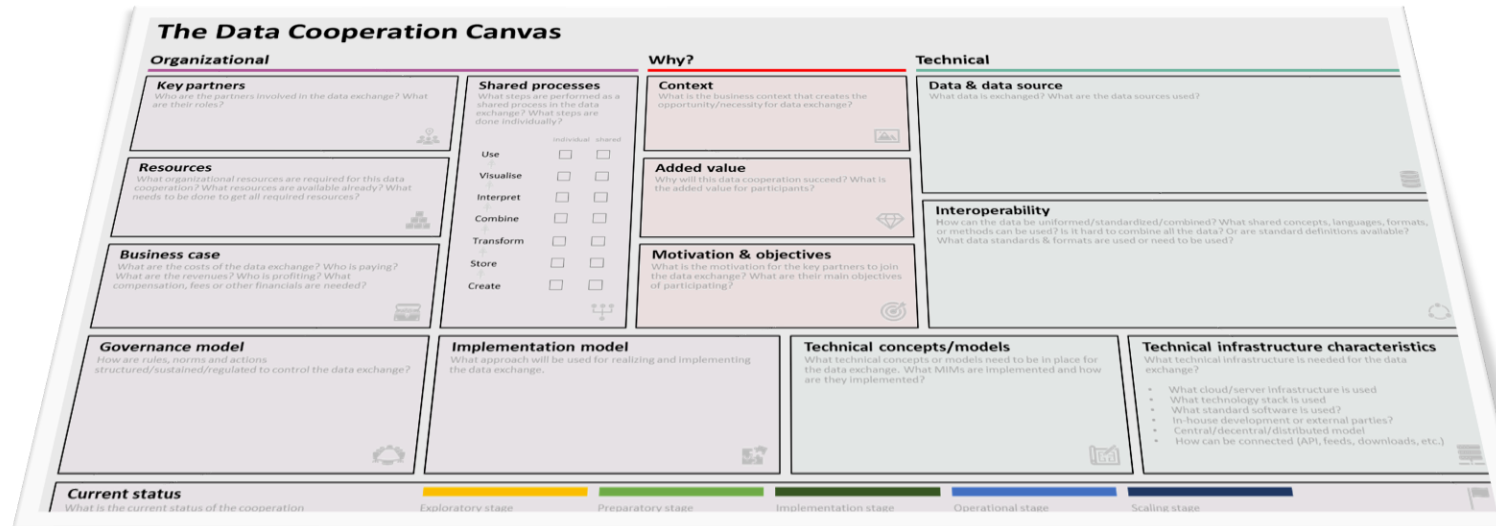


# The Data Cooperation Canvas

## Describing and exploring data cooperations



Ron van der Lans

Strategic Partner Manager   Directorate Digitalization & Innovation, City of Amsterdam (part time)

