# INCREASING DIGITALISATION AWARENESS & READINESS OF BULGARIAN COMMUNITIES

in collaboration with

НСОРБ
НАЦИОНАЛНО СДРУЖЕНИЕ НА ОБЩИНИТЕ В РЕПУБЛИКА БЪЛГАРИЯ

## PHASE 2: PREPARATION

FEBRUARY 12th, 2025

European Commission | serendipity | Capgemini | OASC OPEN & AGILE SMART CITIES & COMMUNITIES | technopolis group | imec embracing a better life | EUROCITIES | ICLEI Local Governments for Sustainability EUROPE | Deloitte.

# Agenda for Training Session:

# BULGARIA

## Phase 1: PLANNING

### DIGITALISATION CAPABILITY — How to Unlock the Potential of Digitalisation

- Climate Neutral and Smart Cities Mission cities' goals, resources & how cities can get involved.
- How to assess your Local and Regional Digital Maturity with LORDIMAS
- How to implement the EU methodology to define your own digitalisation roadmap.
- EU tailor-made procurement templates aligned with EU principles and standards

**January 28th, 2025** **9:30 CET**

## Phase 2: PREPARATION

### DIGITAL TWINS — How to Set Up Your IT Infrastructure

- Understand the importance of open and shareable data as the foundation of your data infrastructures.
- Learn how to implement open data platforms and data spaces through an open reference architecture supported by MIMs
- Discover the open-source tools available through the EU Local Digital Twin toolbox

**February 12th, 2025** **9:30 CET**

## Phase 3: EMPOWERMENT

### SUPPORT AND NETWORKS — How Funding and the Community Supports You

- Discover the Living-in.EU learning community, how to make use of the resources developed for and by the community, and how to engage with their activities
- Discover funding opportunities at EU level and learn how to apply and prepare your proposal

**February 18th, 2025** **9:30 CET**

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# Detailed Agenda Overview

## Phase 2: Preparation Phase - How to Set Up Your IT Infrastructure

**February 12th, 2025** **9:30 CET**

| TIME | TOPIC | SPEAKER |
|---|---|---|
| 9:30 - 9:40 | **Introduction** | **Yana Docheva-** *National Association of Municipalities in the Republic of Bulgaria*<br>**Ignacio Garcia Vega-** *Serendipity* |
| 9:40 - 10:00 | **Open Data Platforms and Data Spaces: The Foundation of Local Digital Twins** | **Michael Mulquin**- *OASC* |
| 10:00 - 10: 15 | **Building my open reference architecture through Minimum Interoperability Mechanisms** | **Michael Mulquin- OASC** |
| 10:15 - 10:45 | **The EU Local Digital Twin Toolbox Services and Resources Available for Smart Communities** | **Patricia Tamarit**- *Nunsys* |
| 10:45-10:55 | **Questions and Answers** | **Yana Docheva-** *National Association of Municipalities in the Republic of Bulgaria*<br>**Ignacio Garcia Vega-** *Serendipity* |
| 10:55 - 11:00 | **Closing** | **Yana Docheva-** *National Association of Municipalities in the Republic of Bulgaria*<br>**Ignacio Garcia Vega-** *Serendipity* |

# OPEN DATA PLATFORMS AND DATA SPACES: THE FOUNDATION OF LOCAL DIGITAL TWINS

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# Open Data Platforms, Data Spaces & LDTs

## What will be covered?

1. The roles of Open Data Platforms, Data Spaces and Local Digital Twins and their value to a local community
2. The steps to develop an implementation roadmap
3. Using the Data space support centre to find the information and resources you need

# Open and Shareable Data

- Open data is data that **anyone can access, use and share**.

- Shareable data is data that is of value to people other than the organisation that gathered it, but whose use **is restricted to certain organisations and roles** within those organisations and for specific purposes.

- Most cities and communities are already providing useful open data to citizens and businesses

- The exploitation of shareable data is the next big step

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# Open Data Platforms

Cities and communities have been providing increasing amounts of useful data to the citizen for many years for some of the following reasons:

- Accountability
- Saving on staff time
- Service to the citizen
- Mandates from central government

Some cities/communities are enabling other agencies to provide relevant open data on their platform for the convenience of the citizen

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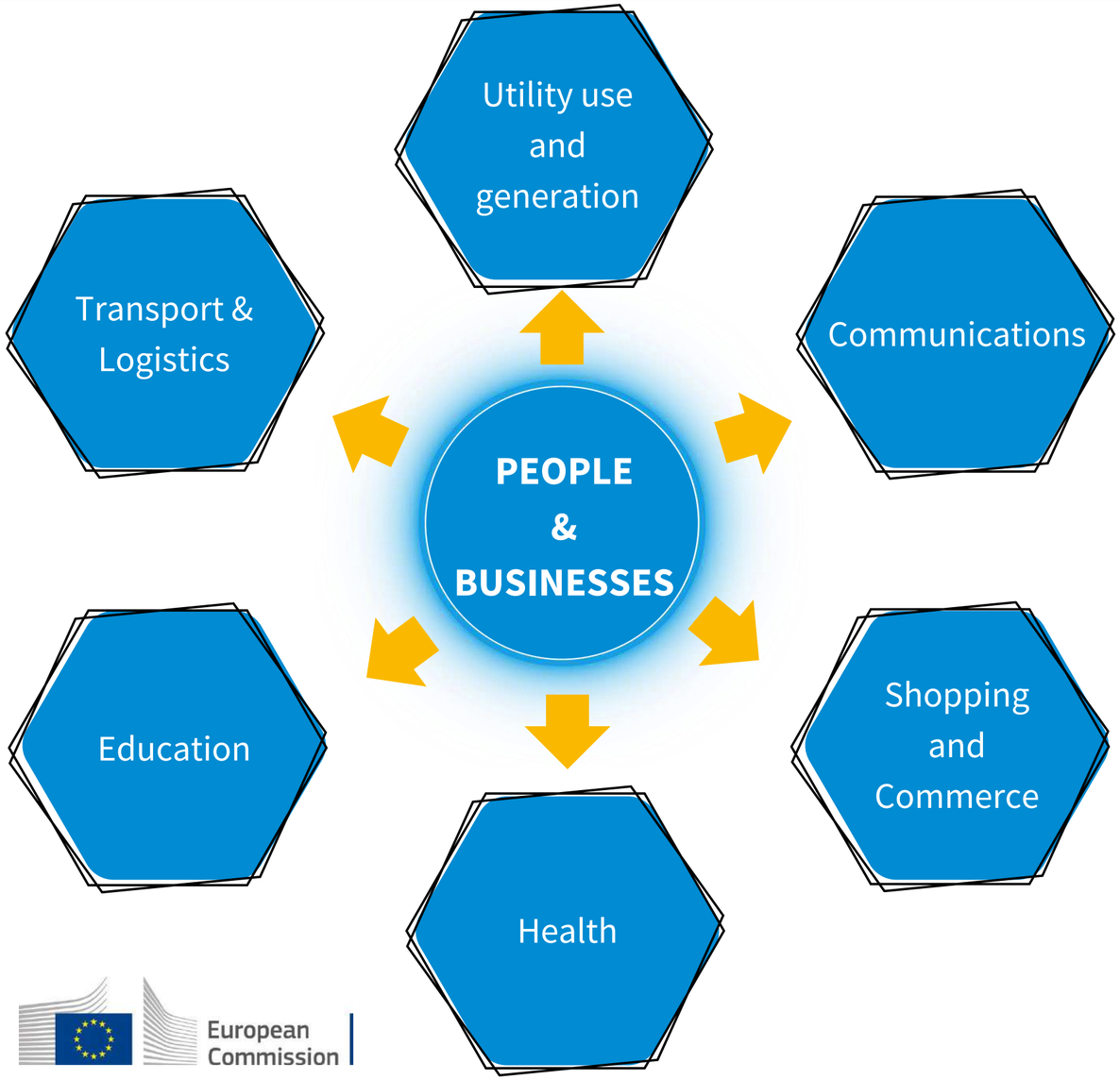
# The Role of Shareable Data




**All these city systems generate data and require good data to work well**

**They all interact with each other at many levels**

**They therefore need to share data to help manage those interactions**

**Need to set up local data sharing ecosystems**

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# European Interoperability Framework for Smart Cities and Communities (EIF4SCC)

**EIF4SSCC** is an approach to support the development of interoperable services in a smart city/community. It defines basic interoperability guidelines in the form of common principles, elements, models and recommendations with use cases.

**Smart city or community:**
A sustainable and inclusive city/community aiming at the well-being of their inhabitants, businesses, visitors, organisations and city/community administrators by offering digitally-enabled services.

The proposal was published in 2021 Proposal for a European Interoperability Framework for Smart Cities and Communities (EIF4SCC) - Publications Office of the EU (europa.eu) and the European Commission is continuing to fund actions to implement it.

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# Key recommendation from EIF4SCC

## Recommendation 12:

Set-up or consolidate interoperable local data platform(s) that integrate and reuse data in cities and communities by stakeholders, and promotes open standards and open technical specifications, APIs and data models to provide a holistic view of the information. This aims to support in decision-making process and to foster innovation and citizen engagement

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# From Data Lakes to Data Spaces

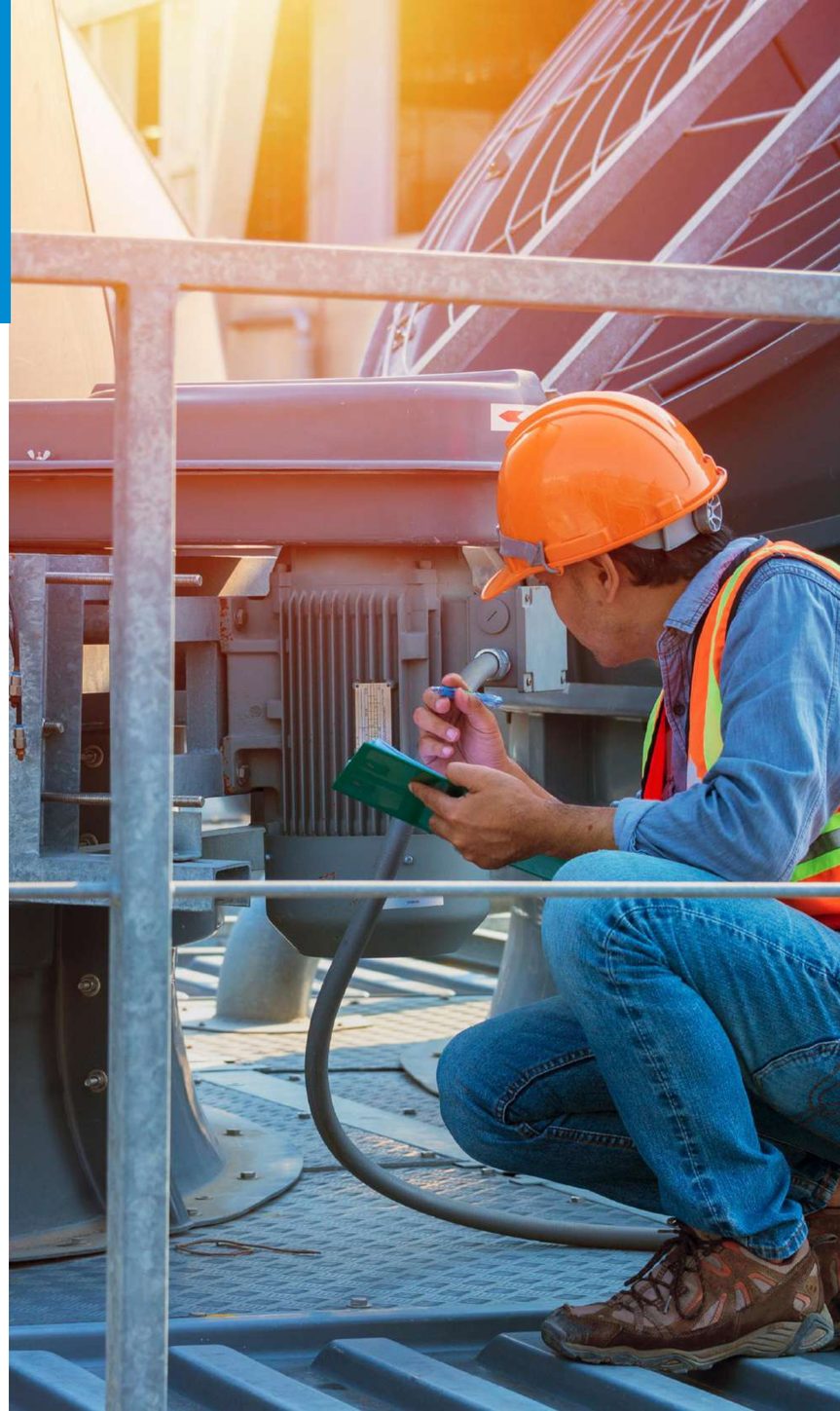
- The traditional approach to manage a city data platform was to put in place a “data lake” - a **centralized repository** for a city/community administration and its partners to store all their data, static and streamed, structured and unstructured, at any scale.
- Increasingly this approach is being replaced by Data Spaces based on **data ecosystems**, defined by a sector or application, where decentralised infrastructure enables trustworthy data sharing with commonly agreed capabilities.
- Here the data continues to be held and managed by the organisation that collected it, but it is made available for wider use under clear terms and conditions

