INCREASING DIGITALISATION AWARENESS & READINESS OF DUTCH COMMUNITIES

Training Session
Technology Phase
in collaboration with VNG
April 18th, 2024

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

Session Moderators

Wouter Heijnen
VNG

Michael Mulquin
OASC

Ignacio Garcia Vega
Serendipity

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Agenda for Training Session:
The Netherlands

Phase 1:

Exploration Phase How to Start Your Digitalization Journey

- Introduction to Local Digital Twins
- Deep dive into the EU initatives and funding opportunities
- Supporting communities, introducing Living-in.EU
- Understanding the digital maturity of your city through assesment

March 14th, 2024 15:30-17:00 (CET)

Phase 2:

Technology Phase How Urban Data Platforms Can Empower Cities

- EU Data Spaces, Open Data platforms, LDTs
- Open Architecture Framework Model for Digital ecosystem for cities and communities

April 18th, 2024 **15:30-17:00 (CET)**

Phase 3:

Practical Phase Use Cases and Supporting Services

- Practical examples of LDTs to achieve the EU Green Deal goals
- Supporting services to set up the roadmap and procurement documentation to implement LDTs

May 16th, 2024 15:30-17:00 (CET)

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Detailed Agenda Overview

Phase 2: Technology Phase - How Urban Data Platforms Can Empower Cities

April 18th 15:30 - 17:00 CET

TIME	TOPIC	SPEAKER
15:30	Introduction	Moderators: Wouter Heijnen (VNG) Ignacio Garcia Vega (Serendipity)
15:45	Why implement Open Data Platforms, Data Spaces and Local Digital Twins	Michael Mulquin (OASC)
16:05	Questions - interaction	Moderators
16:20	Open Architectures and Minimal Interoperability Mechanisms	Michael Mulquin (OASC)
16:45	Questions - interaction	Moderators
16:55	Closing	Wouter Heijnen

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Why implement Open Data Platforms, Data Spaces and Local Digital Twins

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Open Data platforms, Data Spaces and LDTs

What will be covered?

1. The different roles of Open Data Platforms, Data Spaces and Local Digital Twins and their value to a local community
2. The next steps to develop an implementation roadmap
3. How to locate information and resources efficiently through the Data space support centre

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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 particular 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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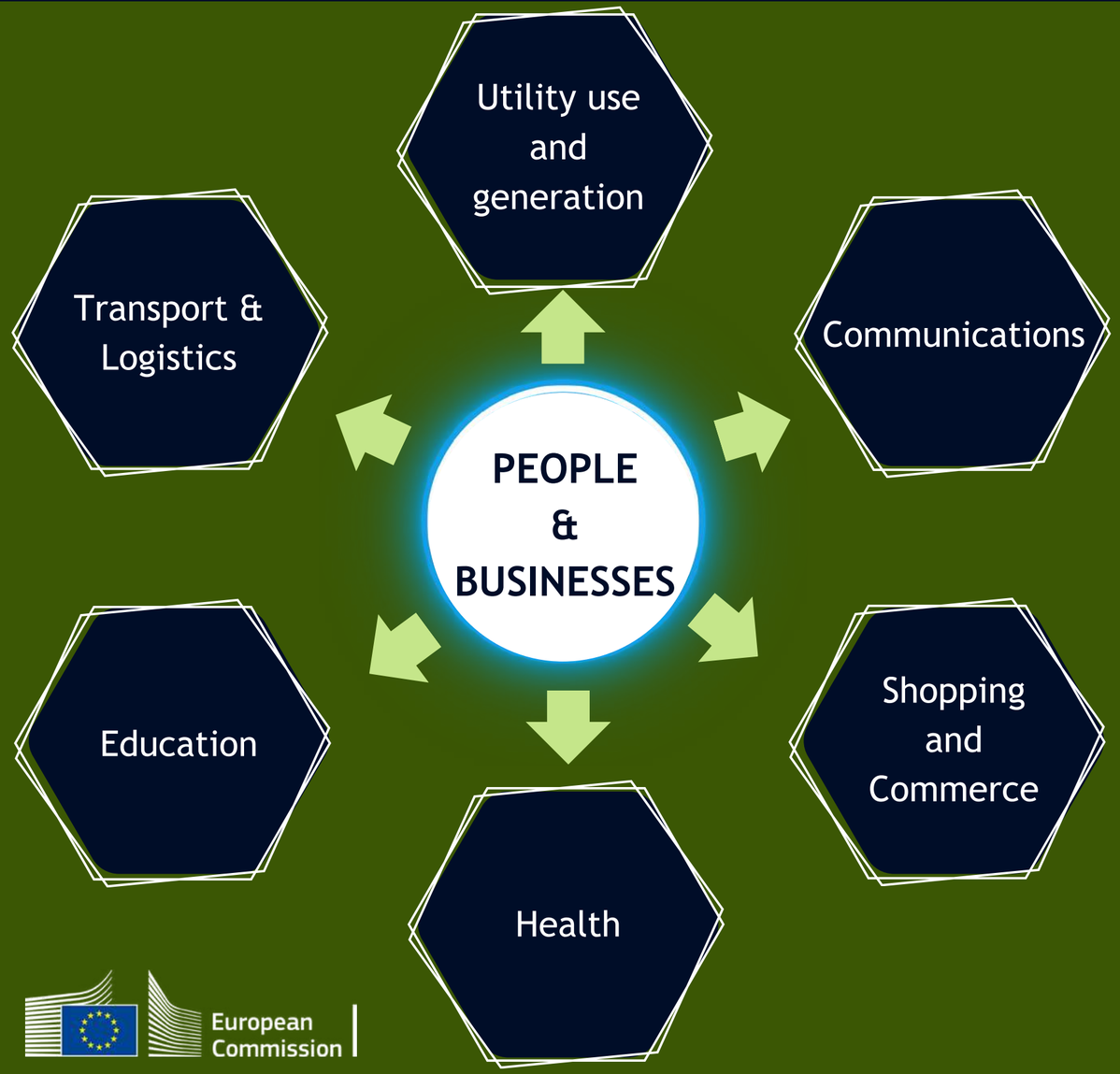
The Role of Shareable Data