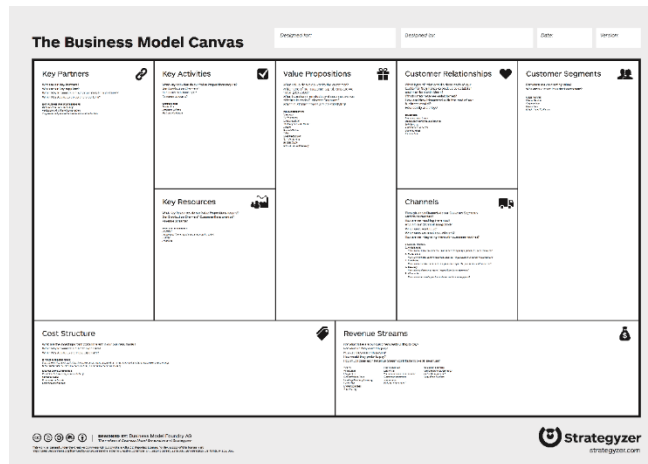
Managing Partner   Braxwell.com



# What is the Data Cooperation Canvas?

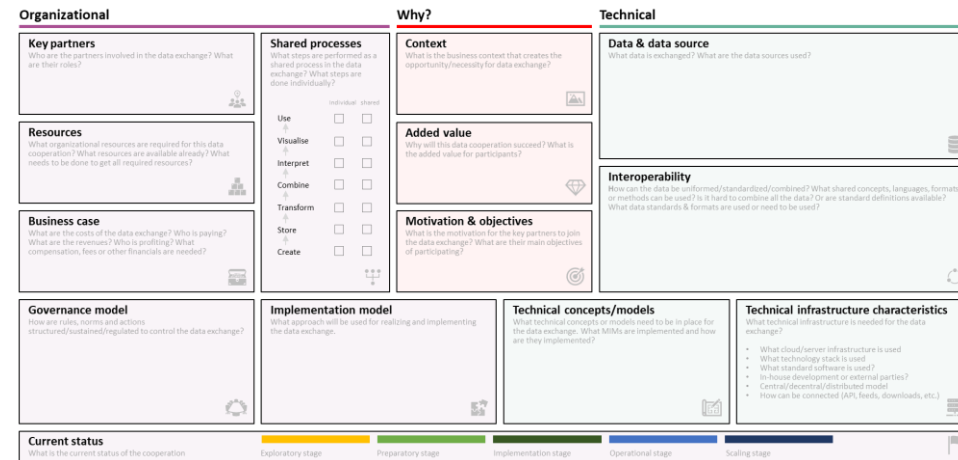
The Data Cooperation Canvas is much like the well-known 'Business Model Canvas'.

## Business Model Canvas



- Describe/compare existing business models
- Explore new business models

## The Data Cooperation Canvas



- Describe/compare existing data cooperations
- Explore new data cooperations

The Data Cooperation Canvas has been conceived as part of the preparatory actions for the Data Space for Smart and Sustainable Cities and Communities (DS4SSCC). The canvas was developed by Ron van der Lans and Jasper Soetendal of Braxwell.com in the role of external experts strategic data partnerships of the Directorate Digitalization & Innovation of the City of Amsterdam and has been added by other participants of DS4SSCC working groups.





# Why the Data Cooperation Canvas?



Share a common  
picture



Cover all important  
aspects


## Data Cooperation Canvas




# The Data Cooperation Canvas

## Organizational


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




**Resources**  
What organizational resources are required for this data cooperation? What resources are available already? What needs to be done to get all required resources?



**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?




**Governance model**  
How are rules, norms and actions structured/sustained/regulated to control the data exchange?




**Current status**  
What is the current status of the cooperation?

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

	Individual	shared
Use	<input type="checkbox"/>	<input type="checkbox"/>
↑		
Visualise	<input type="checkbox"/>	<input type="checkbox"/>
↑		
Interpret	<input type="checkbox"/>	<input type="checkbox"/>
↑		
Combine	<input type="checkbox"/>	<input type="checkbox"/>
↑		
Transform	<input type="checkbox"/>	<input type="checkbox"/>
↑		
Store	<input type="checkbox"/>	<input type="checkbox"/>
↑		
Create	<input type="checkbox"/>	<input type="checkbox"/>




**Implementation roadmap**  
What approach will be used for realizing and implementing the data exchange?




Exploratory stage

## Why?


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



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



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




Preparatory stage


Implementation stage

## Technical

**Data & data sources**  
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?




**Technical concepts/models**  
What technical concepts or models need to be in place for the data exchange. What MIMs are implemented and how are they implemented?



Operational stage

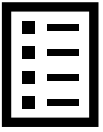
**Technical infrastructure characteristics**  
What technical infrastructure is needed for the data exchange?

- What cloud/server infrastructure is used
- What technology stack is used
- What standard software is used?
- In-house development or external parties?
- Central/decentral/distributed model
- How can be connected (API, feeds, downloads, etc.)



Scaling stage



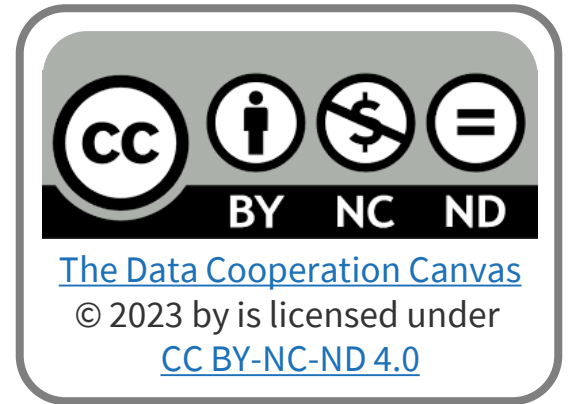


# The Data Cooperation Canvas Book/PDF



Complete PDF: [www.datacooperationcanvas.eu](http://www.datacooperationcanvas.eu)

Currently: detailed Powerpoint. Soon: book.