# Imagine a major low carbon construction project

**A construction data space would enable the following stakeholders:**

- **Client** – who sets their sustainability goals
- **Architects and designers** – responsible for integrating the specifications (material selection, building orientation)
- **Engineers** – verify the feasibility of the design to reach client's goals
- **Urban planners** - ensure that the project aligns with local planning regulations and sustainability goals
- **Data Analysts** - responsible for quantifying the carbon footprint of different designs and planning scenarios using various tools and models, such as BIM.
- **Regulatory Bodies/Local Authorities** - ensure that the project complies with relevant environmental regulations and standards, which often include carbon reduction requirements.
- **Material Suppliers** (Consultative Role) - to provide information on the carbon footprint of materials being considered for the project.

…….. share data to deliver what is needed



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# Data spaces:

## the benefits - the challenges

## BENEFITS

- A data space supports an existing ecosystem of organisations that are already working together to deliver on common priorities
- The individual organisations continue to hold their data, but make it available for sharing within the ecosystem

## CHALLENGES

- Need to support technical interoperability
- Need to have strong governance rules – including SLAs and penalties

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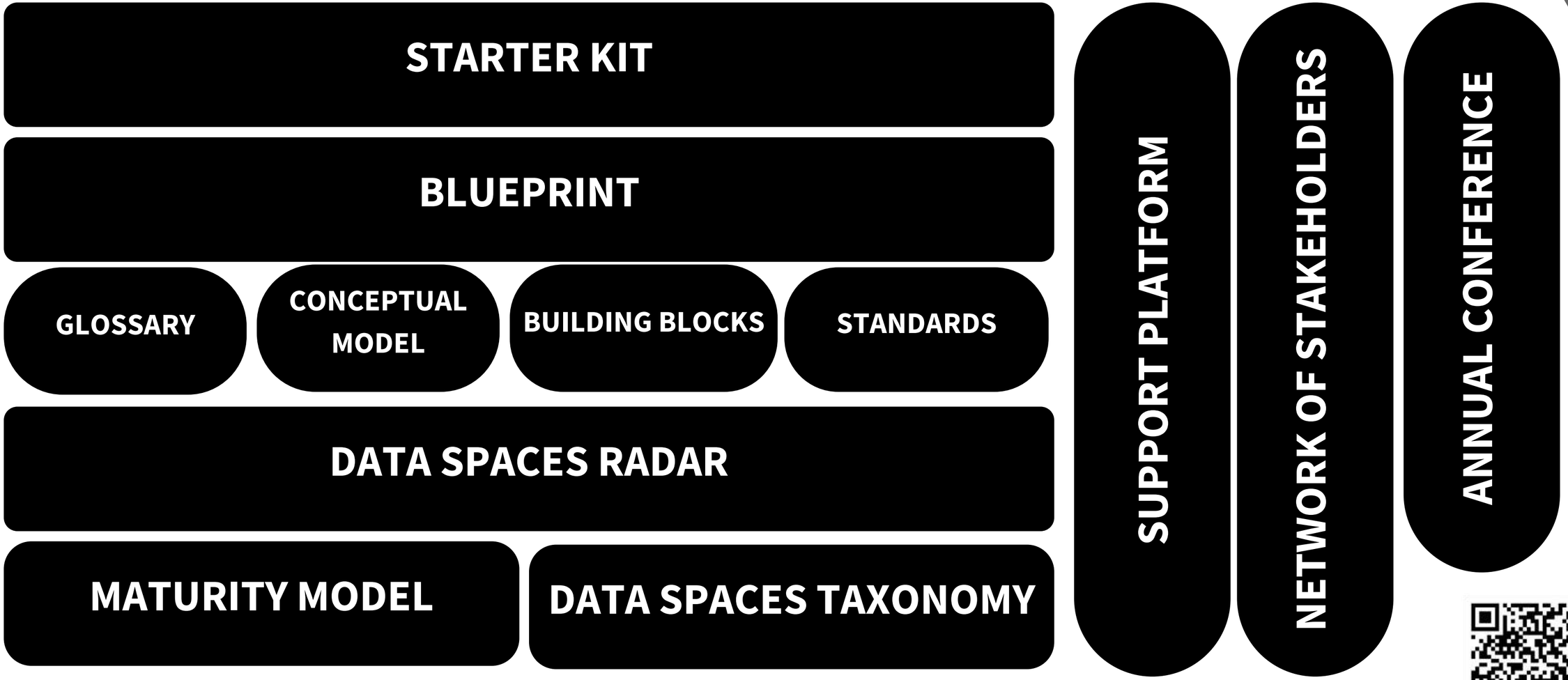
# The Role of the Data Space Support Centre

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https://dataspacessupportcentre.atlassian.net/servicedesk/customer/portal/5

# Local Digital Twins (LDTs)

## The Next Step in Data Sharing

The Living-in.EU initiative defines a Local Digital Twin as:

*“A virtual representation of a city’s physical assets, using data, data analytics and machine learning to provide simulation models that can be updated and changed (real-time) as their physical equivalents change.”*

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# LDTs Can Provide Key Insights On:

Places & Physical Assets

The Processes

The People

…. of a city/community to help manage all its resources so that it can achieve its objectives

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# Could be a Whole City

## Tianjin Eco City

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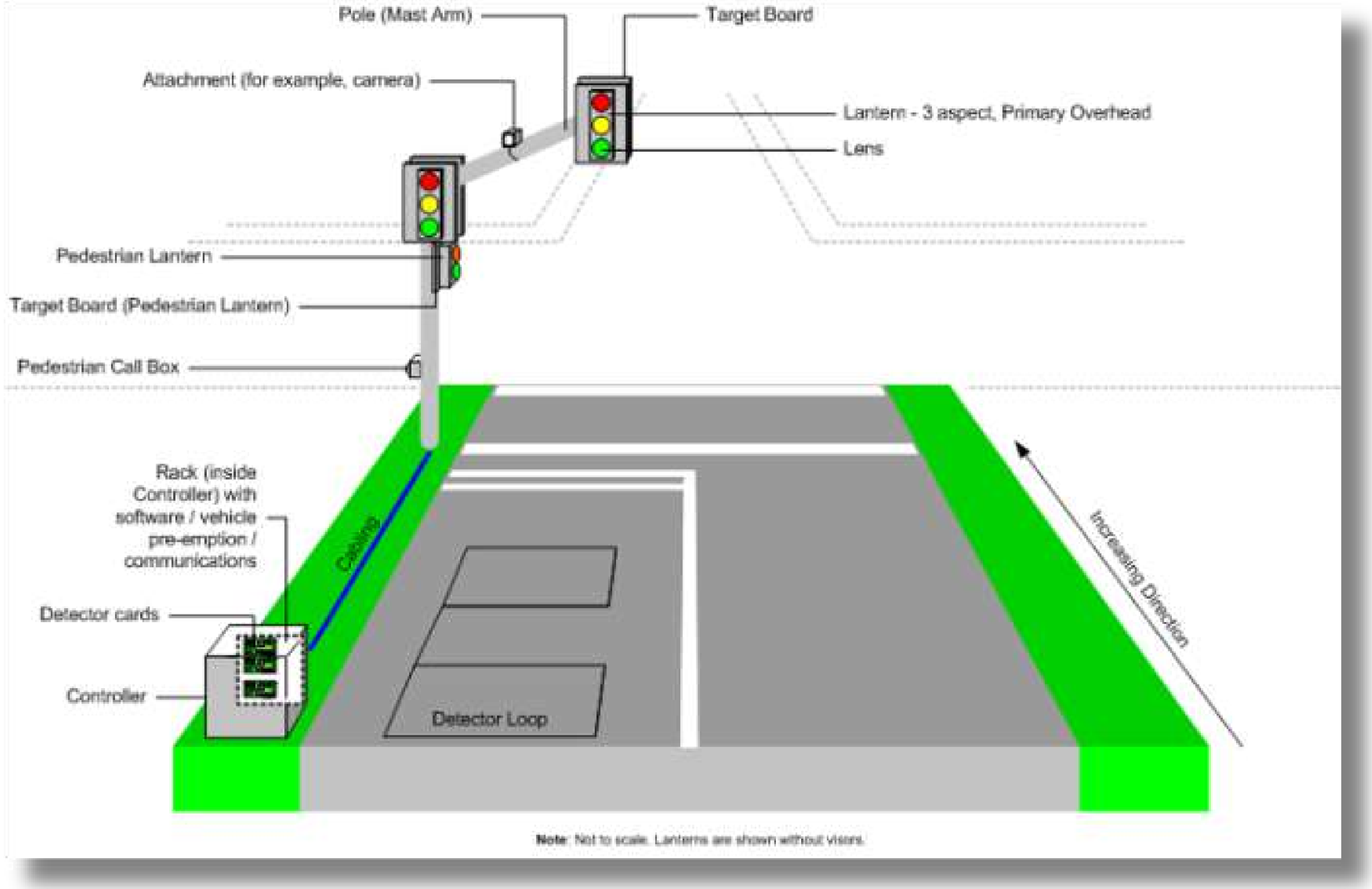
# Or Traffic Lights...

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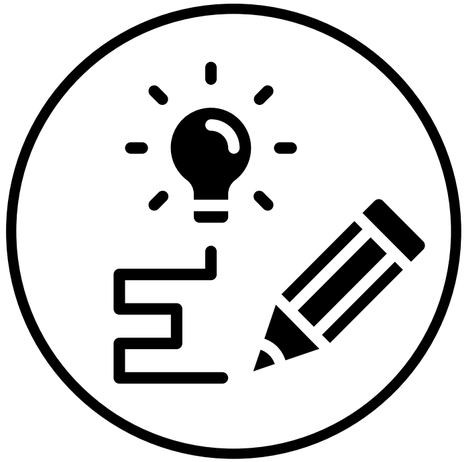
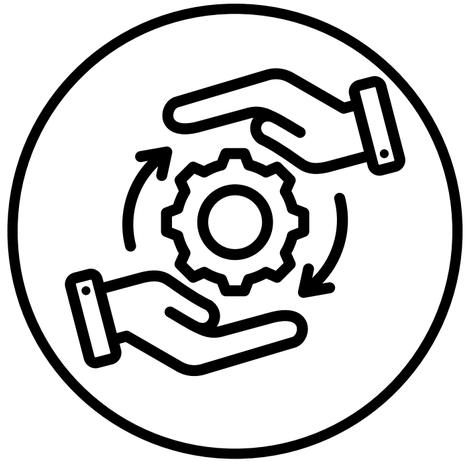
# How It Helps



## PLANNING

- Show me what a proposed change would look like
- Show me the pros and cons of different options
- What if we change something in the city?
- What if something happens somewhere in the city?



## MANAGEMENT

- What is happening in the city now?
- How will that change over time, if nothing is done to affect it?
- What options do I have to optimise the situation?
- Where are all my ..staff … vehicles … equipment?
- What needs to be fixed, what parts do I need and where to put them?