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 across domains and across cities and borders. 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

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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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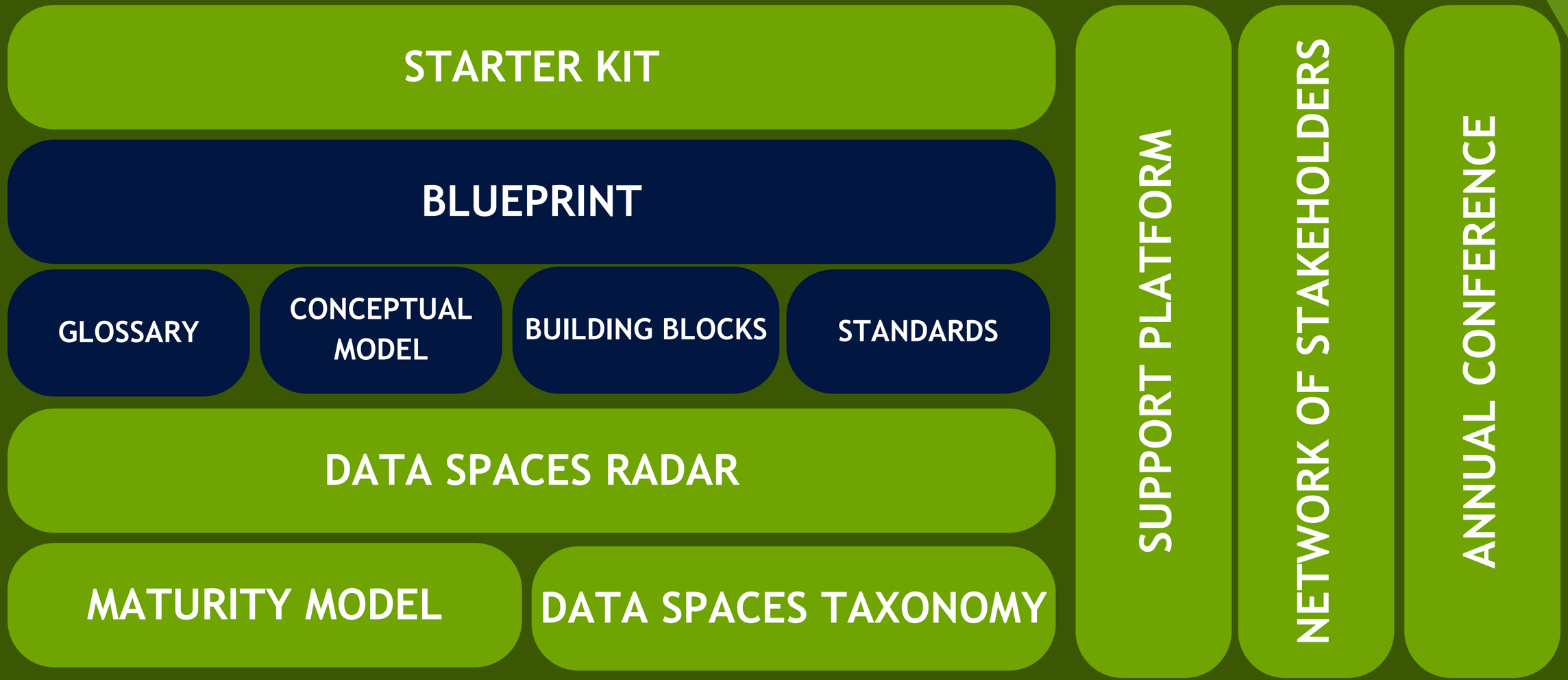
The Role of the Data Space Support Centre



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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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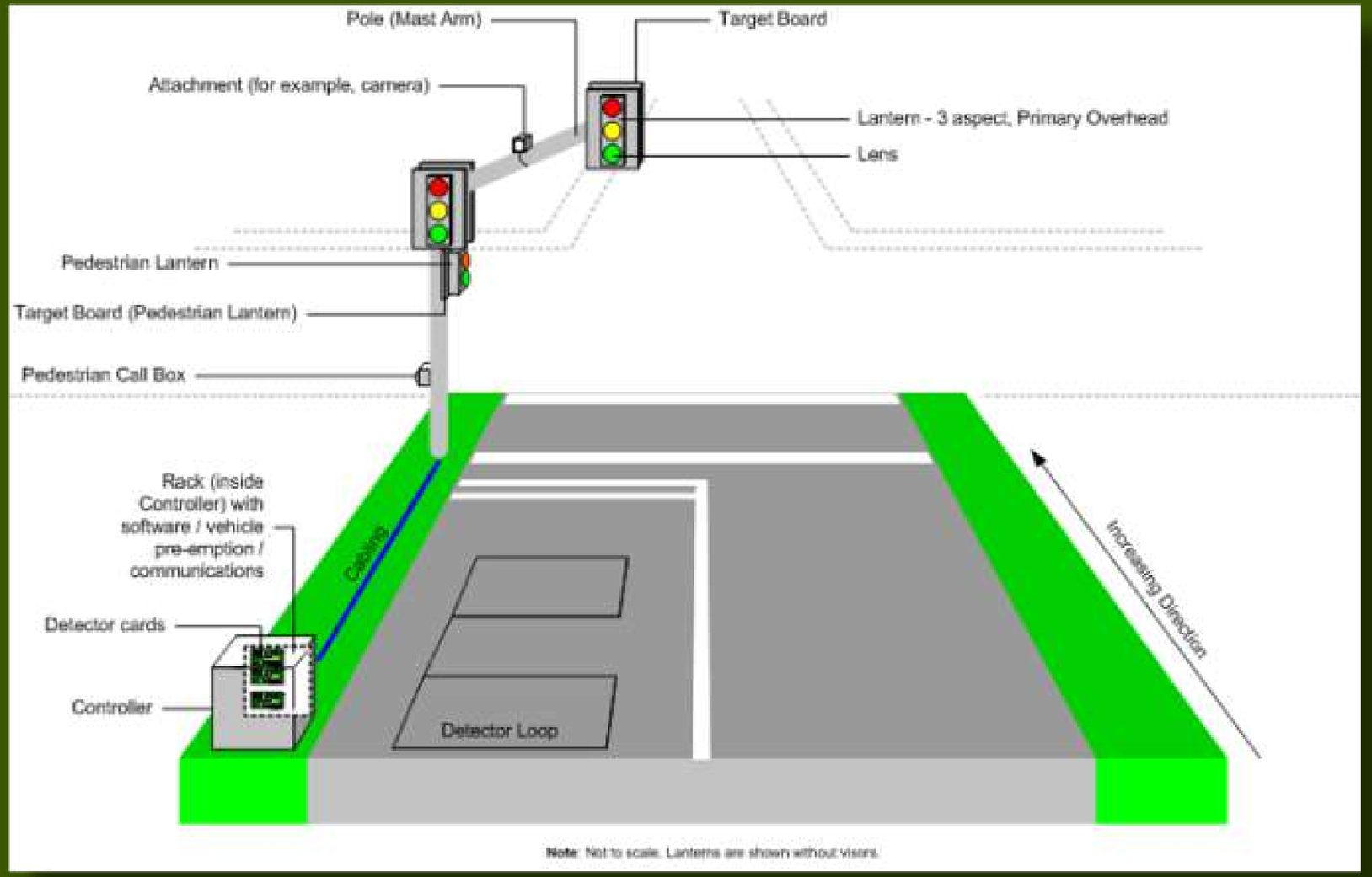
Or Traffic Lights...



