AIGENT Project Kick-Off News

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Press Release

AIGENT Kicks Off: Building a European Digital Twin Infrastructure That Connects our Health, Homes, and Environment

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Can renovating my home lower both my energy bill and my health risks? Today, answering a question like that means stitching together medical data, building data, and simulation models that were never designed to work together. AIGENT, a four-year project funded with €10 million by the European Union's Horizon Europe programme, kicks off this month to change that. Its partners will build a European infrastructure where digital twins of people, homes, and neighbourhoods can be connected, and where clinicians, planners, and citizens can ask such questions in their own words. And AIGENT will not stay in the lab: it will be tested throughout the project by the people it is built for, so that by 2030 it works in real life.

A Fragmented Landscape of Digital Twins

In recent years, digital twins (virtual representations of real-world systems) have gained traction in both healthcare and environmental domains. They allow users to simulate "what-if" scenarios and test interventions before applying them in real life. However, most digital twins today are built for specific domains, such as a patient, a building, or an energy system. These models rarely interact, even though in reality, health outcomes and environmental conditions are closely intertwined. This fragmentation creates practical and costly challenges: data formats and models differ, integration is complex, and combining insights across disciplines

requires significant technical expertise. As a result, the broader potential of digital twins (for example linking indoor climate to respiratory health or housing conditions to wellbeing) remains largely untapped.

"What if digital twins of a person's health, the buildings they inhabit, and the environment around them could speak to one another, and open the conversation to other fields? AIGENT is building the European infrastructure to connect these layers of data and models, with AI agents helping people explore how they interact and shape one another. Our ambition is to make the connections that shape our lives visible, interpretable, and actionable, with people in control of their data and the benefits within everyone's reach," says **Gökhan Ertaylan**, AIGENT project coordinator at VITO.

AIGENT: Towards a Shared Digital Twin Infrastructure

The AIGENT project, which stands for "AI-GENerated digital Twin infrastructure for healthcare & living environment", addresses these challenges by going further than building a prototype: AIGENT will develop a functional, **Pan-European infrastructure** where digital twins from different domains can be generated, connected and used together. Coordinated by VITO, the project will enable researchers, clinicians, housing actors, and policymakers to explore complex, cross-domain questions. For example, they may examine how building renovations affect both energy use and health outcomes, or how environmental conditions influence chronic diseases. A key objective is **accessibility**: through a no-code "Scenario Studio", users will be able to formulate questions in natural language and translate them into simulations without needing advanced programming skills.

The Technology Behind AIGENT

At its core, AIGENT combines several emerging technologies: generative artificial intelligence, simulation models, and distributed computing. The infrastructure is based on a **three-tier architecture**:

- **Edge Twin Nodes** keep sensitive health and building data local, ensuring privacy.
- The **AIGENT Nexus** acts as a central orchestration layer where scenarios, knowledge bases, workflows, and governance are defined, managed, and executed.
- The **AIGENT Compute Platform** connects to European high-performance computing resources and AI Factory infrastructures to run large-scale simulations.

This approach is designed to ensure that simulations remain **privacy-preserving, explainable, and compliant with European regulations**, while still allowing large-scale, cross-domain analysis. To validate the platform, AIGENT will run **six pilot cases** across Belgium, Finland, and Greece, covering both healthcare and living environment applications such as cardiorespiratory monitoring, adverse drug reaction risk, adaptive healthy living, building energy management, indoor environmental quality, and neighbourhood-scale planning.

Collaboration Between Diverse European Experts

AIGENT brings together a multidisciplinary consortium of research and technology organisations, universities, digital health and building experts, legal and ethical specialists, standardisation actors, healthcare networks, and civil society organisations from across Europe and beyond. This diversity reflects the project's cross-domain ambition. Technical

partners contribute expertise in artificial intelligence, modelling, and computing, while healthcare and environmental organisations ensure real-world relevance. Legal and ethical specialists address regulatory compliance, and stakeholder organisations help ensure that the infrastructure responds to societal needs.

Looking Ahead: A European Ecosystem of Interconnected Digital Twins

AIGENT will run for four years, starting in October 2026. Its ambition is to move Europe from isolated digital twin experiments to a reusable, trustworthy, and interoperable infrastructure supporting cross-domain simulations. By lowering technical barriers and enabling collaboration across disciplines, the project aims to support more informed decision-making in healthcare, urban planning, and environmental management. In the longer term, the infrastructure may be extended to additional domains, contributing to a broader European ecosystem of interconnected digital twins. As digitalisation becomes increasingly central to both health and sustainability challenges, initiatives such as AIGENT illustrate how integrated approaches can help bridge the gap between data, models, and real-world impact.

Want to learn more about the project outcomes within the next four years? Follow AIGENT on LinkedIn or on X for updates.