

Energy and mobility data space

MOBILITIES FOR EU

 T-Systems

 MOBILITIES
FOR EU



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01.

Mobilities for EU



European Consortium

Mercamadrid is the smart urban space chosen by Madrid to test the technical and economic feasibility of **26** electric and autonomous mobility **pilots** for people and goods.

The **data space** will be the enabler to deliver value-added services through the exchange of information between different actors.

All projects will contribute to the EU's 2030 **emission reduction** targets. And they can be replicated in other European cities.



PROJECT COORDINATOR:
[TECHNOLOGY CENTRE] **CARTIF**

LEAD CITIES:

MADRID	Dresden. Dresden
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MADRID ECOSYSTEM:

mercamadrid	EMT MADRID
ferrovial	orange
T-Systems	Plexigrid
pre zero	alsa

DRESDEN ECOSYSTEM:

VW	CARNET
Fraunhofer	SAP
saena	TECHNISCHE UNIVERSITÄT DRESDEN

REPLICATOR CITIES:

ESPOO	TRENCIN	GDANSK	IOANNINA
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CROSS-CUTTING PARTNERS:

Steinbeis Europa Zentrum	AEDIVE	STU	RIGHT CLICK	75
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Pilots to be deployed

01 Autonomous vehicle for people and goods

- 1.1. Medium electric bus (20 persons, 12h/day).
- 1.2. Autonomous waste collection vehicle.
- 1.3. Autonomous goods vehicle.
- 1.4. Deployment of private 5G network SA.



03 Efficient charging and fleet electrification

- 3.1. 329 buses and electrification of the Carabanchel bus station.
- 3.2. Intelligent sharing of energy and electric vehicle charging infrastructures.



02 Electricity grid based on RES and V2G chargers

- 2.1. Distributed smart grid for sustainable transport.
- 2.2. Digital twin for Smart grid management.



04 H2 refuelling stations and hydrogen fuel cell fleet

- 4.1. Deployment of a hydrogen (H2) refuelling station and 10 hydrogen fuel cell based buses.



05 High-value services

5.1. Energy and Mobility Data Space

Development of a data space for the use of green energy and mobility in Mercamadrid. With the aim of optimising and rationalising energy use in mobility and minimising the impact on air quality.

Design and demonstrate the feasibility in a limited urban space (Mercamadrid) of a set of mobility solutions for people and goods, exploiting the combined potential of electrification, automation and connectivity, to later scale and replicate to the whole city and other European cities.



02.

Data space

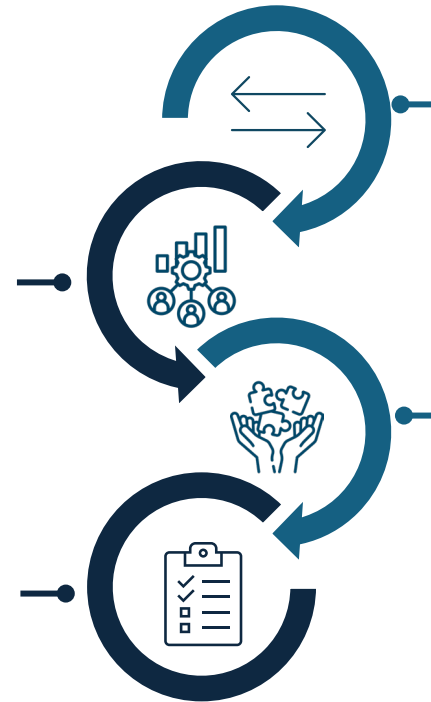
EU data strategy: What rules must it comply with?

Availability of high quality data to create and innovate new business models.

Data business models
EIT EU AI and Technology Data Drive
EU New business models for data services

Data Governance and privacy as a framework for collaborative work

Data Governance Act 2023 (publications)
GDPR (publication)
Data Act 2024 (publication)



EU-wide data interoperability. Technologically compliant.