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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?

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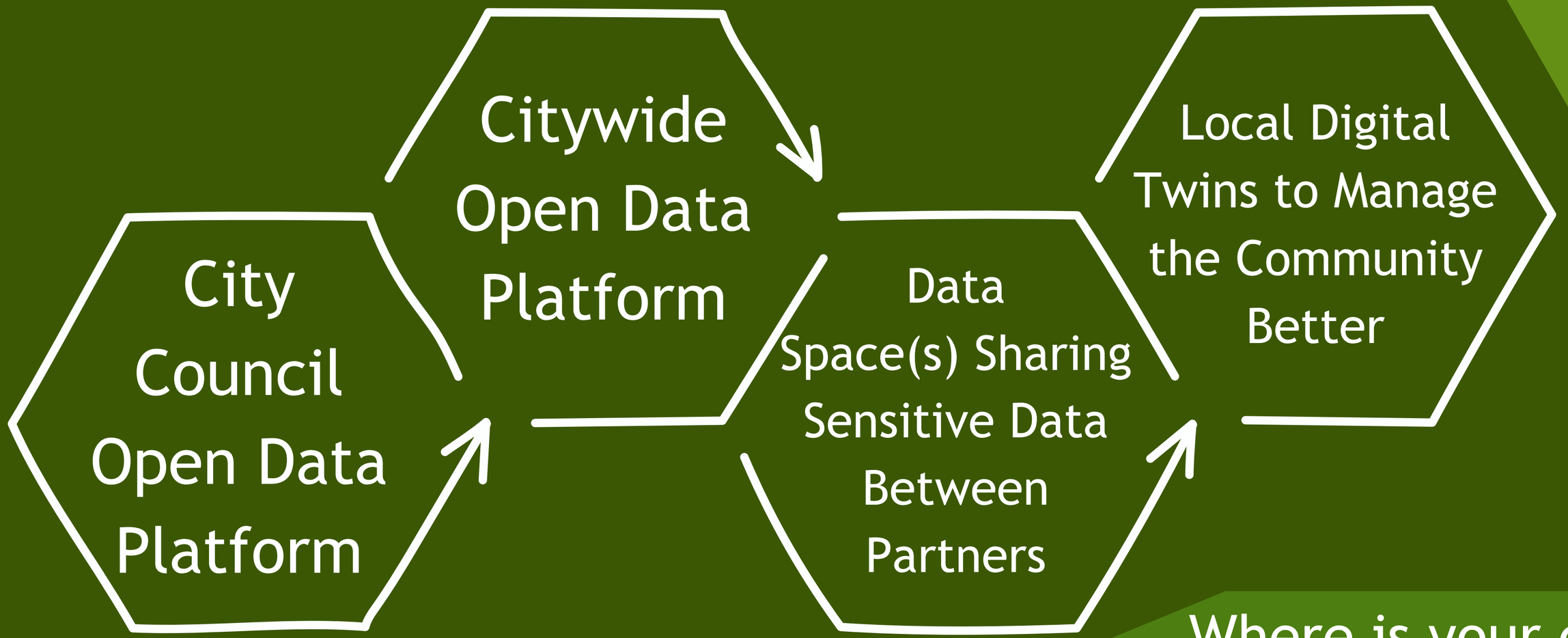
The Four Stages



Where is your city?

What do you need to do to move forward?

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Open Architectures and Minimal Interoperability Mechanisms

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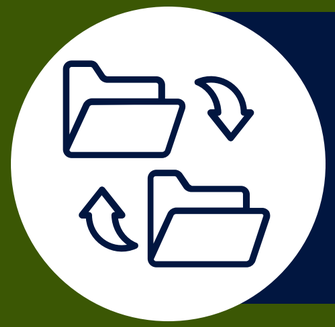
What We Will Cover

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

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.

Three Useful Views

Business Unit/ Application Oriented

Shows how data flows between different business units to provide the value needed.

