DATA SPACE FOR
SMART AND SUSTAINABLE
CITIES AND COMMUNITIES

WP2- Governance

Webinar 26.06.23

OPEN & AGILE SMART CITIES
EURO CITIES
European Network of Living Labs
AUSTRIAN INSTITUTE OF TECHNOLOGY
FIWARE FOUNDATION
Gospodarska zbornica Slovenije
Chamber of Commerce and Industry of Slovenia

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the European Union

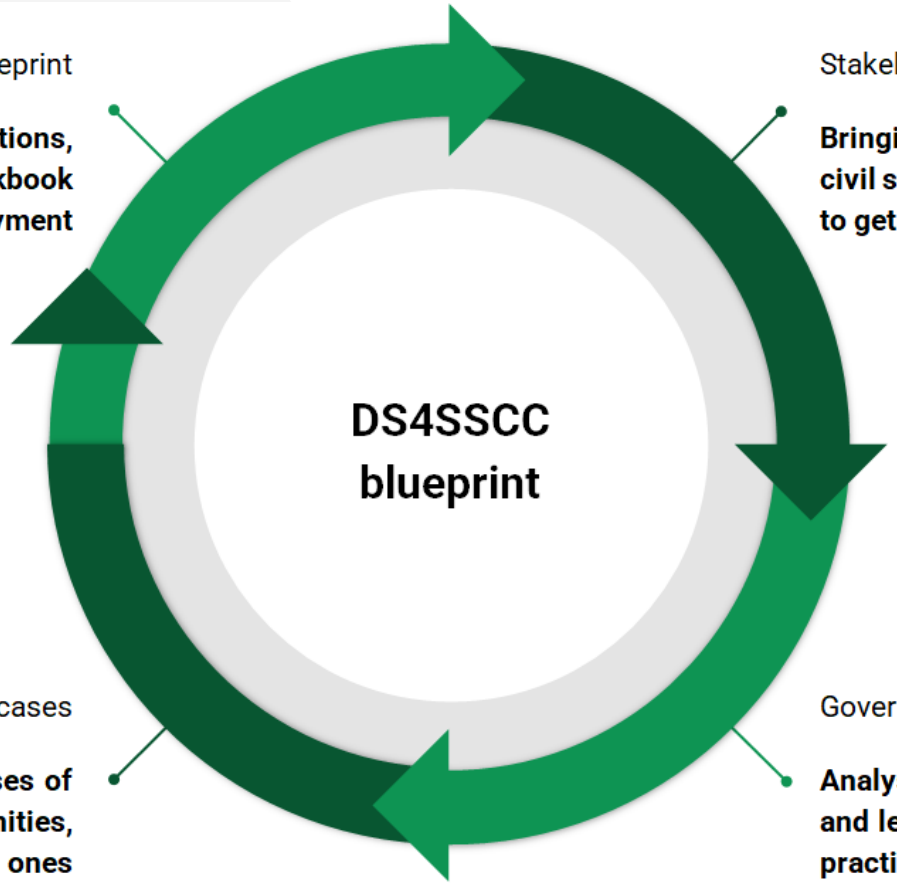
DS4SSCC

Technical blueprint

Catalogue of specifications, Reference Architecture and Cookbook to guide the technical deployment

Stakeholder Forum

Bringing together public administrations, civil society, companies and regulators to get involved in the definition process



Identification of use cases

Collection of existing incipient use cases of data spaces in cities/communities, selecting the most representative ones

Governance Schema

Analysis of related business models and legal framework to provide practical recommendations and governance guidelines for the data space

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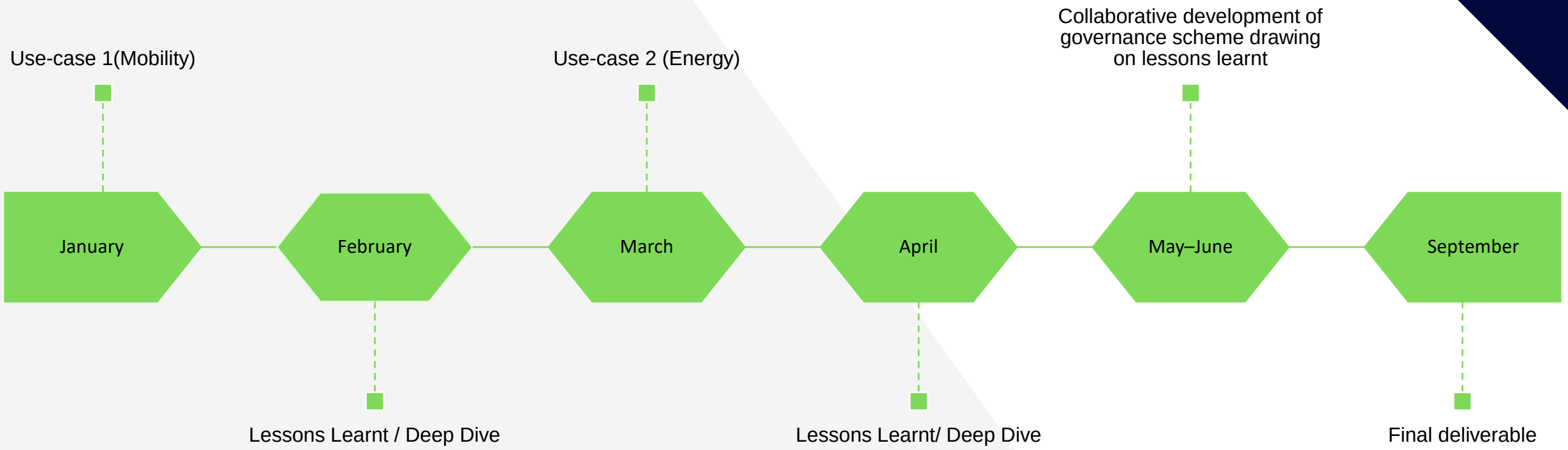
WP2 – Governance

