DISCO

## Ghent Starring living lab

# Urban Access Control

Funded by
the European Union

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101103954

# What is DISCO

## In a Nutshell

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# DISCO Context

- **Background:**
  EU green deal reduce emissions with 55% by 2030 with the Urban mobility framework emphasizing a radical reduction of transport emissions

- **Goal**:
  Accelerate the decarbonisation of urban logistics through data-driven collaboration tools (I.e Physical Internet)

- **Setup**:
  - Horizon Europe program (05/2023 – 05/2026)
  - 8 Living Lab cities & 5 application domains

DISCO

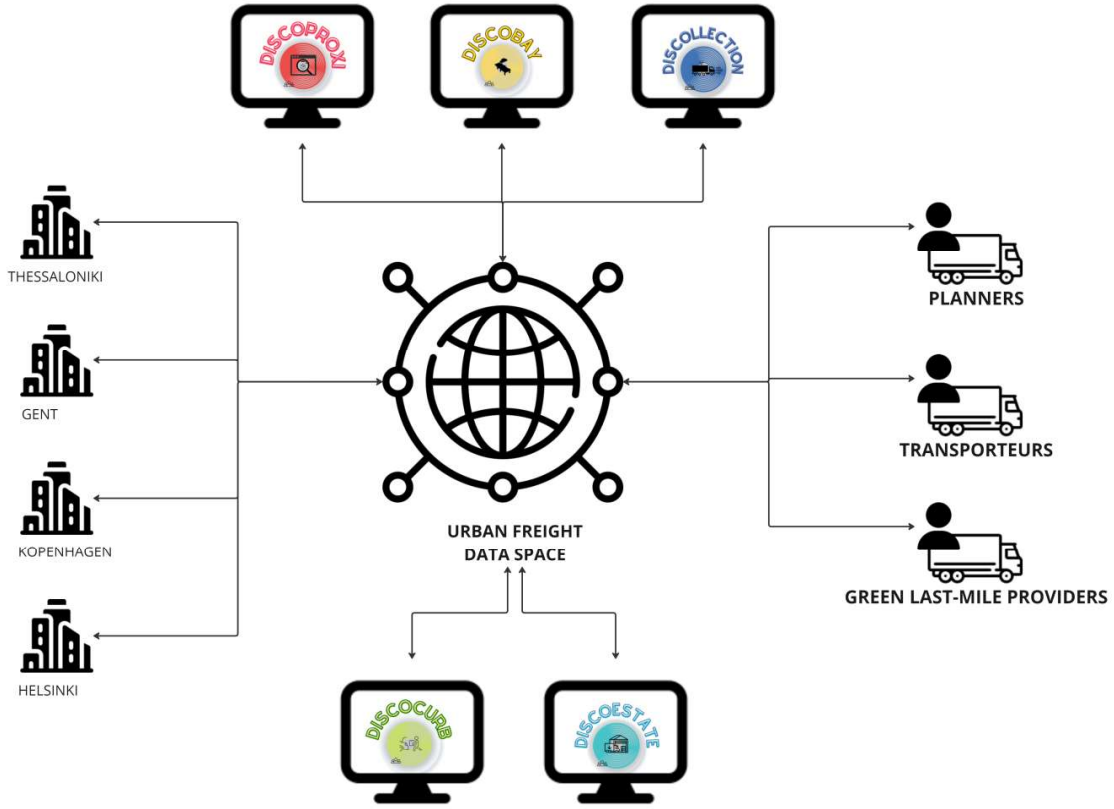
Data-driven, Integrated, Syncromodal, Collaborative and Optimised urban freight meta model for a new generation of urban logistics and planning with data sharing at European Living Labs

EMPOWERING LOGISTICS imec gent: BEMOBILE HOUT & BOUW OPLEIDINGSCENTRUM

# The DISCO Urban Freight Data Space

## The purpose of DISCO

- Connect tools, cities and LSPs to the data space
- Enable collaboration amongst stakeholders in all cities
- Allow scalability of applications



# DISCO Ghent use case

## Integrating city access rules In logistics processes

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## Urban Logistics Challenges in Ghent

- **Logistics transport:** Dangerous situations, emissions, congestion
- **Access regulation is not transparent** – planning tools do not comply with regulation
- Incompliance leads to **expensive, inneficient city transport**
- **Sustainable alternatives** are available, but do not reach their potential

# Ghent Use Case

## De Gent use cases focusses on integrating the city access rules (UVAR) in logistics processes:

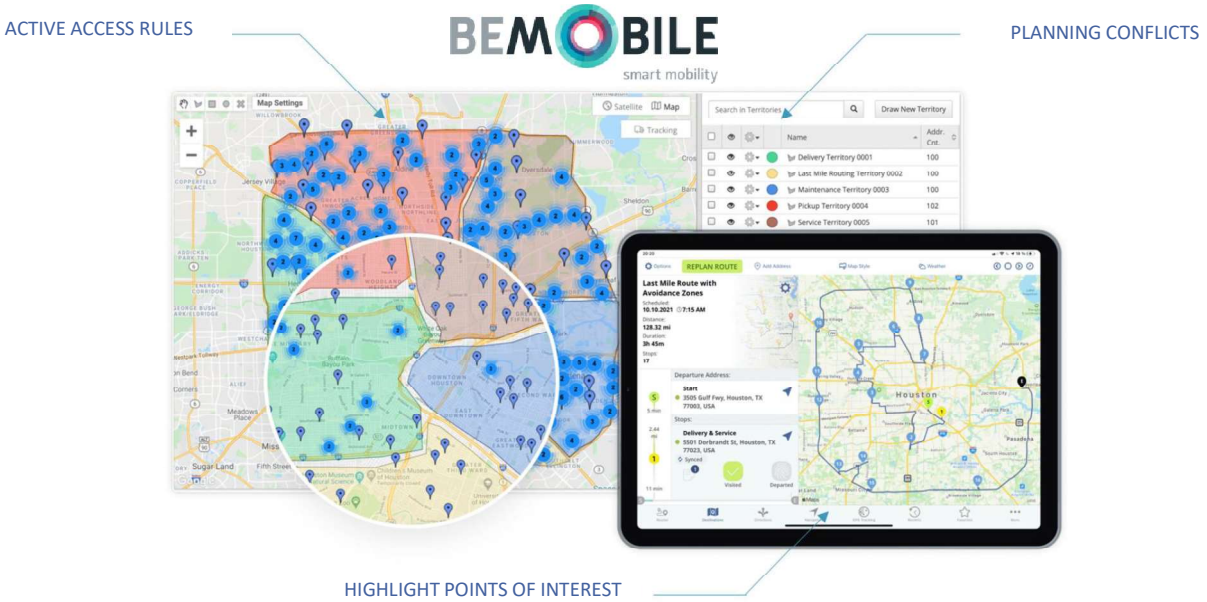
- Efficient communication of the access rules
- Integration of rules with logistics operations (planning, routing..)
- Nudge desired behaviour