THE DATA COOPERATION CANVAS 4

### WHAT IS THE DATA COOPERATION CANVAS?

The Data Cooperation Canvas is much like the well-known Business Model Canvas. Like the Business Model Canvas is used to describe and explore business models, the Data Cooperation Canvas can be used to describe and explore data cooperations.

**GUIDANCE FOR**  
Over the last years we have seen (potential) data cooperations successful to miserably fail. Through this trial and error process, we have gained knowledge and experience in how to structure a full data cooperation. We will share this knowledge in a clear and structured way.

Ron van der Lans & Jasper Soetendal  
Authors

THE DATA COOPERATION CANVAS 5

### Why do you need the canvas?

A shared picture of the opportunity, a common understanding on possible solutions and a joint vision on how to move forward are vital aspects of successful cooperation. Clear communication serves as a fundamental prerequisite for achieving these goals. As the number of discussions and written materials grows, the necessity for a shared and well-defined framework becomes more apparent.

THE DATA COOPERATION CANVAS 6

### THE CANVAS AND ITS ELEMENTS

A new or existing data cooperation can be described by 14 essential building blocks in 3 areas. In this document we will zoom in on each element and provide examples and models to fill these elements in your data cooperation canvas.

**Why?**  
Context  
Added value  
Motivation & objectives

**Organization**  
Key partners  
Resources  
Shared processes  
Business model  
Governance  
Implementation  
Current status

**The Data Cooperation Canvas**

Organizational	Why?	Technical
<b>Key partners</b> Who are the partners involved in the data exchange? What are their roles?	<b>Context</b> What is the business context that creates the opportunity/necessity for data exchange?	<b>Data &amp; data sources</b> What data is exchanged? What are the data sources used?
<b>Resources</b> What organizational resources are required for this data cooperation? What resources are available?	<b>Shared processes</b> What steps are performed as a shared process in the data exchange? What steps are done individually?	<b>Added value</b> Why will this data cooperation succeed? What is the added value for participants?

THE DATA COOPERATION CANVAS 20

### Shared processes

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

THE DATA COOPERATION CANVAS 21

### Dataflow proces

THE DATA COOPERATION CANVAS 50

### 4 Phase 4: Operational stage

Adding value / preparing to scale up

**Situation & activities**  
The goal for this phase is to make paid participation at the start of phase 5 as attractive as possible.

**New use cases**  
A new set of extra use cases is carefully selected, information on which use cases to develop comes from the experiences during testing the market in phase 3. The new use cases will need additions to the final technical infrastructure.

**Financially independent organization**  
The Data Intermediary is now grown to a small-sized professional organization with attractive services package with a professional SLA and that is completely clear on all legal, technical, and procedural conditions for new participants to join the network. It has a governance board that represent all types of users, senior management, departments for IT, market and product development and a help desk.

