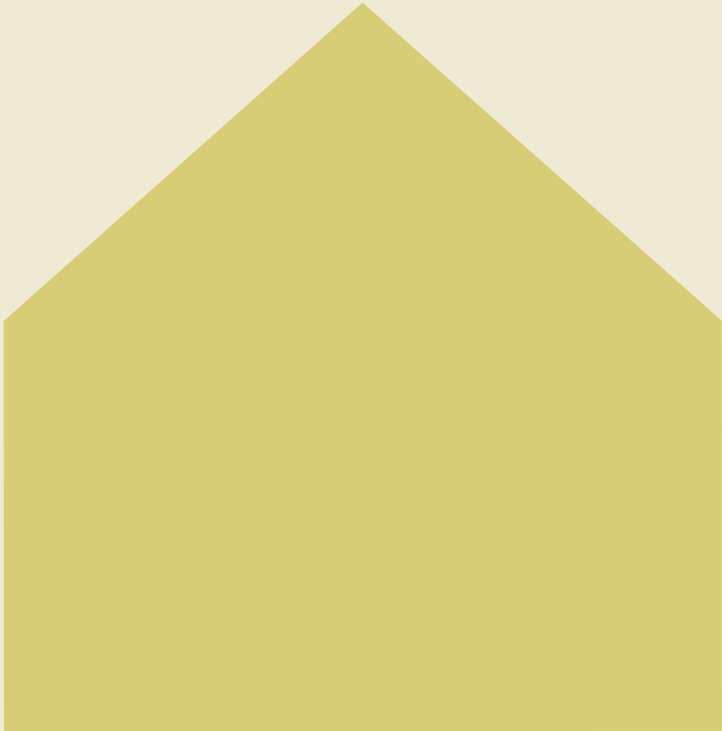




Citiverse

View, Discuss,
Experience!

Making Thoughtful
Public Choices
Together





Colophon

Title: Citiverse for Resilient Cities

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Design and layout: Dropouts

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Management Summary

Challenge: Cities are Changing Rapidly

In this rapidly changing world, we are facing major societal challenges. Technological developments are progressing very rapidly. Decisions are sometimes difficult to explain, which affects support among residents and entrepreneurs. The feasibility of large-scale implementation projects with limited capacity is also complex. Not everything can be done at once. It is difficult to explain why there is a greater necessity for one challenge than another.

Movement: Citiverse

The Citiverse, short for Citizenverse, is used to simultaneously display various tasks, for example traffic flows and water nuisance. This way, people can make well-considered public choices and then take action. One can see and experience scenarios. This allows timely anticipation and can create more understanding and support.

