exPEDite

Enabling Positive Energy Districts through Digital Twins

Press Release

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February 13, 2024 **- In Europe and beyond we are faced with the challenge of redesigning our existing cities to make them more sustainable, resilient, inclusive and safe, as captured by UN Sustainable Development Goals and the New European Bauhaus initiative. Developing Positive Energy Districts (PEDs), is a breakthrough way to deal with the issue of urban emissions and applying adaptation and mitigation strategies to climate change, while ensuring that these urban areas generate an annual surplus of renewable energy and net zero greenhouse gas emissions. To support and accelerate the development of PEDs, the ExPEDite project, a European funded project, aims to create and deploy a novel Digital Twin for real-time monitoring, visualization, and management of district-level energy flow.**

The ExPEDite project will deliver a suite of replicable modeling tools, allowing stakeholders to analyze planning actions towards positive energy and climate neutrality in a cost-effective manner. The tools will be able to model the district's energy production and demand, building stock performance, optimize for flexibility and simulate mobility and transport. ExPEDite will explore the possibilities at district level, a scale between that of the city-wide digital twin and the individual building or asset level, seeking to enable a new macro-level data visibility schema with the potential granularity similar to that of a single asset, demonstrating the potential for organisations or groups of organisations who occupy campuses or districts within larger urban centers.

The digital twin's design-platform will analyze various what-if planning actions, aiding energy and urban planners' evidence-based decision-making processes, while its run-time engine will optimize the district's energy utilization efficiency. The digital twin will follow a modular open architecture to support multi-sectoral and multi-organizational stakeholder requirements. By employing gamification and co-creation approaches, the project will enhance public awareness and engagement in energy efficiency. The ExPEDite digital twin will be applied to a district in Riga, Latvia, and will provide practical guidelines, reusable models, algorithms, and training materials to aid other cities in replicating the digital twin for their districts, fostering widespread adoption of sustainable energy practices.

The ExPEDite-project runs from January 1st 2024 till December 31 2026 and will officially be kicked off on February 15-16 in the city of Riga (LV). This three year's project consists of 19 partners from 11 different countries, including research centers and universities, public authorities and technical partners, and is being led by Riga Technical University. The project partners are:

Rīgas Tehniskā universitāte (LV), National Technical University of Athens (GR), Interuniversity research centre of public economics - University of Padova (IT), Digital + Sustainable Innovation Lab - UCP (PT), VSB – Technical University of Ostrava (CZ), Laurea University of Applied Sciences (FI), EXUS AI Labs (GR), Eviden (SP), Plegma Labs (EL), Tecnalia (SP), Sweco UK Limited (UK), UpcoMinds Cyprus (CY), Deloitte Consulting S.r.l. S.B. (IT), Technological Platform Energy Security Czech Republic (CZ), Riga Digital Agency (LV), Rīgas valstspilsētas pašvaldības aģentūra "Rīgas enerģētikas aģentūra" (LV), The Lisbon Council asbl (PT), Open & Agile Smart Cities (BE), DATI Group (LV).

The ExPEDite project is a Research and Innovation action to support the implementation of the Climate Neutral and Smart Cities Mission project and receives funding from the European Union's Horizon Mission Programme under grant agreement No. 101139527.

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