# Imagine a flood...

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# Places Digital Twin

- *Which areas of the city would be flooded first and how long would it take?*
- *Which roads and other routes would become unusable and when?*
- *Which parts of the city would provide safe havens, how could people get to them, and which buildings might provide shelter?*
- *Which areas of the city might experience power outages?*
- *Where might be good places to store sandbags and other equipment?*

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# Organisations and processes Digital Twin

Which organisations are best able to provide help

Who manages key buildings that might provide shelter

What information do different agencies need and how best to provide it

Which agencies have staff located in key positions and how can they be supported to help manage the emergency

# People Digital Twin

Which people are most vulnerable and where are they located

Which kind of people respond best to different communications channels

At any time, which people are likely to be at work and which are likely to be at home

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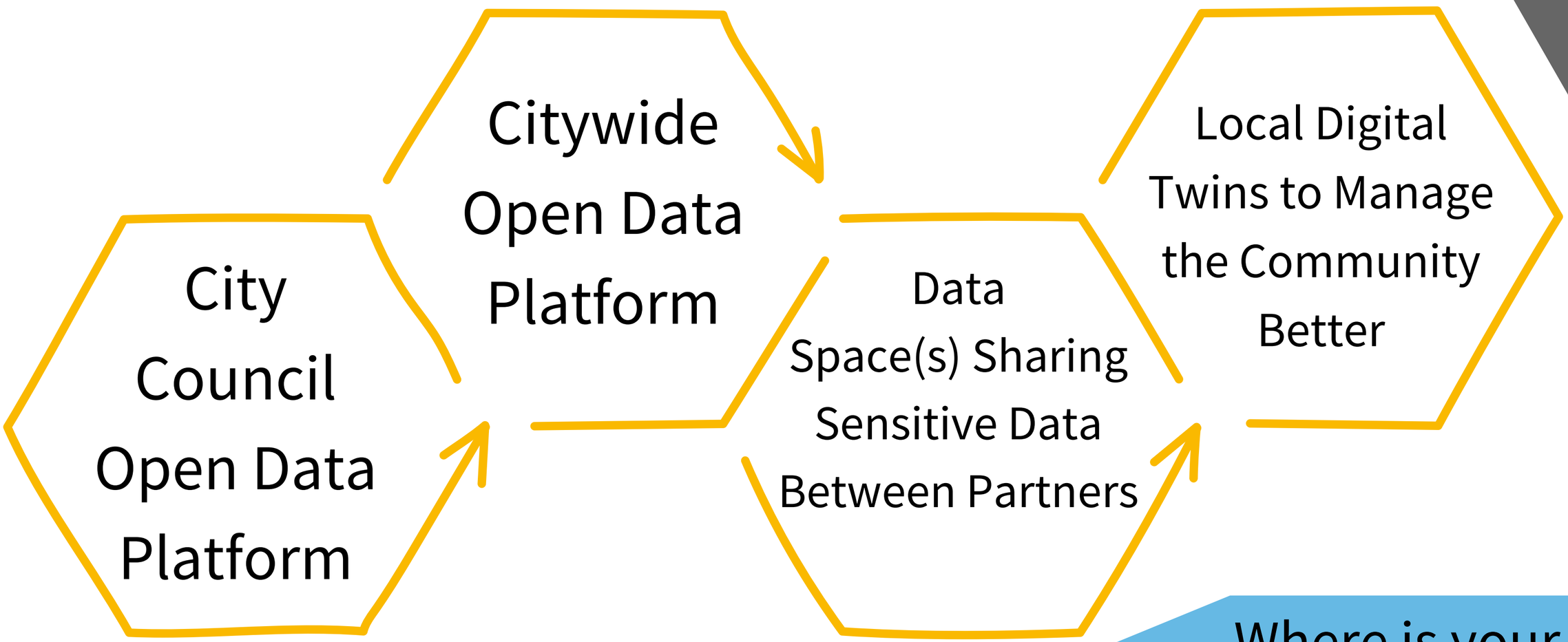
# The Four Stages




Where is your city?

What do you need to do to move forward?

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# BUILDING MY OPEN REFERENCE ARCHITECTURE THROUGH MINIMUM INTEROPERABILITY MECHANISMS

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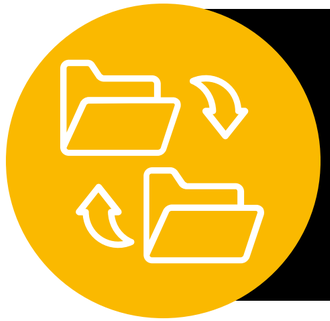
# What We Will Cover

1. The need of an open data architecture of a city or community.
2. How Minimal Interoperability Mechanisms (MIMs) can help set up an effective data sharing infrastructure for a city or community.
3. The support available to my city or community from the procurement help desk

# The Architecture Needs to be Open



A data sharing ecosystem in a city or community should use an open architecture that makes adding or changing components easy.

Open doesn’t mean “non-proprietary” - Windows and Android are proprietary but open. In your city you may have outsourced your IT functions and therefore may have to use proprietary methods to manage your data ecosystem. However, it still needs to have an open architecture

An open architecture is needed for the management and use of data being gathered from different agencies and using different standards-based or proprietary systems.

# Developing an open architecture for data sharing

Begin by identifying as far as possible:

- All the data that you need and where it would come from
  - Who owns it
  - How will you access it
  - What sort of data it is (IoT, web, geospatial, linked data, NGSI-LD
  - Is it open data or can it only be shared in carefully managed ways
- What you will use it for, within your city administration
- Who you need to share it with and what are the most appropriate interfaces

Then map this in detail to show all the paths through which the data needs to flow

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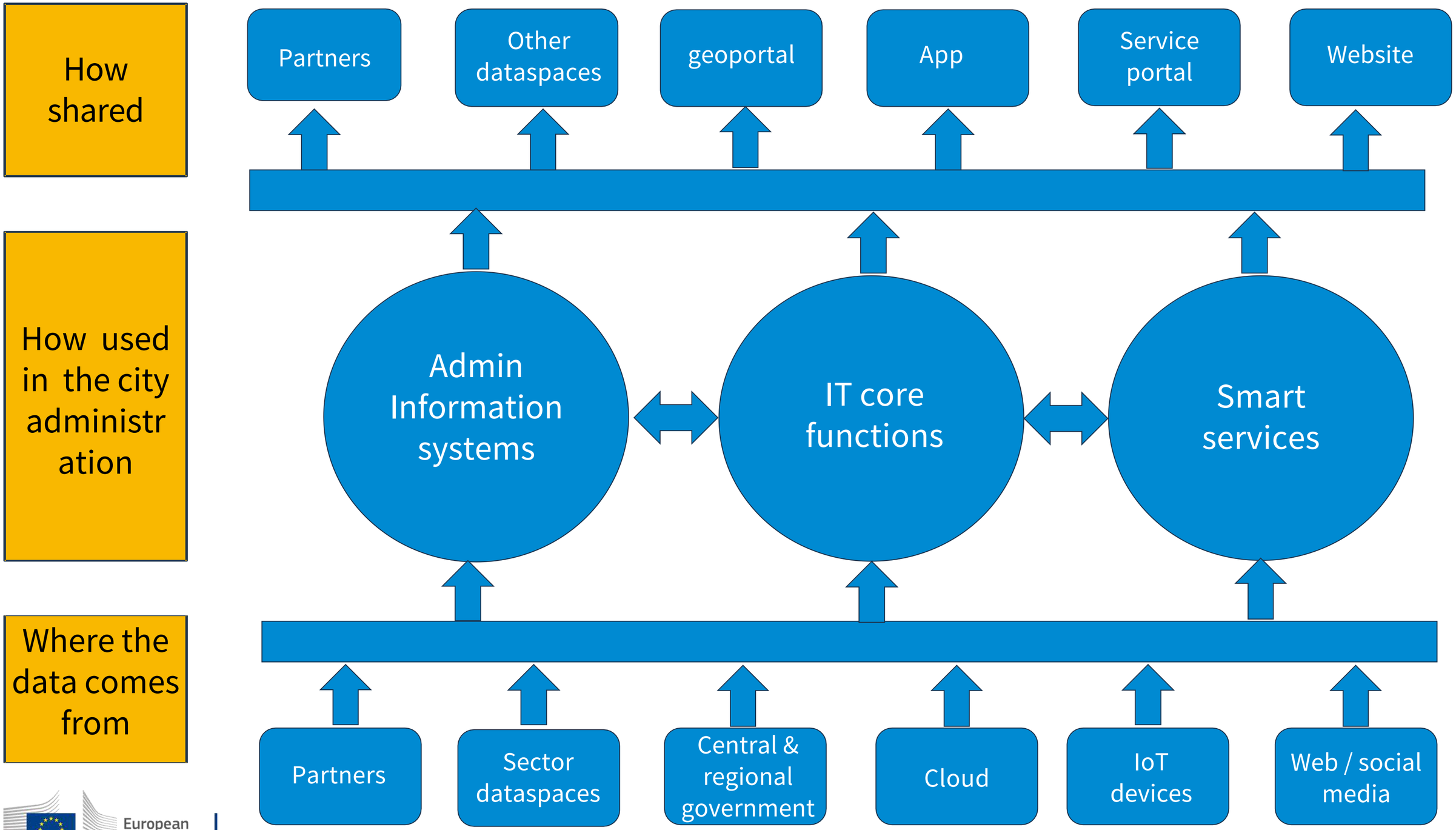


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# Implementing an open architecture

Begin by identifying all the barriers that are preventing the data to easily flow from where it is to where it is needed.

In other words, what are the challenges in:

- Accessing the data
- Ensuring the data is represented in consistent ways
- Interlinking the data
- Securing the data as it flows into, around and out of the city platform
- Sharing the data internally and externally

Then identify solutions to tackle all these barriers

Here is where the MIMs can provide workable and easily implementable solutions

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# The Value of the Architecture Views

It is worth spending time to develop a comprehensive framework to help design your data ecosystem.

Once this is done, it will:

- Show what applications will be needed to help manage the data and where are the interfaces that those applications need to use.

- Show where the Minimal Interoperability Mechanisms (MIMs) will have a role

# Let’s Think About Interoperability

“The capability of systems or units to provide and receive services and information between each other, and to use the services and information exchanged to operate effectively together in predictable ways”

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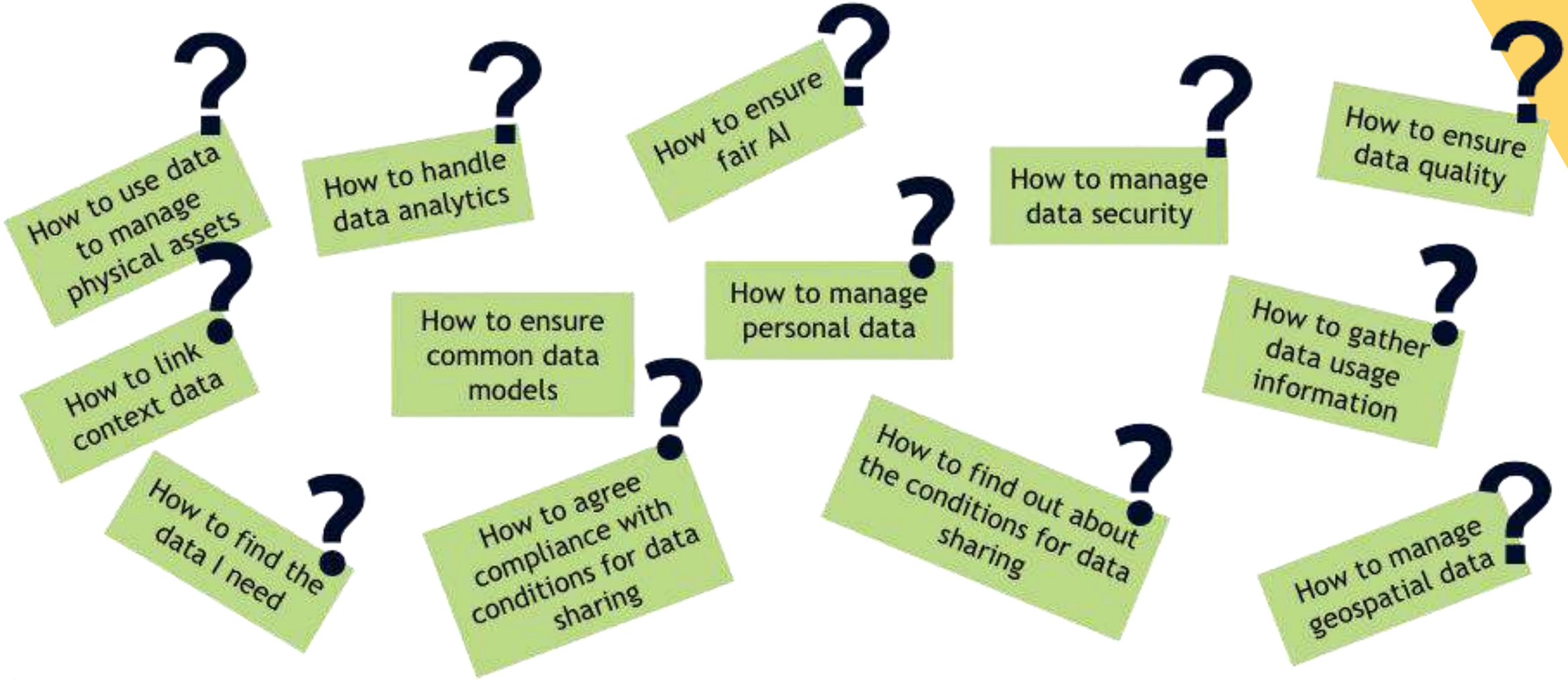
# Many Obstacles to Data Flowing to Where it is Needed!