**Focus & progress**  
Financial Participation Use cases Technology Organization Legal

THE DATA COOPERATION CANVAS 51

### 5 Phase 5: Scaling stage

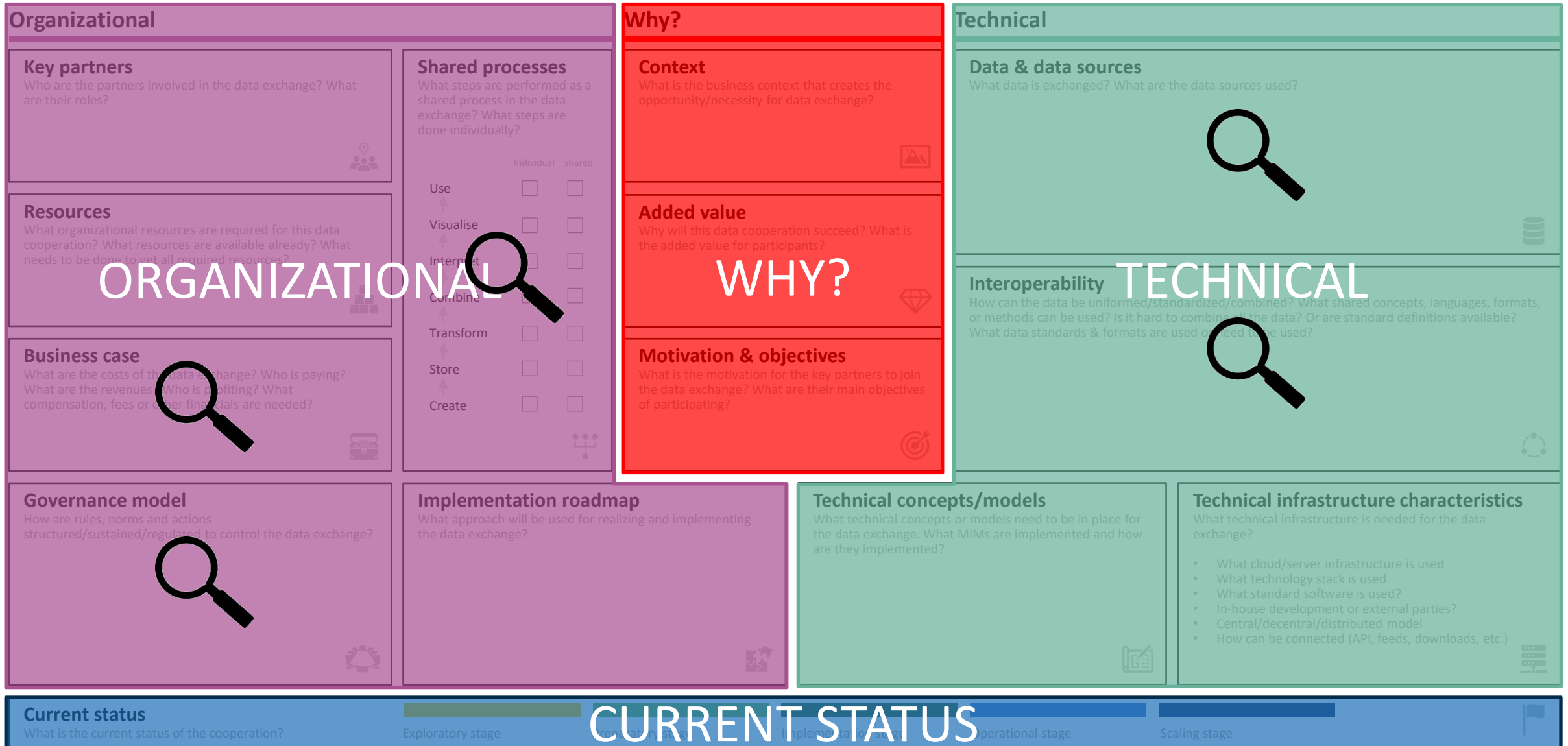
Growing the number of participants

**Situation & activities**  
The Data Intermediary now operates as a full grown and attractive not-for-profit. No external budgets are needed to be operational. The cooperation is very accessible for new participants because of clear technical standards, clear legal conditions, standard on-boarding procedures and a clear cost structure.

**Attracting new participants**  
To be budget neutral the Data Intermediary needs quite some new users from the beginning of phase 5. To prevent that large marketing costs are necessary, the position of the Data Intermediary should be intrinsically attractive. The field of expertise, first participants and available data should attract new participants. In this phase the focus is on extending the number of use cases, so even more participants will join.

**Focus & progress**  
Financial Participation Use cases Technology Organization Legal

# The Data Cooperation Canvas



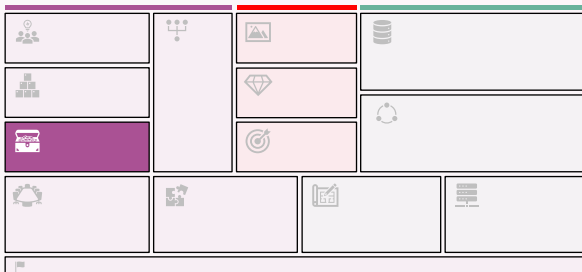


# Business Case



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?

Books can be written about business models and business cases. For the data cooperation canvas, we limit this to a high-level summary of the business model, using the typical business models and business model components from these two pages.



## Typical business models for data cooperations

### Sharing costs

- Participants share their data to meet a shared requirements (e.g., service, process efficiency, transparency)
- Every member saves money and time by sharing the burden

### Shared compliance

- Participants share their data to meet shared compliancy
- Every member saves money and time by sharing the burden

### Sharing profit

- Participants share their data to create a shared opportunity
- Every members shares in the profit created from sharing the data

### Shared access

- Participants team up to provide quality-assured, easy access to data of a domain of common interest (open data, business partner data etc.)
- Transaction costs go down for all ecosystem members

### Joint Innovation

- A customer innovation can only be realized by participants working together
- No single ecosystem member has all the necessary means/data to do it by themselves