- Capture local ecosystems to draw lessons for governance scheme
- Mapping of stakeholders involved in each use-case (quadruple helix)
- Mapping of datasets & data flows
- Mapping of other types of exchanges between stakeholders which facilitate data flows (e.g. knowledge exchange, legal support, supply of data skills, data service providers, citizens involvement)
- Mapping of mechanisms underlying data exchange (i.e. incentives, cooperation/ decision making mechanisms, value distribution, financing, contractual agreements)

WP2 – Governance

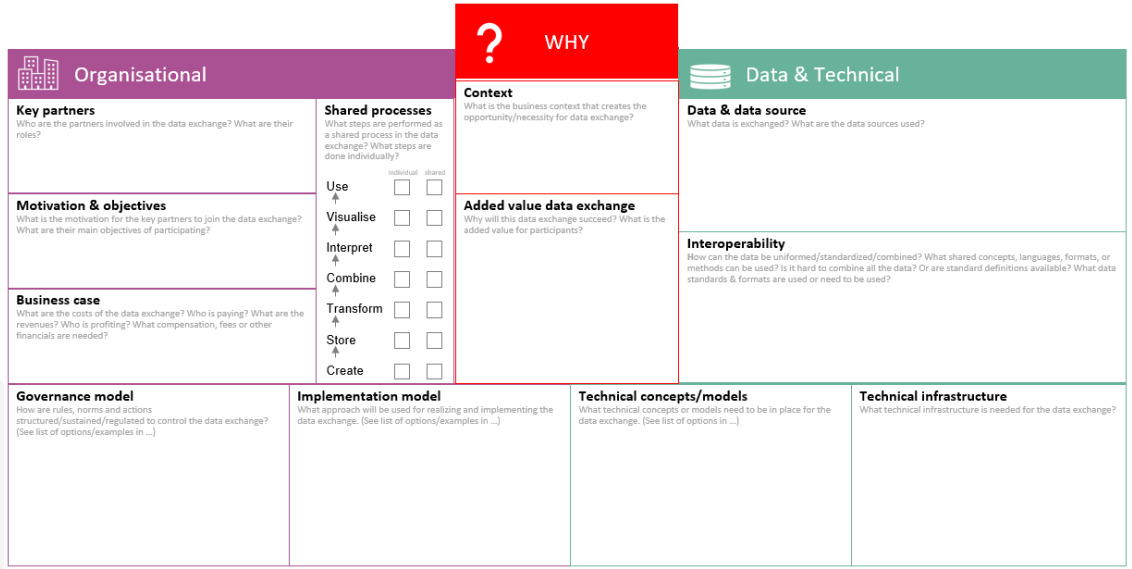


Participants: Aarhus, Amsterdam, Barcelona, Cologne, Eindhoven, Lisbon, Helsinki, Munich, Porto, Rennes, Riga, Tampere, Zaragoza

Broader Stakeholder Forum including academia, private sector & civil society organisations

WP2 – Governance

- Co-development of a tool (led by Amsterdam City Council) to explore, design, discuss, describe and compare new and existing data cooperations
- Describe the current situation, requirements, opportunities, and challenges
- Explore/ defined typical solutions and be inspired by other descriptive data cooperation canvases



- Organisational
  - Key partners
  - Motivation & objectives
  - Shared processes
  - Business case
  - Governance Model
  - Implementation Model
- Why?
  - Context
  - Added value of data cooperation
- Data & Technical
  - Data & Data sources
  - Interoperability
  - Technical concepts/models
  - Technical infrastructure

Data Cooperation Canvas

Organisational

Key partners
Who are the partners involved in the data exchange? What are their roles?

Motivation & objectives
What is the motivation for the key partners to join the data exchange? What are their main objectives of participating?

Business case
What are the costs of the data exchange? Who is paying? What are the revenues? Who is profiting? What compensation, fees or other financials are needed?

Shared processes
What steps are performed as a shared process in the data exchange? What steps are done individually?

	Individual	shared
Use	☐	☐
Visualise	☐	☐
Interpret	☐	☐
Combine	☐	☐
Transform	☐	☐
Store	☐	☐
Create	☐	☐

WHY

Context
What is the business context that creates the opportunity/necessity for data exchange?