The Data Stack

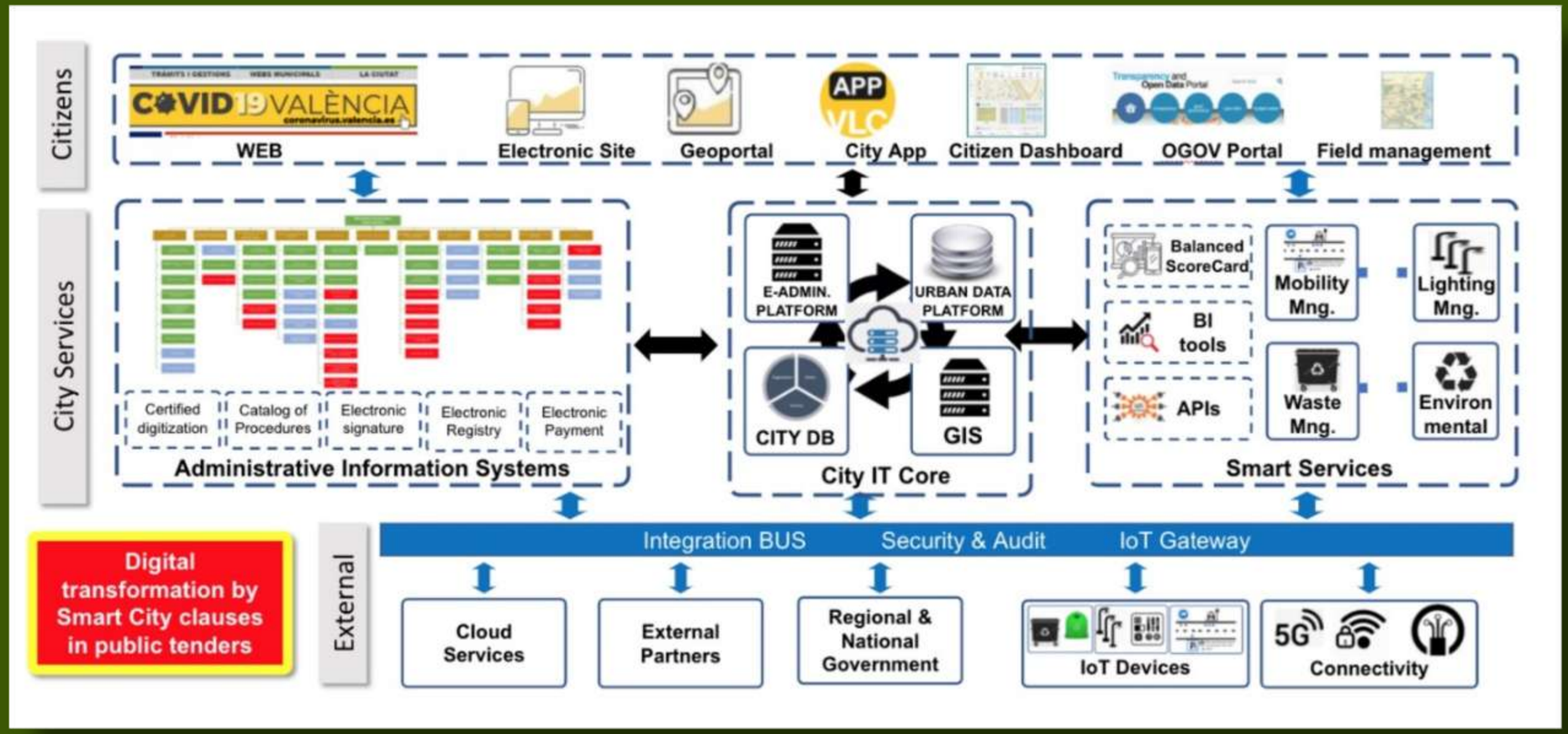
Views the process as a series of layers and shows what happens in each layer and at the interfaces between them, as the data is captured, transformed, and used.

The Data Pipeline

Focuses on the way the data is extracted from various sources and shows how it is transformed in different ways in a step-by-step process to make the data useful.

Business Unit Application Oriented View

An example from Valencia



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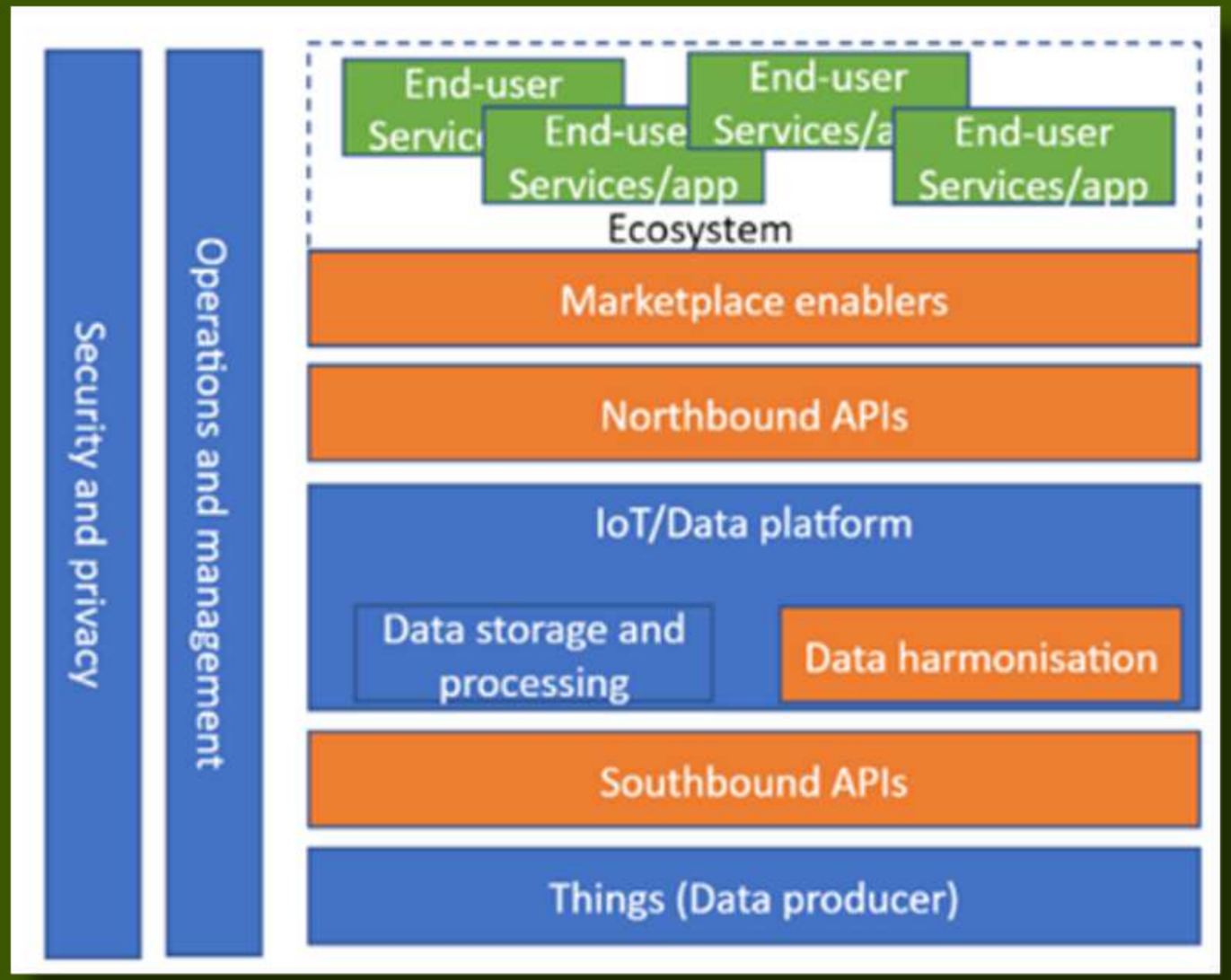