***UVAR - Urban Vehicle Access Regulation:***
*Het beheren van logistieke toegang of doorstroom via handhaving van regels dmv digitale platformen en IoT devices*

# Urban Access Control (UAC)

## Integrating city guidance in logistics tools

- Integrating **access rules** in logistics planning
- Calculates and propos sustainable **alternatives**
- Optimized **realtime route navigation** enriched with Points Of Interests (POI)



# UAC: 3 main components

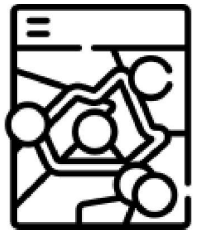
## Access regulation management

*Location manager*

Platform for cities to digitize and manage access / traffic regulations

## UAC policy-rule engine

Rule-engine integrating access/traffic rules in planning systems of LSP's

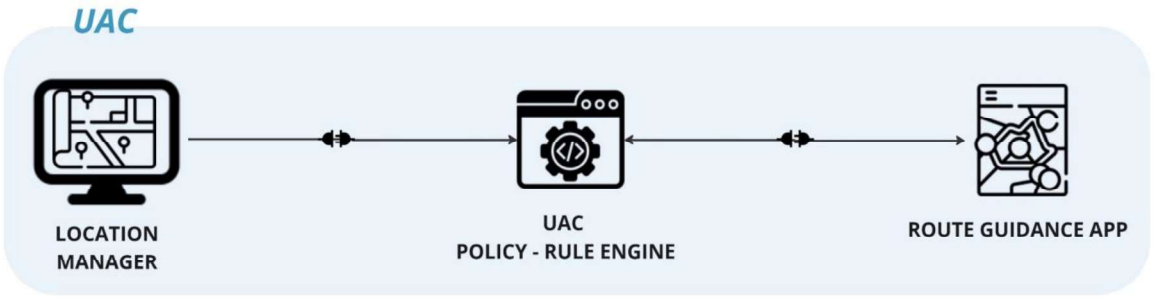


## Route guidance

*Navigation app*

Application for optimized route navigation, with relevant points of interest

# UAC in a nutshell



# UAC added value

**Cities**

Increase transparency of access rules & nudge desired behaviour