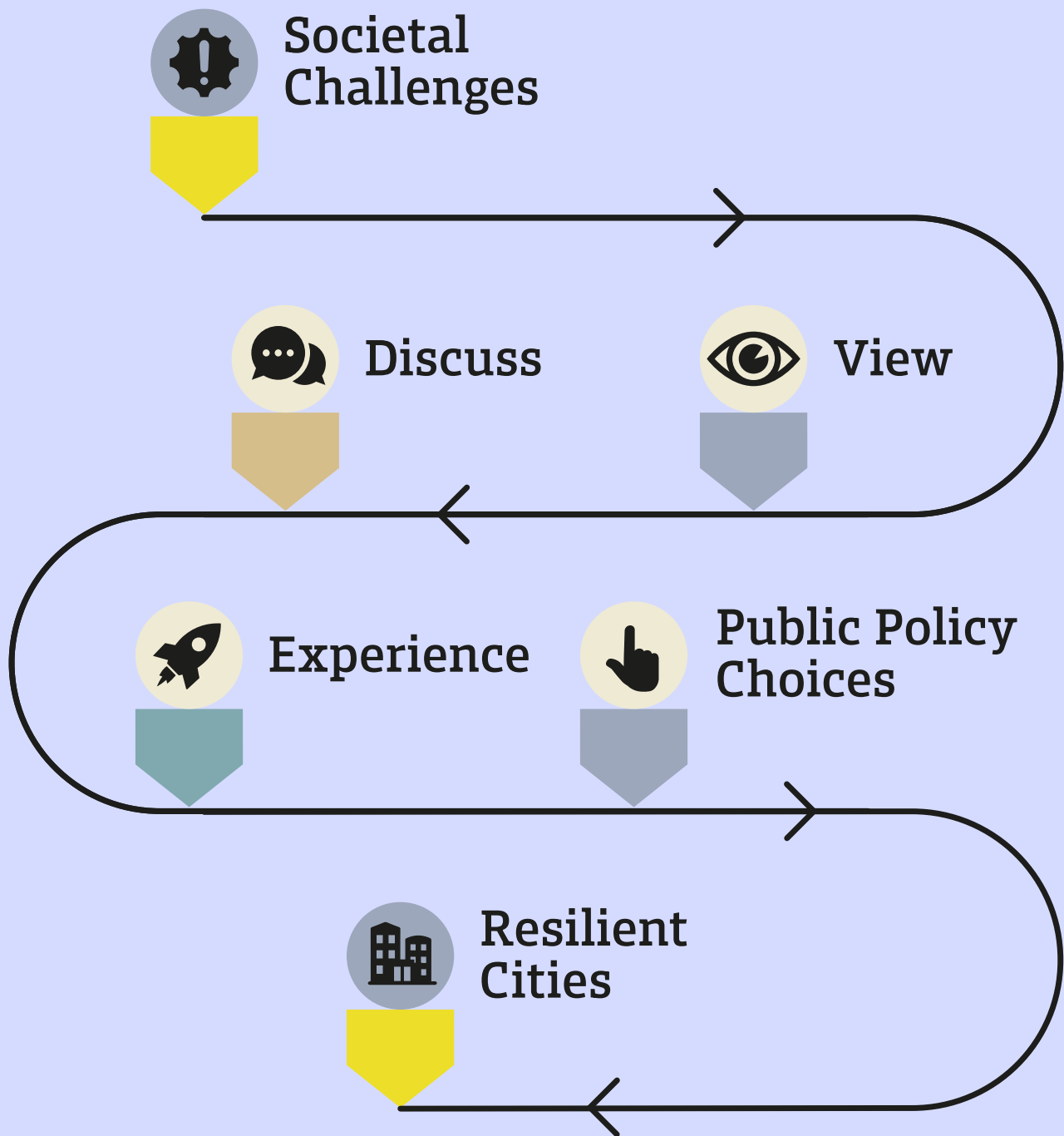
We are exploring this new social-physical-digital world. A responsible public digital infrastructure based on interoperability and trust is a prerequisite for this. There is a duty of care towards society to ensure that the new social-physical-digital city is accessible, open, and safe.

Impact: Resilient Cities

The Citiverse frontrunners Valencia, Tampere, and Rotterdam demonstrate this and are united in the Lighthouse Association. Together they work on resilient cities.



Citiverse for Resilient Cities



Making Thoughtful Public Choices Together

Cities are continuously in motion. They are increasingly facing greater challenges, ranging from extreme weather conditions, maintenance tasks, and unemployment. In addition, we see changes in the power and interests of countries. These developments affect the economy, security, and people's daily lives. There is a stronger focus on digital autonomy: less dependence on tech giants and more control over one's own digital infrastructure, data, and innovation capacity. At the same time, public support and the feasibility of large-scale implementation projects can sometimes be complex. Not everything can be done at once. It is therefore important to make thoughtful public choices together.

In this rapidly changing world, how can we still ensure that residents have a pleasant place to live, work, and recreate? And how do we ensure that companies can grow and develop innovative ideas? To justify the choices made, you need insight into the challenges facing cities. It is important to have the ability to act quickly when necessary, or better, to anticipate before it becomes reality. We see that

the digital reality is increasingly intertwined with the social-physical city, transforming the city into a social-physical-digital city. With the Citiverse, short for Citizenverse, the resident is central. Citiverse makes the new social-physical-digital living environment of the resident visible, discussable, and tangible. The societal challenges that are influenced by this can be better addressed with the Citiverse.

Duty Towards Society and Democracy

It is important to make conscious choices about the digital infrastructure. Compare digital infrastructure with physical infrastructure (think of roads). The government has a duty of care in both cases. It must be accessible, open, safe, and there must be trust. In the physical world, that role is self-evident. In the digital world, we need to figure out the rules together. How do we maintain control over the digital infrastructure? If you do nothing, you lose control over your digital infrastructure. It is a duty towards society and democracy to take on this role. With the Citiverse, this role is fulfilled.



