Overview of Data Spaces and Governance Frameworks

Leona King – Centre for IT and IP Law, KU Leuven

DATA SPACES SUPPORT CENTRE

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European Data Strategy

- Aims at unleashing the benefits of data sharing in Europe through the combination of fit-for-purpose legislation and governance to ensure data availability.

- The Common European Data Spaces will implement the vision of a Single Market for Data in Europe, making sure that:
  - Data can flow within the EU and across sectors
  - EU values and legislation are complied with
  - The rules for data use and sharing are fair and there are **clear and trustworthy data governance mechanisms** in place
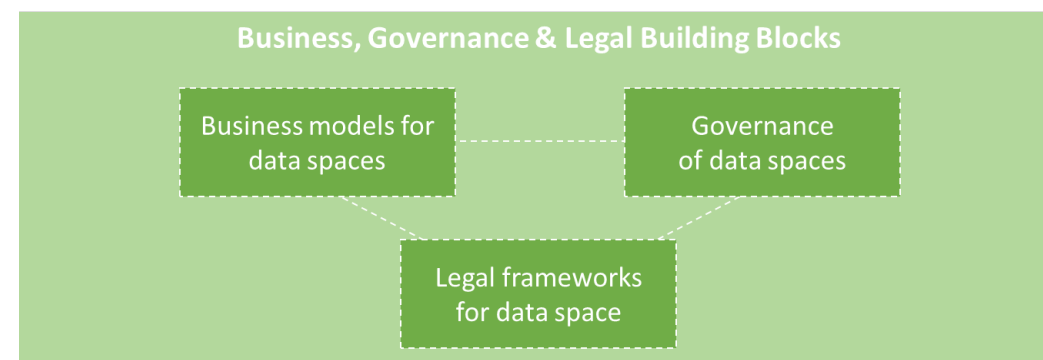
Building Blocks

- Started with the OpenDEI building block model (Starter Kit)

- Developing a new version: Positions the business, governance and legal aspects more clearly

- Incorporating insights from relevant projects and initiatives (including the TGs & EGs)

- Using the latest insights from the work on technological convergence by DSBA

- Share more information with you soon, a version will be part of the 0.5 Blueprint (September).
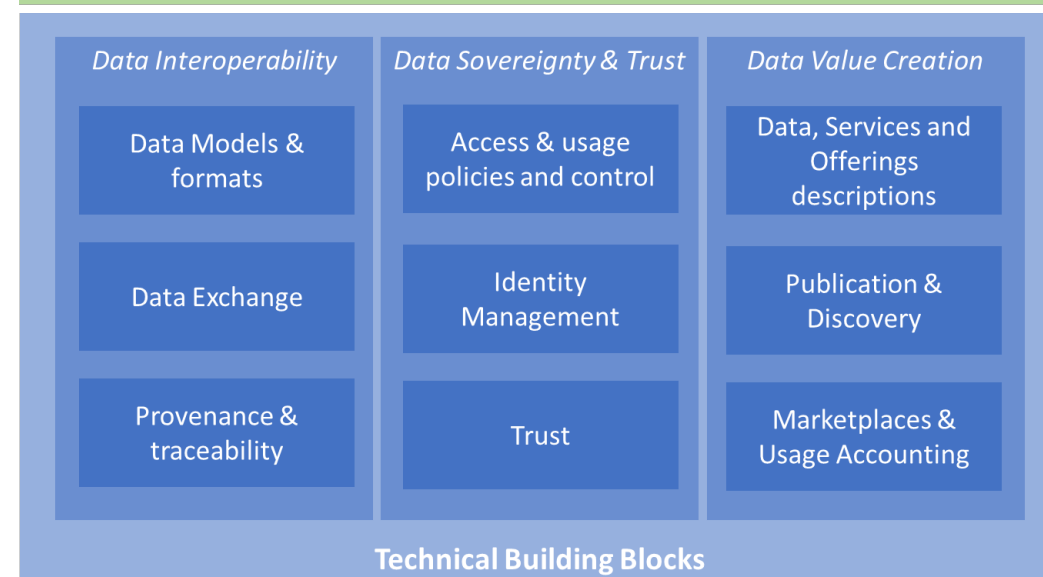

Data Spaces Building Blocks

INTEROPERABILITY	TRUST	DATA VALUE	GOVERNANCE
Data Models & Formats	Identity management	Metadata & Discovery Protocol	Overarching cooperation agreement
Data Exchange APIs	Access & usage control / policies	Data Usage Accounting	Operational (e.g. SLA)
Provenance and traceability	Trusted Exchange	Publication & Marketplace Services	Continuity model

Technical Building Blocks   Governance Building Blocks

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Two categories of Building Blocks

Business, Governance and Legal Building blocks

Technical Building Blocks

Business, Governance & Legal Building Blocks

Business models for data spaces	Governance of data spaces

Legal frameworks for data space

Data Interoperability	Data Sovereignty & Trust	Data Value Creation
Data Models & formats	Access & usage policies and control	Data, Services and Offerings descriptions
Data Exchange	Identity Management	Publication & Discovery
Provenance & traceability	Trust	Marketplaces & Usage Accounting

Technical Building Blocks

DATA SPACES SUPPORT CENTRE

What is governance in a data space?

DSSC Glossary:

- Governance is the creation, development, maintenance and enforcement of a **governance framework**.
  - Governance framework: the set of principles, standards, policies (rules/regulations) and practices that define how a Data Space is governed and how decisions are made, created, and enforced by the Data Space Governance Authority.

- Governance is multifaceted and include **business**, **operational** and **legal** aspects. It also sets requirements for the **technical** architecture of a data space.

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Governance Thematic Group

Generated from input received in DSSC Governance Thematic Group KOM - see MURAL

Governance?

Roles and responsibilities

Data governance framework

Dispute resolution

Social aspects
Multi-stakeholder
Decision-making
Centralised
Legal requirements
Responsibilities process
Legal entity
Management
Protecting minority
Data Principles
Human-centric approach
interests
intermediaries
Practices
Ethical considerations
European Data Innovation Board
Policies
Sectoral-specificities
Data governance
Governance authority
Structures
Roles
Governance
Data altruism organisations
Participation
Oversight Data
Public-private
Governance Act
Personal data
Value distribution
interactions
Federated
Rights
Common
Interests
Interoperability
vision
and incentives
Contracts
Conflict resolution
Partnerships

(Re-)assessment process

Onboarding/offboarding mechanisms

Decision-making, rules and policies

Generated from input received in DSSC Governance Thematic Group KOM - see MURAL

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Thank you

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DATA SPACES
SUPPORT CENTRE

Tourism Data Space Governance Framework

DSSC Insight Series

"Governance for Data Spaces"

26 June 2023 | 14:00 to 15:30 CEST | online

Eric Pol

aNewGovernance

Tourism is…   … a major EU industry

427 b
EUR visitors exports

2.3 m
businesses

12.3 m
direct jobs

27.3 m
w. indirect jobs

10.3%
of EU GDP

745 m
international tourist arrivals
50% of the global market

DATES
European Data Space for Tourism

aNewGovernance

Why Tourism needs a Data Space

Climatology

Finances and Economics

Transport

Tourist destination

Human talent

Feelings of the tourist

Tourism Ecosystem
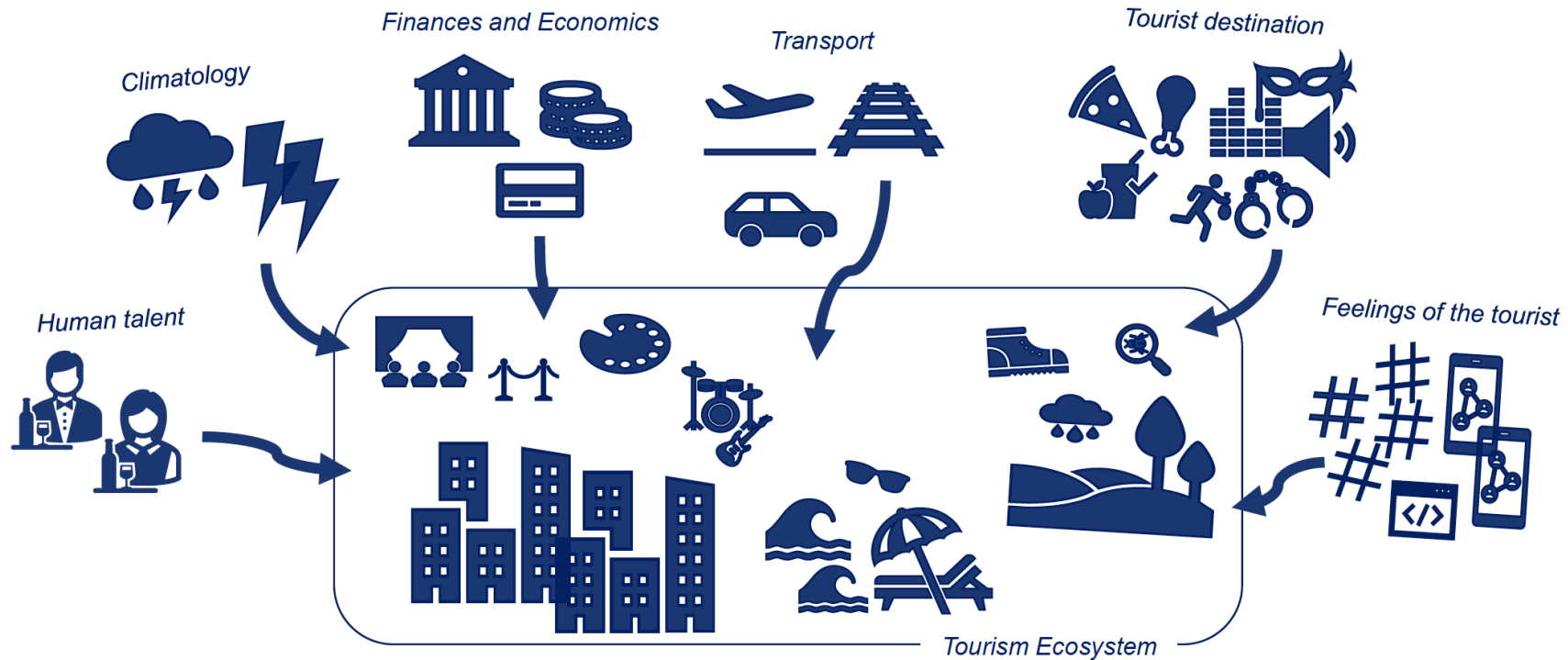
"In Tourism, **different perspectives and private and public spheres come together**, and thus adequate modelling typically will involve variables beyond those of transactional or informational systems of operators"