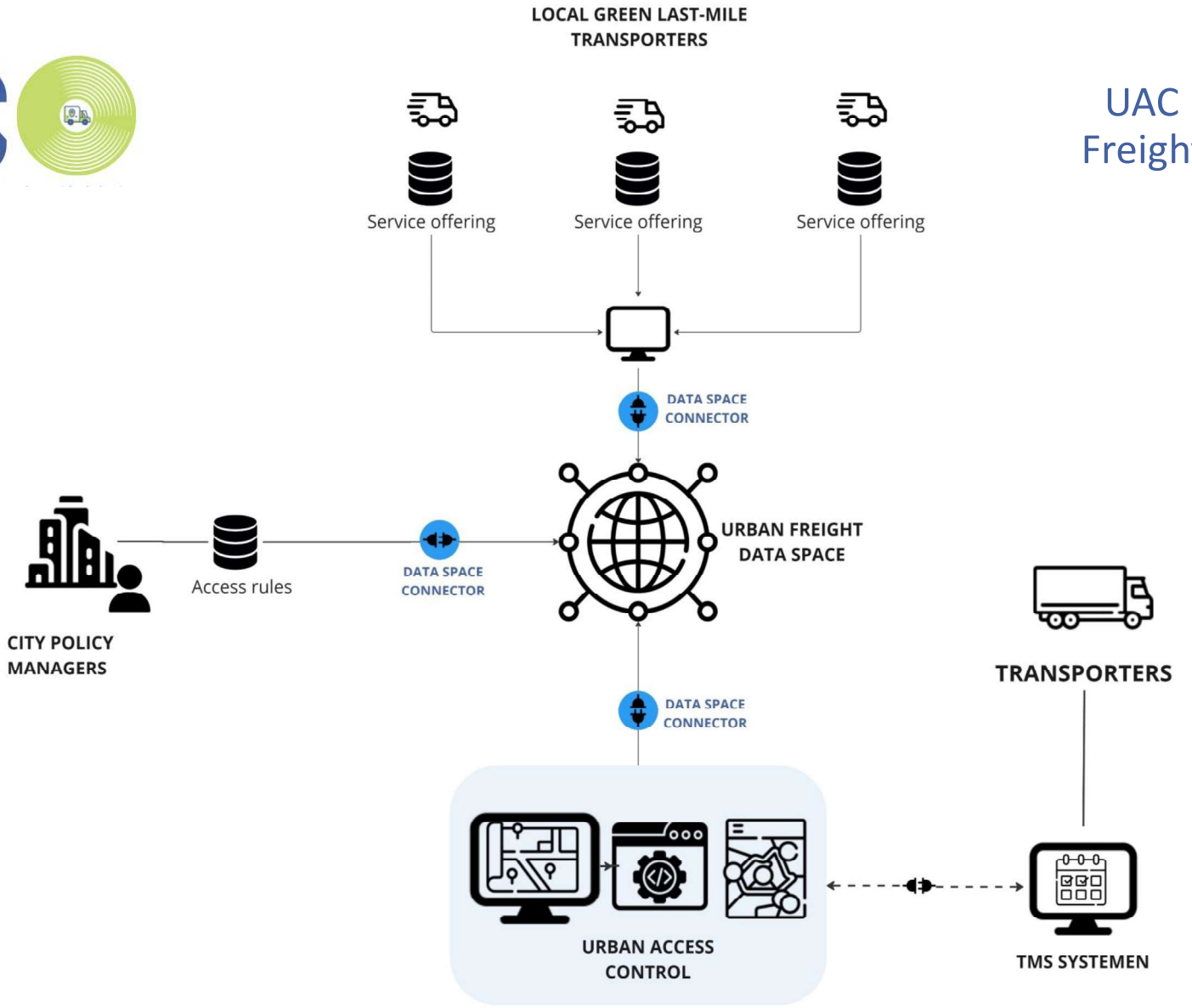
**LSPs**

Reduce costly mistakes on access rules & optimize urban delivery

**Local green last-Mile solutions**

Increased visibility of alternative solutions

# UAC in the Urban Freight Data Space



# Urban Freight data spaces

## Disclaimer

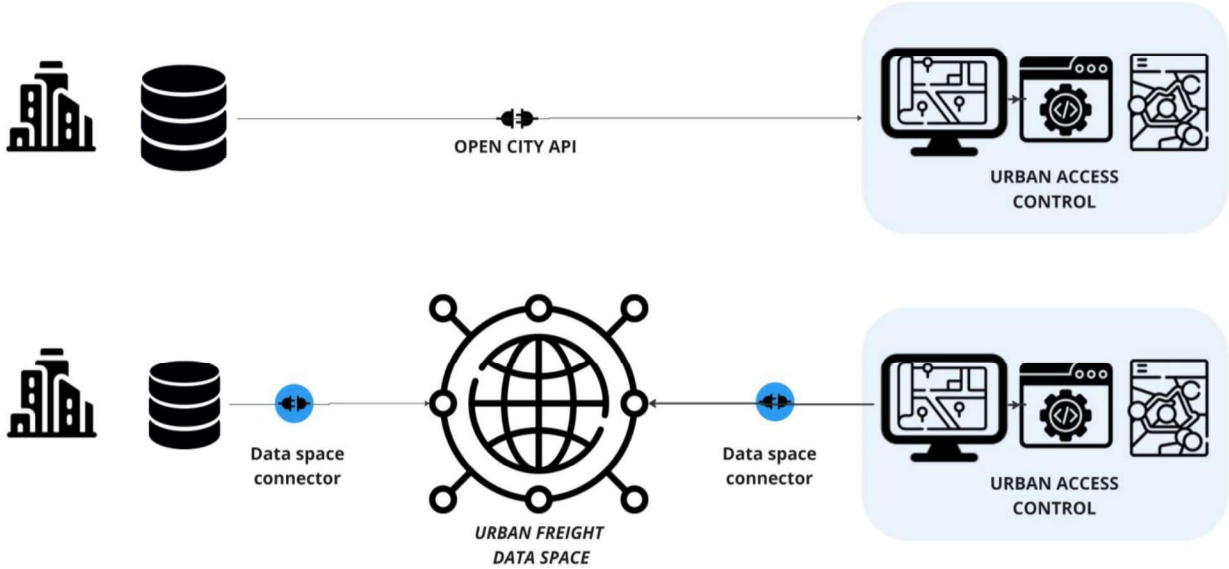
## Data space integration does bring additional challenges for cities

**Without data spaces**

- City data platform open API
- No effort from cities

**With data spaces**

- Data Space connector integration
- Specific technical knowhow



# The road to Maas/Laas

*Data Spaces* reduce the barrier for integrating with the city regulations and collaborating with other logistics players.

Resulting in a scalable ecosystem of MaaS and LaaS services that brings benefit to all stakeholders

# The value of data spaces

## For cities, LSPs and regions

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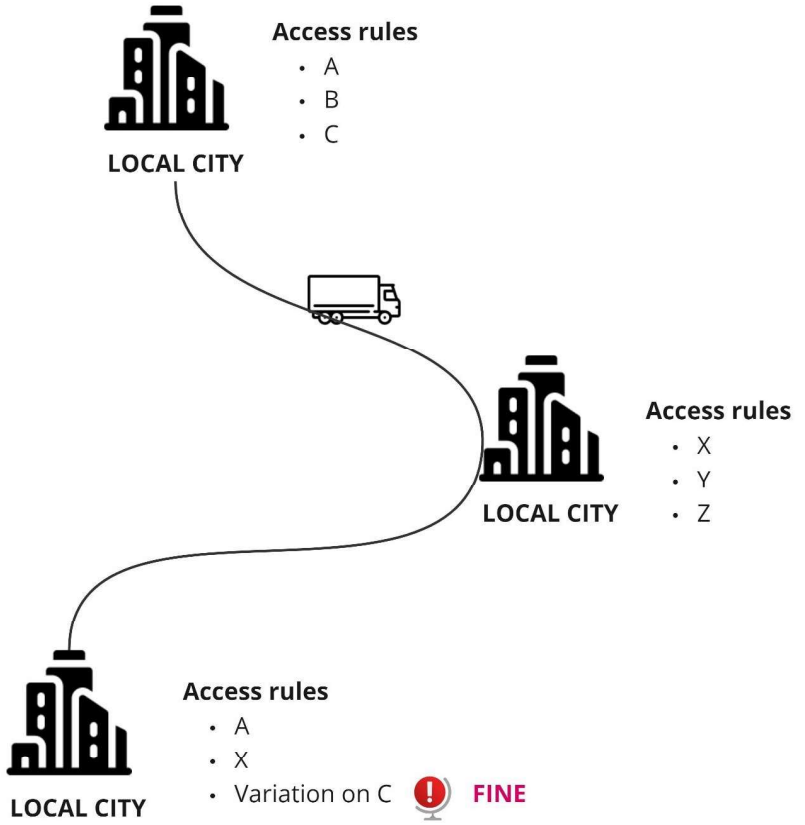
# Value of data spaces