Added value data exchange
Why will this data exchange succeed? What is the added value for participants?

Data & Technical

Data & data source
What data is exchanged? What are the data sources used?

Interoperability
How can the data be uniformed/standardized/combined? What shared concepts, languages, formats, or methods can be used? Is it hard to combine all the data? Or are standard definitions available? What data standards & formats are used or need to be used?

Governance model
How are rules, norms and actions structured/sustained/regulated to control the data exchange? (See list of options/examples in …)

Implementation model
What approach will be used for realizing and implementing the data exchange. (See list of options/examples in …)

Technical concepts/models
What technical concepts or models need to be in place for the data exchange. (See list of options in …)

Technical infrastructure
What technical infrastructure is needed for the data exchange?

DATA SPACE FOR SMART AND STABLE CITIES AND COMMUNITIES

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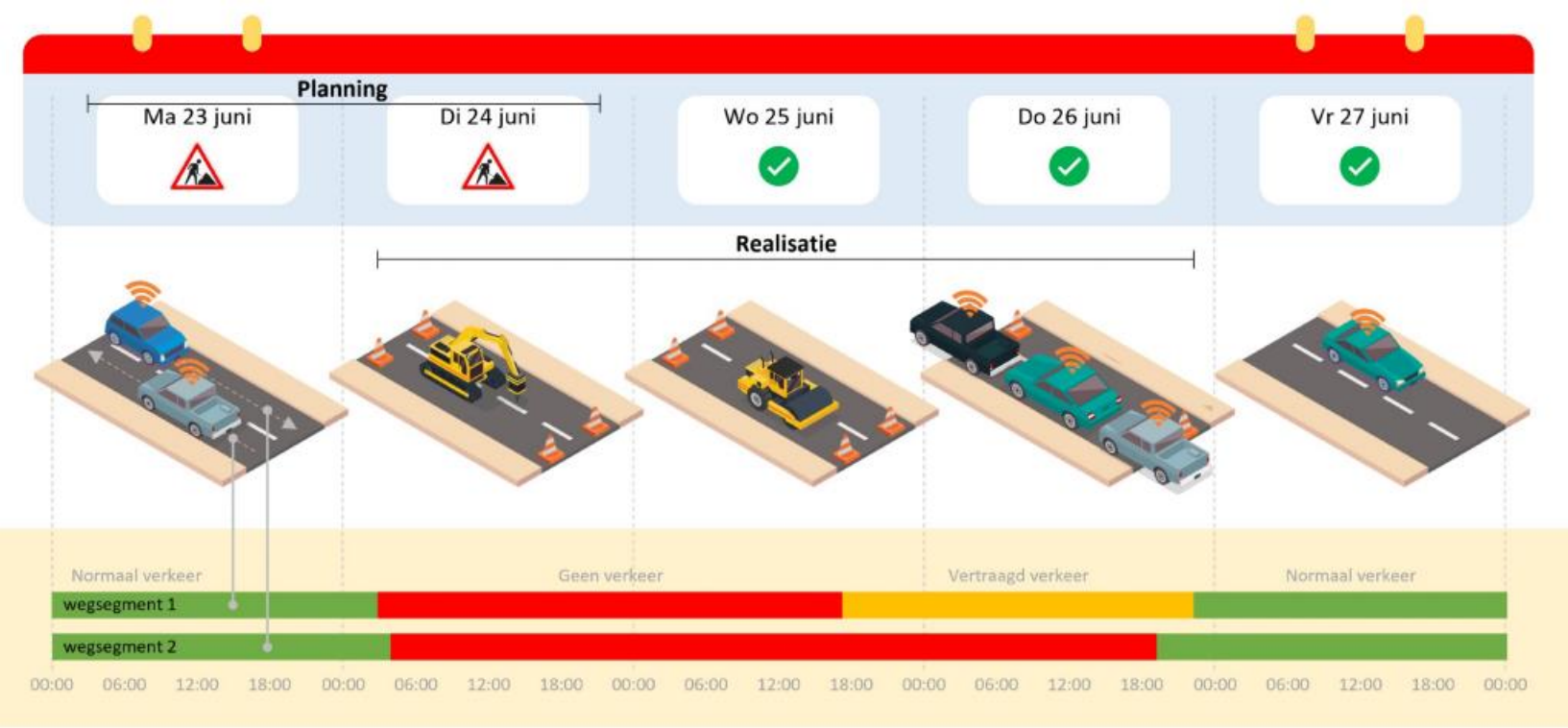
Amsterdam Intelligent Data Exchange Alliance (IDEA)