← That is why sharing data is so necessary!

What governance framework for TDS

Rules for data sharing will be developed on many levels at the same time

New EU data laws — Regulatory framework for data sharing

EU level bodies — How to ensure that data-sharing governance will deliver the expected results?

Member states — How to implement data-sharing governance on a national level?

Data space initiatives — How to specify a governance model for our data space?

Tourism Data Space Rule Book

DATES
European Data Space for Tourism

Innovation and growth,
for all type and size of actors,
in a trustworthy framework

EU Rulebook

MS Rulebook

Technical Rulebook (inc EDIC)

Common to all DS = eases interoperability

Tourism DS Rulebook

Sub-Tourism DS Rulebook

DATES
European Data Space for Tourism

This is about Tourism, not Data sharing

Tourism Data Space Rule Book

Tourism data space governance starts with Tourism sector governance

Existing bodies

Existing guidelines & policies

Existing standards

Don't reinvent the wheel!

MIND THE GAP

Tourism Data Space Rule Book

DATES
European Data Space for Tourism
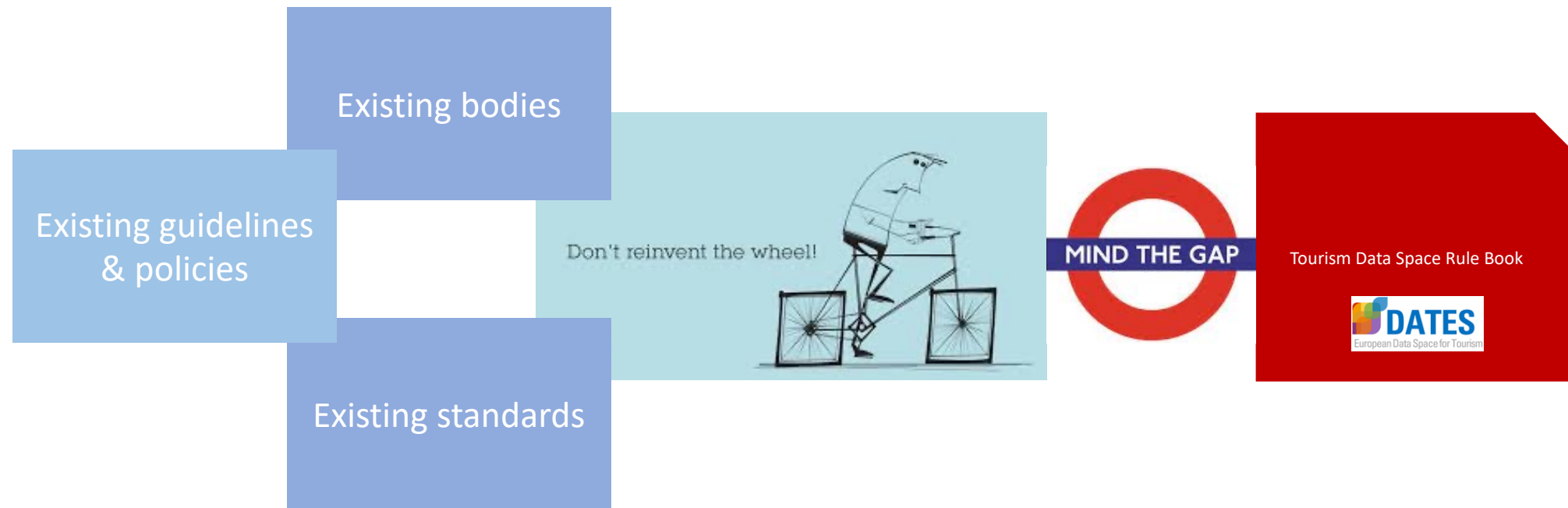
Fundamentals of Tourism Data Space Governance Framework

TOP-DOWN Regulation
DGA, DA, GDPR, IA Act, DMA, DSA,
Competion laws, Tourism-relevant laws,…
Harmonized standards ETSI, CEN-CENELEC,….

JURISDICTIONS
public sector

HARD LAW – regulatory compliance

EU

CROSS-SECTORAL
Glossary, blueprint, ID, personal data,….

Workgroups

SOFT LAW – labels, verifications, audits

THEMATICS
mostly private sector & academia

MEMBER STATE

Councils

TOURISM SECTOR

TOURISM DATA SPACE
DATA SHARING ECOSYSTEMS
mostly mix public & private

| SubData Space 1 | SubData Space 2 | SubData Space 3 | SubData Space 4 | SubData Space 5 | SubData Space 6 | SubData Space 7 | SubData Space … |

BOTTOM-UP Standards & Digital Commons
Data-sharing rules, Business rules, Technical rules
Open source tools, Reference open data bases

Tourism Data Space Rule Book

DATES
European Data Space for Tourism

The tourism data space rule book adheres to relevant EU and national regulations, both in terms of Data and in terms of Tourism relevant regulation, and incorporates local rules for the particular data space determined through its own decision-making processes (i.e., which standards, guidelines or business agreements are enforced within the Tourism Data Space).

DATES
European Data Space for Tourism

aNewGovernance

2nd Pillar of Tourism Data Space Governance Framework: Roles

Rolebook DS* Rulebook

*: Data Strategy, Data Sovereignty, Data Sharing, Data Spaces

Dissemination of regulations

Identification of governance gaps

Resolution of overlapping competencies

Alignment within a Data Space

Conflict resolution across Data Spaces

Balancing innovation and regulation

Learning

Compromise

Adaptive regulation

More details in
Towards a Holistic European Data Governance
Due for publication September 2023

SITRA

in collaboration with

aNG
aNewGovernance

DATES
European Data Space for Tourism

Tourism Data Space Governing Body

Inter dataspaces coordination

EUROPEAN DATA INNOVATION BOARD

DATA SPACE SUPPORT ORGANISATION*

*: currently DSSC

COORDINATOR

TOURISM
COMMON EUROPEAN DATA SPACE

EUROPEAN TOURISM ASSOCIATIONS REPRESENTATIVES

SUB DATA SPACES REPRESENTATIVES

- Legal Structure
- Organisational agreements
- Operational agreements
- Business agreements

Holistic & Adaptative Tourism DS Rule Book

MOBILITY
COMMON EUROPEAN DATA SPACE

SKILLS & JOBS
COMMON EUROPEAN DATA SPACE

FINANCE
COMMON EUROPEAN DATA SPACE

HEALTH
COMMON EUROPEAN DATA SPACE

GREEN DEAL
COMMON EUROPEAN DATA SPACE

...OTHER
COMMON EUROPEAN DATA SPACES

TOURISM ECOSYSTEM

LEISURE + BUSINESS TRAVELLERS

DATES
European Data Space for Tourism

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Practical Dimensions of Tourism Data Space Governing Body