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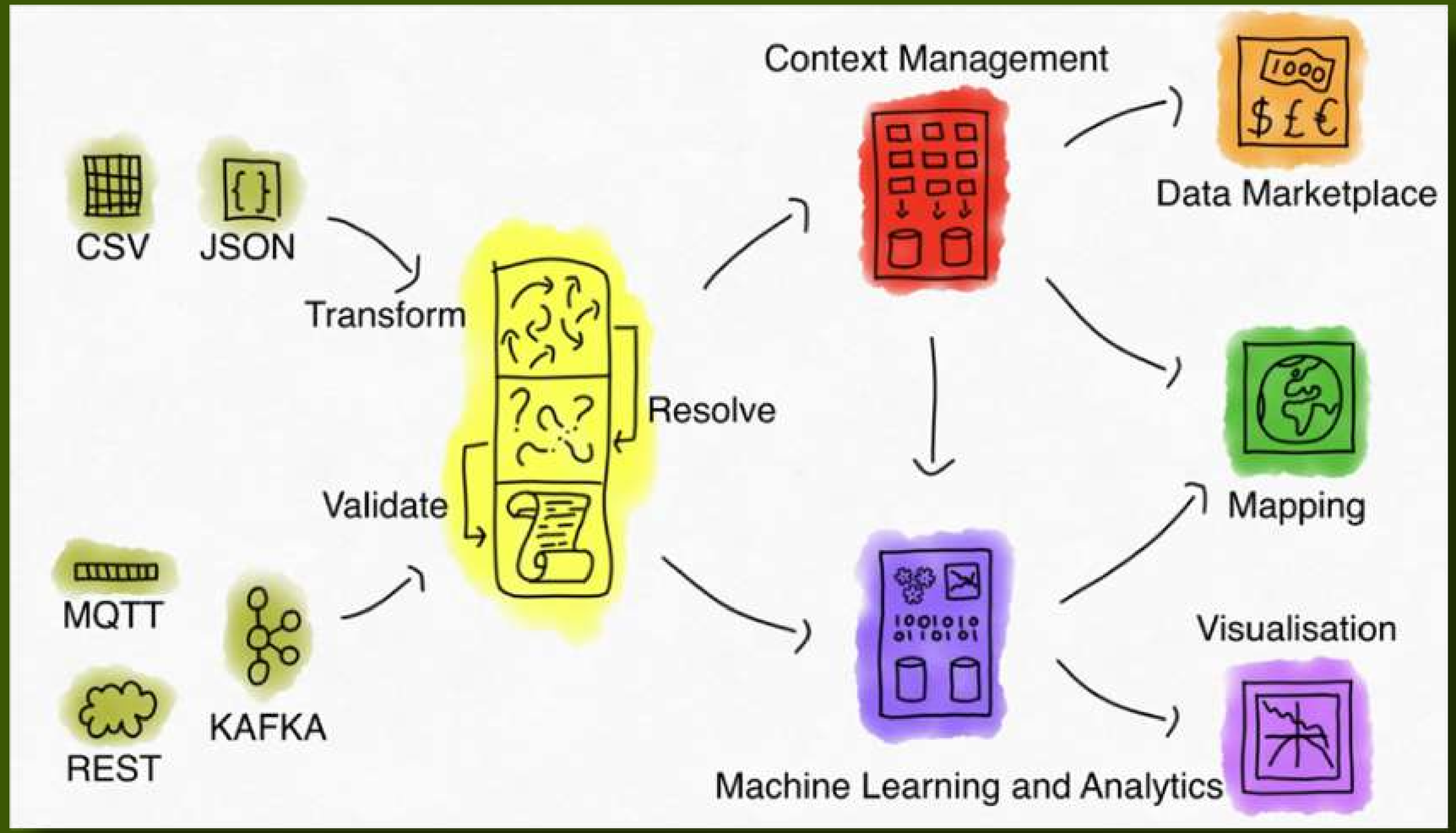

The Value of the Architecture Views

- By using these different views, you can develop a comprehensive framework to help design your data ecosystem

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

- Specifically, it will show where the Minimal Interoperability Mechanisms (MIMs) will have a role

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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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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

- Where technology is undergoing rapid change there are often several alternative standards approaches developed by different standards bodies.
- These different approaches may each provide good-enough solutions, with different strengths and weaknesses.
- Some may be cheaper, or easier to implement or be more suitable within different domains eg health, electricity etc.
- While several different solutions may all seem equally viable now, over time one might become dominant.