### Combining Forces

- Participants agree that joining forces creates a opportunity to team up against existing/emerging competitors/threads
- No single ecosystem member has the necessary resources and commitment to do this alone

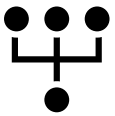
### Greater Common Good

- Public and private sector share data for a greater common, societal goal (e.g., climate protection)

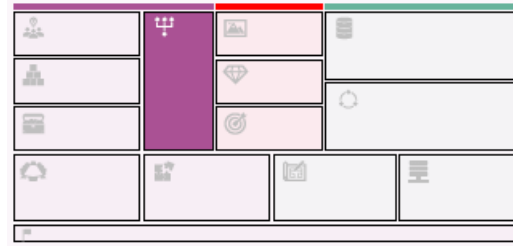
#### Based on:

Starter Kit for Data Space Designers, Data Spaces Support Center  
<https://dssc.eu/wp-content/uploads/2023/01/Starterkit-Interim-Version-Release-19-Dec-2022.pdf>





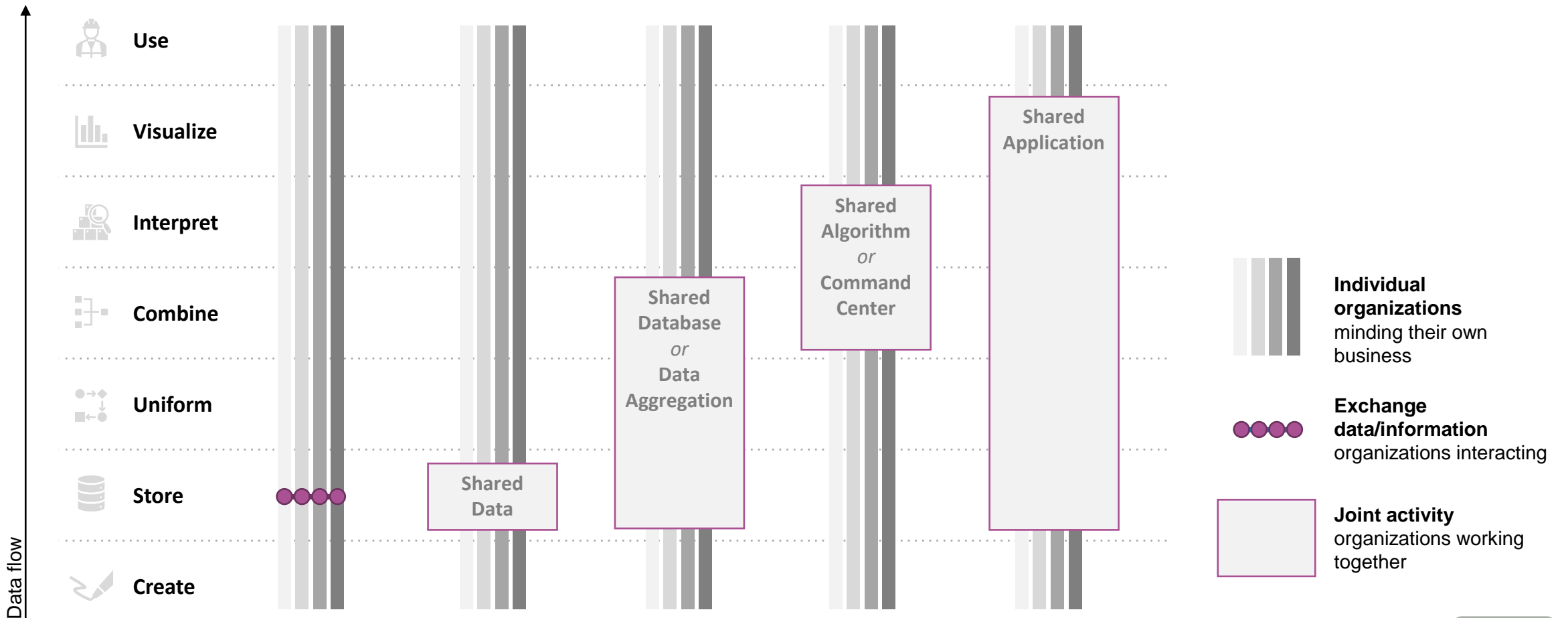
# Shared Processes



## Typical shared processes

Below are five different examples of what parts of the data flow process are performed individually and what is done in cooperation.

On the next page we will provide an example for each cooperation.