**Current Logistics delivery**

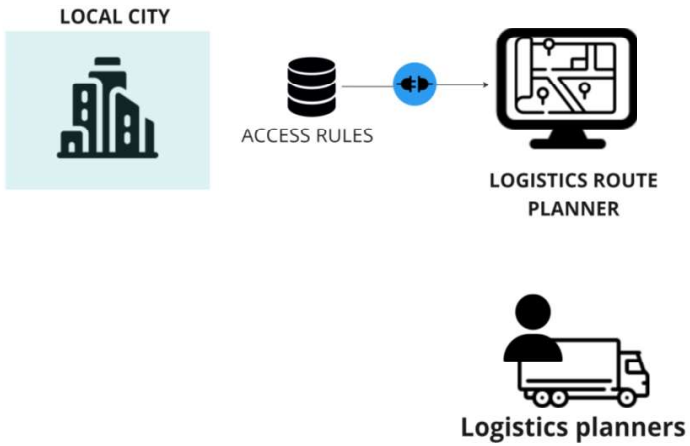
- No consistent access rules
- Manual integration of rules in planning tool
- No clear communication of rules
- Mistake = Fine



# Value of data spaces

**Integrating city policies**

- Integrate rules via City open data platform
- Individual API connections per city
- Not scalable

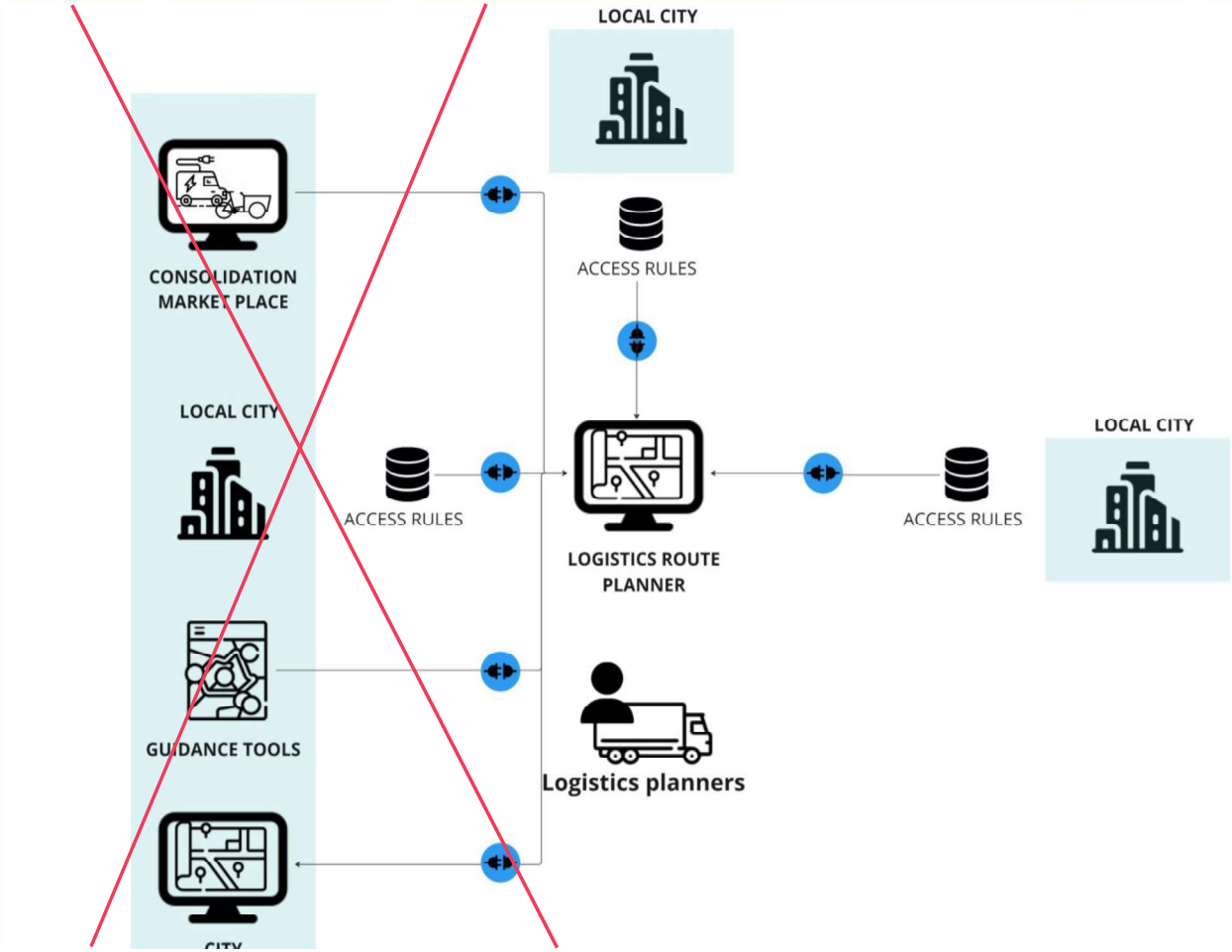


# UAC - Case study

**Future expansions**

- Compliance to optimum route guidance
- Share data to traffic monitoring tool
- Consolidate to local LSPs

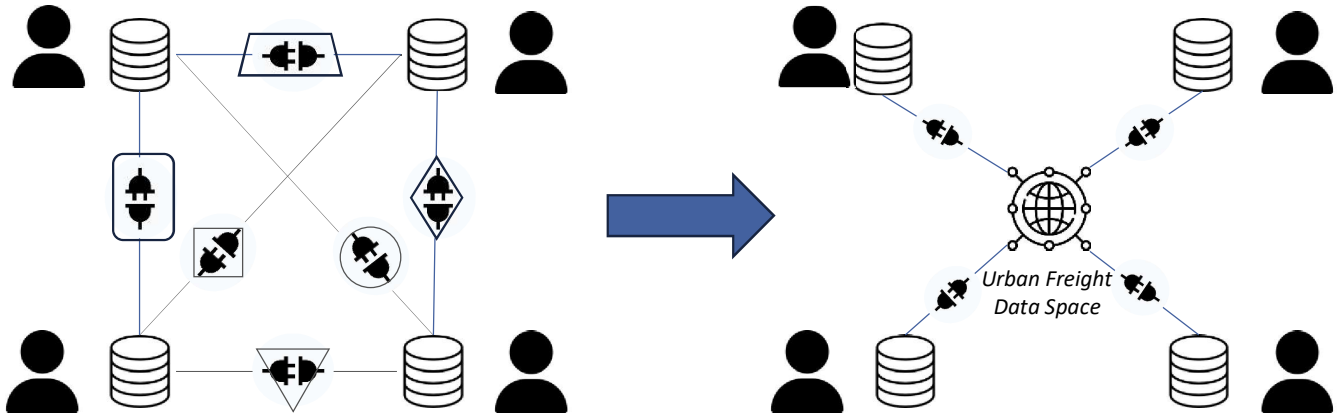
**THIS REACHES A BREAKING POINT**



# Value of data spaces

## Collaboration through data spaces

Data Spaces create a single-entry point network to collaborate with all stakeholders & access all data sets