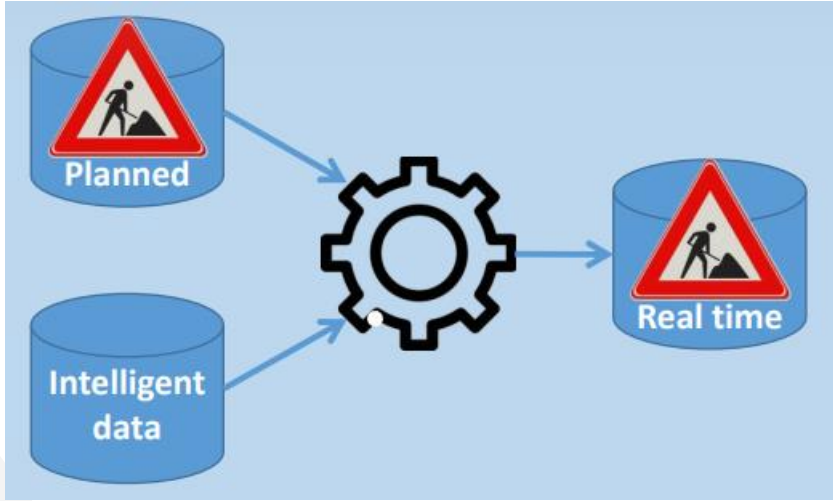


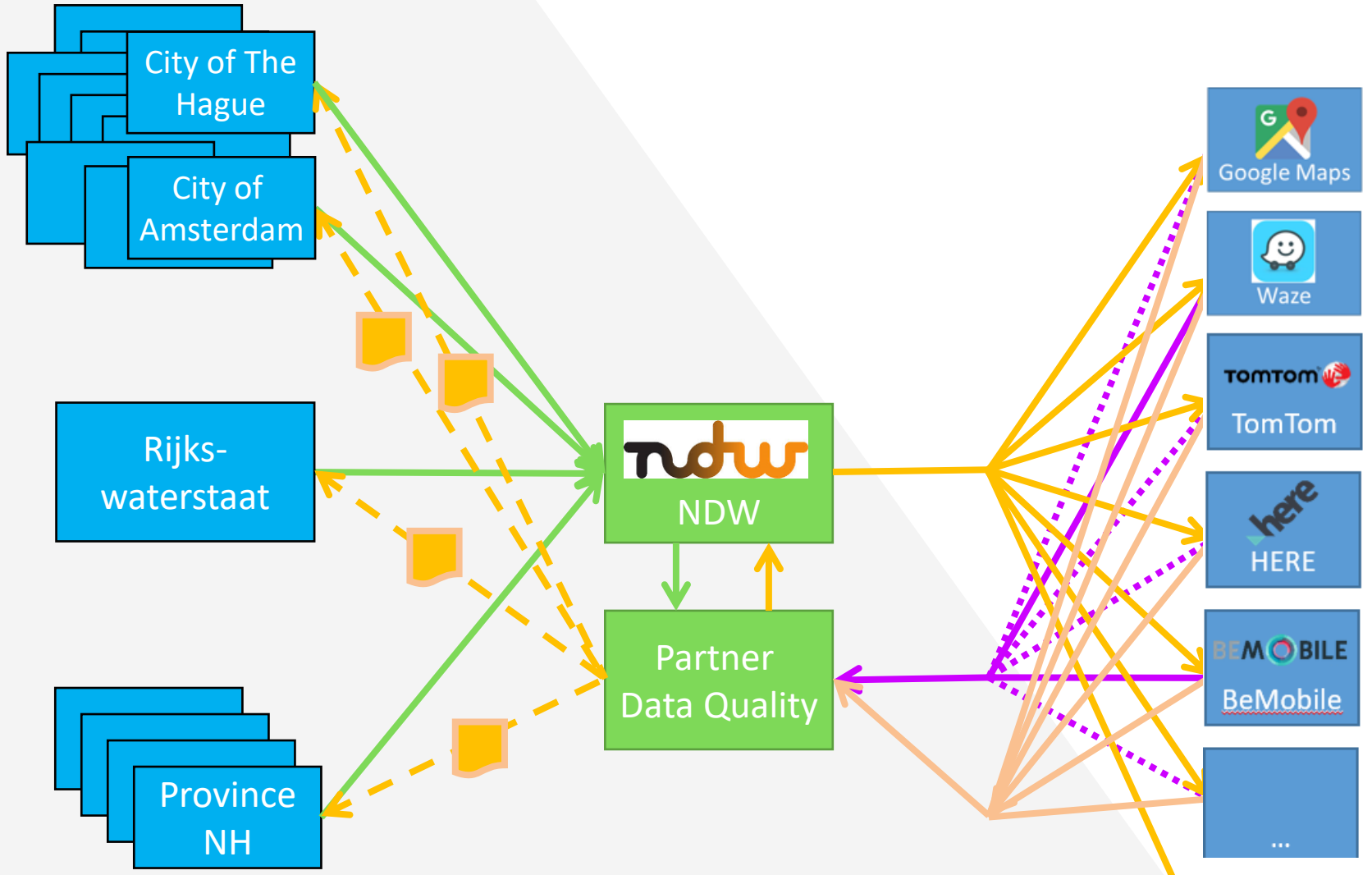
City of Amsterdam

Amsterdam Intelligent Data Exchange Alliance (IDEA)

Pilot: improving data on road works

- Road authorities (local and national) have open data on road works. This data about the planned road works may differ from the actual road works due to subcontractors
- By validating the planned road works, using live data (from floating car data (FCD)), IDEA generates a high quality, real-time data feed for road works => Data partnership