Purpose

Conditions of access & membership	Value (economical, financial, social)
Evaluation of data culture	Commercial & competition dimension
Transparency & Communication *	Contractual principles & Responsibilities
Principals (FAIR, trustworthy…)	Governance Bodies
Typology of data ▼	Conflict management
Data ownership	Data Security
Data privacy	Standards & Protocols
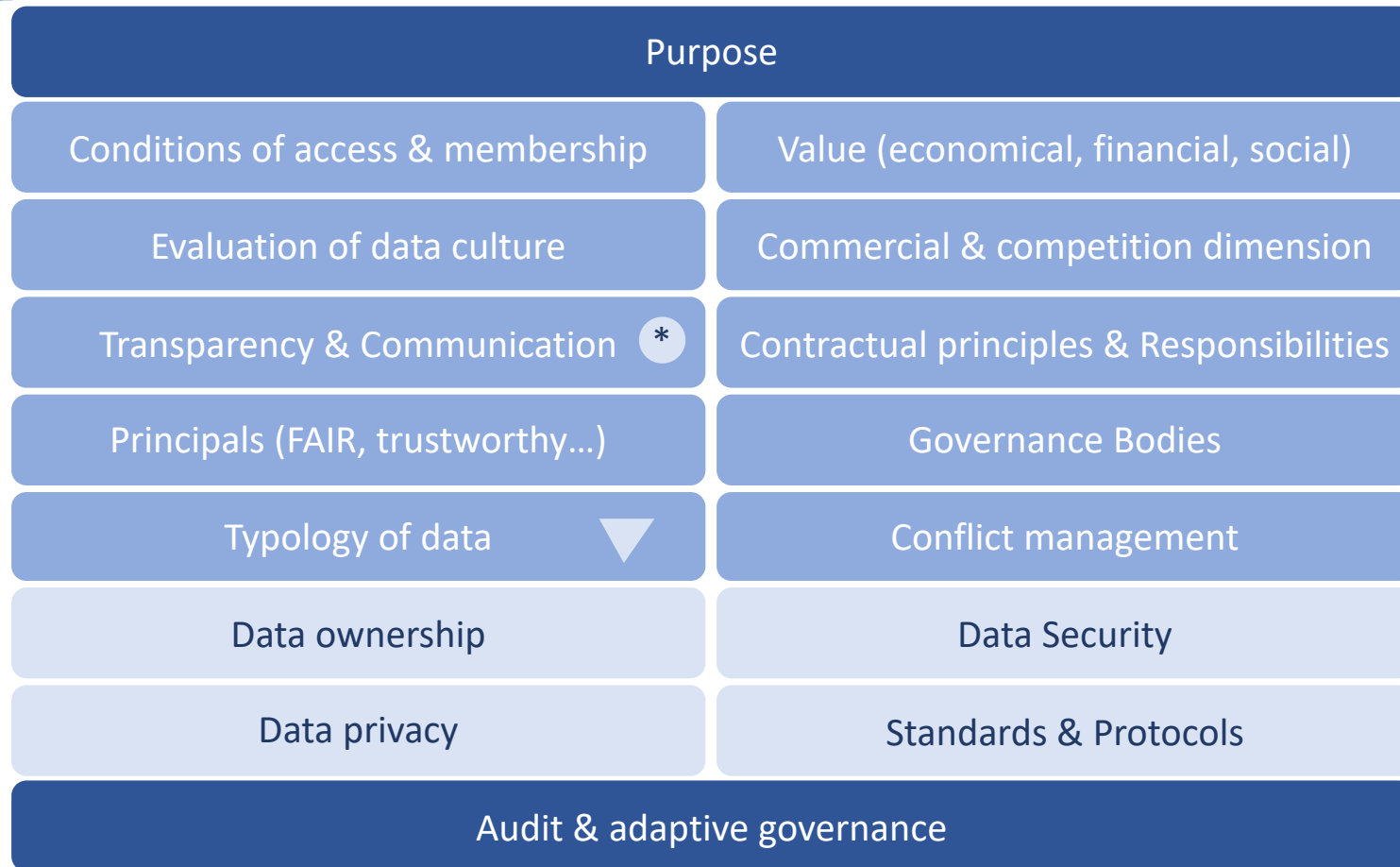
*: includes transparency in data collection, as well as transparency in organisation and processes of the data space

Audit & adaptive governance

DATES
European Data Space for Tourism

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Find out more:

DATES CSA
Tourism Common European Data Space
https://www.tourismdataspace-csa.eu

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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

DS4SSCC blueprint

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

DATA SPACE FOR SMART AND SUSTAINABLE CITIES AND COMMUNITIES

Funded by the European Union

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

Use-case 1 (Mobility)

Use-case 2 (Energy)

Collaborative development of
governance scheme drawing
on lessons learnt

| January | February | March | April | May–June | September |

Lessons Learnt / Deep Dive

Lessons Learnt/ Deep Dive
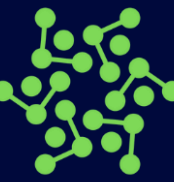
Final deliverable
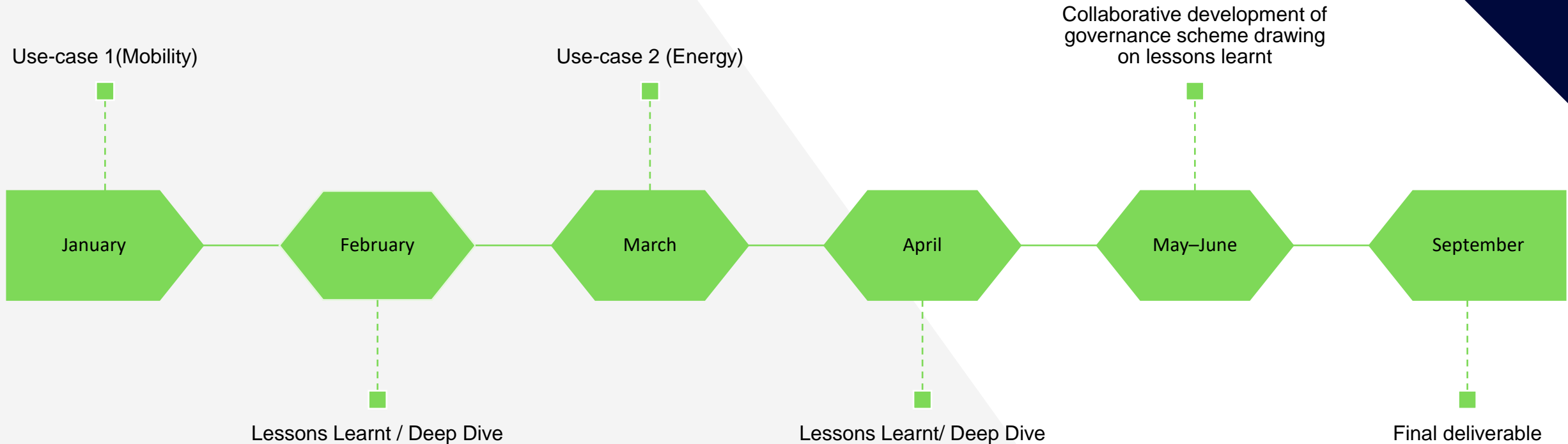
Participants: Aarhus, Amsterdam, Barcelona, Cologne, Eindhoven, Lisbon, Helsinki, Munich, Porto, Rennes, Riga, Tampere, Zaragoza

Broader Stakeholder Forum including academia, private sector & civil society organisations
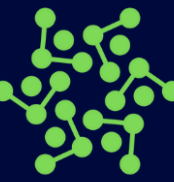
WP2 – Governance