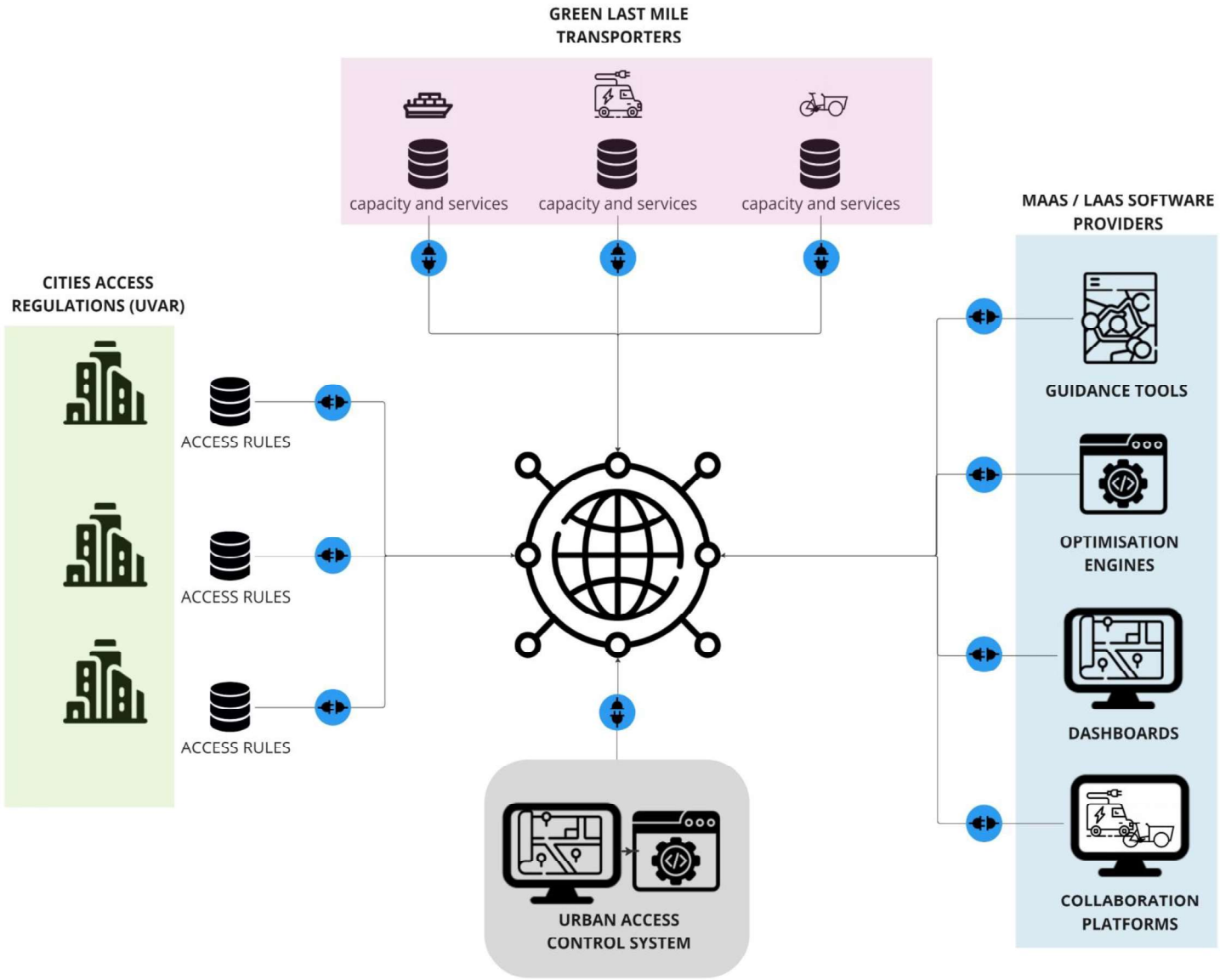

**Collaboration through 1on1 API connections**

- Separate API connections
- Custom made
- High setup cost
- Not scalable

**Collaboration through data spaces**

- Universal connectivity
- One connection to all
- Low setup cost, high scalabiliy

# The UAC on an Urban Freight Data Space



# Value of data spaces

If we want to reach a MaaS / LaaS revolution, we need to enable scalable interoperability, not only within but across cities