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# The Role of Standards

**Standards Development Organisations are developing many comprehensive and detailed sets of standards to help cities and communities tackle these issues.**

**Different standards committees are addressing different challenges.**

**If cities and city service providers would all follow the same sets of detailed standards, then data could flow easily!**

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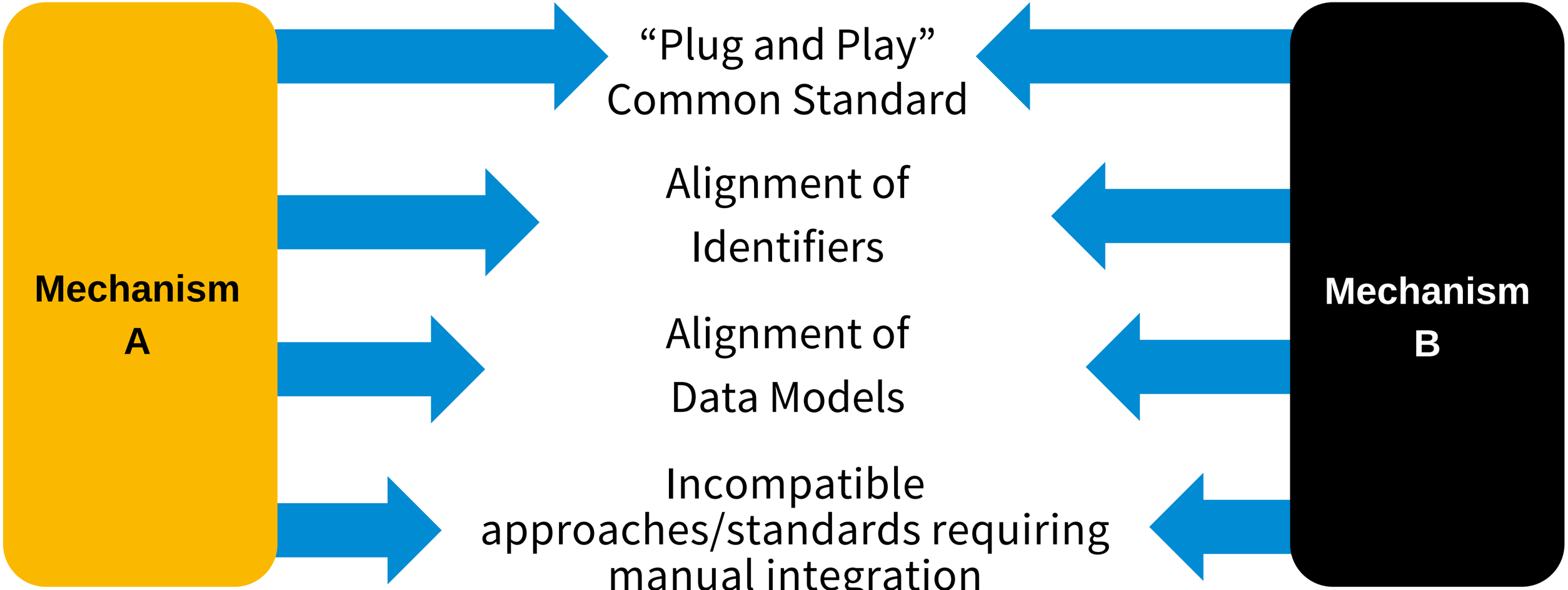
# The Challenge with Standards

- Standards are important to bring consistency to the ways that data is handled.
- However, it is still a challenge to integrate different types of data that comply with different types of data standards, such as geospatial or mobility data
- Also, when sharing data from different organisations, there may be the need to align data that use different standards to address common issues
- It is therefore important to identify minimal but helpful ways to integrate these different types of data

# Degrees of Interoperability



# Minimal Interoperability

The capability of systems or units to provide and receive services and information between each other, and to use the services and information exchanged to operate effectively together in predictable ways with minimal user intervention

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# Minimal Interoperability Mechanisms (MIMs)

The MIMS are developed by Open and Agile Smart Cities and Communities (OASC) and by the Living-in.EU movement.
They originated from some early Smart City projects.

Cities were beginning to experiment with using IoT data to develop applications such as smart parking. They needed to identify a common way to collect and manage the data.

This would enable applications developed for one city to be easily ported to another and data coming from one application in a city to be used in other applications in that city.

As the use of data within cities and communities has become more sophisticated, the MIMs continue to evlove-but the aim is still to support data sharing within and between communities.

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# State of Play of the MIMS

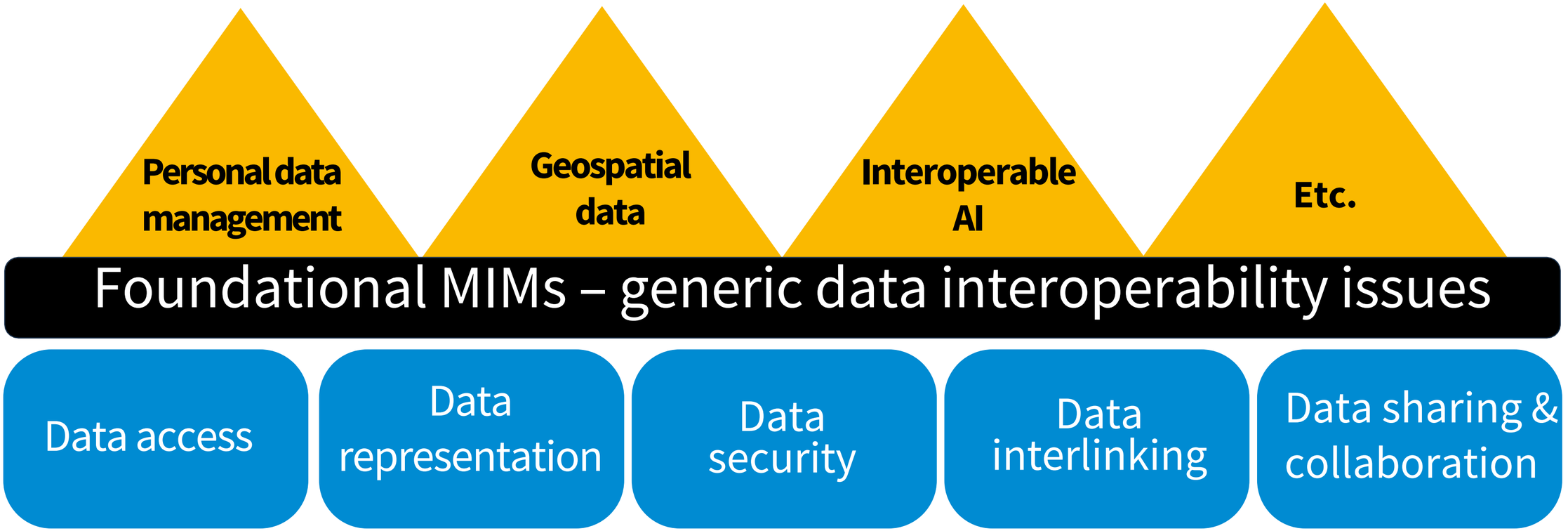
The set of MIMs is being refreshed to reflect the fact that some of the MIMs are foundational – covering generic interoperability issues, while others are application specific

There are 10 MIMs under development
For more details, see:
www.mims.oascities.org/

| MIM | Function |
|---|---|
| MIM1: Context | Data sets/streams can be linked according to context |
| MIM2: Data Models | All data sets/streams use consistent data models |
| MIM3: Contracts | Appropriate data sets/streams can be found, and agreement can easily be reached for their appropriate use |
| MIM4: Trust | Citizens can take charge of how data about them is used so that it can benefit themselves and their community |
| MIM5: Transparency | Decision making algorithms will use data appropriately to make fair and transparent decisions |
| MIM6: Security | Data can be held and shared securely |
| MIM7: Places | Geo-temporal information can be accurately described in consistent ways |
| MIM8: Indicators | KPIs can rely on consistent data from across the ecosystem to enable reliable measurement of progress |
| MIM9: Analytics | Models and analytics used within the ecosystem can work well with other models and analytics |
| MIM10: Resources | Information about city related resources can be appropriately shared |

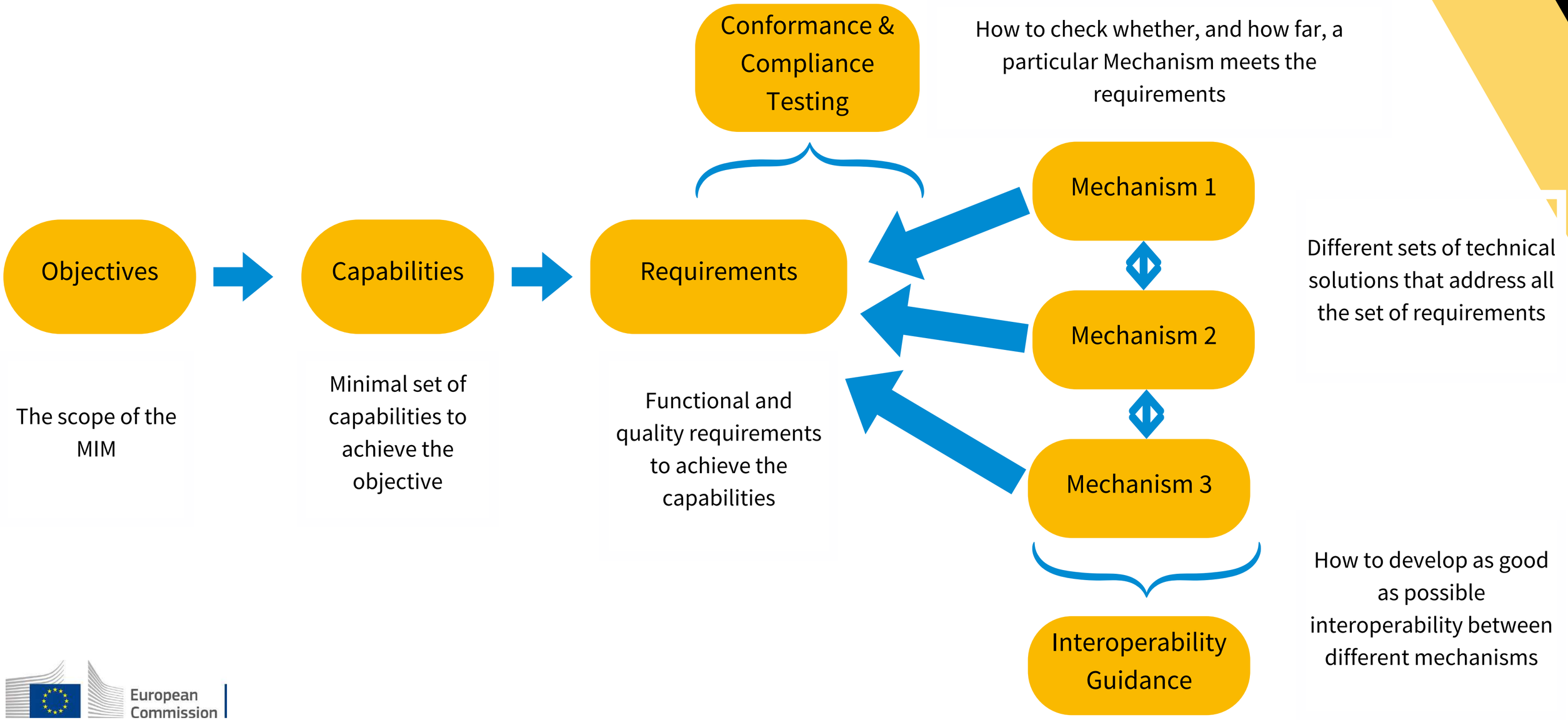
# The Two Types of MIMs

**Application MIMs –** Interoperability issues related to specific application areas.




These are a rearrangement of the existing MIMs 1, 2, 3, and 6, covering the existing content of these MIMs, and filling out any gaps.