- 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 SUSTAINABLE
CITIES AND COMMUNITIES
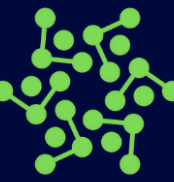
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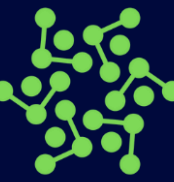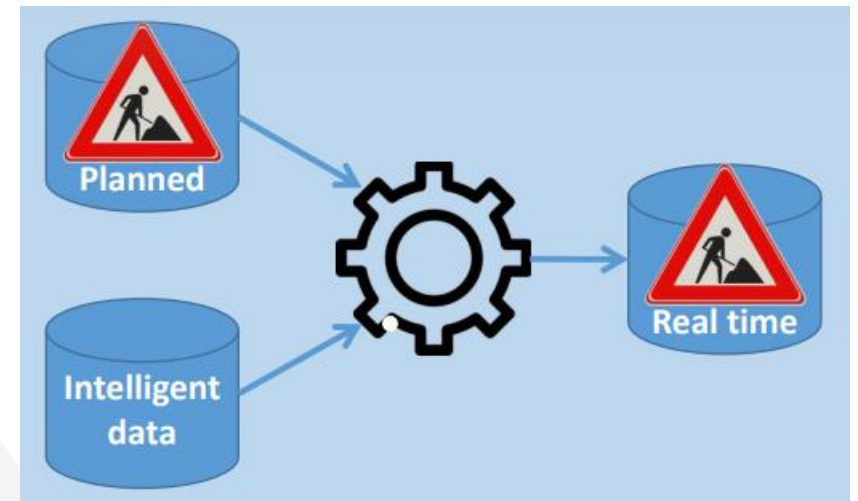
Amsterdam Intelligent Data Exchange Alliance (IDEA)
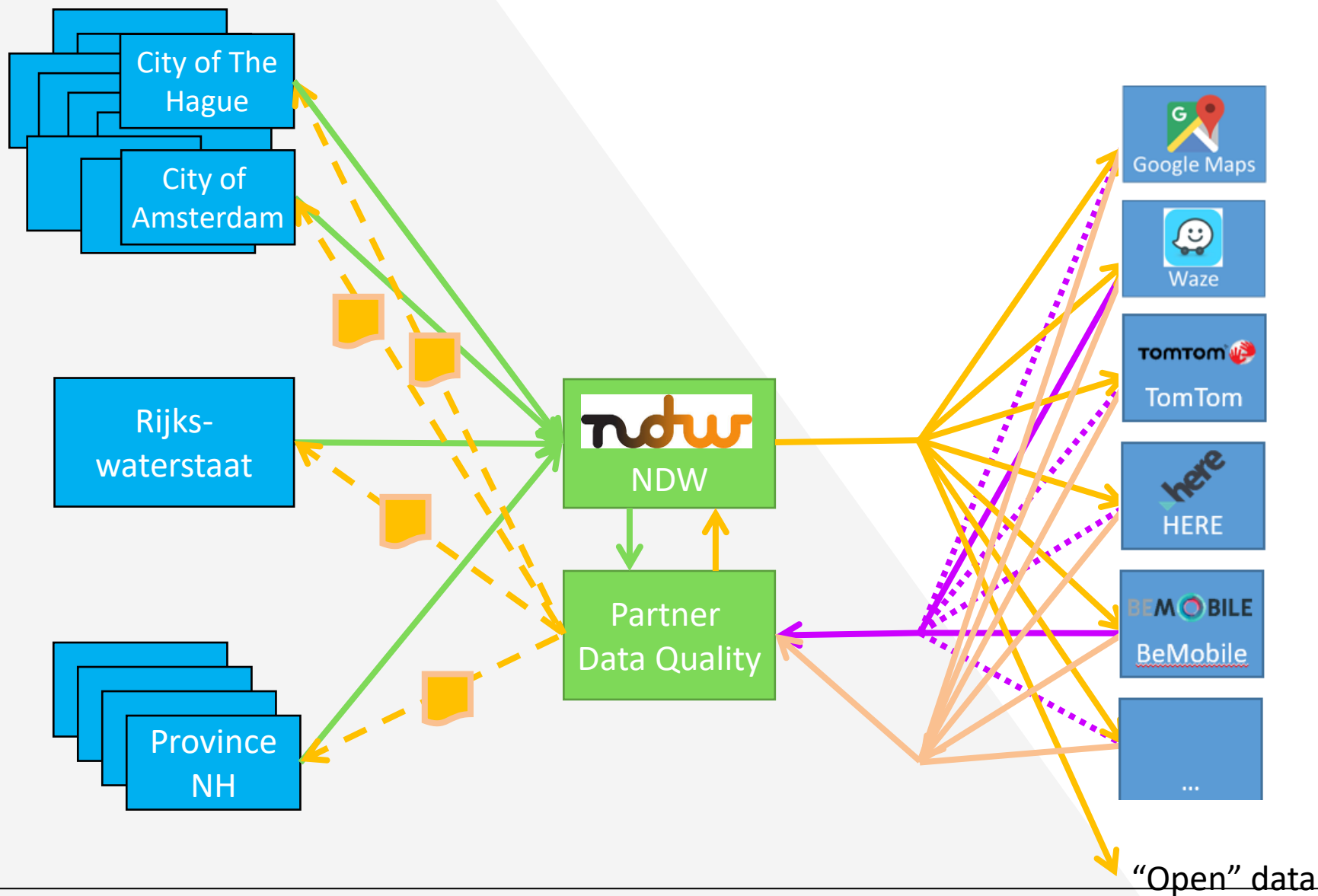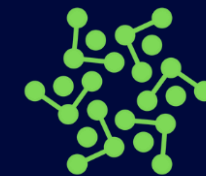
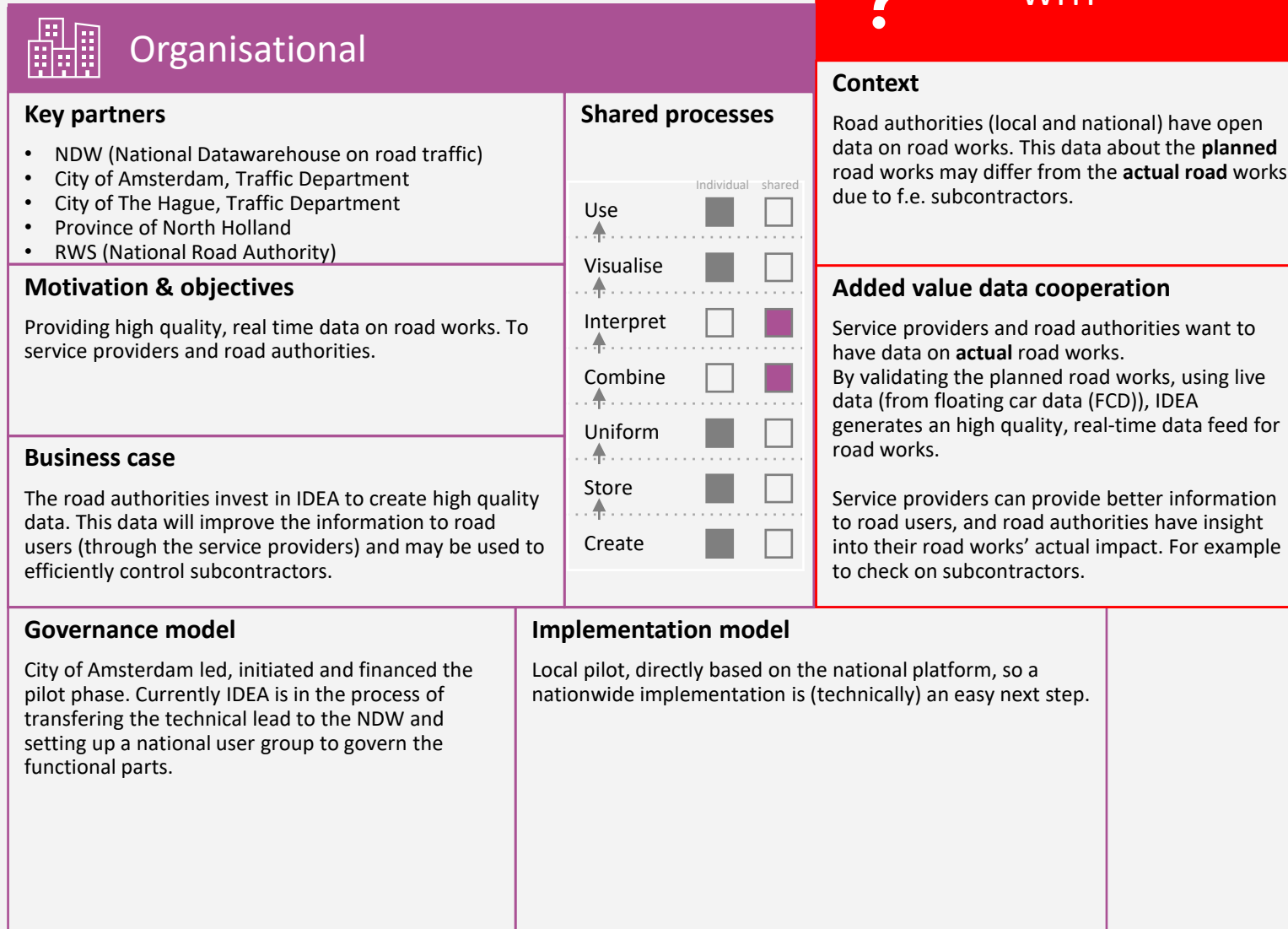# Amsterdam Intelligent Data Exchange Alliance (IDEA)

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

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

	Individual	shared
Use	■	☐
Visualise	■	☐
Interpret	☐	■
Combine	☐	■
Uniform	■	☐
Store	■	☐
Create	■	☐

? 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.

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.

Amsterdam IDEA

Functional Model

Use	Road authorities	Service providers

Visualise

Interpret

IDEA

Combine

Uniform	Road authorities	Service providers

Store

Create

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.
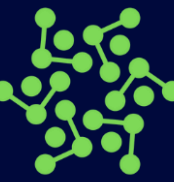
Amsterdam IDEA

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
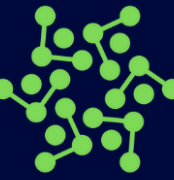
Amsterdam IDEA

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
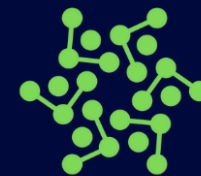
Barcelona Data City Lab