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The Response Needed

- Your partners may be using different standards or approaches to the ones you use, and you need to find ways to support interoperability.
- When procuring solutions, it may not make sense to require complete adherence to specific standards as vendors may be able to propose better solutions using different standards or approaches.
- When implementing solutions, it is important to remember that you may need to change your approach over the next few years. So, you need to be sure that, if need be, you can move to another technical solution in the future, while maintaining consistency.

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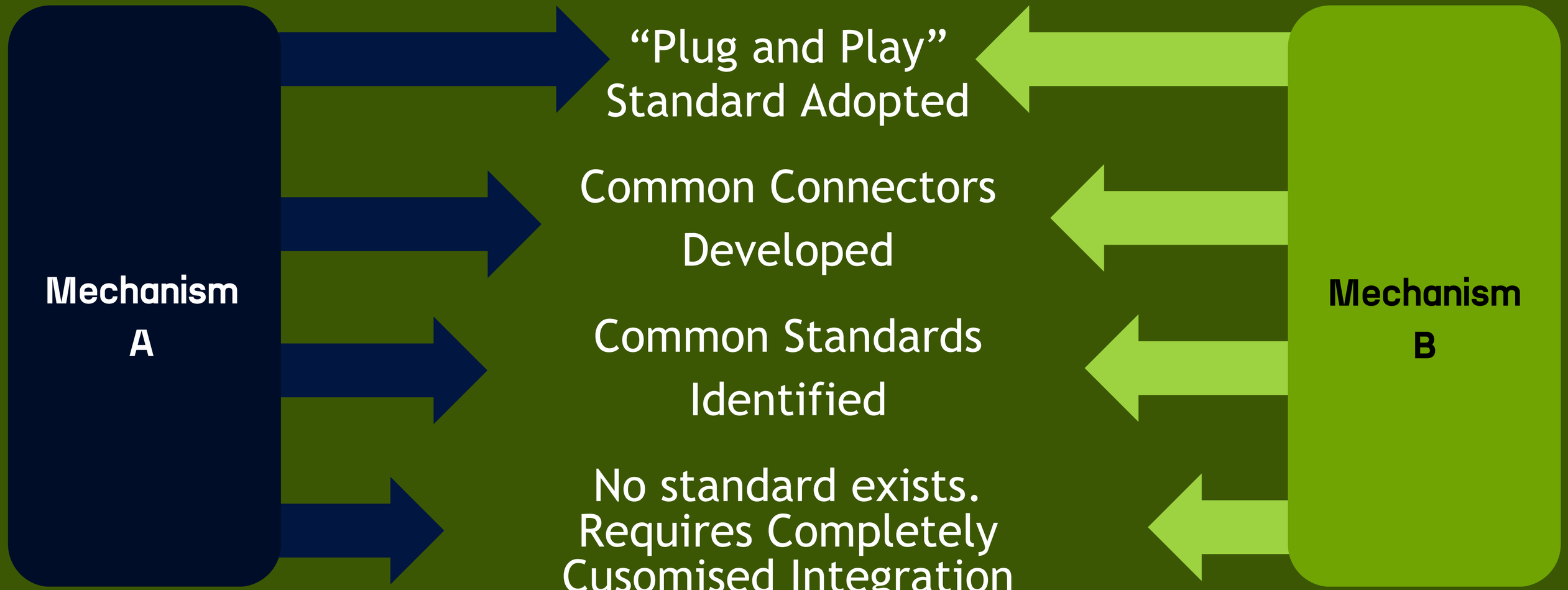
Degrees of Interoperability



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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 (but good enough) Interoperability

- Data sharing requires interoperability between the data coming from the different agencies in a data ecosystem
- Perfect interoperability is difficult to achieve when the data comes from many different organisations following different approaches
- Cities and communities therefore need tools to help them achieve “good enough” interoperability to get started in gaining value from potential smart solutions – ones that address differing types of legacy infrastructure and standards
- These tools include an architectural framework and Minimal Interoperability Mechanisms (MIMs)

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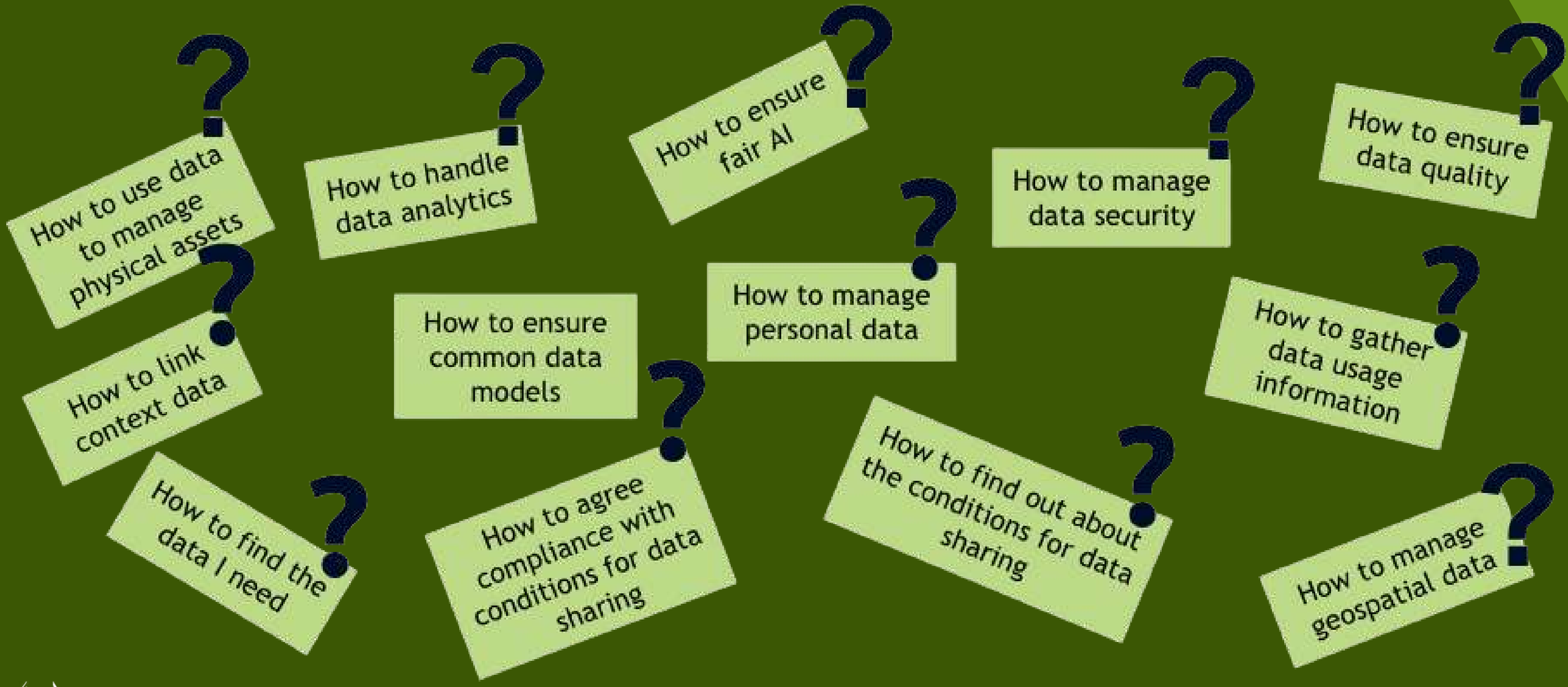
Many Obstacles to Data Flowing to Where it is Needed!



