

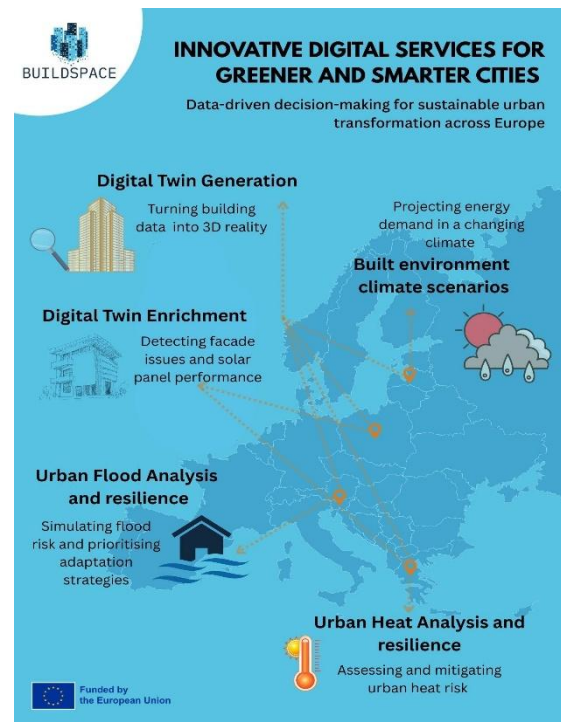
BUILDSPACE Reaches Major Milestone with Launch of Innovative Digital Services for Greener, Smarter Cities

Five advanced tools set to support data-driven decision-making for sustainable urban transformation across Europe.

The EU-funded BUILDSPACE project has reached a significant milestone with the completion of five advanced digital services aimed at helping European cities become more energy-efficient, resilient and climate-ready.

Designed for use by public authorities, planners, and property stakeholders, the tools integrate space data, climate models, and digital twin technologies to deliver actionable insights for the built environment. These innovations address pressing urban challenges, such as energy performance and consumption, heat and flood risk, and building maintenance.

“This achievement marks the culmination of intensive cross-sector collaboration and testing”, said the BUILDSPACE consortium. “Our tools are now ready for broader testing, adoption, and wider deployment across urban areas in Europe.”



Driving the Digital and Green Transitions

The five services now functionally complete, and already piloted in cities including Warsaw, Poznan, Riga, Piraeus and Ljubljana, contribute directly to EU’s twin transitions.. They enable cities to adapt to climate change and improve energy performance through data-driven decision-making and high-precision modelling.

Introducing the Five BUILDSPACE Services:

1. Digital Twin Generation

This service automates the transformation of Lidar and image-based point clouds into high-resolution, georeferenced 3D models. It supports architecture, engineering, and urban planning by enabling accurate structural analysis, real-time updates, and integration with GIS systems.

Applications include building monitoring, infrastructure maintenance, zoning analysis, and energy modeling. Pilots were in Warsaw, Riga, Piraeus and Ljubljana.

Service developed by the University of Cambridge, with point cloud data processing by Universidad Politécnica de Madrid.

2. Digital Twin Enrichment

Built on drone-captured Red Green Blue (RGB) and thermal imaging, this tool enhances digital twins

by detecting facade issues (such as cracks, moisture, or thermal bridges) and analysing solar panel performance. It delivers high-precision assessments for targeted maintenance, retrofitting strategies, and energy optimisation, supporting decision-making for both public and private stakeholders. Pilots were held in Warsaw and Piraeus.

Led by Universidad Politecnica de Madrid in collaboration with the University of Cambridge

3. Built Environment Climate Scenarios

This service provides future-focused energy demand projections for heating, cooling, and domestic hot water under various climate change scenarios. It also assesses rooftop solar photovoltaic (PV) potential and simulates retrofitting strategies to improve building performance and reduce carbon emissions. Piloted in Riga, Latvia, it is designed for use by municipalities, energy planners and building owners.

Service developed by CARTIF with solar PV functionality by NTUA.

4. Urban Heat Analysis and Resilience

It offers a high-resolution urban heat risk analysis tool that integrates demographic, socioeconomic, and climate data. It generates georeferenced vulnerability maps and supports mitigation and adaptation planning at both the building and district scale.

Outputs include downloadable GIS-compatible layers and decision-support catalogue and map based solutions for planners and policymakers. Piloted in Piraeus, Greece

Led by Universidad Politecnica de Madrid with support from MOBICS, CARTIF, Dimos Peiraia, and the European Centre For Medium-Range Weather Forecasts.

5. Urban Flood Analysis and Resilience

This tool enables users to simulate flood damage, assess vulnerability, and explore the impact of blue-green infrastructure (BGI) for mitigating pluvial and fluvial flooding. It supports long-term flood resilience planning by visualising damage scenarios, prioritising adaptation zones, and suggesting retrofitting strategies. Piloted in Ljubljana, the tool can cover major EU cities using Copernicus Urban Atlas data.

Service calculations developed by IMZI and visualization tool developed by NAZKA.

What's Next

With development now completed, the BUILDSPACE consortium is now focusing on:

- Broadening access to end-users through online platforms and training
- Supporting replication in new urban areas across Europe through the Open Call for Replication Potential.
- Promoting engagement through workshops, webinars, and live demonstrations

The Open Call offers a unique opportunity for cities, regions, and property managers to explore how BUILDSPACE services can support local climate adaptation and energy planning goals. Selected applicants will benefit from expert support and early access to advanced digital tools.

Each tool reflects BUILDSPACE's commitment to making complex environmental data accessible, actionable, and impactful for those shaping the cities of tomorrow.

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