INTERVIEW WITH
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STAYING AI-READY

Cities are increasingly implementing AI solutions
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How can cities embrace AI without being overwhelmed?

In this deep dive with our member, the **Luxembourg Institute of Science and Technology (LIST)**, we explore the human, technical, and governance challenges urban areas face in deploying **AI solutions**—and the projects helping cities innovate responsibly, improve efficiency, and stay aligned with EU standards, all while keeping citizens at the centre.

POLIS: What are the key barriers cities face when adopting AI, and how are initiatives like CitCom.ai and Testing and Experimentation Facilities (TEFs) helping to overcome them?

Pascal Lhoas: Most cities are open to innovation, but their human and financial resources are largely committed to day-to-day operations. Their organisations are typically function-oriented, which makes cross-cutting, project- or programme-based initiatives particularly challenging. In Luxembourg, cities like Differdange are beginning to shift towards a more matrix-style organisation in order to meet the goal of becoming a zero-emission city by 2030. However, this approach is not yet embedded in their organisational culture and remains a significant challenge.

German Castignani: Cities are turning to digital technologies and AI to improve operations and engage citizens more effectively. However, identifying and evaluating these solutions before deployment is rarely part of a city's core activities. The role of TEFs for smart communities is to enable meaningful experimentation in partnership with cities—from identifying opportunities to testing and evaluating solutions in real environments. TEF services help de-risk the AI adoption journey by ensuring high levels of interoperability, avoiding vendor lock-in, and guaranteeing full compliance with AI regulations before solutions are deployed in production.

Pascal Lhoas

Lead Partnership Officer in the field of Mobility and Automotive
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German Castignani

Head of the AI Readiness and Assessment (AIRA) group
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POLIS: How are data space technologies supporting smart city initiatives, and what benefits do cities gain from joining data ecosystems? Could you provide some practical examples?

Castignani: Data space technologies are key to smart city development. They can help cities overcome siloed data and fragmented systems across departments and services.

By joining data spaces, cities can achieve system and semantic interoperability. For instance, a mid-sized EU city facing recurring traffic congestion may rely on siloed data from road sensors and CCTV, limiting its ability to respond.

For example, by joining a Mobility Data Space, the city could implement a Local Digital Twin (LDT) that integrates diverse multi-modal mobility data through a single connector and standardised Application Programming Interfaces (APIs). Mapped to a shared mobility ontology, this data enables coordinated, efficient traffic management.

Lhoas: Data lies at the very heart of innovation, yet its value is often underestimated by cities. For example, when I once asked an operator of e-scooters in Paris how successful his business was, he responded: 'I do not make any profit from personal mobility services, but I collect valuable data that I can sell to the city for decision support systems'.

Remarkably, the city had no explicit clause on data in the contract with the operator. This highlights how cities sometimes still overlook the critical strategic importance of data in their partnerships.

POLIS: How do the local digital twin toolboxes developed or used by LIST help municipalities simulate and test AI solutions safely before real-world deployment?

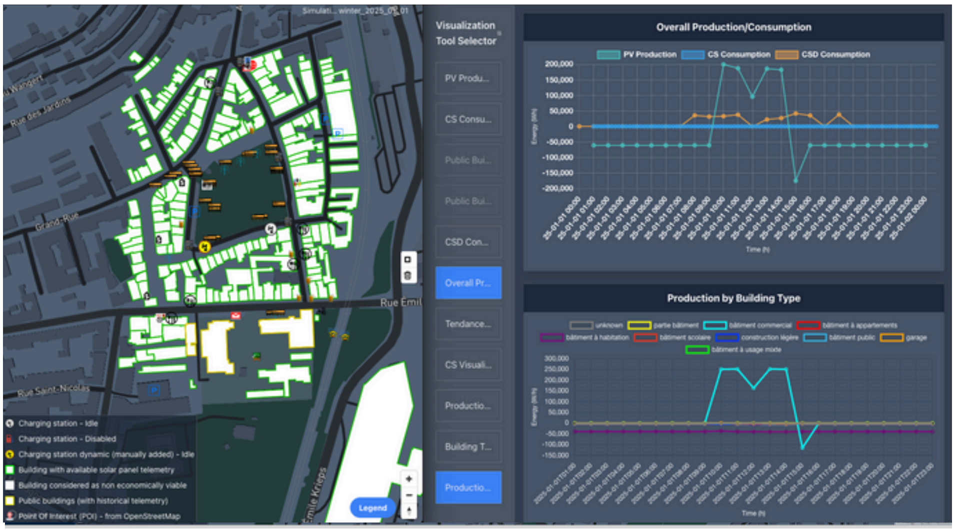
Castignani: As part of our work in CitCom.ai, we have developed a Local Digital Twin toolbox that allows cities to test and experiment with various 'what-if' scenarios in energy and electromobility. Through hands-on experiments, we collaborate with cities and strategic innovators to identify relevant use cases, assess available data, highlight challenges, and define decision-support needs.

