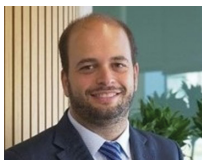# Deloitte.

Smart Cities &
Urban Transformation
Client Stories

Developing an interoperability framework for European cities and communities

Through the Smart Cities & Urban Transformation practice, Deloitte has an ambition to improve citizens' quality of life, solve key urban challenges, and positively contribute towards the United Nation's Sustainable Development Goal 11: Make cities and human settlements inclusive, safe, resilient, and sustainable.

The initiative offers up-to-the-minute thinking on how cities can use advanced digital technologies to address such key issues as mobility, infrastructure, data, and sustainability. Drawing on our global reach and cross-sector experience, Deloitte translates a holistic vision of smart cities into actionable, concrete solutions that can enable a brighter and more human-centric urban future.

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Addressing new realities

Cities and urban areas play a fundamental role in today's economies—They are not just engines of economic growth, but also where most of humanity lives and works. Although the pandemic dented the growth trajectory of urbanization, the urbanization rate could return to normal soon. The rapid urbanization observed over the last couple of decades does not just comprise a confluence of people, but is also synonymous with a growing ubiquity—and integration—of digital technology in every aspect of city life.

The last decade has seen an explosion of connected devices within cities—the number of Internet of Things (IoT) devices is expected to rise from 12.5 billion to 27 billion between 2021 and 2025.[1]

These digital and connected technologies enable our cities to become hyperconnected. But without interoperability standards and frameworks for coordination and collaboration, the results can often be suboptimal. In simplest terms, this interoperability can be defined as the "coexistence and frequent interactions between old and new systems, processes, and platforms."[2]

With this in mind, the European Union (EU) wanted to refresh its existing 2017 European Interoperability Framework (EIF) to include new realities and common principles that cities and communities could use to deliver better services to their constituents. In 2020, it launched the European Interoperability Framework for Smart Cities and Communities (EIF4SCC) project to overhaul the existing interoperability framework and tap into the knowledge from its other initiatives and projects.[3]

[1] Mohammad Hasan, "State of IoT 2022: Number of connected IoT devices growing 18% to 14.4 billion globally," IoT Analytics, May 18, 2022.
[2] Piyush Pandey and et al., "Making smart cities cybersecure: Ways to address distinct risks in an increasingly connected urban future," Deloitte Insights, April 11, 2019.
[3] European Commission, "Proposal for a European Interoperability Framework for Smart Cities and Communities (EIF4SCC), accessed October 2, 2022.
[4] Proposal for a European Interoperability Framework for Smart Cities and Communities (EIF4SCC) - Publications Office of the EU, Page 4.

The framework was developed through a collaborative, cocreation process involving multiple European Commission Directorates-General (DGs), including the DG for Informatics (DIGIT), the DG for Communications Networks, Content, and Technology (CONNECT), and the Joint Research Center (JRC). The development process involved interviewing and surveying various project teams, nonprofits, industry partners, and research institutions, including regional committees, living-in.eu signatories, the European Network of Living Labs, Eurocities, and the SynchroniCity EU-funded project. Additionally, there were multiple stakeholders that helped co-create the new framework, including the city of Lisbon, Madrid, Valencia, Athens, Amsterdam, Estonia Ministry of Finance, the Association of Estonian Cities and Municipalities, and the Finnish Ministry of Economic Affairs and Employment.[4]

Developing foundational principles

One of the core purposes of the new interoperability framework was to go beyond the technology lens and consider the human, social, and ethical aspects. Before developing the new framework, it was important to develop the building blocks or guiding principles for the new framework. Five principles were identified based on the work done by the living-in.eu platform and the 2017 interoperability framework, and are as follows:

1. **A human-centric approach** that focuses on well-being, inclusivity, accessibility, multiculturalism, multilingualism, and adheres to the once-only principle of reusing data and documents.

2. **A city needs–led approach at the EU level** requires sharing experiences, challenges, and successes relating to interoperability to build a learning system within the EU.

3. **The city as a participatory–driven and open-innovation ecosystem** that promotes an open and collaborative approach and enables cocreation and coproduction with constituents and organizations.

4. **Ethical and socially responsible access, use, sharing, and management of data and technology** that enables transparency, security, and privacy of individuals' data and information.

5. **Technology as a key enabler, not as the objective**, which encourages technology-neutrality, data portability, open standards, and open technical specifications.