Reduce the energy poverty of the vulnerable population in Barcelona

by generating electricity from photovoltaic solar energy on public buildings

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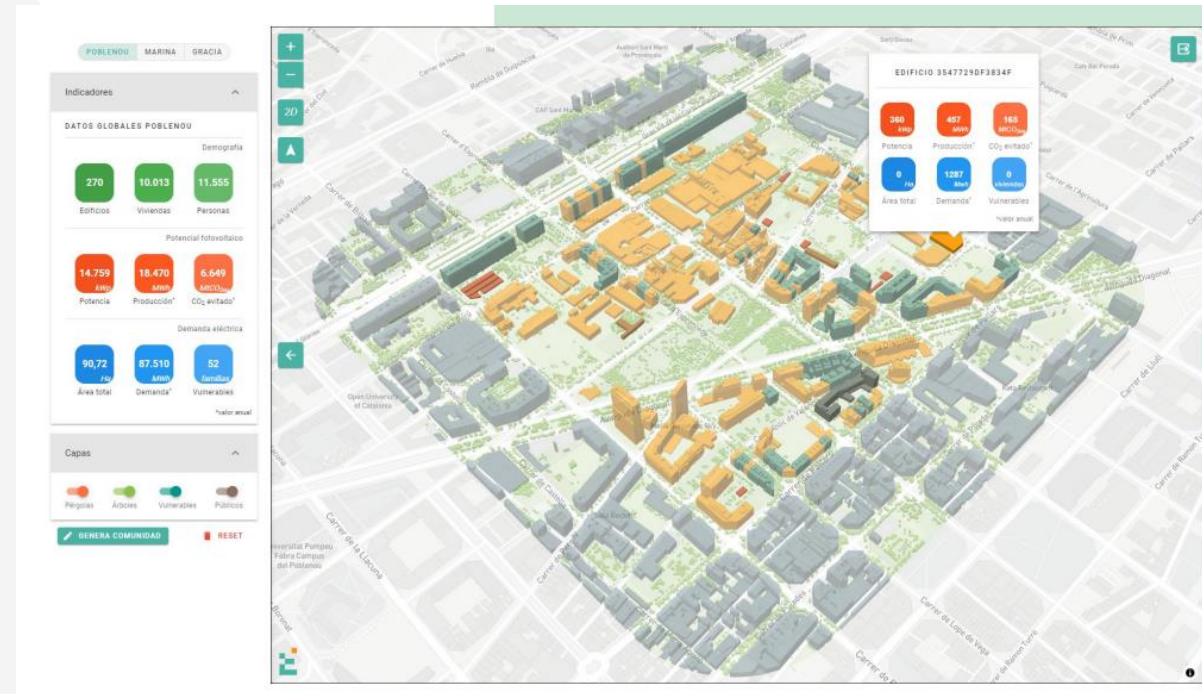
Providers	Type of datasets	Access
Barcelona city council	Geospatial data Social services data CRM data Population statistics Employment data Public building/public spaces characteristics	Open data / restricted
Datadis	Aggregated energy consumption per postcode	Restricted (Private APIs)
Endesa	Anonymised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

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

	Individual	shared
Use	■	□
Visualise	□	■
Interpret	□	■
Combine	□	■
Transform	■	□
Store	■	□
Create	■	□

? 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

Use	City	ImpactE	Energy providers

Visualise

DataCity Lab

Interpret

Combine

Transform

| City | ImpactE | Energy providers |

Store

Create
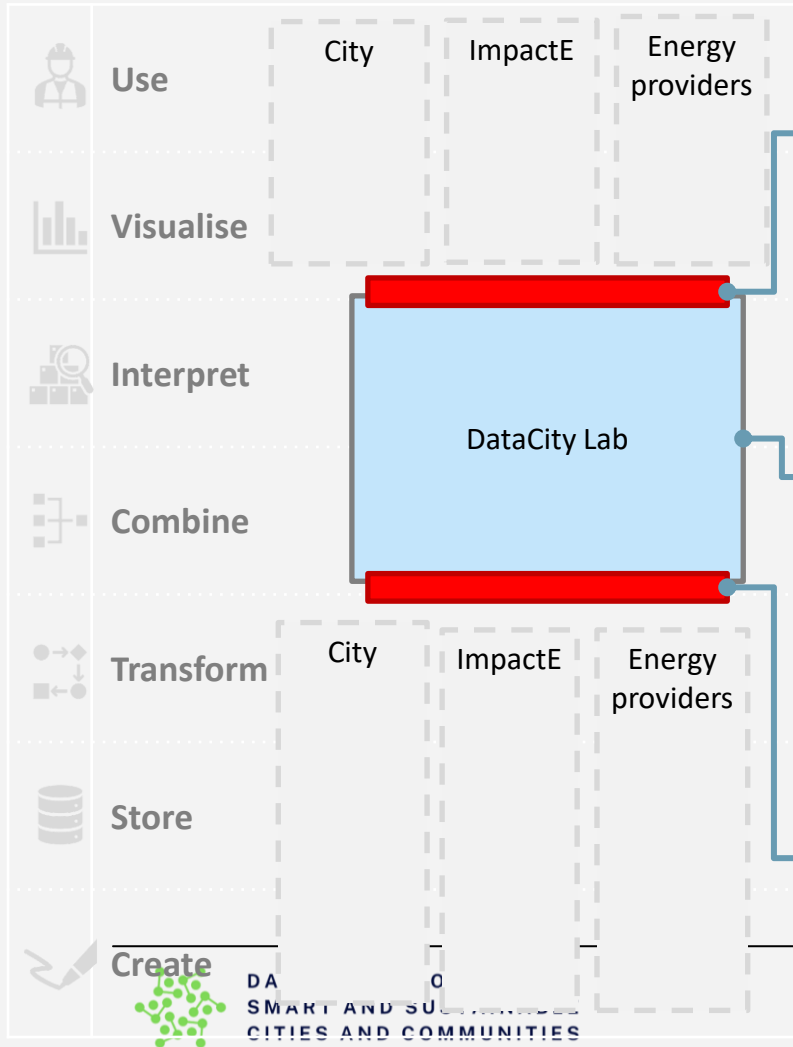
Governance model

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.

SMART AND SUSTAINABLE CITIES AND COMMUNITIES
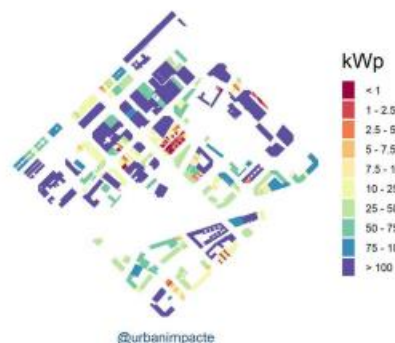
the European Union

Ajuntament de Barcelona

MAXIMUM POTENTIAL

Poblenou

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

@urbanimpacte

kWp
- < 1
- 1 - 2.5
- 2.5 - 5
- 5 - 7.5
- 7.5 - 10
- 10 - 25
- 25 - 50
- 50 - 75
- 75 - 100
- > 100

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

@urbanimpacte

kWp
- < 1
- 1 - 2.5
- 2.5 - 5
- 5 - 7.5
- 7.5 - 10
- 10 - 25
- 25 - 50
- 50 - 75
- 75 - 100
- > 100
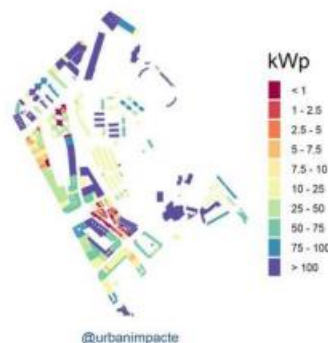
525	8	280
Familias vulnerables	Edificios Públicos	kWp instalables
62	42	193
Familias vuln. alcanzadas	% ahorro energético	€ ahorro medio por familia

Gràcia

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

@urbanimpacte

kWp
- < 1
- 1 - 2.5
- 2.5 - 5
- 5 - 7.5
- 7.5 - 10
- 10 - 25
- 25 - 50
- 50 - 75
- 75 - 100
- > 100

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

Ajuntament de Barcelona
OPTIMAL CASES

Poblenou

Casal de Barri Bac de Roda, Antic de València 96

@urbanimpacte

18	100	10
Familias PE	kWp	% Energía público

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

La Marina

Escola Enric Granados, Zona Franca 96

@urbanimpacte

28	100	20
Familias PE	kWp	% Energía público

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

Gràcia

Mercat de la Llibertat, Llibertat 27

@urbanimpacte

18	100	10
Familias PE	kWp	% Energía público

40	3.7	1.6
% ahorro energético PE	K€ Ahorro PE	k€ ahorro público
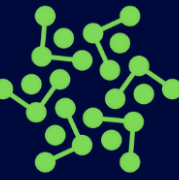
Barcelona Data City Lab

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)
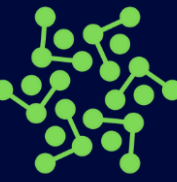
Barcelona Data City Lab

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)
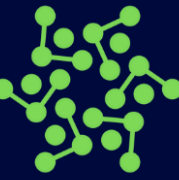
Lessons for DS4SSCC governance

- 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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PrepDSpace4Mobility

On the way to mobility data spaces: Regulatory specificities

Charlotte Ducuing

Contents

- Some important specificities of mobility concerning data (regulation)
- What mobility (datafication) can teach

Some specificities of mobility concerning data (regulation)

'Mobility' is just a word!