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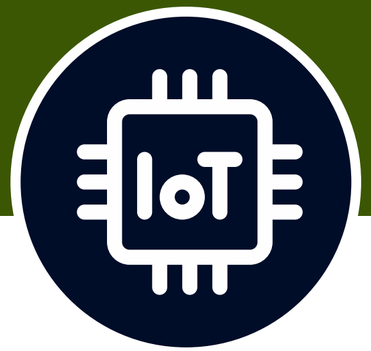
Minimal Interoperability Mechanisms (MIMs)



The MIMs came from early projects where cities were beginning to experiment with using the data from IoT to develop applications such as smart parking.

The challenge was to identify a common way for cities to collect and manage the data to 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.

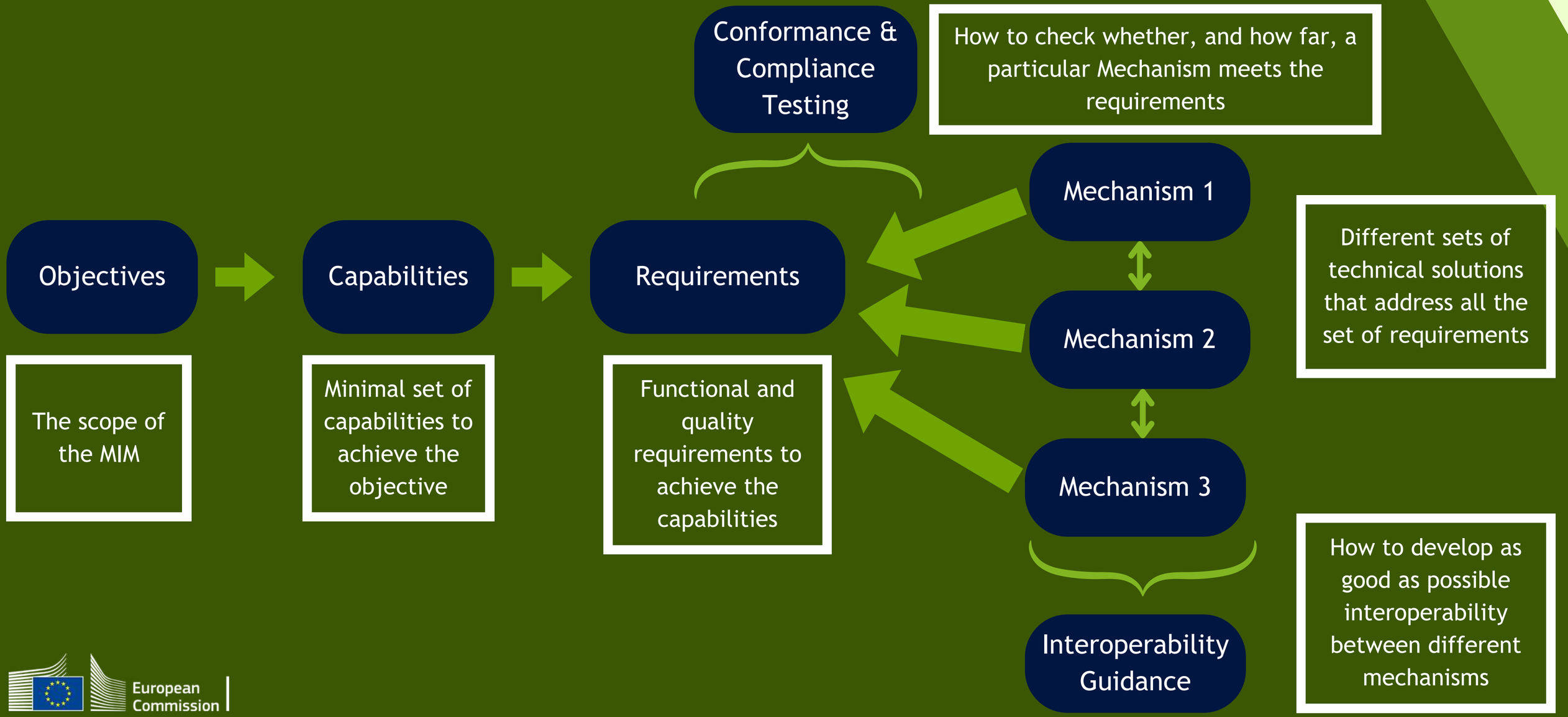
The scope of the MIMs has changed with the increasing sophistication of data use by cities and communities - but the aim is still to support data sharing within and between communities.