**Cities**

Integrate city guidance, enforcement & monitoring in a logistics ecosystem

**LSPs**

Optimise your operations by integrating with an ecosystem of Logistics Services

**Government**

Enable consistency and scalability between local policies

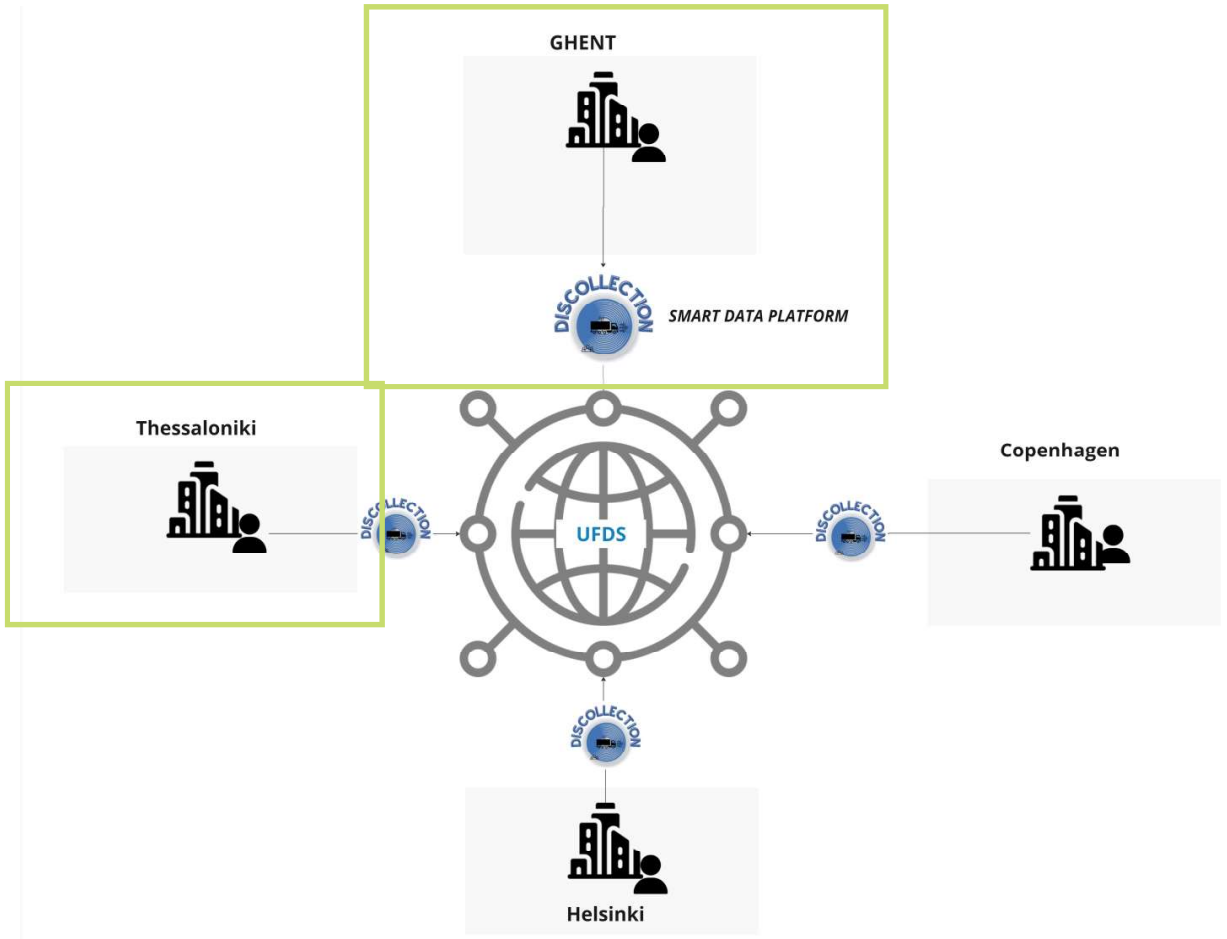
# DISCOLLECTION goal

DISCOLLECT Phase 1

**The goal of DISCOLLECT is to enable all cities to connect to the data space**

**Steps taken:**

- Built PoC of Smart Data Platform (SDP)
- Connect first 2 cities to the data space
- Identify available connection points (open data platforms) of other cities



# SMART DATA PLATFORM components

**1. The Smart Data Platform (SDP) basic**

- Dagster Data base for storing the data
- UFDS connector + middleware to connect to the data space

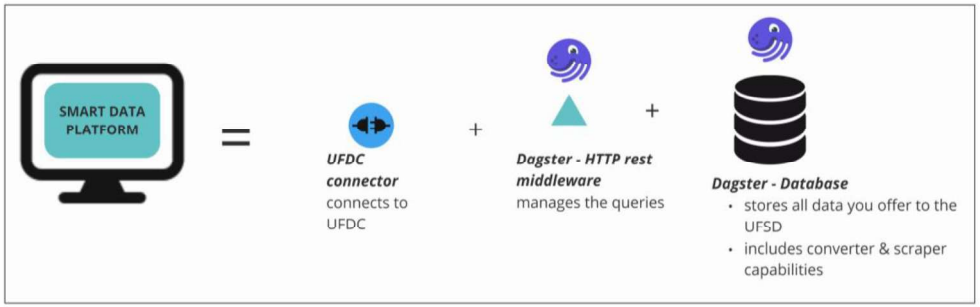
**2. Additional capabilities**

- Data scraper
- Data model converter

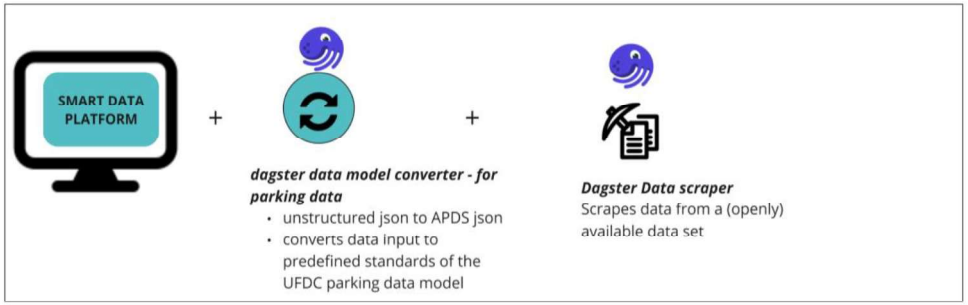
**3. Required components from cities**

- City data portal/platform
- Open API connector to connect the data portal to the SDP

