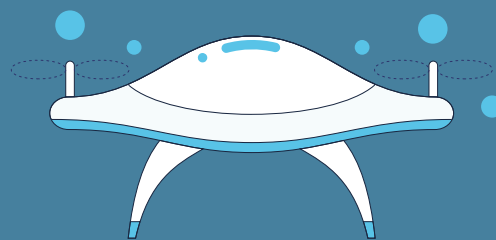
- Prioritizes repairs, improves solar panel output, and boosts building performance.
- Pinpoints areas needing energy retrofits and structural upgrades.
- Supports applications for national and EU sustainability funding.
- Raises awareness of building conditions and efficiency for consultancies and stakeholders.
- Provides a solid basis for public-private projects





Social Impact

- Boosting building and urban environment resilience through data-driven assessments.
- Detecting envelope damage and evaluating solar panel performance, improving safety, energy efficiency and longevity of buildings.
- Reducing energy costs and promoting sustainable practices in construction and real estate sectors.
- Fostering environmental awareness on building maintenance and energy optimization,
- Supporting interventions for energy retrofitting and building repairs for more resilient communities.



Synergies with Copernicus

BUILDSPACE integrates Copernicus core services, particularly the Land Monitoring Service (CLMS), into the design and implementation of building-level services, thereby enhancing their scientific robustness, interoperability, and replicability across Europe.