One of the key underlying aspects of these principles is citizen-centricity in everything a city does or builds. These principles encourage constituents to play an active role in connecting, engaging, and enabling better policymaking. For example, the city of Nantes, France, involves constituents in major urban-renewal projects and their decision-making processes. The city selects a random group of 25 constituents as an independent panel to review and provide feedback on tenders or proposals from different contractors, which ensures that solutions and processes are developed based on said citizen feedback.[5]

Building a new governance model

The next step was to develop a governance model that was relevant at the local level, brought both public and private stakeholders on board, and helped engage the city's different communities. For instance, in the previous framework, government organizations were responsible for providing integrated public services. The EIF4SCC framework broadened the onus on providing integrated services beyond public administration to include the private sector, nonprofits, and community organizations. This seemingly minor change in the framework has massive implications for each of the five components of the new governance model, which include:

1. **Cultural interoperability** that refers to acknowledging and understanding social, cultural, political, and ideological differences between individuals and organizations. It requires debates and discussions between different actors to find ways to build consensus on interoperability challenges and solutions. For instance, the city of Leuven's 2030 roadmap for achieving carbon-neutrality ensures close cooperation between the local government, citizens, the private sector, and knowledge institutions.

2. **Legal interoperability** that ensures individuals and organizations operating under different legal and regulatory environments can work together. Data-sharing is a good example in which legal interoperability becomes critical, as different entities might have different rules and regulations around data governance.

3. **Organization interoperability** that refers to aligning processes, responsibilities, and expectations among organizations toward a common, agreed-upon goal. For example, in 2016, Berlin, Germany, introduced a central information and communications technology (ICT) architecture with clear tasks and mandates that agencies had to follow for developing digital solutions. This helped hack silos within the government, improved data interoperability, and enabled integrated service delivery.

4. **Semantic interoperability** that requires data models and common code lists to describe data exchanges, data format, and data vocabularies as standardized throughout exchanges between individuals and organizations.

5. **Technical interoperability** that ensures the standardization of interfaces, interconnections, data integration services, data presentation, and communication protocols. For instance, Copenhagen's City Data Exchange (CDE) focused on establishing common standards for data-sharing to ensure that different agencies can tap into citywide data.

What's next

The EIF4SCC was formally launched in July 2021 for local administrators at the regional, city, and community levels. The cities and communities are encouraged to review the framework, methodology, and stakeholder engagement process to implement its recommendations. The EIF4SCC will also be discussed in the living.in.eu community networks to identify ways to implement it and provide feedback to the Commission.[6]

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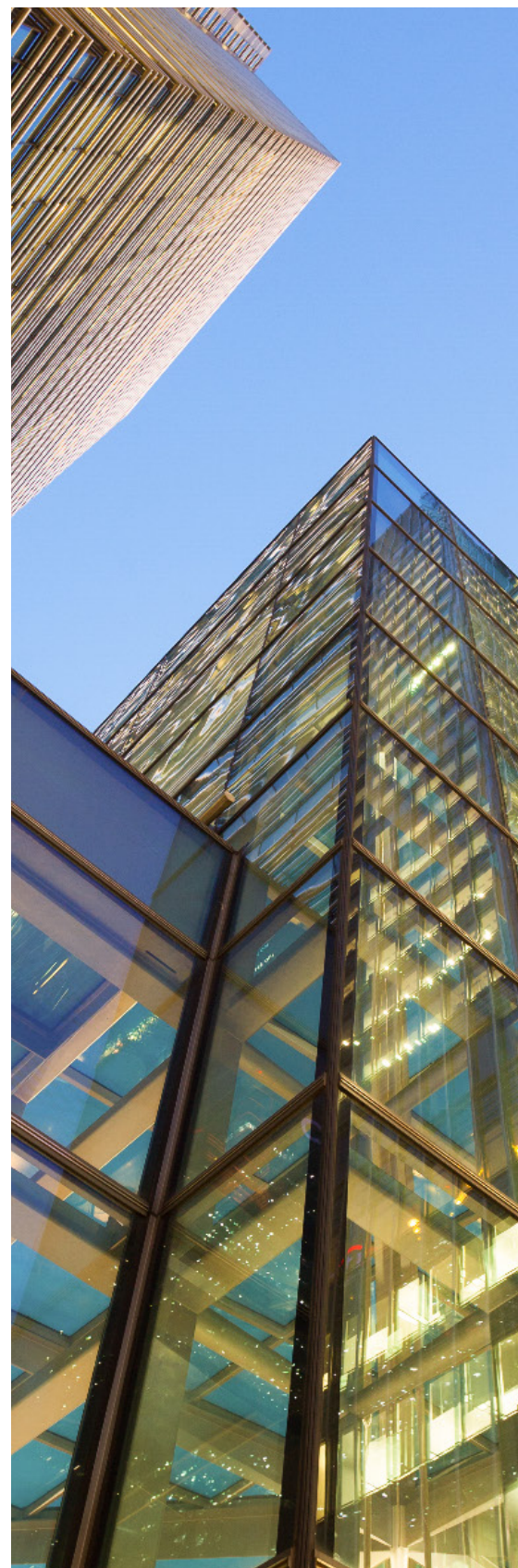
[6] European Commission, "Proposal for a European Interoperability Framework for Smart Cities and Communities (EIF4SCC), accessed October 2, 2022.

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