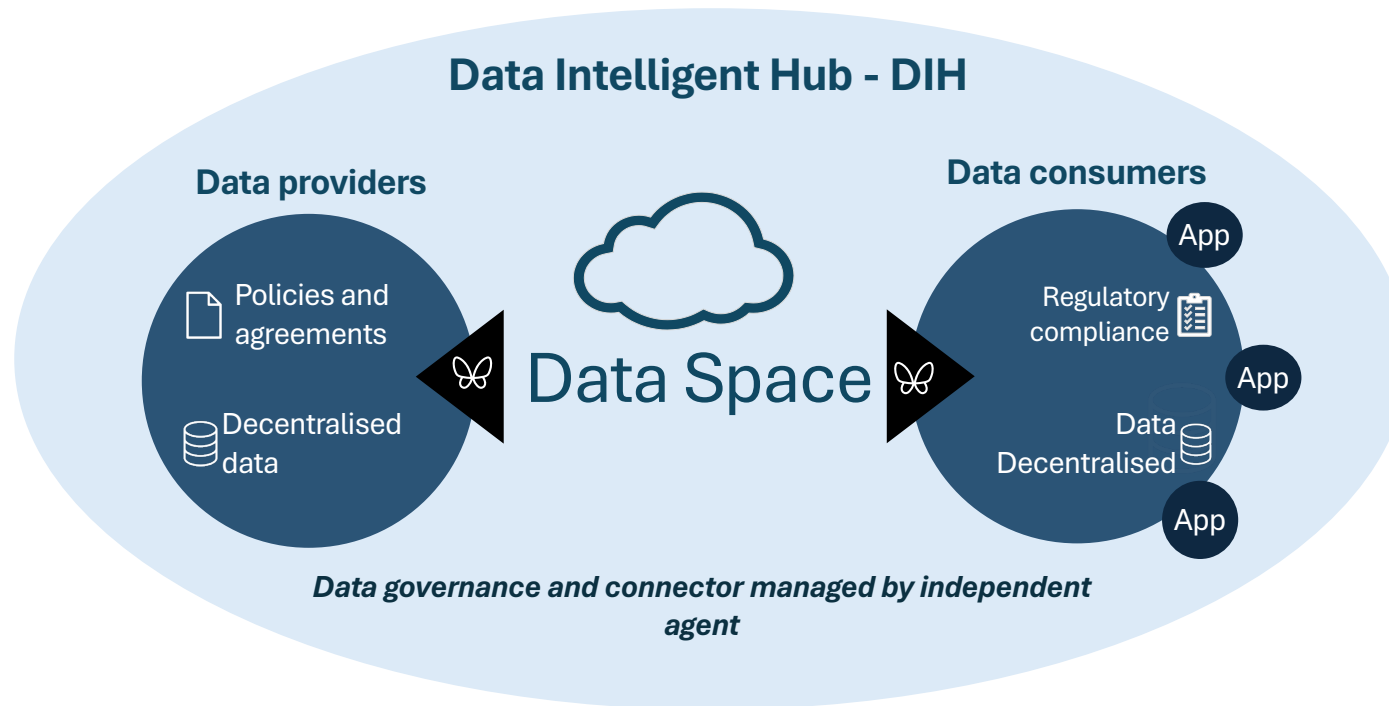
Interoperability European Framework

ESG values and European regulations are respected.

European Climate Law (Green Deal) - CO2 neutrality by 2050

What is a data space?

Data Spaces are ecosystems for sharing data in a decentralised network: the data remains at its source.



KEY POINTS OF THE DIH

-  **Central marketplace** for **secure** and **reliable** data exchange.
-  **Data sovereignty:** the data owner retains control over the flow and use of the data.
-  **Harmonisation** and **accessibility** to a rich data set. Enabling **analytics/IA** and delivering new **business applications** in a collaborative workspace.
-  **Portable and interoperable** solution. Cloud agnostic.
-  Compliant with EU **standards and regulations** (GAIA-X, EIDAS, JWT, ISO, ETSI...).

03.

High-value services

Identification of services

VALUE-ADDED SERVICES

1. ENERGY MARKET PLACE
Market for buying and selling energy in Mercamadrid, considering the supply and demand of electricity in real time (solar panels, electricity grid, reverse vehicle charging...).