City of The Hague
City of Amsterdam
Rijks-waterstaat
Province NH
NDW
Partner Data Quality
Google Maps
Waze
TomTom
HERE
BeMobile
...
"Open" data

Amsterdam IDEA

Organisational

Key partners

- NDW (National Datawarehouse on road traffic)
- City of Amsterdam, Traffic Department
- City of The Hague, Traffic Department
- Province of North Holland
- RWS (National Road Authority)

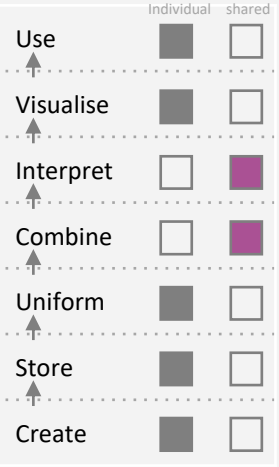
Motivation & objectives

Providing high quality, real time data on road works. To service providers and road authorities.

Business case

The road authorities invest in IDEA to create high quality data. This data will improve the information to road users (through the service providers) and may be used to efficiently control subcontractors.

Shared processes



Governance model

City of Amsterdam led, initiated and financed the pilot phase. Currently IDEA is in the process of transfering the technical lead to the NDW and setting up a national user group to govern the functional parts.

Implementation model

Local pilot, directly based on the national platform, so a nationwide implementation is (technically) an easy next step.

WHY

Context

Road authorities (local and national) have open data on road works. This data about the **planned** road works may differ from the **actual road** works due to f.e. subcontractors.

Added value data cooperation

Service providers and road authorities want to have data on **actual** road works.
By validating the planned road works, using live data (from floating car data (FCD)), IDEA generates an high quality, real-time data feed for road works.

Service providers can provide better information to road users, and road authorities have insight into their road works' actual impact. For example to check on subcontractors.

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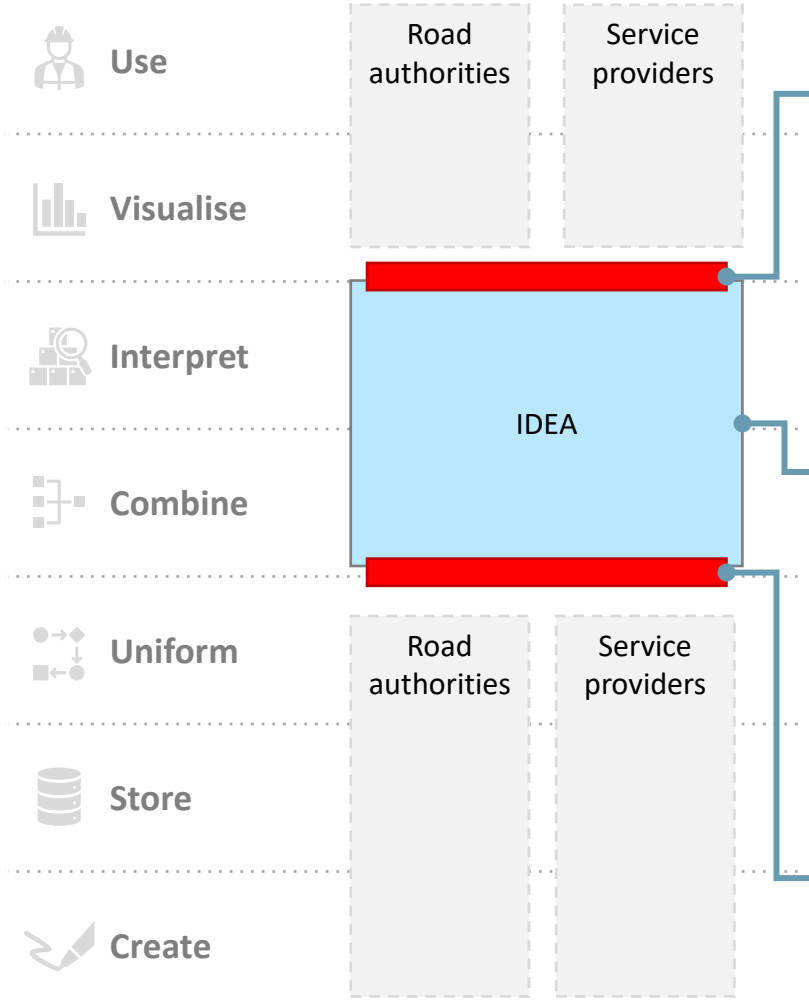
Amsterdam IDEA

Functional Model



Governance model

Output Governance: Open
The IDEA feed is available as open data for anyone. It requires a data user to have a (free) profile at NDW.

Process Governance: Agreement in advance
- A cooperative governance is set up. Together, a user group of road authorities decide on functional issues.
- At the financial and technical side, the NDW is in charge, which is a shared service center for all road authorities it self.
- All input is in Datex-II, a European data standard for road data.
- A machine learning model is used to validate the planned data based on actual and historical floating car data.
- The resulting data is one uniform feed of road works, in Datex-II format.