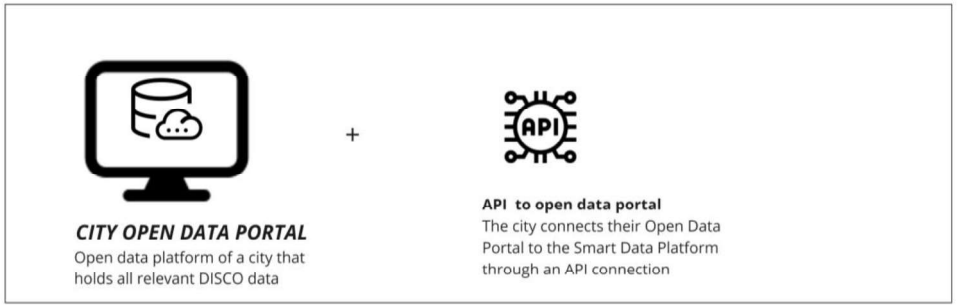
**1. SDP basic package**




**2. SDP package + data conversion additions**



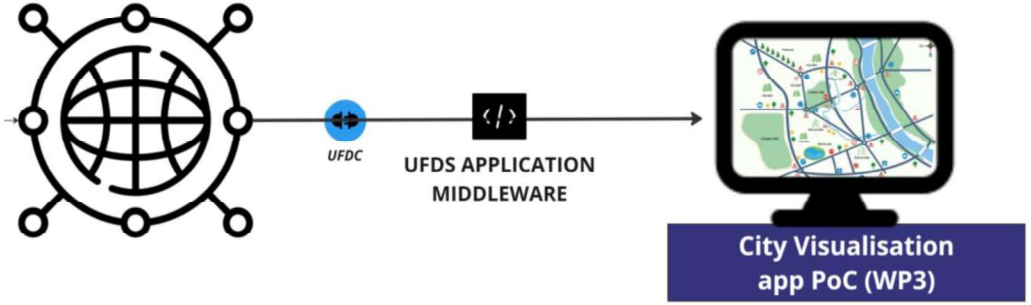

**3. City components**



# UFDS application Middleware (by Inlecom)

- Standardisable component
- Scalable solution
-

**→ SDP helps connect data**
**UFDS application middleware helps connect applicaties**

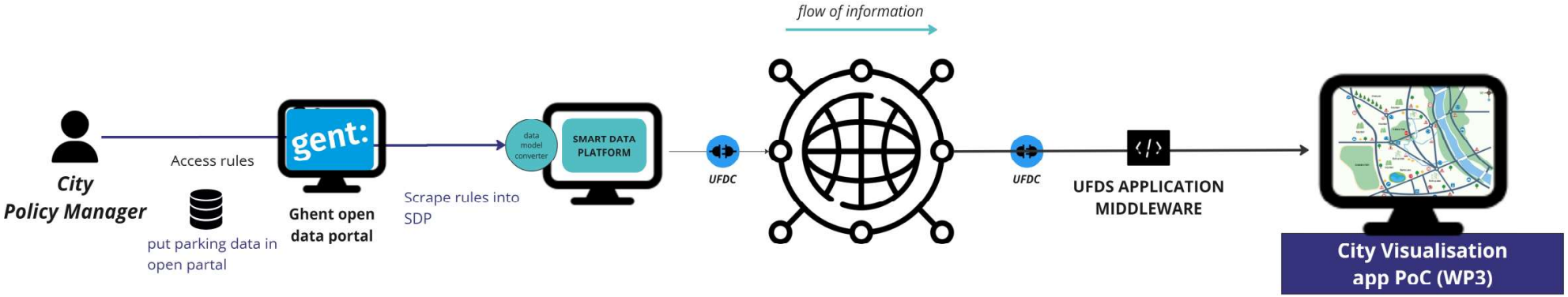


DISCOLLECT Phase 1

# Ghent Living Lab

- In Ghent LL, we connected the SDP to the Ghent open data portal to pull parking data
- We scraped the parking data and converted it to the right standard
- On the consumer side, Inlecom is building a 2D visualizer app with a Middleware that will connect the app to the data space
- Ongoing: The 2D visualizer app will pull the parking data from the SDP and visualize it

**DISCOLLECT POC 1: Case study - implementing Ghent parking data in the data space**

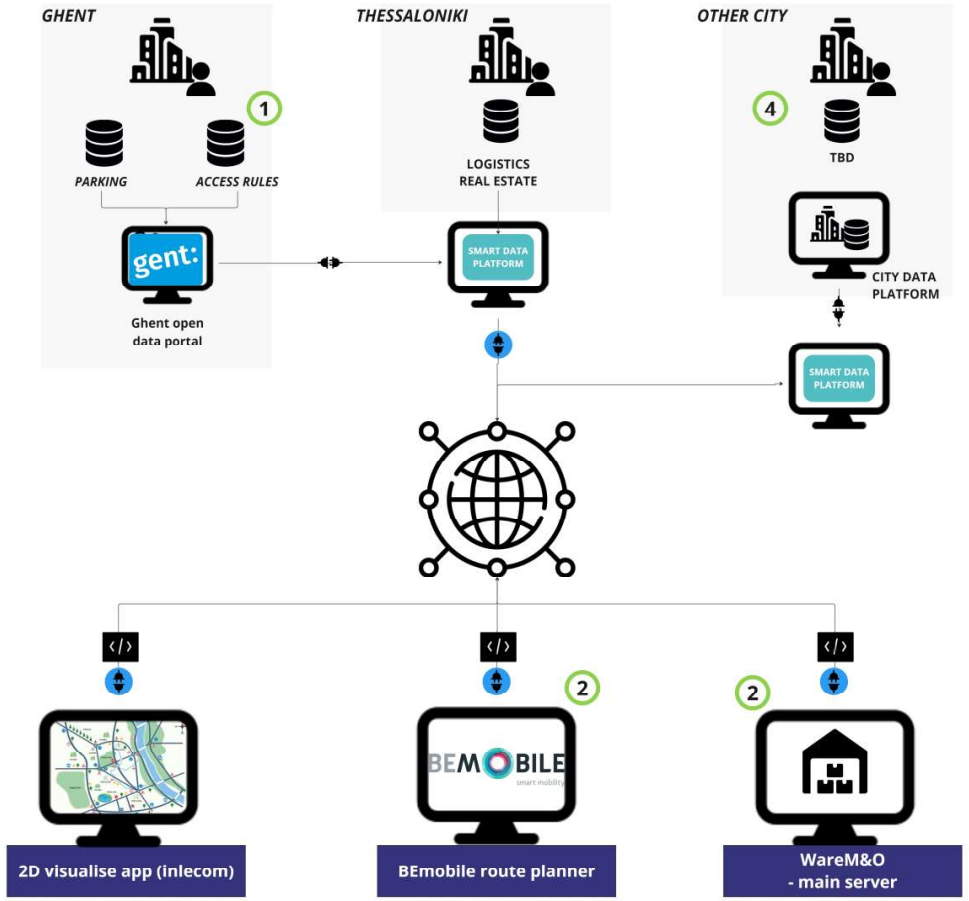


# DISCOLLECT Phase 2
# Next steps

DISCOLLECT Phase 2

## Next step is to extend our SDP setup

1. Connect Access rules as a second **data set** in Ghent
2. Integrate Bemobile (and WareM&O) as first commercial **applications**
3. Add a additional city with its own **SDP**

