POLICY BRIEF

Getting started with setting up a smart city

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interoperable europe

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INTRODUCTION

Smart city initiatives are essential for enhancing efficiency, sustainability, and citizen well-being. By leveraging technology and data, cities can improve public services, reduce environmental impact, and foster a higher quality of life. Despite these benefits, many cities struggle with the early stages of digital transformation due to limited resources, lack of expertise, and the overwhelming array of available tools and platforms presenting at times seemingly contradicting information.

The purpose of this policy brief is to provide a clear roadmap for cities beginning their journey towards digital transformation and smart city development. Targeting local governments and administrations in less digitally advanced cities, this brief aims to demystify the complex smart city ecosystem and offer practical guidance for taking the first steps.

Drafted in collaboration with experts involved in some of the European Commission's smart city initiatives, this policy brief proposes a high-level structured approach to smart city development. It highlights key steps and considerations for local governments and administrations, guiding them through the initial phases of digital transformation. By focusing on accessible and practical measures, this brief aims to empower cities to navigate key resources such as LORDIMAS and the Online Helpdesk.

Ultimately, the goal is to equip cities with the knowledge and confidence to embark on their smart city journey, laying the foundation for a more efficient, sustainable, and citizen-centric urban future.

UNDERSTANDING SMART CITIES

A smart city leverages technology and data to enhance the efficiency, sustainability, and overall well-being of its urban environment. Unlike a digital twin, which is a virtual representation of physical assets, processes, or systems, a smart city encompasses a broader scope, integrating various technologies to improve public services, reduce environmental impact, and foster a higher quality of life for its citizens. Digital twins are powerful tools within the smart city ecosystem, but they are not the starting point.

Indeed, before diving into advanced tools like digital twins, cities must establish foundational elements to support their digital transformation. These include data infrastructure, a centralised platform, and interoperability mechanisms. Data infrastructure forms the backbone of a smart city, involving the collection, storage, and management of data from various sources such as sensors, IoT devices, and public records. A centralised platform is essential for processing and analysing this data, enabling informed decision-making and efficient service delivery. Interoperability mechanisms ensure that different systems and technologies can communicate and work together seamlessly, creating a cohesive and integrated smart city environment.

The practical applications of these foundational elements are vast and impactful. For instance, in urban planning, data can be utilised to optimise land use, transportation, and resource allocation, leading to more efficient and sustainable cities.

Infrastructure monitoring allows for real-time tracking of the condition and performance of critical infrastructure like roads, bridges, and utilities, ensuring timely maintenance and reducing the risk of failures. In emergency response, data-driven insights and coordination can enhance the speed and effectiveness of responses to emergencies, ultimately saving lives and resources.

LAYING THE FOUNDATIONS: KEY FIRST STEPS

Establishing governance and leadership

Creating a dedicated smart city team or department is a crucial first step in establishing governance and leadership for smart city initiatives. Forming an internal team is recommended for cities of all sizes to ensure focused and consistent efforts towards digital transformation. However, besides creating a dedicated team, smaller cities with a population below 50,000 inhabitants may also want to consider regional cooperation to share resources effectively. By pooling resources and coordinating efforts, smaller communities can overcome financial and administrative challenges, gaining better contract terms and ensuring compliance with EU procurement regulations.

Ensuring political buy-in is another essential aspect of establishing governance. Getting for instance the mayor and key decision-makers on board is crucial for the success of smart city initiatives. Demonstrating the added value of these initiatives is also vital to counter perceptions of additional burden. By showcasing the benefits of smart city projects, such as improved efficiency, sustainability, and citizen well-being, political leaders can be convinced of the importance of investing in digital transformation.

Building a data infrastructure

Developing a robust data infrastructure is fundamental for any smart city initiative. Many cities already possess valuable data, but it is often siloed across different departments. Creating a centralised data platform is essential to break down these silos and ensure data is accessible, reusable, and standardised. Interoperability is key—data should be able to flow seamlessly between different systems and applications.