The Citiverse frontrunners Valencia, Tampere, and Rotterdam fulfill this duty. They are convinced that these challenges are best addressed through collaboration between cities and regions and adhere to the following principles:

- Open Standards, Interoperability
- Inclusion
- Trust
- Safety and Resilience

To make an impact together and work on resilience and urban resilience, these cities are united in the Lighthouse Association. Together they create the golden standard in urban innovation, digitalization, and the Citiverse.

Public Digital Infrastructure - What is the Citiverse?

With the Citiverse, we make societal challenges visible, discussable, and experiential. A responsible public digital infrastructure is a prerequisite for this. This is part of the foundation of this social-physical-digital city. Citiverse is a philosophy, in which thoughtful public choices are made together.

The Citiverse is a European Digital Infrastructure Consortium (EDIC) that is building an EU ecosystem of advanced AI solutions for cities.

The LDT Citiverse EDIC was launched by the European Commission and is located in Valencia. Digital twins (digital copies of a city) are connected to each other. Knowledge and information can be exchanged. Cities can help each other become resilient. Cities do this with a strong equal partnership between government, businesses, and universities. Together, they support solving large, complex societal challenges.

The Citiverse concept is also embraced by the United Nations and ITU with the 'Global initiative on virtual worlds & AI - Discovering the Citiverse'. All three cities are active partners. Valencia and Tampere are as well member of the Executive Committee as the Steering Committee of this program, Rotterdam is member of the Steering Committee.





Look at the City..... and Understand the Societal Challenges

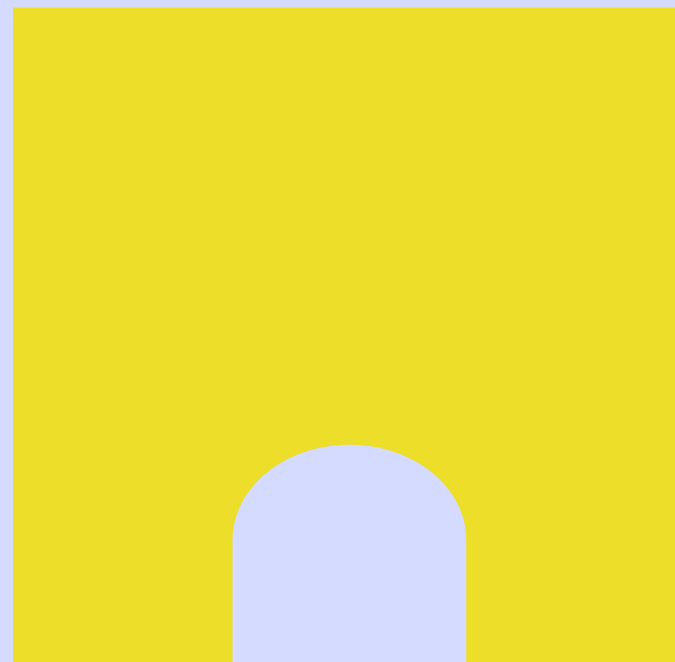
Sharing information between cities is possible with the help of open data and open standards. This allows you to exchange data and applications between different systems and organizations (interoperability). By making data accessible in a uniform way and visualizing it (for example with 3D), you can create a shared visual representation. With a digital copy of a city (digital twin), which is continuously updated with real-time data from the real world, you can analyse and make predictions using AI. What are the possible scenarios? This helps to gain insight into the societal challenges at the area development level.

In this way, sharp decisions can be made in the physical living environment. In addition, you can respond better and faster to the opportunities that arise and more easily collaborate with partners and other cities.