Once there is a shared understanding of the use case, we model specific scenarios within the LDT. This involves integrating key entities—such as public buildings, EV chargers, and traffic counters—and connecting them to relevant data streams, whether live or emulated via AI models. Decision support is provided through multi-widget dashboards that help visualise and explore trade-offs between different decision options.

Our toolbox is entirely designed in line with common EU interoperability standards, as defined by various European initiatives.

POLIS: How does data analytics optimise urban services like mobility, energy, and waste management?

Lhoas: Data analytics can greatly improve how cities deliver services across a wide range of areas—from optimising waste collection, to simplifying access to administrative procedures via chatbots, to identifying ideal locations for solar panels. One example ofthe intersection of mobility and energy is the integration of electromobility with technologies like V2H (Vehicle to Home) and V2G (Vehicle to Grid). The battery capacity of a typical electric vehicle is roughly equivalent to the average energy consumption of a family of four over three days.



Screenshot of Differdange's Digital Twin dashboard and graphs showing solar production vs. simulated EV consumption

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As green energy sources—such as solar, wind, and geothermal—are cyclical and highly variable, there is significant potential for optimisation. However, realising this potential requires data-intensive methods and advanced AI techniques.

POLIS: How do you assess the trustworthiness, safety, and performance of AI solutions, and what standards and/or methodologies does LIST use to evaluate AI readiness?

Castignani: In the context of smart cities—and through our work in CitCom.ai—we have developed an AI Sandbox to support the assessment of AI components, initially focusing on large language models (LLMs).

The sandbox includes a set of metrics aligned with various dimensions of the EU AI Act, with fairness and bias analysis at its core. This tool enables us to evaluate potential biases in citizen-facing chatbots deployed by cities, across a range of topics and languages.

To support cities in building AI readiness, we also deliver Digital Opportunity Assessment workshops. These sessions help to generate, prioritise, and define potential AI use cases, while identifying current barriers related to data, processes, and infrastructure. Based on these insights, we provide tailored, practical recommendations for each city.

POLIS: How do you see European cities adopting and governing AI technologies over the next 3–10 years?

Castignani: European cities are expected to adopt AI technologies gradually and progressively, largely driven by regulatory developments. The AI Act will introduce strict governance frameworks, particularly for high-risk systems. Cities will be required to conduct conformity assessments, ensure transparency, use high-quality datasets, and implement mechanisms for human oversight.

Ultimately, they will transition from isolated AI pilot projects to more coordinated, transparent, and citizen-focused AI ecosystems—balancing innovation with accountability and regulatory compliance.

Lhoas: All these initiatives must carefully tailor their approach to support cities according to their level of AI maturity and readiness. Small and medium-sized cities, while often facing similar challenges to larger ones, will require additional support—not only to enhance their technological readiness but also to access simplified frameworks for compliance and governance.

Larger cities, in particular, adopting AI-enabled LDTs operating multiple AI solutions across various urban missions and vendors, will need robust governance schemes to monitor the compliance status of all deployed systems over time.

POLIS: Is there anything else you would like people to understand about implementing AI solutions in cities, or any common misconceptions you would like to address?

Castignani: To adopt AI effectively, cities need a solid data strategy, strong data management, and suitable technical platforms to share data. Federated data space technologies can help break down silos and unlock AI's full potential.

Before implementation, cities can benefit from TEFs to reduce adoption risks. Meeting these demands may require cities to adapt their internal structures. Innovation management will be key, closely tied to Information Systems, while legal services must become more tech-aware and able to assess AI risks—ideally supported by Regulatory Sandboxes to guide safe innovation.

Lhoas: I would also share a clear message with cities: in most—if not all—calls for tenders you issue, there should be a dedicated and well-defined section on data. This should outline the type of data to be collected, its availability, and—crucially—the ownership of this valuable asset.

Do not underestimate the value of data—it is the gold of today, not of tomorrow.

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