In addition to internal data sources, cities should consider integrating external data from utilities, mobility providers, and even social media. By leveraging external data sources, cities can gain a more comprehensive understanding of urban dynamics and improve decision-making processes.

Choosing a smart city focus area

Identifying the most relevant domain for your city is crucial for the successful implementation of smart city initiatives. It is advisable to avoid trying to cover everything at once—start small and scale up gradually. Cities should assess their unique needs and priorities to determine the most impactful focus areas. Common domains include mobility, traffic flows, energy efficiency, waste management, water management, education, administrative and public services, safety and security, or living and health.

Leveraging key resources to get started

Leveraging existing resources provided by the European Commission such as LORDIMAS and the Online Procurement Helpdesk for Smart Communities is an effective approach for cities to get started with their digital transformation journey.

LORDIMAS, which stands for Local and Regional Digital Maturity Assessment, is a comprehensive self-assessment tool developed by ESPON in cooperation with the European Committee of the Regions, the European Commission, Living-in.EU supporters and signatories, and the Go Li.EU consortium. This tool is designed to help cities and communities evaluate their digital maturity across seven key dimensions: *Governance, Service Design, Data Management, Interoperability, Service Delivery, Technology,* and *Networking*. Each dimension comprises a set of sub-capabilities that provide a detailed picture of a community's digital readiness.

The LORDIMAS assessment assigns scores to each capability and sub-capability, offering a snapshot of the community's current digital maturity. This score is crucial for identifying strengths and weaknesses in the community's digital infrastructure and strategic priorities. By understanding their digital maturity level, cities and communities can better plan their digital transformation journey, focusing on areas that require improvement and leveraging their existing strengths. LORDIMAS enables communities to benchmark their progress against other cities and regions, fostering a culture of continuous improvement and collaboration.

The Online Procurement Helpdesk for Smart Communities is a dedicated service established by the European Commission to support cities and communities in their digital transformation journey. Launched in January 2024, the Helpdesk provides consulting services, guiding communities through a structured journey that includes assessing their current digital and technical maturity, developing tailored digitalisation roadmaps, and offering procurement support for the deployment of essential digital tools and technologies in line with the Minimum Interoperability Mechanisms (MIMs).

The Helpdesk journey begins with kick-off activities, where city representatives are introduced to the project and its services. Following this, communities complete the LORDIMAS assessment to evaluate their overall digital maturity. Next, they conduct a strategy assessment to align their strategic priorities with the capabilities of Local Digital Platforms (LDPs) and Local Digital Twins (LDTs). In fact, the strategic priorities outlined in this assessment are precisely the strategic sectors in terms of future investments in digitalisation for the community that should be identified as per the previous key step, i.e., “Choosing a smart city focus area”. It is indeed crucial that the community targets its strategic sectors when planning the development of smart community solutions. An IT infrastructure assessment follows, determining the community's technical readiness for developing LDPs and LDTs.

Based on these assessments, communities receive a tailored digital transformation roadmap detailing phases, initiatives, and milestones for their digital journey. Finally, the Helpdesk provides procurement support, offering templates and guidelines to address current digital infrastructure gaps.

In short, LORDIMAS provides a detailed evaluation of a community's digital maturity, highlighting areas that need improvement and offering a benchmark for progress. This assessment helps cities understand their current capabilities and identify strategic priorities for their digital journey.

The Online Procurement Helpdesk complements LORDIMAS by offering tailored support and guidance throughout the digital transformation process. By providing a structured journey, the Helpdesk ensures that cities can systematically assess their digital and technical maturity, develop comprehensive digitalisation roadmaps, and receive procurement support for implementing essential digital tools and technologies. This holistic approach helps cities navigate the complexities of digital transformation, ensuring sustainable investments and avoiding vendor lock-in situations.

Together, LORDIMAS and the Online Procurement Helpdesk empower cities to take their first steps towards digital transformation with confidence, providing the tools and resources needed to build a robust digital infrastructure and achieve their smart city goals.