# The Format for Each MIM

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# The Aim

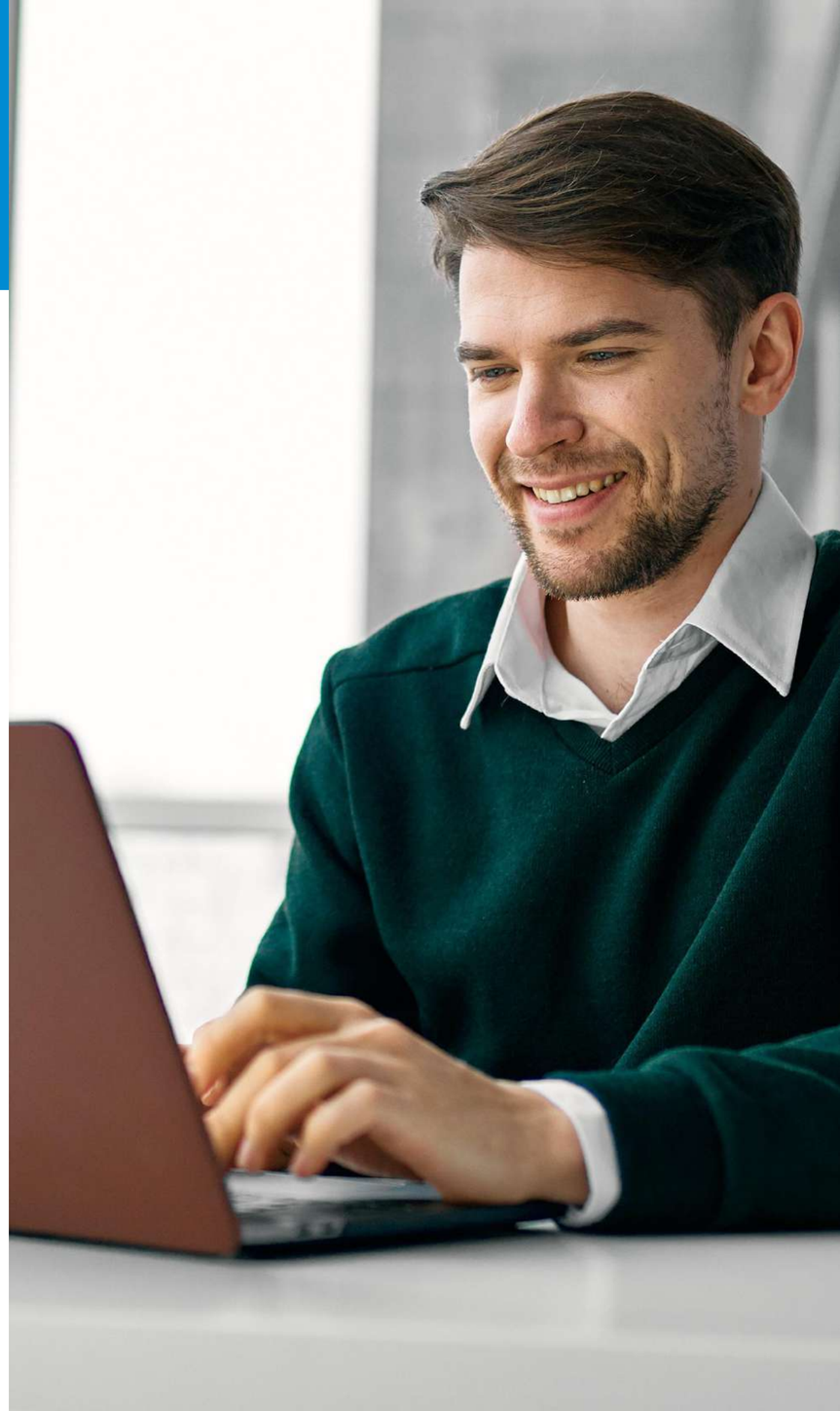
By identifying the key capabilities needed for data sharing and translating these into requirements, it becomes possible to identify and compare alternative mechanisms to address those requirements.

It also becomes easier to identify commonalities in these approaches – are they using common, more basic, standards, for instance that can be used as the basis for good-enough interoperability

And to identify the common interfaces across which open APIs can be used

# The Value the MIMs Provide

- You can more easily share and re-use data coming from partners that may use different approaches
- You can more easily compare and contrast the value of different approaches offered by vendors in procurements
- You can more easily develop a path to change technical approaches, should this be needed in the future



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# How the Procurement Helpdesk Can Help

You will have another session looking in detail at the Procurement helpdesk.

- The helpdesk will use procurement templates to help you capture your functional and technical requirements when procuring a product or service related to data spaces or Local Digital Twins
- In addition, there will be a section related to minimal interoperability requirements, that will help you identify the interoperability requirements relevant to what you are procuring and use the MIMs to help you specify what is needed.

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# Compliance and Conformance Testing

- We are developing a set of self-assessment and technical tools to help you check that your implementation conforms to the MIMs, and that products and services offered by vendors comply with the MIMs requirements
- These will be incorporated into the Procurement Templates, so that vendors will be clear what is required of them
- An initial set of tests for the geospatial MIM can be found at: https://itb-riga.northeurope.cloudapp.azure.com/itb/

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# In Summary

The MIMs address the key issues in managing data in a data sharing ecosystem

They set minimal requirements for applications to make it easier to enable good-enough interoperability between them

They are based on existing standards and so provide a good starting point for ever improving interoperability

# For more information:

See the MIMs Plus documentation on the Living-in.eu website

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# THE EU LOCAL DIGITAL TWIN TOOLBOX SERVICES AND RESOURCES AVAILABLE FOR SMART COMMUNITIES

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EU LDT TOOLBOX

Powered by DG CNECT

# The European Local Digital Twin TOOLBOX

## Unlock the potential of your city.

Funded by
the European Union

EU LDT TOOLBOX

Powered by DG CNECT

# Session Goal

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the European Union

**Highlight the role of the EU LDT Toolbox as a suite of software tools designed to create interoperable digital twins for data-driven decision-making, emphasizing its distinction from operational tools.**

EU LDT TOOLBOX

Powered by DG CNECT

# Local Digital Twin

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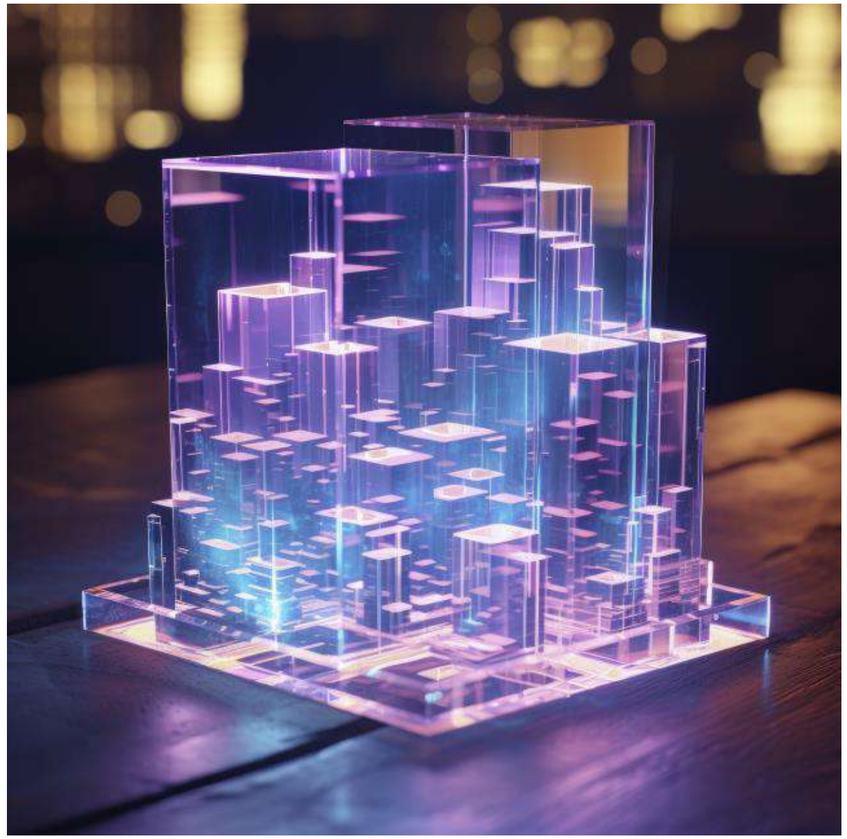
the European Union

## Local Digital Twin

The Living-in.EU initiative defines a Local Digital Twin as:

“A virtual representation of a city’s physical assets, using data, data analytics and machine learning to provide simulation models that can be updated and changed (real-time) as their physical equivalents c hang e.”



EU LDT TOOLBOX

Powered by DG CNECT

# The EU LDT Toolbox

Funded by
the European Union

## TheEU LDT Toolbox

The **EU LDT Toolbox** is a set of tools that enables cities to **simulate** and **predict scenarios of local digital twins (LDT)**.

The **EU LDT Toolbox** allows to:

1. Acquire and manage **data**
2. **Model**and **simulate**city elements and create **insights**
3. Connect with other city **systems**
4. Visualize analysis **outcomes**

Tool: Play and Visualise

Real-time Data + Simulation Data

# The EU LDT Toolbox –Definition

## WhattheEU LDT Toolbox**IS**

- A Simulation Platform An Open Framework
- Interoperable and Standardized Guideline for LDTs
- A Resource for Best Practices A Tool for Strategic
- Digital Transformation Planning
-

## WhattheEU LDT Toolbox**IS NOT**

- Not a Local Digital Twin (LDT) Not a Real-
- Time Operations Tool
- Not a Ready-Made Product
- Not a Fully Commercial Solution Not a
- Replacement for Local Data Systems Not
- Limited to Tech Experts

# EU LDT Toolbox –Design principles

**LDT Toolbox Design principles**

**1. User-centricity**

The Toolbox must support the diverse needs of European cities, allowing for customizable LDT configurations to meet each city’s digital maturity level

**2. Standardsand regulatory compliance, Interoperability**

All Toolbox components must comply with relevant industry standards, EU regulations, and Living-in.EU principles to ensure consistent functionality and interoperability across EU
mun icip al it
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**3. Open-source te c hn ol ogy**