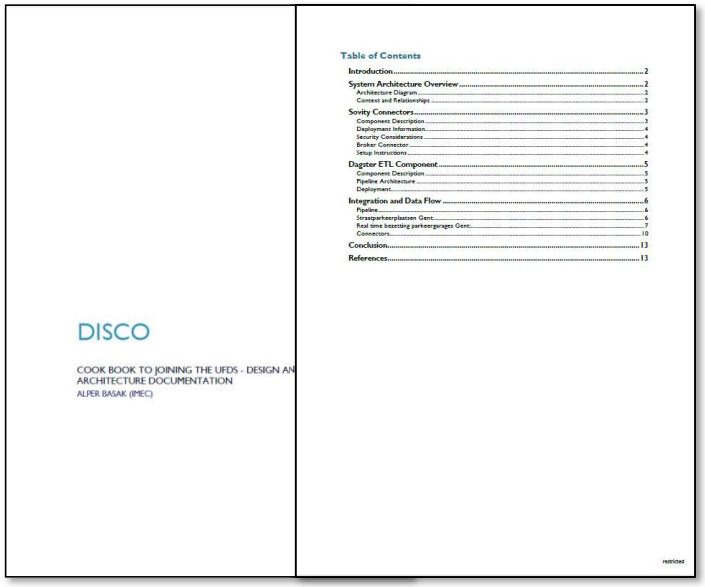


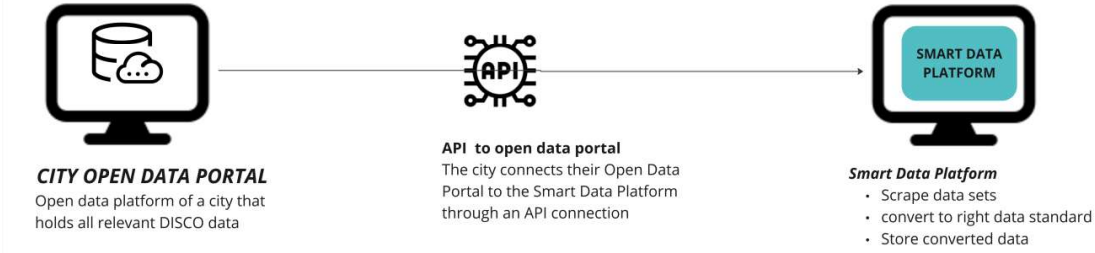
# Integrating SDP in your city

**Cities can share data with the UFDS by connecting their Open Data Portal to the SDP**

1. Set up the Smart Data Platform
   *An instructional Cook book is provided to support cities with the setup.*
2. Choose the relevant data set
   *Parking locations; access rules; logistics real-estate locations*
3. Connect the Smart Data platform API with the open API of your city's data portal

*Imec can support the setup for cities. However, cities are encouraged to install and host their own SDP. Any solutions hosted by imec, will be terminated at the end of the project*




***CITY OPEN DATA PORTAL***
Open data platform of a city that holds all relevant DISCO data

**API to open data portal**
The city connects their Open Data Portal to the Smart Data Platform through an API connection

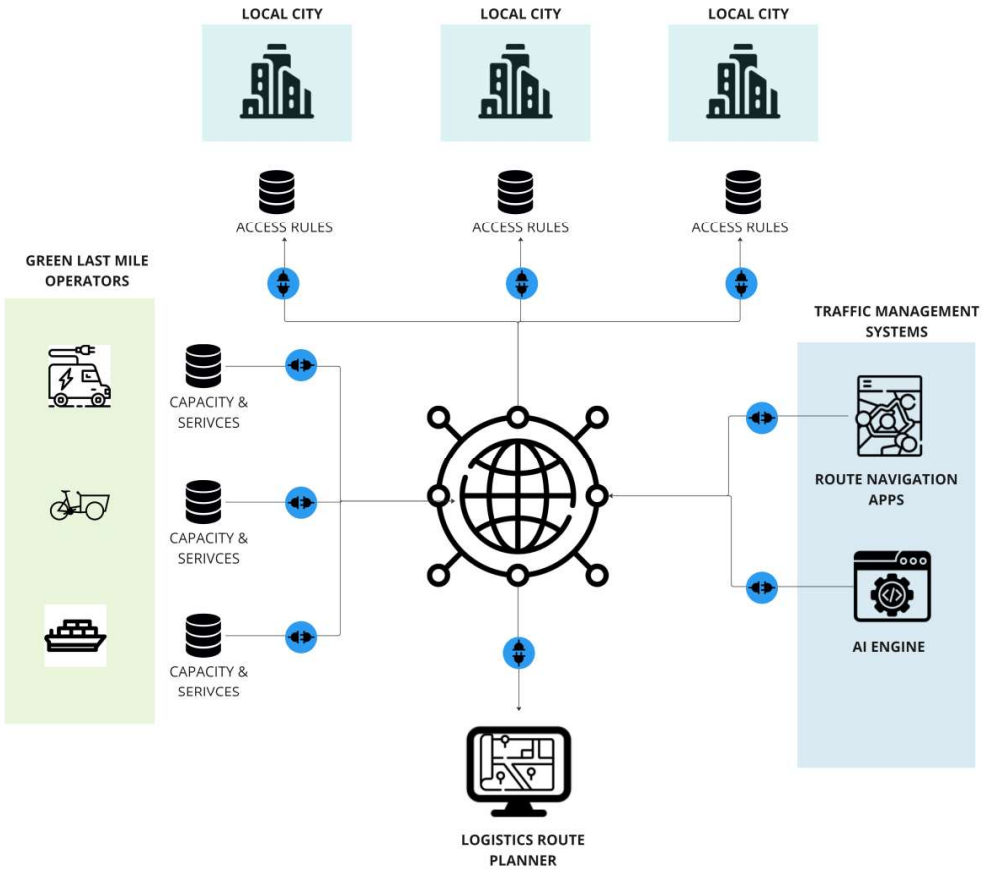
***Smart Data Platform***
- Scrape data sets
- convert to right data standard
- Store converted data

# Urban Freight data spaces

**With data spaces**

- Everyone only needs one connection
- The solution is scalable to additional stakeholders
- The bigger the ecosystem, the more incentivized LSPs will be to join it

→ The city can enrich its ecosystem and attract LSPs



# Ghent Data Space use case

## Questions?

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**Dries Van Bever**
**Dries.vanbever@imec.be**