OVERCOMING KEY CHALLENGES

Political and institutional barriers

One of the primary challenges in the early stages of smart city development is the lack of political will. Convincing leadership to invest in smart city initiatives can be difficult, especially when the benefits are not immediately visible. To address this, it is crucial to present clear impact cases and cost-benefit analyses that demonstrate the long-term advantages of smart solutions. Highlighting successful examples from other cities and showcasing how smart technologies can improve efficiency, reduce costs, and enhance the quality of life for citizens can help in gaining political support.

Another significant barrier is the difficulty in justifying budgets for smart city projects. Smart solutions often require substantial upfront investment, which can be challenging to justify in the face of competing priorities. To overcome this, it is important to emphasise how smart solutions can lead to long-term savings and improved efficiency. Demonstrating the potential for cost reductions in areas such as energy consumption, waste management, and public services can help in making a compelling case for budget allocation.

Funding and resource allocation

While the EU provides various funding mechanisms for smart city projects with programs such as Horizon Europe, Digital Europe Programme (DEP), Connecting Europe Facility (CEF) building blocks, European Social Fund Plus (ESF+), and Cohesion Funds, direct funding can be limited. Indeed, the EU's approach puts the emphasis on democratising access to resources while encouraging communities to strategically assess their needs and selectively apply for funding. The objective is that cities and communities can better prepare for funding opportunities, ensuring a more efficient and targeted use of financial support.

In other words, cities may need to explore alternative sources of funding to support their smart city initiatives. Potential sources of funding include:

- *National Funds*: Interreg and Green Deal funding can provide substantial financial support for smart city projects.
- *Ministries Responsible for Digital Transformation*: These ministries often have dedicated budgets for digital initiatives and can be a valuable source of funding.
- *Collaborations*: Working with associations of cities, Eurocities, and Smart Communities Networks can help in pooling resources and gaining access to additional funding opportunities.

Interoperability and technical challenges

Cities often face significant challenges when integrating new systems and technologies with existing infrastructure. Each city has unique needs and existing systems, making it difficult to find solutions that work seamlessly across different environments. This complexity can lead to issues such as data silos, incompatibility between systems, and inefficient operations. Additionally, the absence of standardised interoperability mechanisms results in fragmented and isolated systems, hindering scalability and sustainability. Cities may also become dependent on specific vendors due to proprietary technologies, leading to vendor lock-in, which restricts flexibility and innovation, and can result in higher costs and reduced ability to adapt to evolving technological needs.

To address these challenges, cities can adopt the Minimal Interoperability Mechanisms (MIMs), which provide a standardised framework for ensuring smooth integration of new technologies with existing systems. The Living-in.EU Technical Working Group is currently developing MIMs Plus which are based on the global MIMs but tailored to European needs and legislation. In parallel, a MIMs Plus Conformance Testing and Certification Scheme, along with a network, is being designed to test the solutions of providers and cities, enabling them to achieve MIMs Plus certification for their solutions. Creating a network of vendors and cities that adhere to MIMs Plus principles through the MIMs Plus Conformance and Certification Scheme can significantly enhance interoperability, reduce the risk of incompatibility, and prevent vendor lock-in. Utilising procurement templates and guidelines that reference MIMs Plus also contributes to the creation of a spillover effect, ensuring that cities procure solutions guaranteed to integrate seamlessly with their infrastructure. This approach allows:

- cities to test their solutions for MIMs Plus certification,
- cities to use procurement templates with MIMs requirements to identify interoperable solutions, and
- solution providers to test and certify their offerings to MIMs Plus standards, meeting cities' requirements and effectively marketing their solutions.

Furthermore, fostering collaboration and knowledge sharing within a certified network of cities and vendors promotes innovation and accelerates digital transformation.