- Different transport modes
  - Different governance models
  - Important though differentiated imbrication public / private sectors
  - History of mode-specific liberalization (aviation, railways)
  - Multi-level governance

- 'Public services obligations'
  - Multi-level governance impact (especially in the EU!), *lex specialis* compared to market (regulation)

- Long distance vs urban transport

Elements of convergence

- '**Mobility' is actually the project** with datafication and digitalisation
  - Digitised consignment notes; (proposed revision for) ITS Directive, although road mobility as an entry point; 'smart mobility' experiments

- Importance of (physical, and increasingly digital) infrastructure
  - Importance of public funding
  - Transport is local!
  - Network effects

- Incomfortable position of some actors between 'public' and 'private' logics
  - Liberalisation process (see the role of infra managers)
  - Impact of PSI / Open Data Directive, DGA and High-value data sets Reg (PSBs and public undertakings)

- Liberalisation → fragmentation → interfaces → data (Montero & Finger, 2017)
- Safety-critical

What mobility (datafication) can teach

Experience with interoperability

- Interoperability by law as a result of liberalisation and thus fragmentation of economic operators/ions
  - Interoperability as part of liberalisation (law) → mainly sector-specific
  - Community-building exercise as a means to establish consensual standards (see TAF and TAP TSIs):
    - Co-regulatory approach;
    - long-term endeavour;
    - insider-outsider phenomena.
  - Modal interoperability can stand in the way of inter-modal interoperability and data exchange

Platformisation and infrastructure

- When datafication means platformisation
    - Risk of digital platformisation of legacy players through external datafication (e.g. smart mobility private players) (Montero & Finger, 2017)
    - Not only a market issue (i.e. 'the value of data') but also an infra & public funding issue
    - Risk reinforced by the 'data as infrastructure' motto (Ducuing, 2020)
    - ⇔ Illustration of the general argument 'data is local'

- From infrastructure to platform and back
    - Challenges the regulatory focus on sole 'data' (impl. as a resource)
    - Towards more integrated regulation of value chains?
    - Growing literature qualifying digital / online platforms as infrastructure by analogy (Rahman, 2018; Plantin et al., 2018; Montero & Finger, 2021; Busch, 2021): a way forward?

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  - Ducuing, Charlotte; 2020. Data as infrastructure? A study of data sharing legal regimes. Competition and Regulation in Network Industries; 2020; Vol. 21; iss. 2; pp. 124 – 142
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  - Rahman, K. S. (2018a). Infrastructural Regulation and the New Utilities. Yale Journal on Regulation, 35, 31.
  - Rahman, K. S. (2018b). Regulating informational infrastructure: internet platforms as the new public utilities. Georgetown Law Technology Review, 2, 234–252.
  - Plantin, J.-C., Lagoze, C., Edwards, P. N., & Sandvig, C. (2018). Infrastructure studies meet platform studies in the age of Google and Facebook. New Media & Society, 20(1), 293–310.
  - Montero, J., & Finger, M. (2021). Platforms as the new network industries. In The Rise of the New Network Industries - Regulating Digital Platforms (pp. 203–213). Routledge.
  - Montero, J. J., & Finger, M. (2017), "Platformed! Network industries and the new digital paradigm", Competition and Regulation in Network Industries, 18(3-4), 217-239

The context: GOS⁴M as use case for GREAT

The GREAT project aims to establish the Green Deal Data Space Foundation and its Community of Practice which builds on both the European Green Deal and the EU's Strategy for Data.

To build the Community of Practice few Use Cases were selected

GOS⁴M was one of them as of its maturity

greatproject.eu

Funded by
the European Union
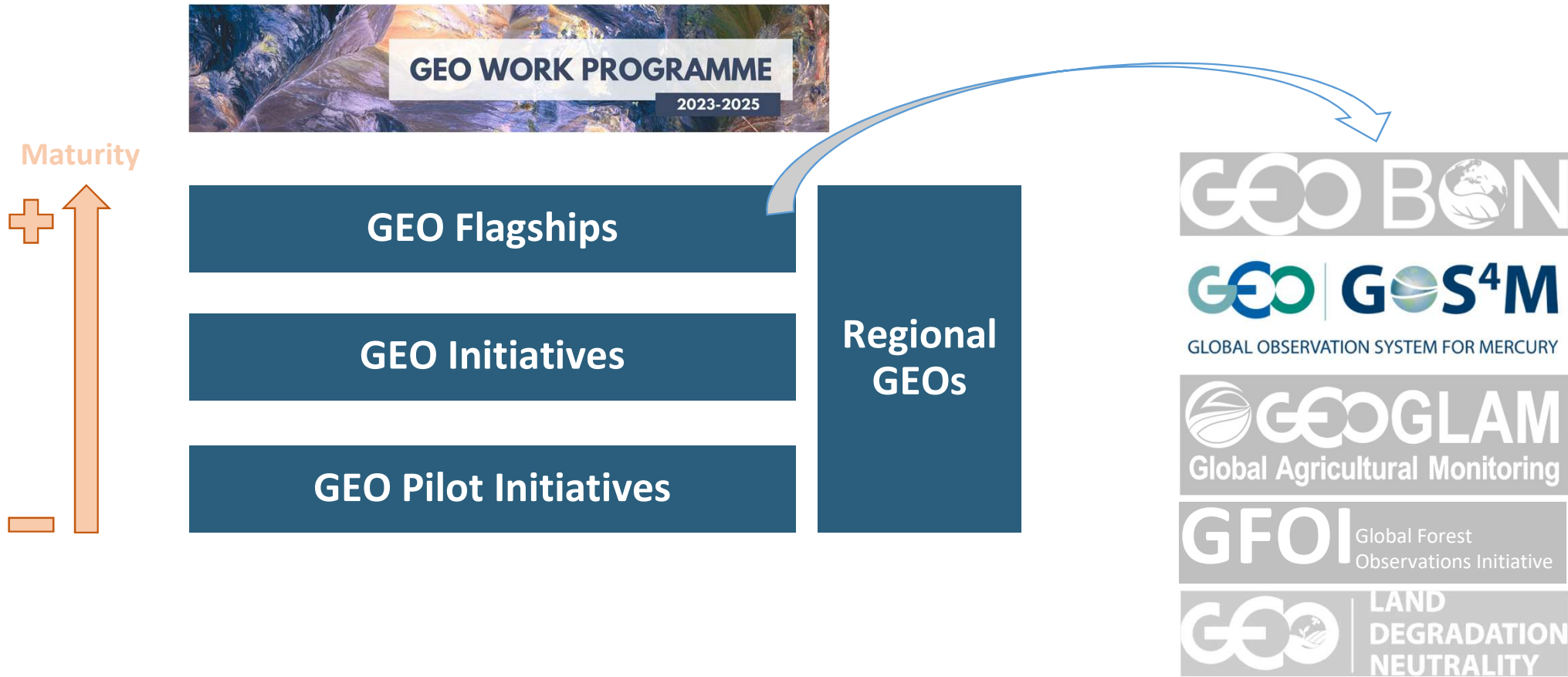
GEO, the Group on Earth Observations

What is GEO?

Is an Intergovernmental organization of more than 100 Members and in excess of 100 Participating Organizations

Is committed to improve the availability, access and use of Earth observations (EO) for the benefit of society

The GEO Work Programme is the primary instrument used to realize GEO's Mission and Vision

CNR-Institute of Atmospheric Pollution Research
www.iia.cnr.it

GEO's Implementation

GEO | GOS⁴M

GLOBAL OBSERVATION SYSTEM FOR MERCURY

Support the implementation of GOS⁴M, which objectives are:

➤ **to support** the UN Global Partnership on Mercury Fate and Transport Research (UN F&T)

➤ **to provide** a global data sets of comparable monitoring data by harmonizing data provided by existing regional and global scale networks.

➤ **to provide** a Knowledge Hub integrating EO data sets and modeling tools that allow to co-design socio-economic-policy driven scenarios.

➤ **to assess** the effectiveness of measures undertaken by the Minamata Convention that Parties implement to reduce the risk for human health and the environment

Key aspects of the GOS⁴M-KH

- The KH is and integrated **multi-model and multi-domain computational platform** to support the implementation and effectiveness evaluation of the Minamata Convention on Mercury.

- **It is based on** a CTM emulator to provide end-users a scientific-based information on Hg end-points.

- **It shares** data and programming components.

- **It enables** scenario analysis to assess the effectiveness of measures adopted.