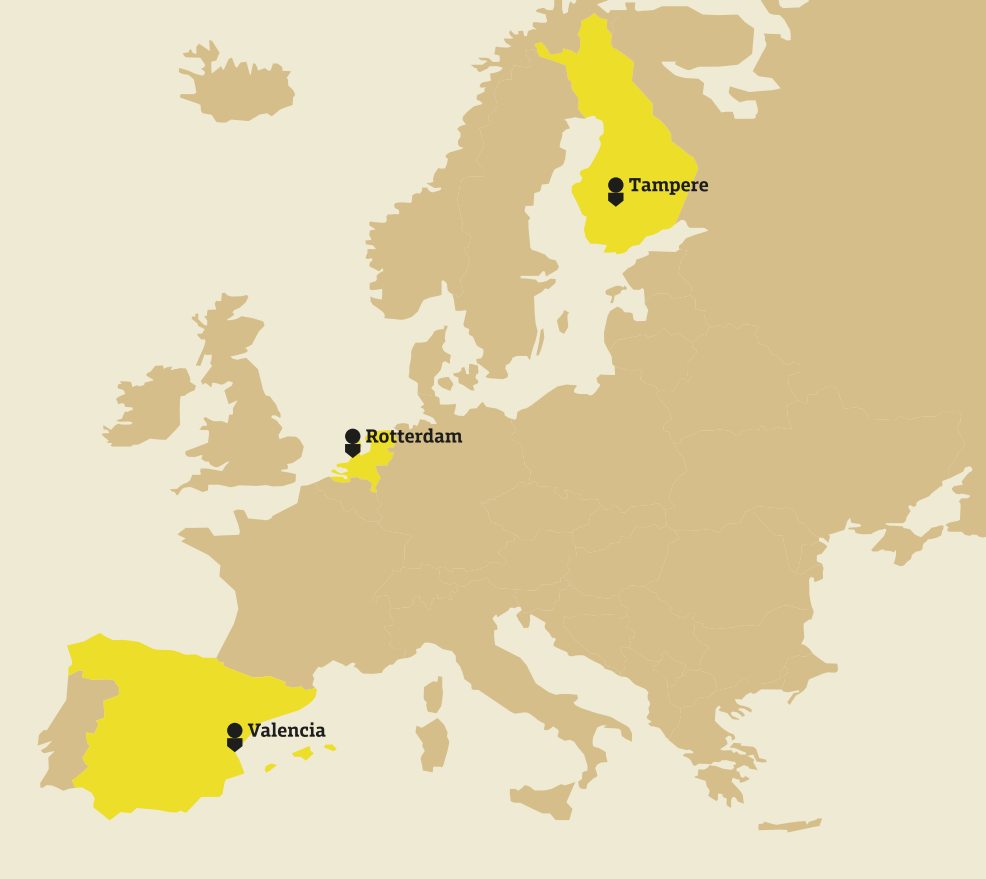
Discuss the Challenges of the City..... and Make Thoughtful Choices Together

Based on data, you can develop new services. The new services offer economic opportunities for the city. New companies can emerge, and new skills are developed. Companies can connect to the public platform (similar to an App Store). Together they form a growing ecosystem of applications. It connects in a transparent, reliable, and secure manner the ability to exchange and share data, services, and applications.

Tampere has developed a service called Tampere Pulse to predict visitor flows in the city. Based on the collected data, a forecast is made of the visitor flows for the coming month. This helps companies prepare for events. By anticipating an increase in demand, they can ensure sufficient staff in time or adjust opening hours. Having the right information is essential. This way, you can engage in conversations with residents, entrepreneurs, and area partners and make sharp choices together.



Citiverse Frontrunners



Experience the City and Anticipate Future Scenarios

Immersive technology (such as virtual reality, augmented reality, mixed reality) can promote empathy and understanding among residents. Residents can experience future plans more directly. Imagine that, as a resident, you can already virtually see and experience your future urban space plans and how they will look. For example, you can experience what that new residential area will look like. In this way, we make decision-making transparent.

People with limited mobility can visit an old monument that they would normally not be able to see or experience easily. In this way, we make it accessible to everyone.

Another example is that the Citiverse shows residents what a potential flood could mean, as happened in Valencia. What does the street look like when the water rises up to the car? This way, you can experience what will

happen in an unexpected emergency scenario. As an emergency service, resident, or entrepreneur, you can prepare for emergencies.

Whether it is about redesigning public spaces, making experiences accessible, or responding to climate risks, Citiverse helps to make challenges understandable, make thoughtful choices together, and act on future scenarios. Together we work on resilient cities.

Future-proof Cities

We are proud that together the cities of Valencia, Tampere, and Rotterdam are leading, both nationally and internationally. With Citiverse, the golden standard is being developed regarding a public digital infrastructure. Ethical thinking and acting take precedence.

Join us to make an impact. Together we are strong and ensure a safe digital infrastructure for resilient cities.



Tampere

Cities rarely develop in a straight line. Tampere, a city known for its industrial heritage and cultural vibrancy, has grown into one of the most recognized European frontrunners in digital transformation. Its journey – from a Smart City to a Data-Driven City, to Tampere Citiverse – tells a powerful story of vision, courage, and innovation.