The Toolbox shall be built on collaboratively developed, non-proprietary software to ensure accessibility, adaptability and broad
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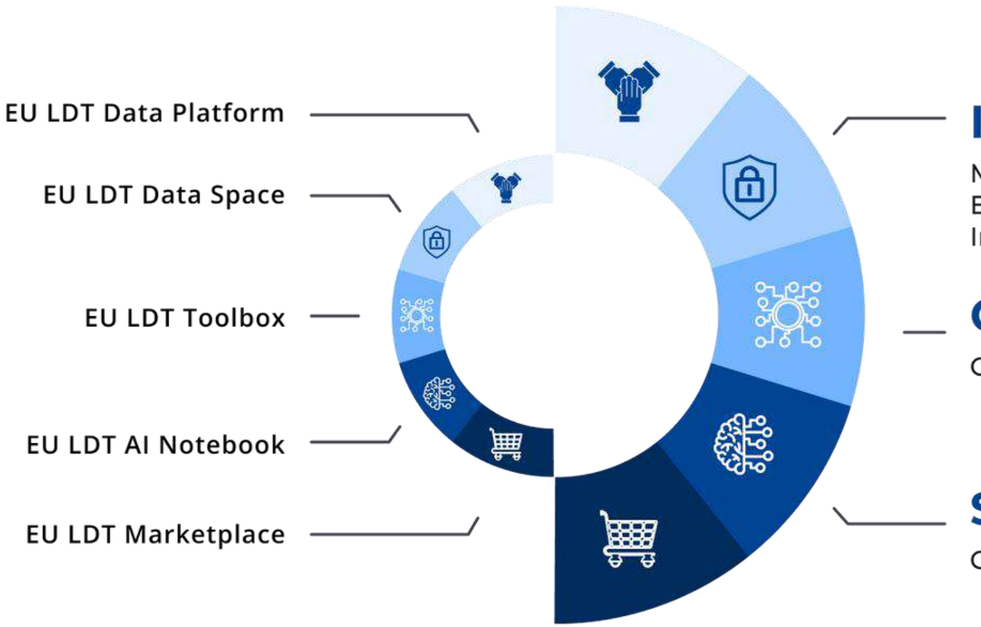
# EU LDT Toolbox –Why the EU LDT Toolbox




## EU Regulation Compliance

EU AI Act, EU Data Act, Ethics and FAIR AI

## Interoperability

Minimal interoperability Mechanisms (MIMs) Plus, European Telecommunications Standards Institute(ETSI) & International Telecommunication Union(ITU-T) Standards

## Open Source First

Open Source tools, extensible with other tools

## Sharing Intelligence

Cooperative solutions and networks of cities

## Economic Sustainability

Marketplace, replicability to multiple cities and added value services

- **Digital Single Market** solution for Cities **EU Green**
- **Deal** support for impact and ROI analysis Common
- **EUStandards**and frameworks to address emerging **EU AI and EU Data Acts**
- **Digital Europe:**
  - Marketplace - Interoperability - Sandboxes (TEF) -Data Spaces (SIMPL) - Ethical AI best practices
- **European Digital Infrastructure Consortium (EDIC)** maintenance, valorisation and economic sustainability

# LDT –How can it help address urban management challenges

## Urban management challenges

- **Mobility Planning:** Optimize traffic flow, public transport, and accessibility by simulating mobility scenarios.
- **Energy Optimization:** Design low-emission zones and reduce energy waste to improve air quality and sustainability.
- **Urban Health:** Monitor pollution and assess impacts to create healthier urban environments.
- **Urban Planning:** Test land use and infrastructure options for balanced, sustainable city growth.
- **Sustainability:** Meet emissions targets and enhance quality of life through effective environmental tracking and strategies.

# EU LDT Toolbox– Approach to every Urban Management Challenge

## Mobility Planning
Low Emission Zone Use Case/Simulator
Urban Mobility model

## Energy Optimization
Neighborhood energy demand forecasting model
Energy Efficiency model

## Urban Health
Pollution Propagation model

## Urban Planning
EU Building Database
Reconstruction model

## Sustainability
Environmental footprint model for building

# LDT Toolbox Version 1 (June 2026)

## Key assets:

- 1 toolbox composed of 10 tools 1 EU LDT Toolbox
- website 1 Marketplace 1 EU-wide Database: European
- Building Database 6 AI Models 1 Use Case: Low Emission
- Zone 6 Pilots to test the LDT Toolbox *(currently being*
- *defined)* Transfer to the European Digital Infrastructure
- Consortium (EDIC)
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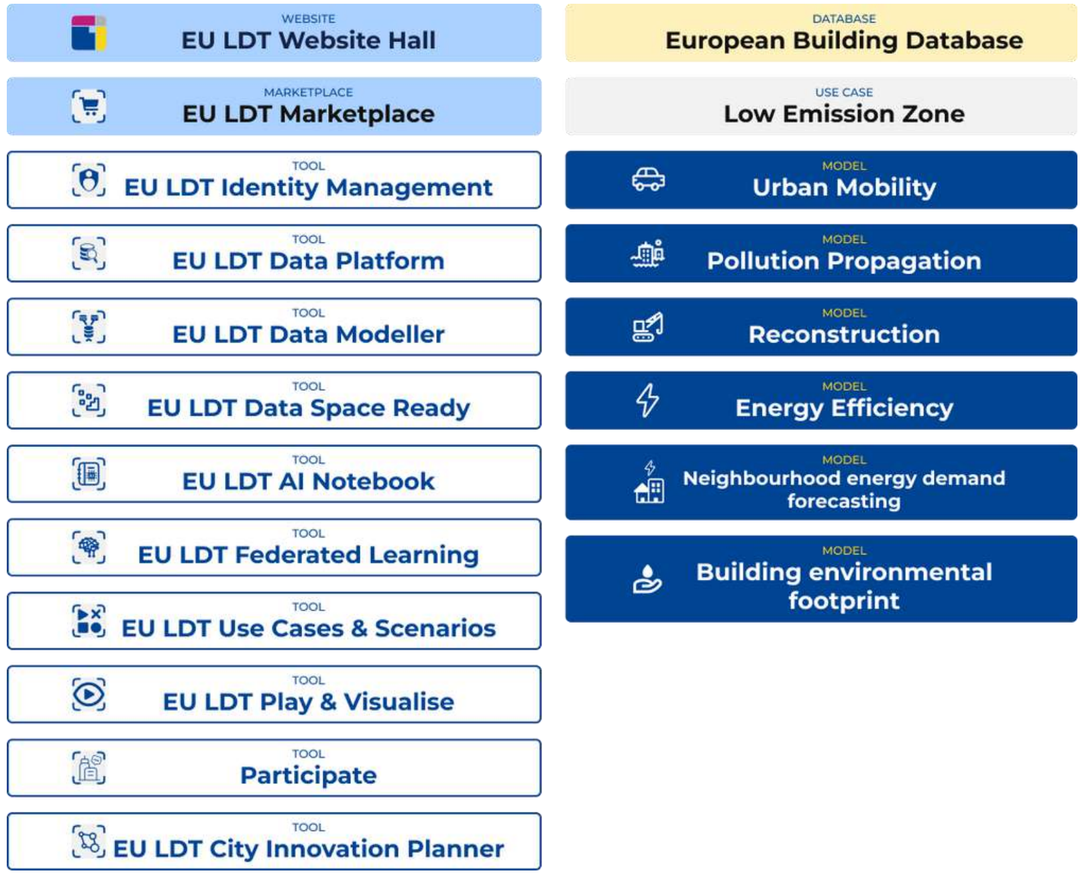


# The Toolbox –Tool by Tool

Your city

*EU LDT Hall Website*

**Website**

*EU LDT Marketplace*

**Marketplace**

*EU LDT Data Platform*
*EU LDT Data Space Ready*
*EU LDT Data Modeller*

**Gather your data**

Gather data from your city or generate new synthetic data

*EU LDT AI Notebook*
*EU LDT Federated Learning*

**From Data to Knowledge**

Create models or use the ready-to-use ones from the Marketplace

*EU LDT Use Cases & Scenarios*

**Simulate what if scenarios**

Run scenario simulations to assess the impact of various actions

*EU LDT Play & Visualise*

**Visualize the impact**

Get virtual representation of the scenarios' results

*EU LDT Participate*

**Ask your citizens**

Get feedback and engage with citizens

*EU LDT City Innovation Planner*

**Make informed decisions and measure**

Evaluate the impact, make decisions and measure

*EU LDT Identity Manager*

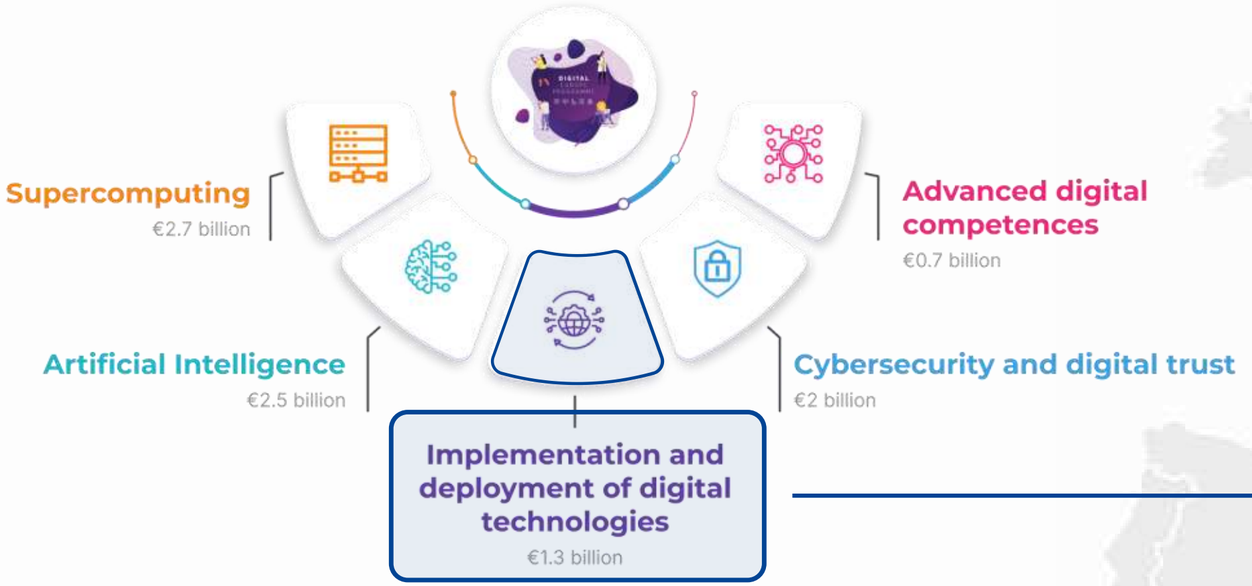
**Security**

Your improved city

# EU DIGITAL STRATEGY

## FUNDING FOR DIGITAL PROJECTS

### DIGITAL EUROPE PROGRAMME




**LDT EDIC CitiVERSE**

# Who?

MemberStates:

- SignatoryMemberStates: Spain, Slovenia, Estonia, Latvia, Croatia, Portugal, France, CzechRepublic, Luxembourg, Belgium, Slovakia, Italy, The Netherlands Cities& Regions
-

O bse rve
rs

EU LDT TOOLBOX

Powered by DG CNECT

# How to implement your Local Digital Twin

Funded by
the European Union

# How to implement your Local Digital Twin

**A city that wants to implement the local digital twin of its city** (starting from a level of maturity in which it already has a Smart city with data sets) **will have to take the following steps:**

1. **Secure the necessary infrastructure** to start creating your LDT.
2. **Assemble a team of expert technicians** to install the toolbox and define use cases and scenarios that support decision-making.
   *(It is essential to define a **transformation plan** if objectives are not yet set, to prioritise actions and identify where scenario simulations could assist decisi ons.)*
3. **Review, add or create specific simulators** using Marketplace algorithms or develop them from scratch.

The LDT toolbox is designed to engage a diverse array of stakeholders, **fostering digitalization** and **expanding the ecosystem** of **Smart Communities across Europe**.