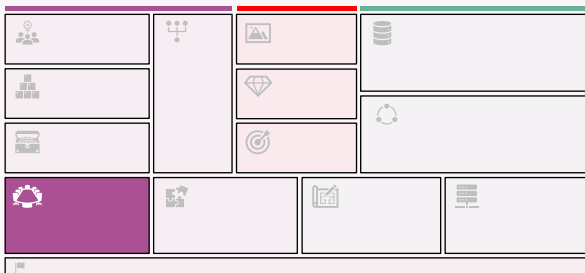


# Governance model

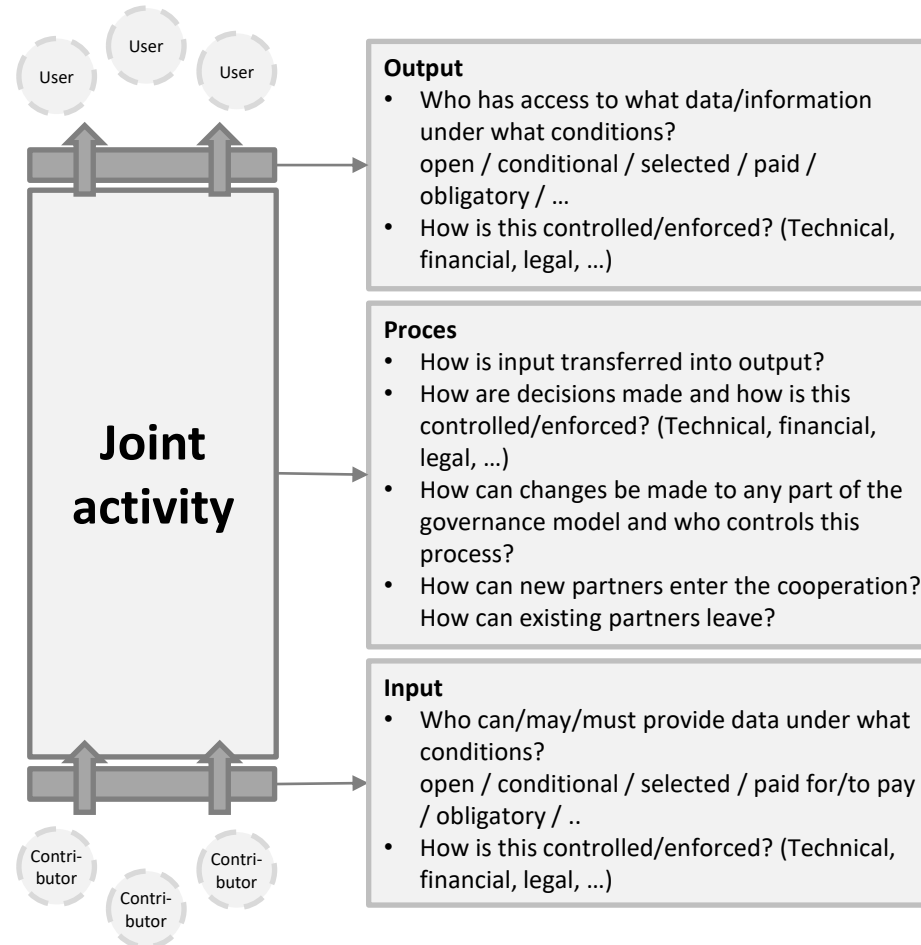
How are rules, norms and actions structured/sustained/regulated to control the data exchange?

A governance model specifies the way the data flow process is controlled. It is a set of agreements, policies, structures and operational procedures to specify who can take what decisions in the data cooperation.

On this page you'll find the typical parts and power structures of a governance model. On the four next pages you'll find a set of typical governance models.



## Typical parts of a governance model

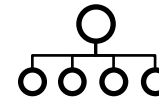


## Typical power structures



### Single

One single entity controls the 'cooperation'.  
(Which isn't a cooperation then, is it?)



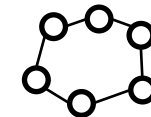
### Hierarchical

One entity is in control and coordinates most parts of the cooperation.



### Coordinated

One entity initiates and manages the corporation, but all decisions are made by consensus.



### Joint

All entities are equal. All decisions are made by consensus.