The start of Tampere's transformation dates back to early programs such as eTampere and Open Tampere, which underscored the city's ambition to use ICT for economic and social renewal. Subsequently, the Smart Tampere program was launched in 2016, leading to the Data Driven City.

Data Driven City for Citizens

This program emphasized strengthening capacity maturity in key areas such as connectivity, data and AI, XR/AR, digital twins, and citizen services. The program had 5 focus areas:

- Businesses and business data: the vitality of a city depends on the well-being of businesses and residents
- International and inclusive city: attracting skilled workers from abroad and using data to analyze their needs and offer tailored services.
- City of Growth and learning: gaining insight into the situation of young people in vulnerable and difficult circumstances.
- Safe Pedestrian City: how can data, digital infrastructure, and intelligent systems make moving through the city safer – especially for pedestrians – without turning the city into a controlled or monitored environment?
- Digital Twins: living representations of the city

These infrastructures align closely with the ambition of the “Digital Compass” to achieve secure, powerful, and interoperable digital foundations.

Tampere Citiverse

At the core of Citiverse are technologies such as multi-layered digital twins: real-time virtual models of cities that allow citizens, planners, and policymakers to simulate changes, test ideas, and make informed decisions together. Whether it concerns improving traffic flow, redesigning public spaces, or responding to climate risks, Citiverse helps cities act faster, more transparently, and more effectively.

Valencia

Since February 2024, Valencia has been the statutory seat of the LDT CitiVERSE EDIC, the European Digital Infrastructure Consortium for Networked Local Digital Twins, established by Commission Implementing Decision (EU) 2024/459. Fifteen Member States are part of the LDT CitiVERSE EDIC, with Spain acting as coordinator and Valencia chairing the Assembly.

The EDIC is headquartered in the La Harinera building and connects local digital twins across Europe into a shared, interoperable infrastructure for geodata, AI and virtual worlds. Its first General Assembly was held in La Harinera in December 2024. For Valencia, hosting the EDIC is not only a matter of prestige: it anchors the city's commitment to European digital autonomy, open standards and public values in the development of the CitiVERSE.

Smart City Platform and Bidirectional Digital Twin

Valencia has a long tradition in geographic information systems (GIS) that has evolved into a fully-fledged urban digital twin. What sets it apart is the bidirectional connection with the city's Smart City Platform: the twin is continuously fed with real-time data and, in turn, feeds back into municipal systems. The platform is open by design, enabling new applications and new businesses to be built on top of it, and evolves continuously with services such as AI assistants and immersive visualisations. Interoperability and inclusivity — narrowing the digital divide — are guiding principles. Valencia applies the Minimal Interoperability Mechanisms (MIMs) and is recognised as a reference city in this area. The platform was the first one set up in Spain and it is based on open standards. It is connected with the main systems in the Municipality and has meant a dramatic change from silos culture to a collaborative work.

CitiVERSE experiences in Valencia are structured around four main domains: tourism (enhancing visitor experiences with immersive technologies), urban planning (simulating the impact of major projects), citizen participation (virtual models that allow residents to engage with alternative scenarios) and a virtual civil servant chatbot providing accessible public services.



Valencia Immersive City

In March 2026, the City of Valencia and the University of the Arts London (UAL) signed a Memorandum of Understanding that launched Valencia Immersive City, a strategic alliance to position Valencia as a European reference in the application of immersive technologies to urban transformation. Valencia is the first Spanish city to combine advanced urban simulation with immersive technologies to test and discuss major urban projects before they are built. The initiative is being rolled out through the Valencia Immersive City Lab, organised around three work streams: immersive experiences tied to the urban fabric, training and talent programmes in creative technologies, and the development of a local business ecosystem in XR and digital storytelling.

Urban Sandbox and GovTech Challenges

Valencia turns the city itself into a testing ground for innovation. Urban Sandbox provides a regulatory and operational framework that allows start-ups, SMEs, universities and research centres to pilot new solutions on real urban assets — from streets and squares to public buildings and city events. In parallel, the GovTech Challenges programme translates concrete municipal needs into open calls for start-ups, creating a pipeline for public innovation procurement: by 2025, fourteen challenges were active and new rounds were presented at the Valencia Digital Summit. Together, Sandbox and GovTech turn city management into a living innovation platform: they lower the barriers to urban experimentation, de-risk the adoption of new technologies by public services, and feed the Smart City Platform and the Digital Twin with evidence from real-world pilots.