The MIMs are developed by Open & Agile Smart Cities & Communities (OASC) and by the Living-in.EU movement

MIMs Under Development

MIM		SUBJECT	NAME
MIM1		CONTEXT	Context information Management
MIM2		DATA MODELS	Shared Data Models
MIM3		CONTRACTS	Ecosystem Transactions Management
MIM4		TRUST	Personal Data Management
MIM5		TRANSPARENCY	Fair Artificial Intelligence
MIM6		SECURITY	Security Management
MIM7		PLACES	Geospatial Information Management
MIM8		INDICATORS	Ecosystem Indicator Management
MIM9		ANALYTICS	Data Analytics Management
MIM10		RESOURCES	Resource Impact Assessment

The Format for Each MIM



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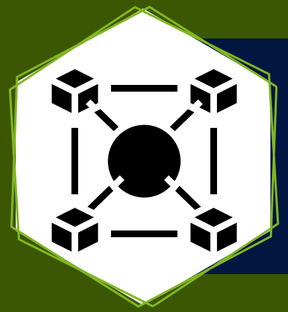
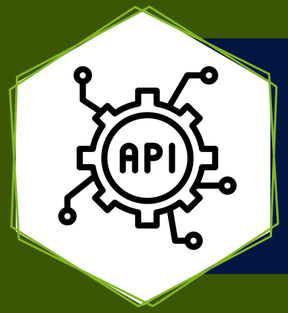
The Aim

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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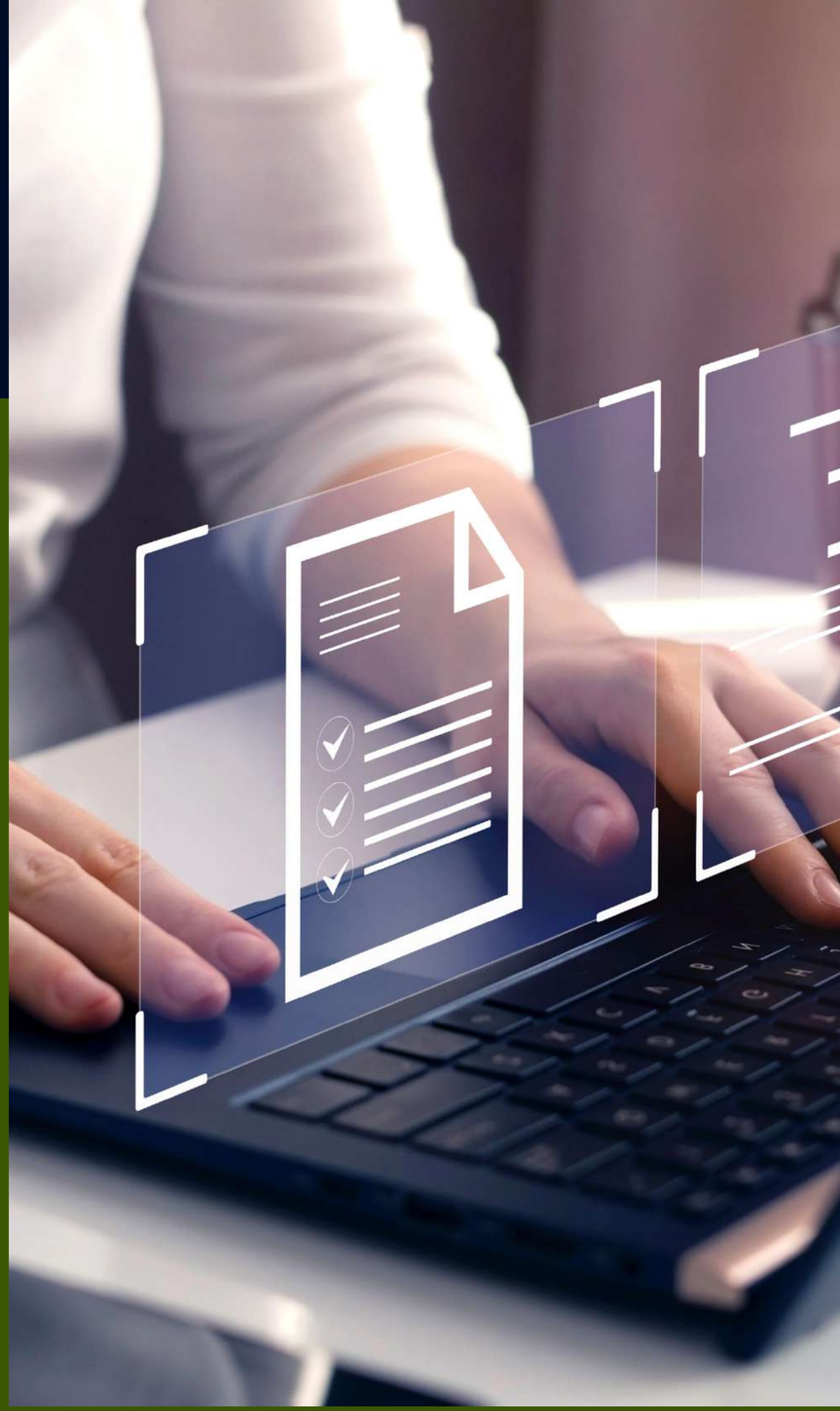
Compliance and Conformance Testing

- 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



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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

MIMs Plus version 6 Final

Local Digital Twins – Increasing Digitalisation Awareness and Readiness of Dutch Communities

JBS Living in EU

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Call to Action: Training Registration
The Netherlands

Phase 3:

Practical Phase Use Cases and Supporting Services

- Practical examples of LDTs to achieve the EU Green Deal goals
- Supporting services to set up the roadmap and procurement templates to implement LDTs

May 16th, 2024 15:30-17:00 (CET)

Step 1: Register for the next training session

Step 2: Evaluate this session

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“Technology is best when it brings people together.”

-Matt Mullenweg
Founder of WordPress

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INCREASING DIGITALISATION AWARENESS & READINESS OF DUTCH COMMUNITIES

THANK YOU

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