UN environment programme | 50 1972-2022 | MINAMATA CONVENTION ON MERCURY

GLOBAL MERCURY PARTNERSHIP

www.gos4m.org

CNR-Institute of Atmospheric Pollution Research
www.iia.cnr.it

GEO | GOS⁴M
GLOBAL OBSERVATION SYSTEM FOR MERCURY

GREAT
Green Deal Data Space

Data Value Chain (simplified)

Data production (observations & simulations) & QA/QC

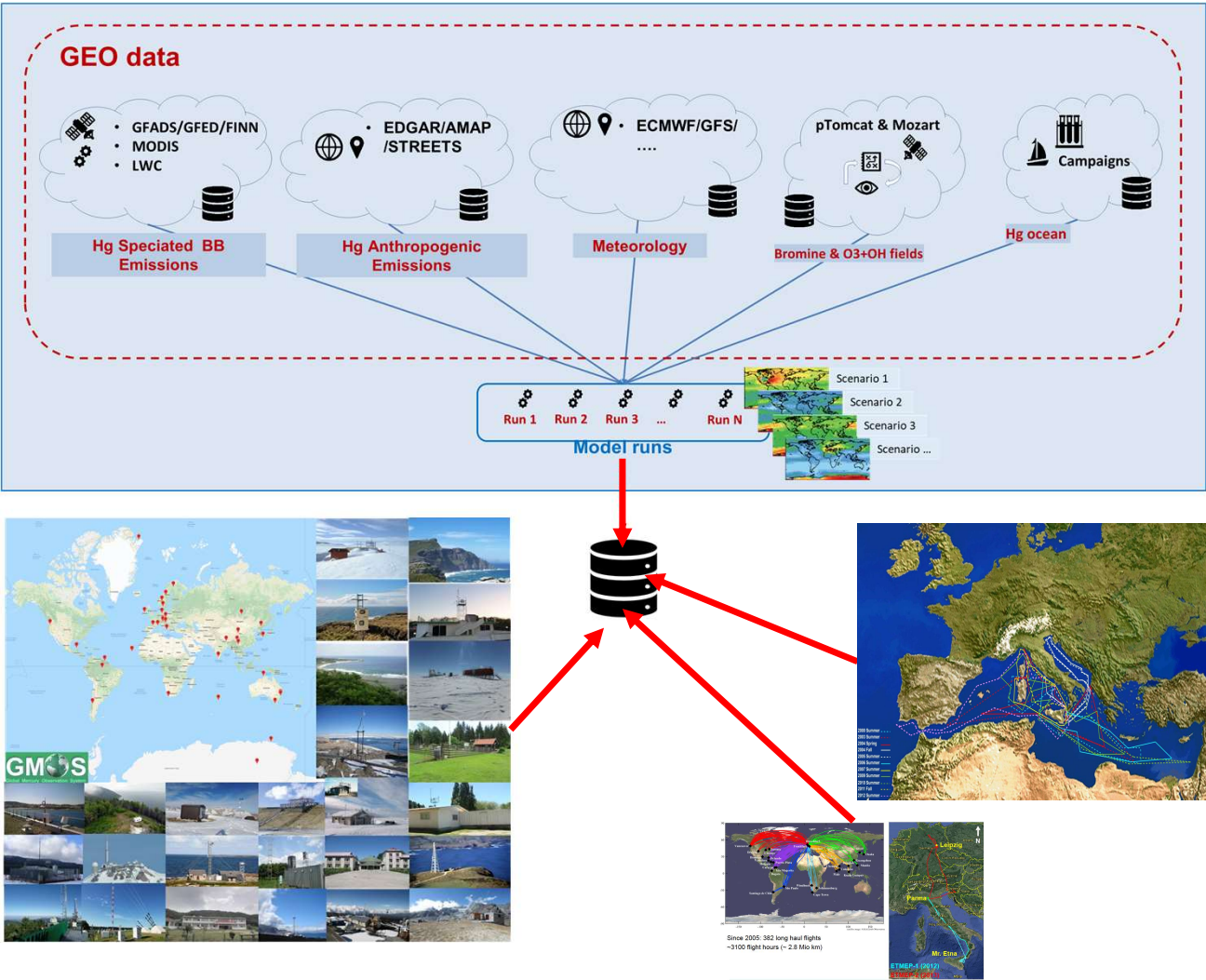Data cataloguing & publication

Knowledge generation
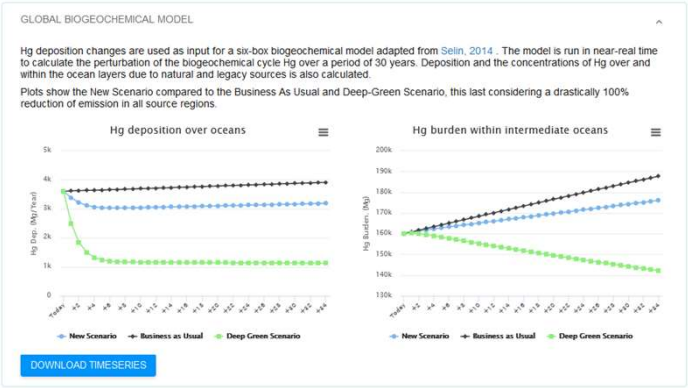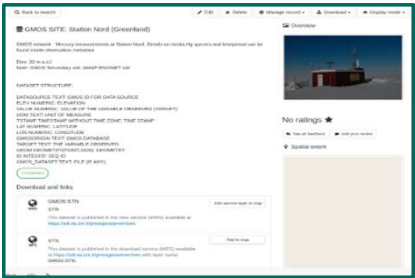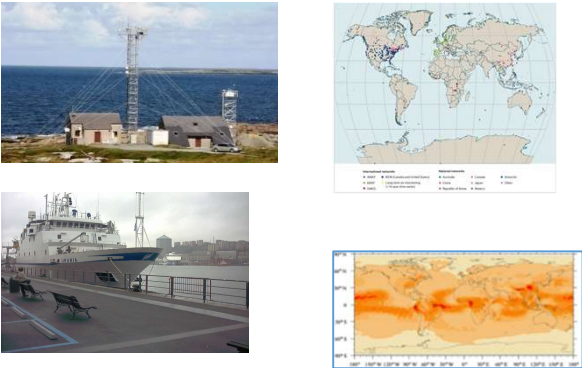
Data Production

Data archived undergo a QA/QC process and include:

➢ In-situ data
➢ Monitoring campaigns
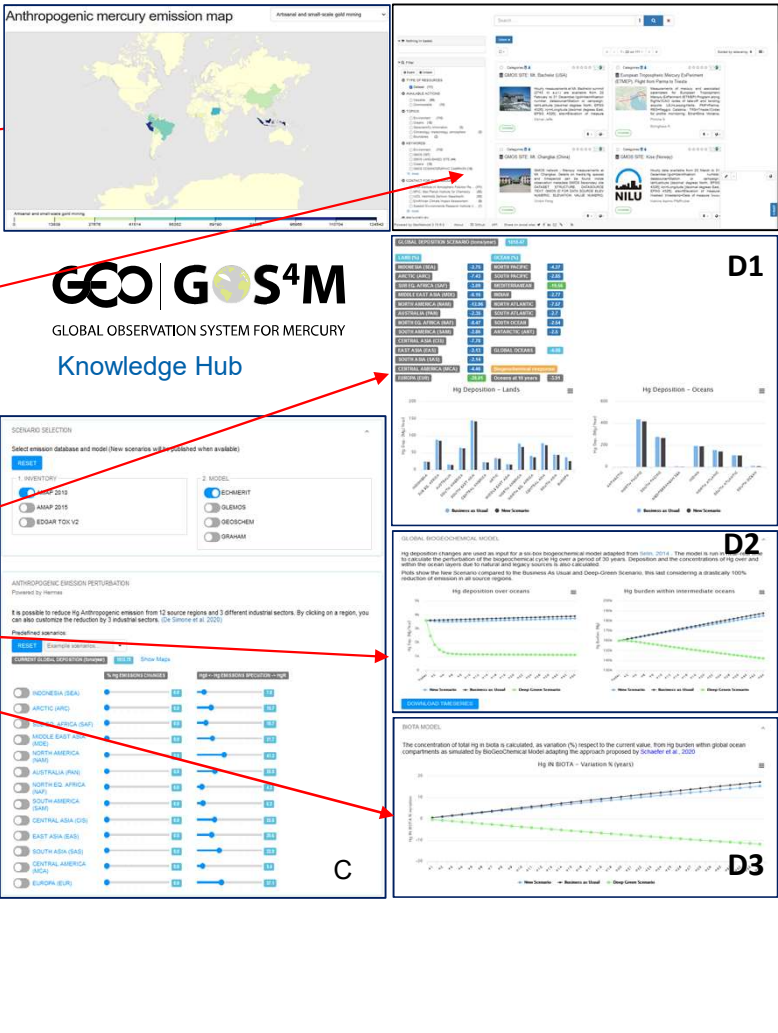➢ Model outputs
➢ Pollutant in biota