# Governance model

## Typical governance models (overview)

**11 typical governance models** are described in the next pages, divided into four groups, based on their main objective:

	Enabling re-use and innovation	Cooperate and share cost or profit	Protecting valuable data	Earn money / Commercialize data
<b>Objective</b>	Enabling re-use and innovation	Cooperate and share cost or profit	Protecting valuable data	Earn money / Commercialize data
<b>Governance models</b>	<ul style="list-style-type: none"> <li>• Open Data/Transparency</li> <li>• Governance As A Platform</li> <li>• Data Marketplace</li> <li>• Data Repository</li> </ul>	<ul style="list-style-type: none"> <li>• Shared Data</li> <li>• Conditional Access</li> <li>• Data Trust</li> </ul>	<ul style="list-style-type: none"> <li>• Personal Control</li> <li>• Data Common</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial Data</li> <li>• As-A-Service</li> </ul>



# Governance model

## Typical governance models (overview)

11 typical governance models are described in the next page

### Objective

Enabling re-use and innovation

### Governance models

- Open Data/Transparency
- Governance As A Platform
- Data Marketplace
- Data Repository

Organizational

## THE DATA COOPERATION CANVAS

## Typical governance models



Main objective: Enabling re-use and innovation

	Open data / Transparency	Government As A Platform	Data Marketplace	Data Repository
When to use	When one or more entities (government, non-profit or business) want to provide their data to enable re-use and innovation.	When a government or organization wants its (digital) services to be open to anyone, so that users/civil servants, businesses and others can deliver radically better services to the ecosystem/public, more safely, efficiently and accountably.	When data is available, but is spread all over the internet and hard to find. Demand and supply of data are inefficiently matched.	When data is available, but is spread all over the internet and hard to find. Demand and supply of data are inefficiently matched.
How it works	The data is published on a website or portal, is well-documented with metadata and has a license (mostly creative commons or public domain) that allows for a broad use of the data.	The work of an organization/ government is reorganized around a network of shared APIs and components, open-standards and canonical datasets.	A market place provides a platform for data providers to offer their data to potential users. It enables the monetization or brokerage of data for both discovery and transactions between buyers and providers.	A repository provides a listing of available data, offering data providers a way to publish their data and offering data users an efficient way to search for the data they need. The repository provides meta data and a link to the actual data.
Control on input	●●● High. The initiator decides for itself what data will be published.	●●● High. The initiator defines the services and components itself.	●●● Low: if marketplace is open ●●● High: if marketplace is curated	●●● Low: if repository is open ●●● High: if repository is curated
Control on use	●○○ Low. Re-use and innovation for unforeseen applications are welcomed	●○○ Low. Re-use and innovation for unforeseen applications are welcomed	●○○ Low. Re-use and innovation for unforeseen applications are welcomed	●○○ Low. Re-use and innovation for unforeseen applications are welcomed
Examples	<ul style="list-style-type: none"> <li>• data.europe.eu</li> <li>• data.gov</li> <li>• data.overheid.nl</li> </ul>	<ul style="list-style-type: none"> <li>• e-Estonia</li> <li>• Jeff Bezos' API Mandate (Amazon)</li> </ul>	<ul style="list-style-type: none"> <li>• Microsoft Azure Data Share</li> <li>• AWS Data Exchange</li> <li>• Databricks Marketplace</li> </ul>	<ul style="list-style-type: none"> <li>• Kaggle</li> <li>• Various science data repositories</li> </ul>





# Data & Data Sources



What data is exchanged? What are the data sources used?

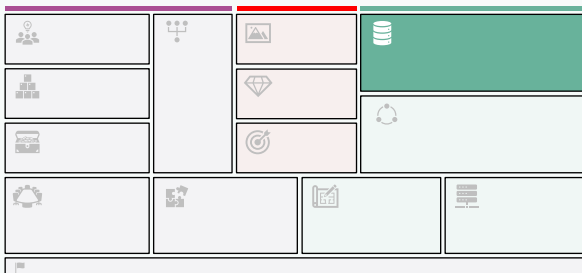
A **Data Demand & Supply Matrix** can be used to describe what data is required/demanded by each participant, and what the current availability is for this data set.

By using a **priority (demand)** and a current **status (supply)** datasets can be prioritized for the data cooperation, starting with the high priority, green data sets.