## EU LDT ToolboxStakeholders

- **EU Smart Cities** (with different digital maturity levels) **EU-based technology**
- **and data platform providers Open-source software**
- 
- **community**
- **Networks** of Smart City/Digital Twin
- Communities in EU Member States

**Standardization Bodies** (ETSI,

EU LDT TOOLBOX

Powered by DG CNECT

# An example of the LDT:

## Implementing a Low Emission Zone

Funded by
the European Union

# Use Case –Low Emission Zone

## Urban management challenges

- Mobility Planning
- Energy
- Optimization
- Urban Health
- Urban Planning
- Sustainabilit y

**Exa mp le**

Betterqualityofurbanlifethrough Low Emission Zones (LEZs)

**The Challenge:**

*Reduce vehicle emissions in cities.*

**The desired solution:**

*A cleaner, healthier and more sustainable urban e nvi r onm e nt.*

## How would the LDT toolbox help?

- **Solution Design**: by simulating and testing the LEZ's emission reduction effect
- **Feasibility Analysis**: by comparing different LEZ solutions based on their simulation outcomes and supporting informed decision-making.
- **Continuous Monitoring**: by tracking real-time pollution data for continuous LEZ impr ov emen t
- **Documentation and reporting** : by documenting the LEZ design and implementation process, also for regulatory compliance and planning updates

# Implementing Low Emission Zones with LDT Toolbox

Your city

*Data acquisition*

## Gather your data

*Gather data from your city or generate synthetic data*

**Your city's data**

- Air quality monitors history
- Real-time air quality monitors
- Traffic sensor history
- Real time Traffic sensors

*Synthetic Data Generator*

**Simulate your missing data**

| Input | Output |
|---|---|
| None | Synthetic traffic data. |

*AI algorithms Creation & training*

## From Data to Knowledge

*Create AI models, use the ready-to-use ones, and/or download from the Marketplace.*

**Ready-to-use models**

- Traffic
- Weather
- Air quality (CO2, particles...)
- Noise pollution

*Use Case & Scenarios*

## Simulate what if scenarios

*Simulate Low Emission Zones Scenarios*

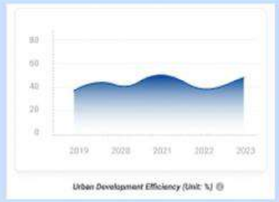
**Low Emission Zone scenarios**

| | |
|---|---|
| What if: Restrict entry to passenger vehicles | **Scenario 1** Low Emission Zone with passenger restriction |
| What if: Restrict entry to delivery services | **Scenario 2** Low Emission Zone with |
| What if: restrict entry to trucks? | **Scenario 3** Low Emission Zone with service van restriction |

*Play & visualise*

## Visualize the impact

*Get virtual representation of the LEZ scenarios*




*Participate*

## Ask your citizens

*Get feedback and engage with citizens*

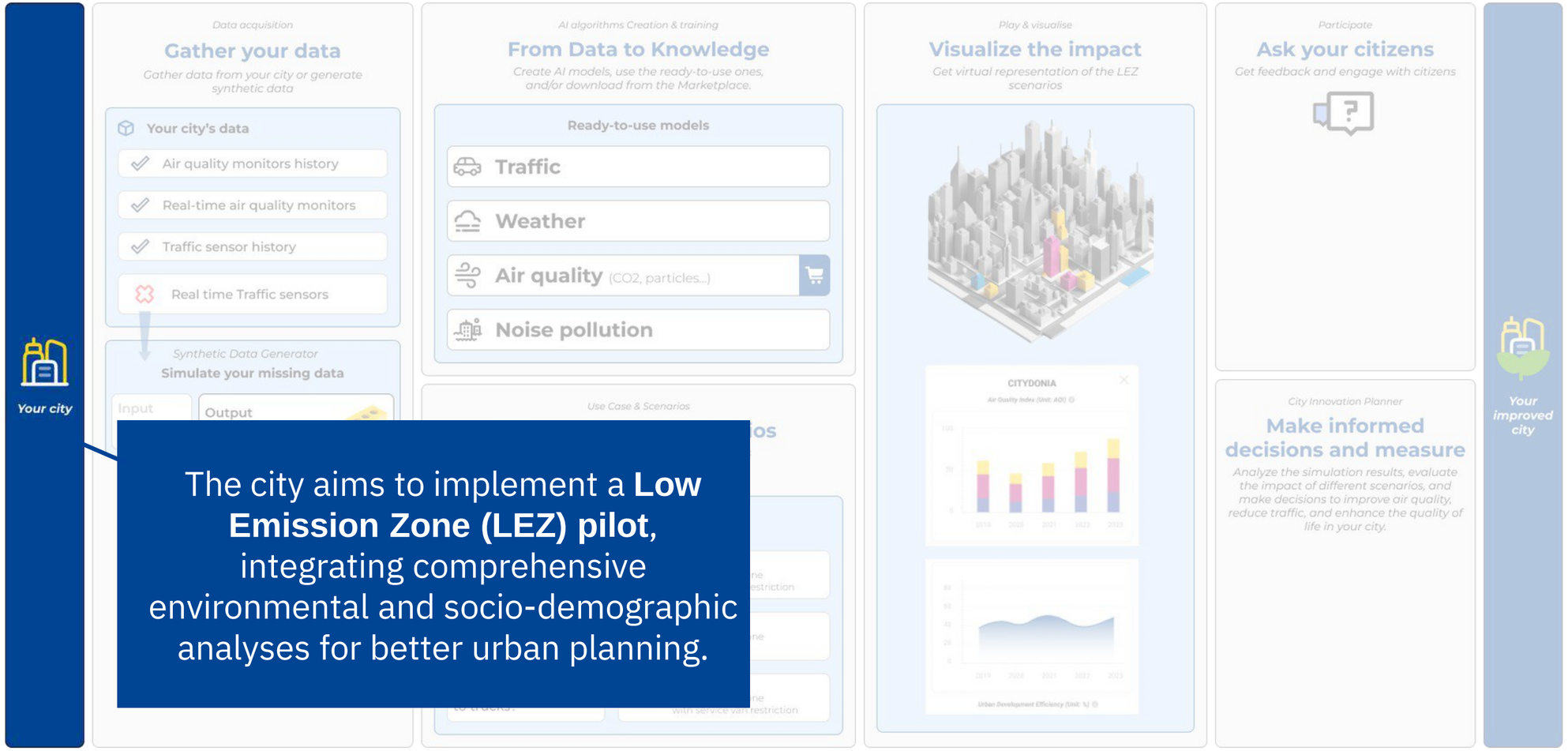
*City Innovation Planner*

## Make informed decisions and measure

*Analyze the simulation results, evaluate the impact of different scenarios, and make decisions to improve air quality, reduce traffic, and enhance the quality of life in your city.*

Your improved city

# Implementing Low Emission Zones with LDT Toolbox



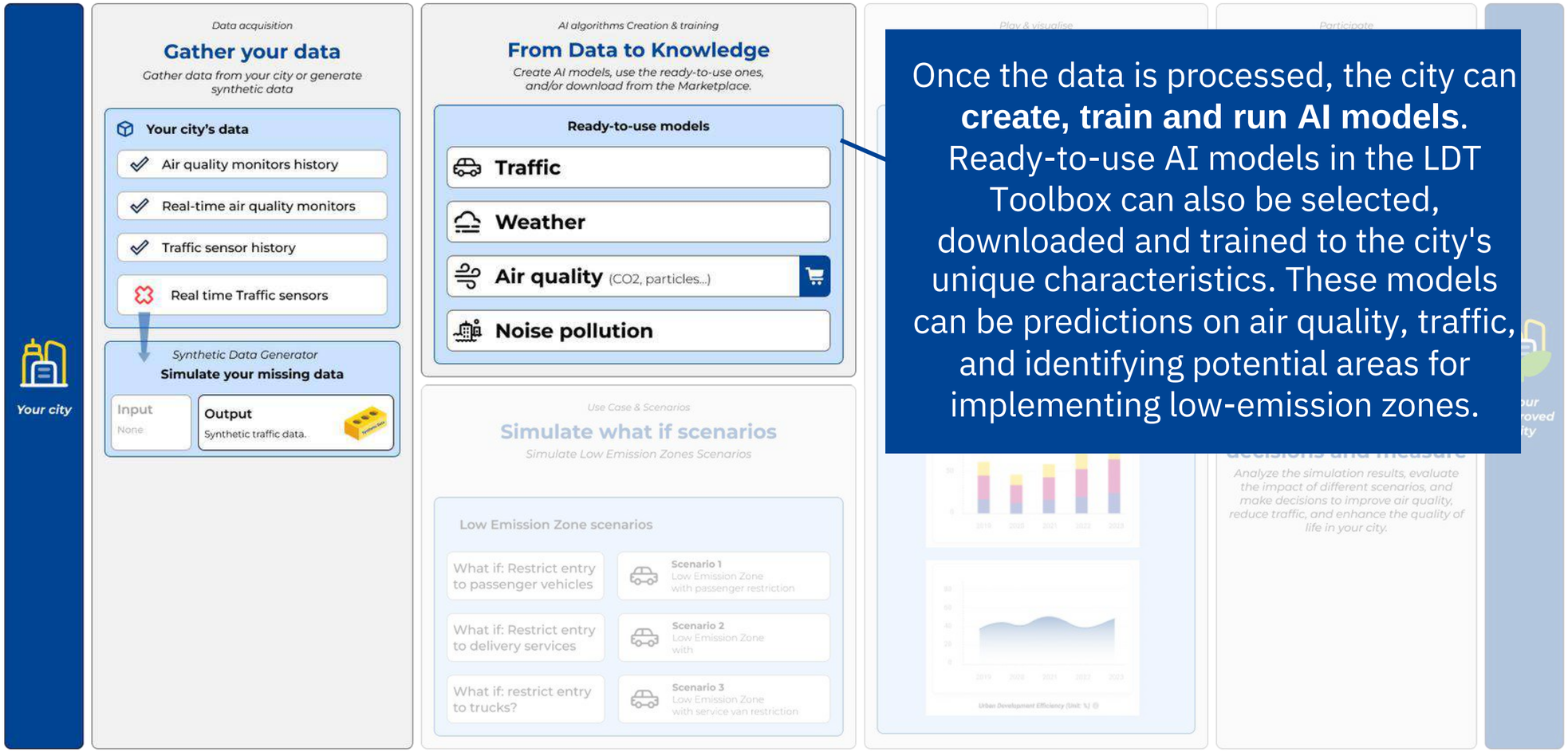

The city aims to implement a **Low Emission Zone (LEZ) pilot**, integrating comprehensive environmental and socio-demographic analyses for better urban planning.

# Implementing Low Emission Zones with LDT Toolbox

The first step involves **gathering historical and real-time data**on various aspects of the city, such as air quality and traffic. However, cities may occasionally face gaps in critical data, forexample real-time traffic sensor information.

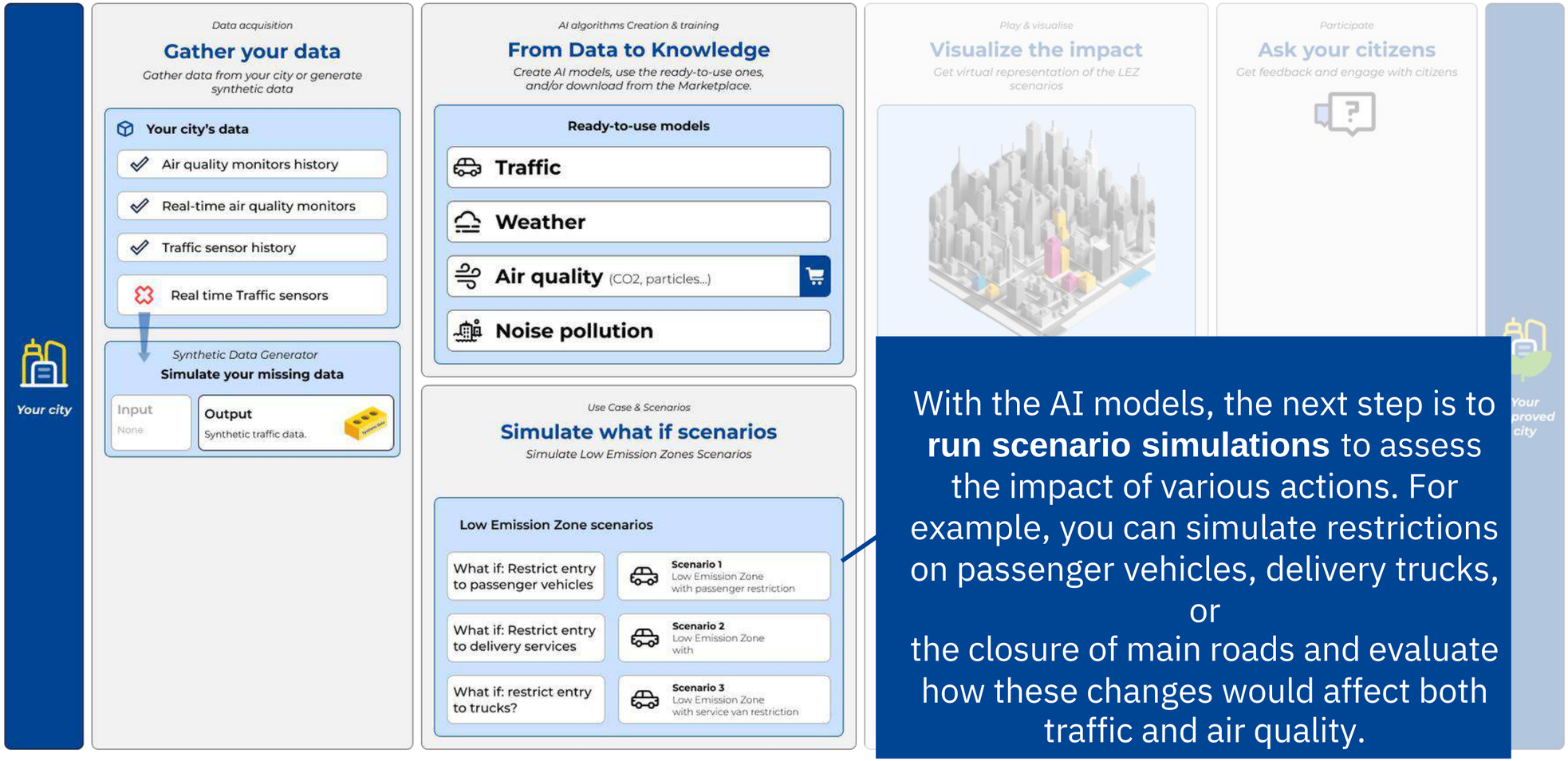
When crucial data for analysis is missing, such as real-time traffic data, the **Synthetic Data Generator**of the LDT Toolbox steps in to simulate this information. This ensures that decision-making is not limited by data gaps.