Input Governance: Mixed (mainly strictly controlled)
Input for IDEA by road authorities is based on the existing processes and platforms (Melvin, LTC, SPIN) for planned roadworks. Only official road authorities can provide their data.
Input from service providers for Floating Car Data is bought on a commercial contract.
Service Providers are invited to provide feedback on the IDEA data.

Implementation model

- IDEA is initiated and initially financed by the City of Amsterdam.
- IDEA is developed in cooperation with NDW, the national shared service center for data from national, regional and local road authorities.
- By working together with the NDW, a local solution is build on top of the national framwork, using only existing data sources. By doing this, from a technical viewpoint, nationwide scaling up to other road authorities would be very easy.
- A pilot was started with 2 local, a regional and a national road authority.
- IDEA is now ready to be implemented for all road authorities in The Netherlands, using only existing systems and data sources.

Amsterdam IDEA

Enablers of data sharing	Challenges
• Improving data quality as key enabler to data sharing and collaboration with private sector • Using a Data Quality Partner (technology company) as a temporary intermediary to improve quality of data but also build trust in the ecosystem • Two intermediary roles in ecosystem • Bottom-up approach / starting with limited number of partners • Data density (existing open datasets, data to re-use) • Less costs of involvement for other public bodies after initial proof of concept	• Upfront investment to create legal agreements and set up the ecosystem (time, resources, costs) • Initial push to build trust with private sector partners

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Amsterdam IDEA

Benefits:

- Better quality of traffic data for all stakeholders
- Service providers can provide better information to road users
- Road authorities and cities have insights into actual road works' impact (e.g. enabling check on subcontracts).
- Less traffic disruption and air pollution, increase liveability of cities
- Accelerating the shift to smart & sustainable mobility

Barcelona Data City Lab

Impacte

DAS
DATA SCIENCE @ UNIVERSITAT DE BARCELONA

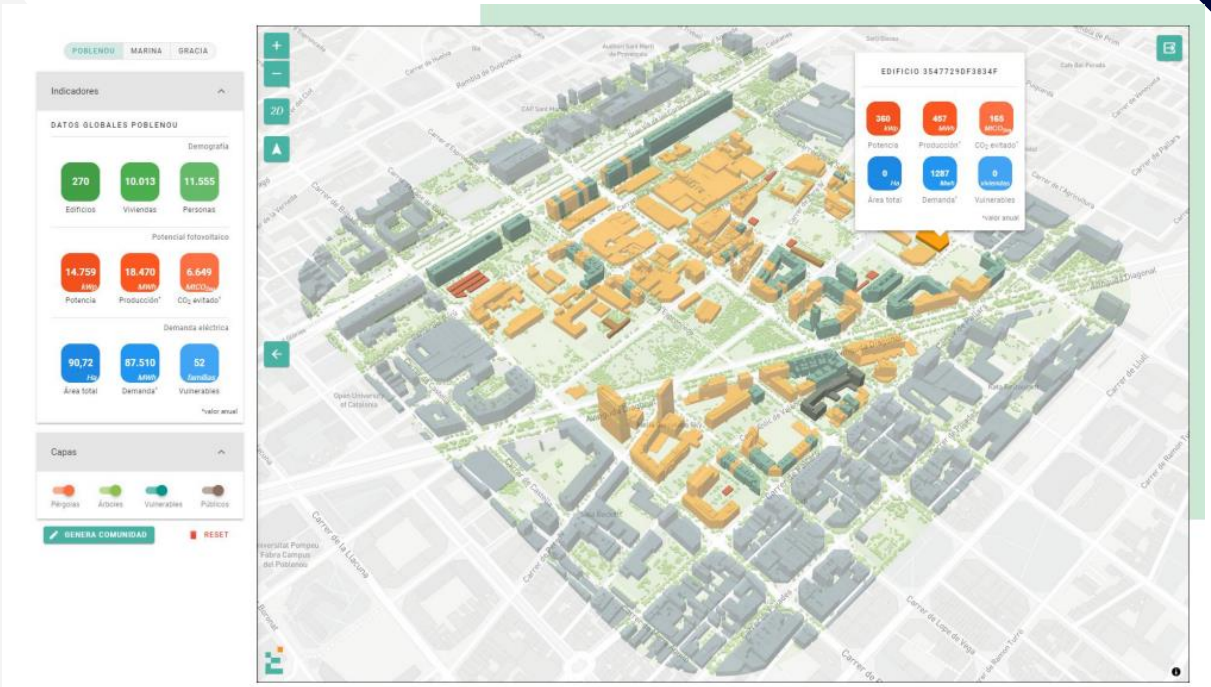
acciona

bithabitat

Ajuntament de Barcelona

Barcelona Data City Lab

- Development of a tool to assess the maximum surplus of solar energy - generated from municipal buildings and public spaces – in relation to the maximum impact on the spending of households in a situation of energy poverty.