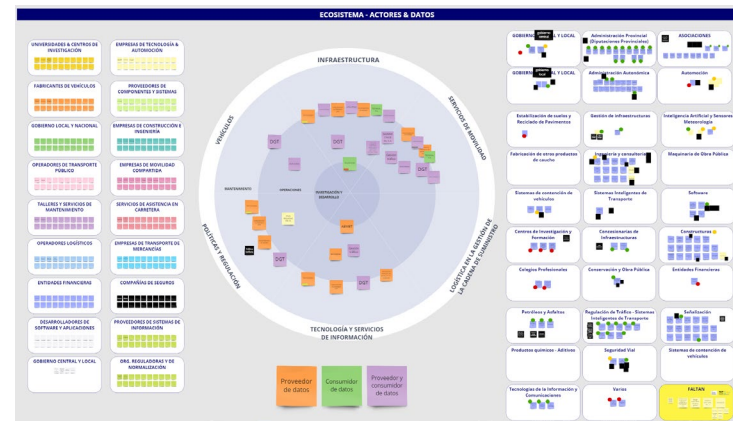
2. KM 0 CARBON FOOTPRINT AND PROXIMITY PRODUCTS
Index the products and goods that arrive at Mercamadrid through the carbon footprint of transport and offer it as a reference for Mercamadrid companies.

3. DYNAMIC ALLOCATION OF RECHARGING POINTS
Service for the allocation and reservation of vehicle charging points, taking into account current occupancy, supply and demand and the price of energy.

CAPABILITIES TO IDENTIFY NEW USE CASES

COLLABORATION AND DATA SHARING WORKSHOPS

- Support in the identification of strategic dimensions and key players in its ecosystem.
- Data sharing and identification of use cases.



1. Energy Marketplace



DESCRIPTION OF THE SERVICE

- Market for the exchange of energy with a **dynamic price system** calculated in real time based on the supply and demand of energy in Mercamadrid.
- The calculation of supply and demand will be made considering the energy generation capacity through solar panels and the reverse charging that vehicles can do. Demand is identified with the recharging needs of electric vehicles through the chargers.
- The energy dump can be gamified and/or bonus.

DIFFERENTIAL VALUE

- Users will know when the energy they recharge their vehicles with comes from clean energy or from other grid sources.
- Users will know the price of kWh at any given moment, as well as the history of peaks and valleys, so that they can choose the most convenient time to recharge their vehicle, or do reverse recharging.
- Users who recharge in reverse at key times of the day will be eligible for exclusive services in the Mercamadrid area.

KEY DATA

- *Loading sessions (pc)*
- *Energy charged (kWh)*
- *Time of use (h)*
- *Average time per session (min.)*
- *Average energy per session (kWh)*
- *Average recharge power (kW)*
- *Charging sessions (AC)*
- *Charging sessions (DC)*
- *Cost of energy (€/kWh)*
- *Energy price (€/kWh)*
- *Occupancy by time*
- *Temperature (°C), Humidity (%) and Pressure (bar)*

2. Carbon footprint of goods



DESCRIPTION OF THE SERVICE

- **Independent sustainability rating** of goods entering Mercamadrid based on the carbon footprint they have generated in the last journey.

DIFFERENTIAL VALUE

- Indicative product certification for Mercamadrid companies on incoming products in terms of the carbon footprint they have generated in their last logistical stage (origin and destination).

KEY DATA

- Data from digital or analogue consignment notes with origin-destination data, type of goods and volumes.
- Type of motorisation of the vehicle: registration number, model, engine, energy certificate, consumption, power, fuel...

3. Dynamic allocation of electric recharging points



DESCRIPTION OF THE SERVICE	DIFFERENTIAL VALUE	KEY DATA
<ul style="list-style-type: none"> ▪ Through an app, users who need to recharge their electric vehicles will be able to know the global status of the electric charger ecosystem in advance. ▪ It will automatically suggest the nearest available chargers to your location that meet your charging needs by vehicle type and charging capacity. ▪ The user will be able to reserve the charger a few minutes in advance. 	<ul style="list-style-type: none"> ▪ Users with charging needs will be able to go directly to the assigned or reserved charger. No need to search fruitlessly around the site with the consequent unnecessary energy expenditure and possible congestion of mobility. 	<ul style="list-style-type: none"> • Type of vehicle recharging. • Current location. • Chargers available. • Rated power of the chargers. • Current energy type of each charger (green energy generated in Mercamadrid or supplied by the electricity grid).

"We have a unique opportunity to implement a data space without limitations, laying the foundations for the exchange of energy and mobility information, and enabling the deployment of new services for the people and businesses of the city of Madrid".



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Thank you!



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