# Implementing Low Emission Zones with LDT Toolbox



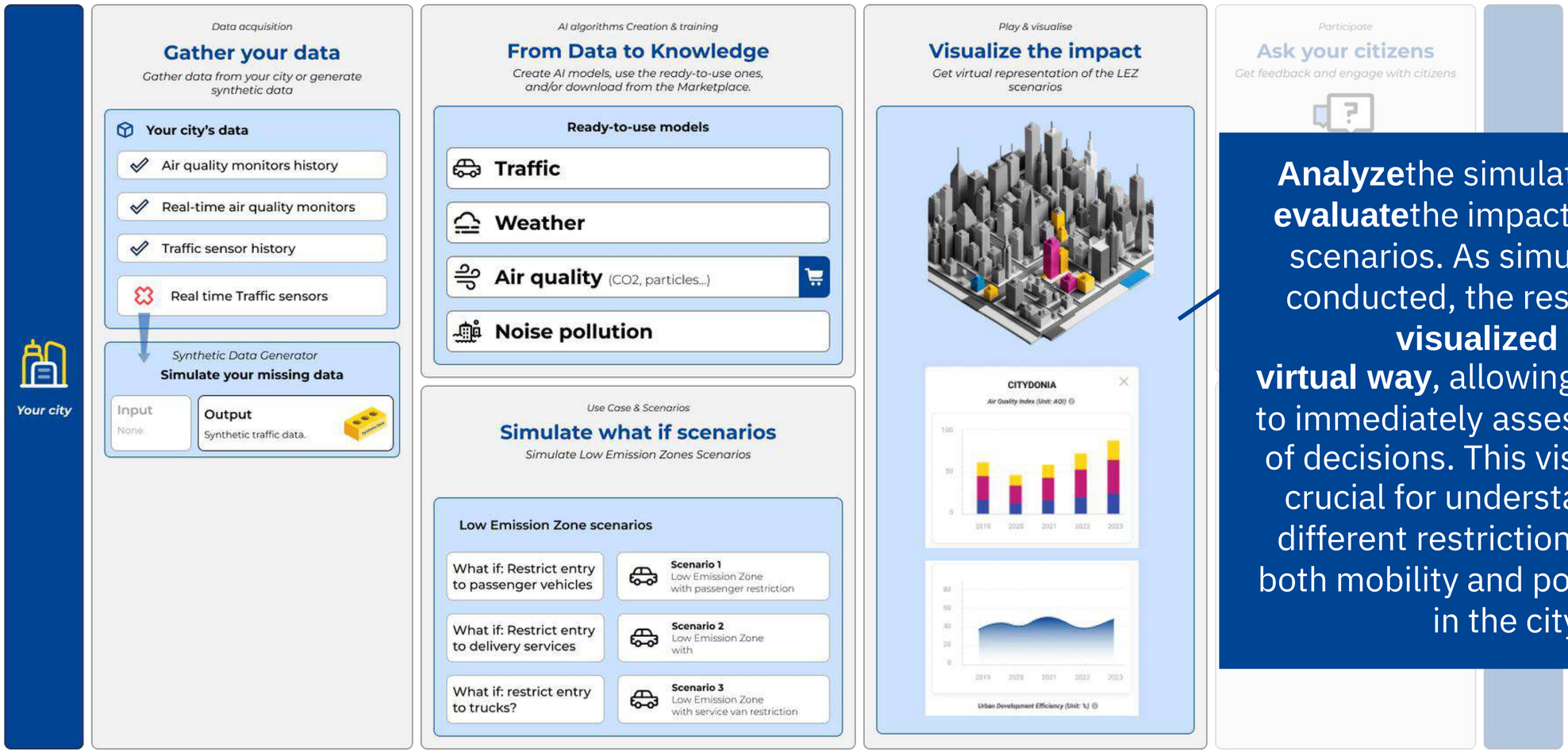

Once the data is processed, the city can **create, train and run AI models**. Ready-to-use AI models in the LDT Toolbox can also be selected, downloaded and trained to the city's unique characteristics. These models can be predictions on air quality, traffic, and identifying potential areas for implementing low-emission zones.

# Implementing Low Emission Zones with LDT Toolbox




With the AI models, the next step is to **run scenario simulations** to assess the impact of various actions. For example, you can simulate restrictions on passenger vehicles, delivery trucks, or
the closure of main roads and evaluate how these changes would affect both traffic and air quality.

# Implementing Low Emission Zones with LDT Toolbox

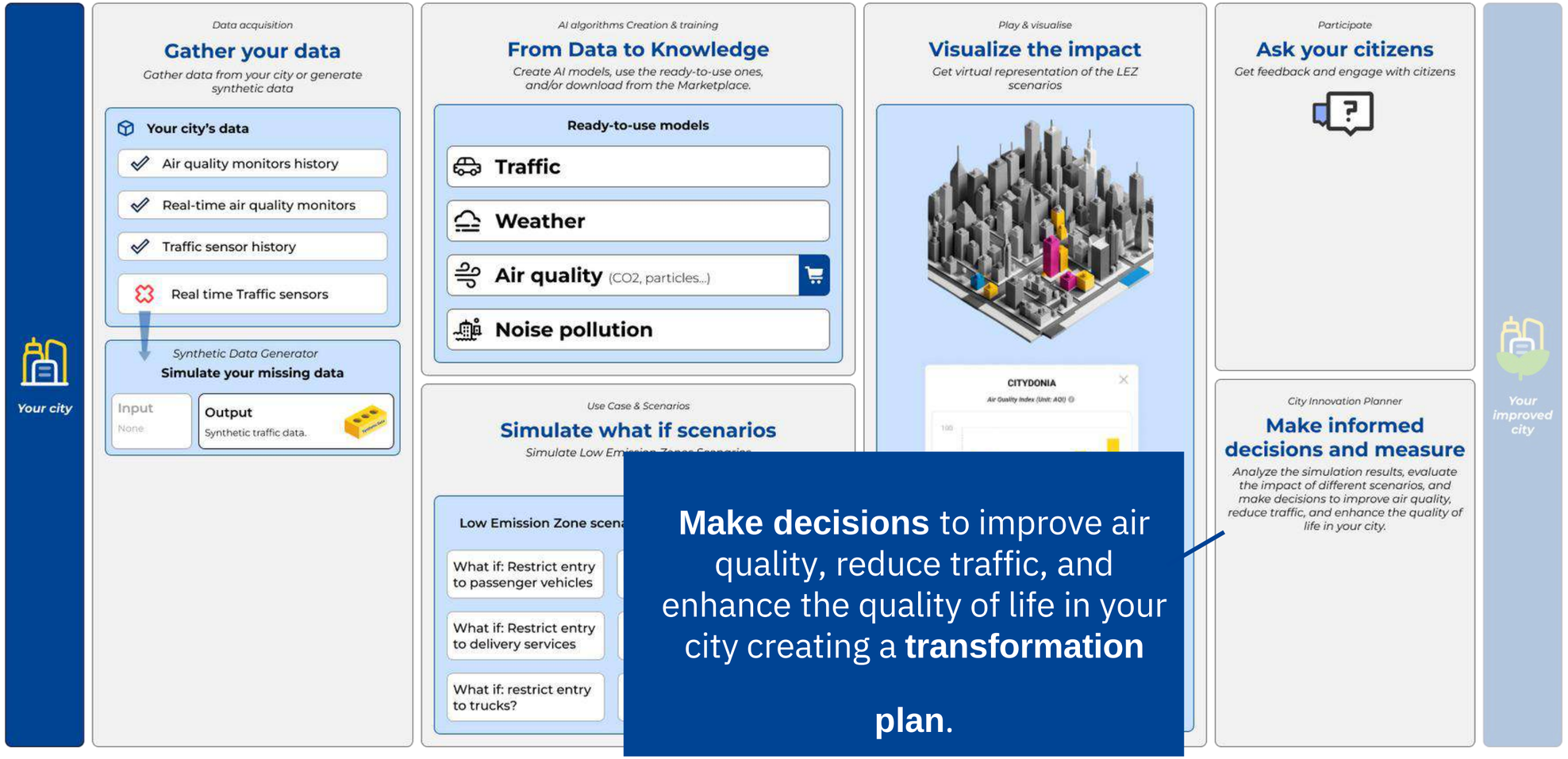



**Analyze**the simulation results, **evaluate**the impact of different scenarios. As simulations are conducted, the results can be **visualized in a virtual way**, allowing city officials to immediately assess the impact of decisions. This visualization is crucial for understanding how different restrictions will affect both mobility and pollution levels in the city.

# Implementing Low Emission Zones with LDT Toolbox

The implementation of a low-emission zone can significantly impact citizens' daily lives. Therefore, the process allows **community involvement**, giving citizens the opportunity to **provide feedback** on decisions and **suggest improvements** to the measures implemented.

# Implementing Low Emission Zones with LDT Toolbox




**Make decisions** to improve air quality, reduce traffic, and enhance the quality of life in your city creating a **transformation plan**.

# Implementing Low Emission Zones with LDT Toolbox

EU LDT TOOLBOX

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# Follow Us

## and be part of the revolution

@ld tto olb ox

EU LDT Toolbox

Funded by the European Union

# QUESTIONS AND ANSWERS

European Commission

# Call to Action: Reminder

1

**Prepare your strategy to implement Local Digital Twins**

2

**Join the Living-in.EU movement**

3

**Evaluate your digital maturity with LORDIMAS**

4

**Discover the MIMs Plus to start building your Open Data Architecture Framework**

5

**Apply to the EU Mission Cities: Twin Cities Programme**

6

**Express your interest to participate to the Online Procurement Helpdesk**

REGISTER FOR THE LAST TRAINING SESSION!

**EMPOWERMENT**

Online Training 3

**February 18th**

**9:30 CET**

European Commission

# We value your feedback!

https://forms.office.com/r/2hTHUR4Knh

European Commission

# Call to Action: Register to trainings

## BULGARIA

**Phase 3:**

**Empowerment**

## SUPPORT AND NETWORKS

### How the Living-in.EU Community Supports You

- Discover the Living-in.EU learning community, how to make use of the resources developed for and by the community, and how to engage with their activities
- Discover funding opportunities at EU level and learn how to apply and prepare your proposal

**February 18th, 2025** **9:30 CET**

**Please register here**

SCAN ME

European Commission

# INCREASING DIGITALISATION AWARENESS & READINESS OF BULGARIAN COMMUNITIES

in collaboration with

НСОРБ
НАЦИОНАЛНО СДРУЖЕНИЕ НА ОБЩИНИТЕ В РЕПУБЛИКА БЪЛГАРИЯ

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