Providers	Type of datasets	Access
Barcelona city council	Geospatial data Social services data CRM data Population statistics Employment data Public building/public spaces characteristics	Open data / restricted
Datadis	Aggregated energy consumption per postcode	Restricted (Private APIs)
Endesa	Anonymised aggregated energy data (monthly consumption per building)	Restricted

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Barcelona DataCity Lab

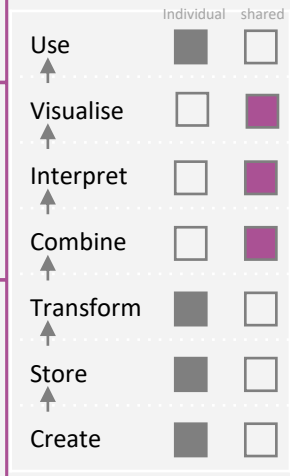
Organisational

Key partners
- Barcelona City Council
- Other local authorities
- DataCity Lab
- ImpactE
- Acciona
- Endesa
- University of Barcelona

Motivation & objectives
The cooperation aimed to use data to evaluate the potential of photovoltaic panels on public buildings in three neighbourhoods of Barcelona (i.e. Poblenou, La Marina and Vila de Gràcia) and in turn inform the creation of Energy Communities.

Business case
Acciona funded the project under the condition that the final product produced should present a new business opportunity both for Acciona and ImpactE.

Shared processes



WHY

Context
Barcelona has developed an energy strategy (SEAP) which aims to use 100% renewable energy, with zero emissions and reduce energy poverty.

Added value data exchange
Development of a visual tool for city use which can support decision making in terms of energy transition and the development of energy communities

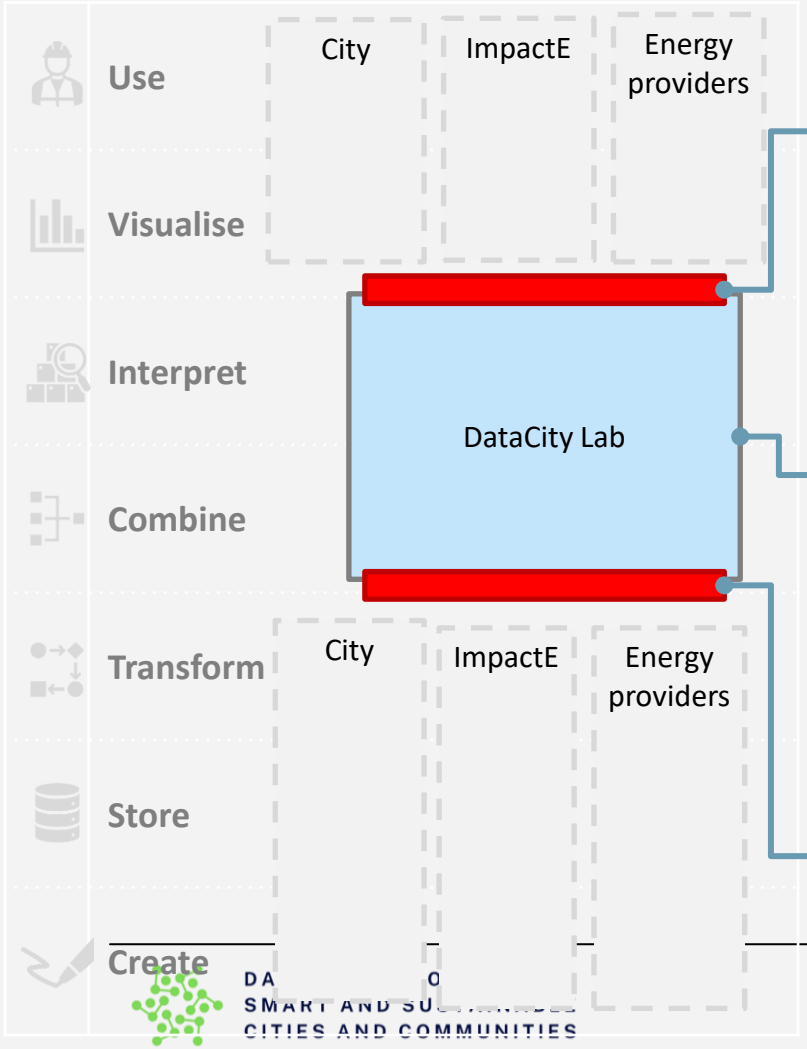
Governance

Governance model
Barcelona city council led and coordinated the project. DataCity Lab acted as project manager, looked for funding for the challenge, organised workshops to define specific challenges and provided administration and legal support.

Implementation model
Local pilot tested in three neighbourhoods. The start-up company tasked to develop the tool is a local start-up (ImpactE)

Barcelona DataCity Lab

Functional Model



Governance model

Output Governance

- Tool developed by ImpactE made available to the city council (SaaS)

Process Governance: Agreement in advance

- Consortium Contract as part of the DataCity Lab programme, including safeguards to protect Intellectual Property Rights
- Validation of models and algorithms developed and used by ImpactE as welkl as data quality by the data science department of the University of Barcelona

Input Governance:.