The GOS⁴M – Knowledge Hub

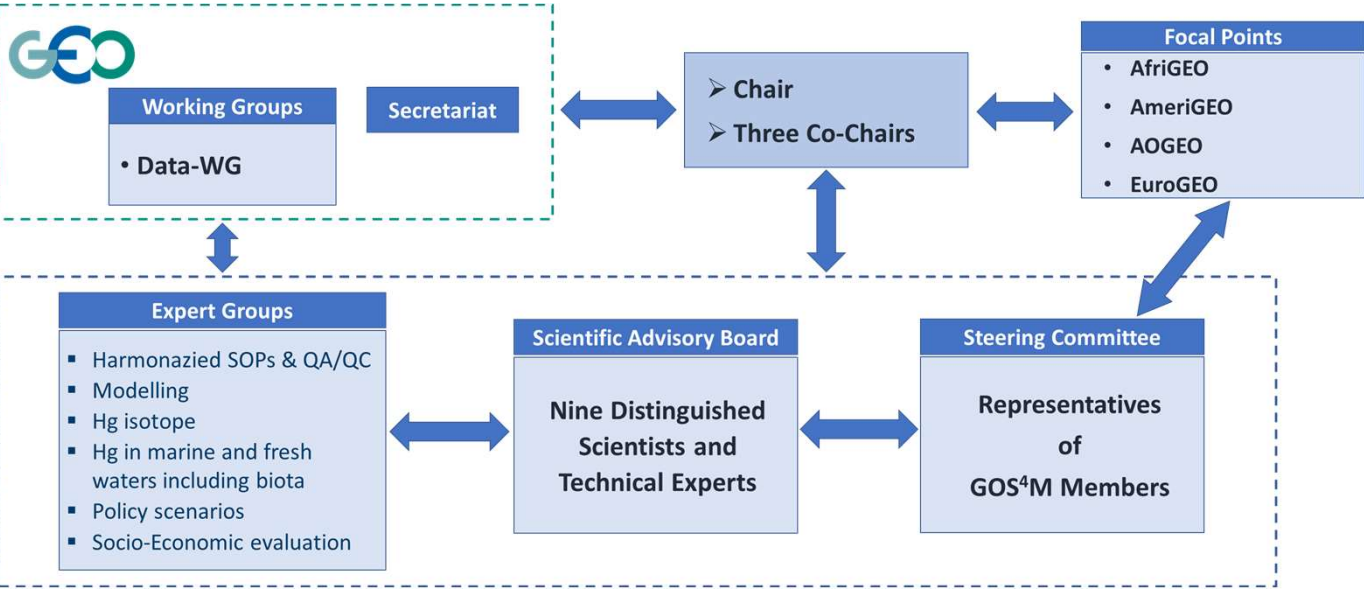Browse & select anthropogenic emission data by Country and Industrial Sector (**A**)

Browse and download dataset on Hg concentration in air, water and biota as well ancillary parameters (**B**)

Evaluate changes in deposition patterns & trends over land and oceans (**D1**), long-term trends of Hg concentrations in oceans (**D2**) and marine biota (**D3**)

Evaluate cost-effective strategies, including investment costs, aiming to achieve a given risk mitigation target (**E**)

Becoming part and governing bodies

21 partners
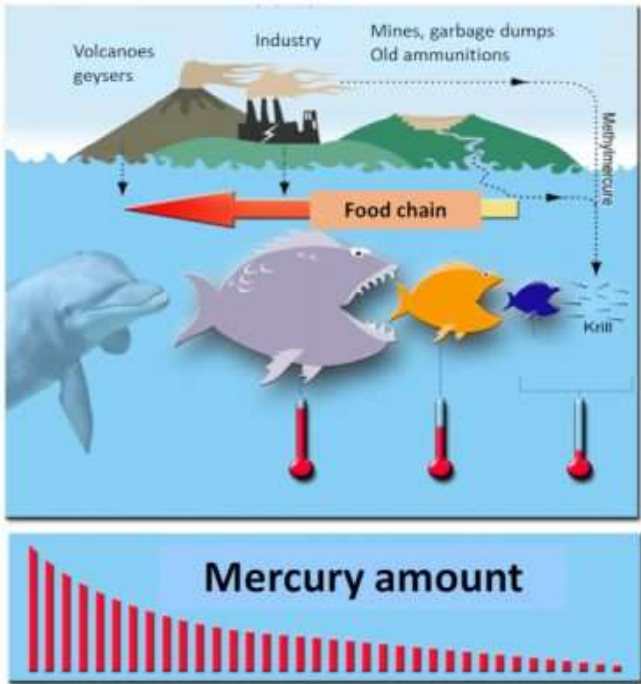
Under development

Human health risk module

Human Exposure to Methylmercury in Fish will be based on:

- Levels of mercury in fish

- Fish consumption spatial distribution by fish type

- Population distribution
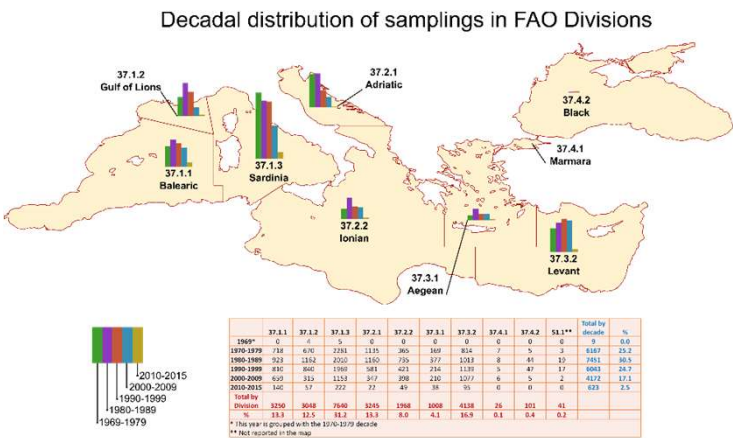
Cinnirella et al. (2019), Mercury concentrations in biota in the Mediterranean Sea, a compilation of 40 years of surveys, [doi:10.1038/s41597-019-0219-y]
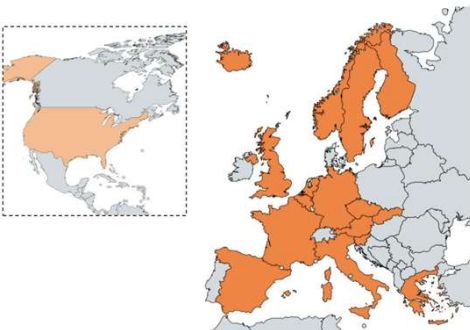

After: DANEL Vincent (2022), Mercury, fish and gold miners, Encyclopedia of the Environment, [online ISSN 2555-0950] url : https://www.encyclopedie-environnement.org/en/health/mercury-fish-gold-miners/. CC BY-NC-SA license

Sustainability perspectives & Data Space

GOS⁴M is part of the EIRENE Research Infrastructure

EIRENE RI (Research Infrastructure for EnvIRonmental Exposure assessmeNt in Europe) is a new ESFRI RI that is aimed to fill the gap in the European infrastructural landscape and pioneers the first EU infrastructure on human exposome research (environmental exposures and their impacts).

www.eirene-ri.eu

The EIRENE RI Vision is to mediate an **open access to the infrastructures** supporting a world-class research expanding the scientific knowledge in the area of human exposome, supporting the **development of new technologies** and **translation of the research results** to the daily lives of citizens via public-private (industry, spin-offs) or public-public (policy-making) partnerships in order to tackle a problem of non-genetic factors behind the development of chronic conditions and to improve the population health.

The EIRENE RI consists of 17 National Nodes representing 50+ institutions.

Toward a possible Exposome Data Space

1. Mass spectrometry data (markers of exposure and effect)
   a. Environmental (air, soil, indoor, water, food, products) exposures
   b. Human exposures
2. Nucleotide sequence-based data (genetic predispositions, markers of susceptibility)
   a. genomics,
   b. epigenomics,
   c. metagenomics,
   d. transcriptomics
3. Biological and biochemical markers
4. Anthropometry and medical data

5. Self-reported (questionnaire) data
   a. Health
   b. Lifestyle and nutrition
   c. Social environment
   d. Psychology and stress
6. Ancillary Geospatial data (EO data)
7. Image and video data
9. Info on provenance of samples and data

Issues to be considered

➢ Ethical, Legal and Social Issues (ELSI)

➢ Data governance (interoperability, licensing, sustainability)

➢ Science –policy interaction (need for approval of data)
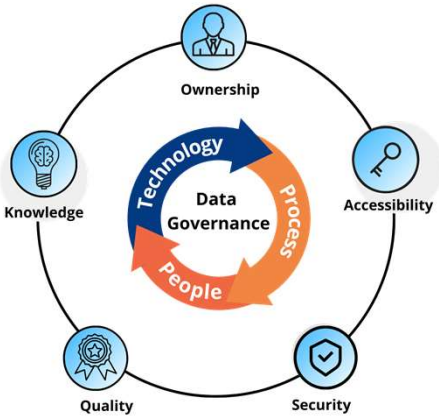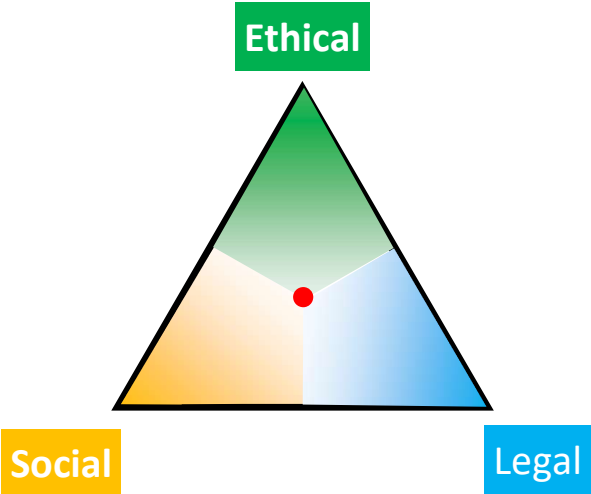
After: saxon.ai

Thank you!

Q&A

or further information
gos4m.org