European Projection: CitCom.AI and the Citiverse Alliance

Valencia's role in Europe goes beyond hosting the EDIC. The city leads the Southern Supernode of CitCom.AI, one of the European Testing and Experimentation Facilities for AI, bringing together eleven countries to validate AI solutions for cities. Valencia City Council plays a relevant role in two initiatives promoted by some United Nations agencies. On the one hand, it is co-leading the Thematic Group on City Platforms and Data Spaces at The United for Smart Sustainable Cities (U4SSC) initiative that is a global UN collaboration, coordinated by ITU, UNECE and UN-Habitat. On the other hand, it has a representative at the Executive Committee and another at the Steering Committee at the 'Global Initiative on Virtual Worlds and AI-Discovering the Citiverse' (promoted by ITU, UNICC and Digital Dubai), leading the Citiverse Alliance, an open coalition of cities and partners committed to advancing the Citiverse along shared ethical and technical principles.



Resilience After the DANA

The DANA of October 2024 was a turning point for Valencia and for the region. Beyond its immediate human and economic toll, it made visible how data, simulation and immersive visualisation can help cities anticipate, communicate and respond to extreme events. The Smart City Platform, the Digital Twin and the immersive tools now being developed are part of a broader, post-DANA commitment: to build a city that is better prepared, more transparent with its residents, and more capable of making sharp and sound choices in the face of climate, social and technological change. This is the contribution Valencia brings to the Lighthouse Association and to the Citiverse: a city that has learned, the hard way, why the infrastructure behind the Citiverse matters.

Rotterdam

Rotterdam is internationally among the leaders in creating the basic conditions of the Citiverse, even having the world's first Chief Citiverse Officer, and reached the finals of the 2026 European Capital Innovation Awards. The municipality of Rotterdam assumes a continuously mutually influencing social, physical, and digital reality. Rotterdam Citiverse is a citizen-oriented, social-physical-digital ecosystem based on trust, interoperability, and inclusivity.

Open Urban Platform

The Open Urban Platform (OUP) is the hub of the digital infrastructure that provides all residents of Rotterdam with a safe, responsible, and insightful digital environment. It is a platform by and for all residents, businesses, and organizations of Rotterdam. In one common place, you can find all current data of Rotterdam gathered together. In such a way that everyone can use it, add data, and share it. This makes the Open Urban Platform the basis for new applications, services, information provision, and participation. Think of a housing corporation that makes 3D information of buildings available to the fire department, enabling them to fight a fire more effectively. Or of residents who are already co-designing in 3D in a pilot project, for example, the redesign of a square in their neighborhood. It is a public-private partnership. The next step is that humans can also become part of the digital city (social component).

Rotterdam is exploring what the Citiverse exactly means and what the future city will look like as these worlds increasingly converge. The goal is to, by the end of 2027, arrive at a vision for the digital transformation of the city of Rotterdam and the Rotterdam ecosystem.

Vision Rotterdam Citiverse

To reach this desired vision, work is being done along three axes:



Four Perspectives:

- Municipal services;
- Digital economy;

- Digital inclusion & equality;
- Adaptive and resilient digital infrastructure



Twelve Building Blocks

Think of digital identity, youth and innovation, port economy. These are the issues that Rotterdam faces, translated into opportunities for Rotterdam.



A Growing Number of Workshops.

Currently, these are:

- Ecosystem of Applications: Appstore on top of the Open Urban Platform: applications that communicate with each other and reuse data.
- x-CITE: EU project with Tampere, Flanders, and Rotterdam: XR and AI for citizen participation and the school of the future.
- Digital Imagination: Research on AR/VR and 3D visualizations as a tool for understandable co-creation with residents and companies.
- Digital Humans & AI: Experiments at the intersection of AI and ethics, including the 'digital human' Digiderius (based on Desiderius Erasmus).
- Web3.0 / Citizen Data Vault: Citizens maximally in control of their own data through a reliable personal data vault for municipal services.

The goal is to share and acquire knowledge and to translate this knowledge as much as possible into relevant insights for the vision of Rotterdam Citiverse.



City of
Rotterdam



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