- Barcelona city council (open & restricted anonymised data). Example of datasets include Geospatial data, Social services data, CRM data, Population statistics or Employment data.
- Datadis Open & Restricted API (aggregated energy data per postcode)
- Endesa provided limited anonymised aggregated energy data (monthly consumption per building)in the context of the challenge (restricted)

Implementation model

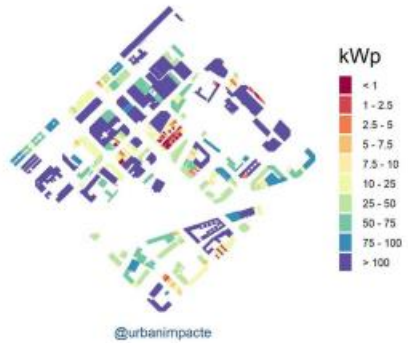
- Co-development of a visual tool which aggregates different sources of data. In doing so the tool allows to assess the maximum surplus of solar energy generated from municipal buildings and public spaces in relation to potential impact on the spending of households in a situation of energy poverty.
- Data science expertise provided by the University of Barcelona and ImpactE, energy provider expertise provided by ImpactE and Acciona, local expertise provided by city council.

Ajuntament de Barcelona

MAXIMUM POTENTIAL

Poblenou

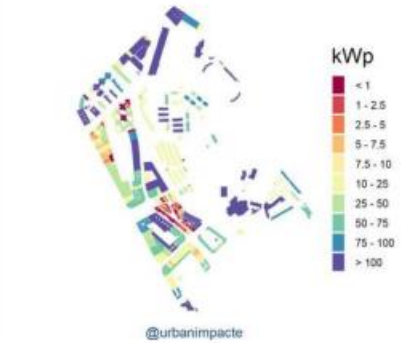
La Supermanzana Social de Poblenou podría, con 14.8 MWp instalables, cubrir el 21.1 % de su demanda.



149 Familias vulnerables	**3** Edificios Públicos	**243** kWp instalables
44 Familias vuln. alcanzadas	**41** % ahorro energético	**250** € ahorro medio por familia

La Marina

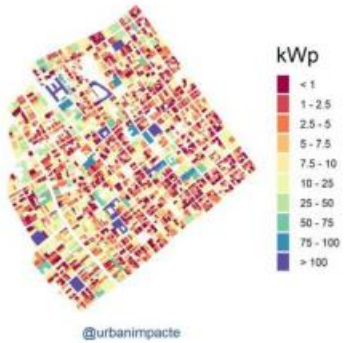
La Supermanzana Social de La Marina podría, con 10.2 MWp instalables, cubrir el 18.1 % de su demanda.



525 Familias vulnerables	**8** Edificios Públicos	**280** kWp instalables
62 Familias vuln. alcanzadas	**42** % ahorro energético	**193** € ahorro medio por familia

Gràcia

La Supermanzana Social de Gràcia podría, con 14.3 MWp instalables, cubrir el 13.8 % de su demanda.



259 Familias vulnerables	**14** Edificios Públicos	**434** kWp instalables
130 Familias vuln. alcanzadas	**24** % ahorro energético	**310** € ahorro medio por familia

Ajuntament de Barcelona

OPTIMAL CASES

1. Periodo de retorno
2. Máximo ahorro económico sobre familias vulnerables
3. Máximo ahorro económico por familia

Poblenou

18	100	10
Familias PE	kWp	% Energía público

40	4.5	0.3
% ahorro energético PE	K€ Ahorro PE	k€ ahorro público

La Marina

28	100	20
Familias PE	kWp	% Energía público

29	8.5	3.5
% ahorro energético PE	K€ Ahorro PE	k€ ahorro público

Gràcia

18	100	10
Familias PE	kWp	% Energía público

40	3.7	1.6
% ahorro energético PE	K€ Ahorro PE	k€ ahorro público

Barcelona Data City Lab

Benefits:

- Support decision making in terms of energy transition and the development of energy communities
- Supplying clean, affordable, and secure energy
- Reduction of energy poverty / Leave no-one behind (Just Transition)

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Barcelona Data City Lab

Enablers of data sharing	Challenges
• Internal collaboration and coordination within Barcelona City Council (across four departments) • DataCity Lab as a facilitator: acted as project manager, looked for funding for the challenge, organised workshops to define scope, but also provided admin and legal support • Close collaboration with other municipalities which allows to run the model developed by ImpactE • Building on Acciona funding as well as their expertise • University of Barcelona as another facilitator by providing data skills, validation models/algorithms used, data quality, process, mentoring and peer reviewing role	• Municipality does not have access to energy data/ Difficulties to get data from private utilities • Timespan of project too short to develop methodology to obtain consent from citizens to share their data (e.g. Rubi City Council) • Question of project's sustainability (i.e. funding)

Lessons for DS4SSCC governance

- Identification win-win situations. Legislation is a possible stick. However, it is better to find mutual incentives to collaborate
- Start from use-cases/existing needs
- Importance of defining roles and responsibilities within data collaborations and rules for stakeholders (e.g. to present unfair competition)
- Key role of intermediary organisations, especially B2G
- Importance of knowledge/ best practices sharing (role of community orchestrator)

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