THE STORY OF KLADNO:
A JOURNEY TOWARDS BECOMING A SMART CITY

CONTEXT

Kladno, a Czech city known for its post-industrial challenges, embarked on its smart city journey primarily motivated by the **need to enhance sustainability and reduce CO2 emissions**. The SPARCS project, which focused on energy transition with key areas such as e-mobility, building renovation, and the development of a positive energy district, provided a crucial opportunity for Kladno to **implement smart monitoring systems for energy consumption within city buildings**. Although the city lacked a comprehensive digital plan, it initiated pilot projects in niche areas such as energy consumption, water management, and waste management. These efforts aimed to collect valuable data and experiment with innovative methods and digitalisation, laying the groundwork for future initiatives.

WHAT MADE A DIFFERENCE

Governance and political support played a vital role in Kladno's smart city development. The city's grants and project preparation department coordinated efforts across various departments, including energy, leveraging a **multi-disciplinary team** that included two IT specialists. Political buy-in was secured by leveraging the success of the SPARCS project and preparing **clear impact cases that demonstrated the benefits of the smart city initiatives**. Showcasing their financial impact in terms of cost reduction was key to ensure political support. Funding from national and European sources was crucial for implementing pilot projects and exploring new technologies. This included a successful application in a national call for the *demonstrative application of the 5G network ecosystem for smart cities, municipalities, and regions*, which enabled the expansion of security cameras and the establishment of a new video-security room for the local police.

CHALLENGES ENCOUNTERED

Throughout its journey, Kladno faced challenges such as **limited resources** and **time availability** from the team, a **lack of political continuity**, and the **prioritisation of infrastructure investments** over digitalisation, which is not yet a primary focus in Czechia.

LESSONS LEARNED

Nevertheless, the city learned valuable lessons, including the importance of **joining international projects**, being **open-minded,** as well as **collaborating with other cities to exchange knowledge and good practices**.
Kladno's experience underscores the need for cities to **start small, focus on specific domains, secure political commitment, develop a robust data strategy, and leverage national and European support tools** to navigate the complexities of smart city development confidently.

KEY RECOMMENDATIONS FOR CITIES GETTING STARTED

1. Build a team or join a regional smart city cooperation initiative

Establishing a dedicated team or joining a regional smart city cooperation initiative is crucial for pooling resources, expertise, and knowledge, enhancing smart city projects and fostering innovation. Ensuring effective communication and alignment between departments within the same district or city, which may be at varying levels of digital maturity, is also essential.

2. Define a focus area—start with a use case that delivers value and can expand over time

Identify a specific focus area that addresses a pressing need within the community and start with a use case that delivers tangible value. This approach allows cities to demonstrate the benefits of smart solutions, build momentum, and gradually expand the scope of their initiatives over time.

3. Secure political commitment—engage decision-makers early

Engage decision-makers early in the process to secure political commitment and support for smart city initiatives. Present clear impact cases and cost-benefit analyses to demonstrate the long-term advantages of smart solutions, ensuring that leadership is invested in the project's success.

4. Develop a data strategy—break down silos, ensure interoperability, and integrate external data where relevant

A well-defined data strategy enhances data management, facilitates informed decision-making, and supports the seamless integration of various smart city technologies.

5. Use available assessments to evaluate readiness and plan next steps

Utilise available assessments, such as LORDIMAS, to evaluate the community's digital maturity and readiness for smart city initiatives. These assessments provide valuable insights into current capabilities and gaps, helping cities to plan next steps and prioritise areas for improvement.

6. Leverage national and European support tools for funding, training, and knowledge sharing

Take advantage of national and European support tools for funding, training, and knowledge sharing. Programs such as DEP and the Online Helpdesk offer financial support, resources, and expertise to help cities navigate their digital transformation journey and implement effective smart city solutions.

If you'd like to know more about Kladno's experience with setting up a smart city, you may contact:

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Additional resources:

- Online Procurement Helpdesk for Smart Communities | Living in EU (living-in.eu)
- LORDIMAS | Living in EU

Do you have a solution in mind that you would like to propose for a peer-leaning policy brief?

PLEASE CONTACT US WITH A SHORT DESCRIPTION OF YOUR SOLUTION TO SET UP AN EXPLORATORY MEETING

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