## Example Data Demand & Supply Matrix

Participant	Data demand	Priority	Data supply / availability	Current status
Participant A	Data on Road network	☆☆☆	Data available as open data by Participant B	● Available. Use api.road.network/2.0
Participant A	Data on actual speeds on road	☆☆	Data available from Participant B as soon as contract is signed	● Available if contract is signed
Participant A	Real-time floating car data	☆	Participant C can provide FCD with 1-day delay. Real time data requires expensive contract	● Start using historic data. Assess expensive contract later
Participant B	Feedback from service providers	☆☆☆	We will need to convince service providers to join or data cooperation	● Requires effort to convince service providers
Participant B	Personal data of road users	☆☆	Data can no be shared because of GDPR. Maybe it can be aggregated, but this requires major effort from ParticipantD	● Will never be available.
Etc.				

- Not (yet) available. Will never be available or requires major effort
- Not yet available, requires medium effort
- Available or available soon with minor effort



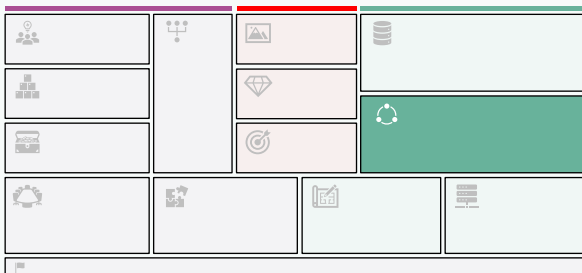


# Interoperability

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?

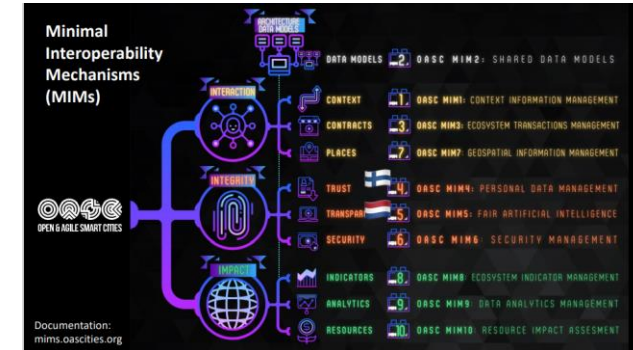
For interoperability, specify the current level of interoperability, the available standards and methods and what effort is required to reach a satisfying level.

This can be done in general, or for each dataset from the data demand & supply matrix.



## Typical elements of interoperability


- **Current level of interoperability:**
  1. No standards or shared understanding
  2. Shared understanding
  3. Ad-hoc standards/definitions that can be mapped
  4. Local standards that are defined and need to be mapped
  5. Standard definitions available (worldwide)
- **Available standards, concepts, languages, methods**
- **Effort required to reach a satisfying level**




# The Data Cooperation Canvas

## Organizational


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




**Resources**  
What organizational resources are required for this data cooperation? What resources are available already? What needs to be done to get all required resources?



**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?



**Governance model**  
How are rules, norms and actions structured/sustained/regulated to control the data exchange?




**Current status**  
What is the current status of the cooperation?

## Why?


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

	Individual	shared
Use	<input type="checkbox"/>	<input type="checkbox"/>
Visualise	<input type="checkbox"/>	<input type="checkbox"/>
Interpret	<input type="checkbox"/>	<input type="checkbox"/>
Combine	<input type="checkbox"/>	<input type="checkbox"/>
Transform	<input type="checkbox"/>	<input type="checkbox"/>
Store	<input type="checkbox"/>	<input type="checkbox"/>
Create	<input type="checkbox"/>	<input type="checkbox"/>




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


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



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




**Implementation roadmap**  
What approach will be used for realizing and implementing the data exchange?




## Technical


**Data & data sources**  
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?




**Technical concepts & models**  
What technical concepts & models need to be in place for the data exchange. Which APIs are implemented and how are they implemented?




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

- What cloud/server infrastructure is used
- What technology stack is used
- What standard software is used?
- In-house development or external parties?
- Central/decentral/distributed model
- How can be connected (API, feeds, downloads, etc.)



Exploratory stage   Preparatory stage   Implementation stage   Operational stage   Scaling stage



## Organizational

## Why?

## Technical

Key partners

Shared processes

Context

Data & data sources

Resources

	Individual	shared
Use	<input type="checkbox"/>	<input type="checkbox"/>
↑		
Visualise	<input type="checkbox"/>	<input type="checkbox"/>
↑		
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↑		
Create	<input type="checkbox"/>	<input type="checkbox"/>

Added value

Business case

Motivation & objectives

Interoperability

Governance model

Implementation model

Technical concepts/models

Technical infrastructure characteristics

Current status

What is the current status of the cooperation?

Exploratory stage

Preparatory stage

Implementation stage

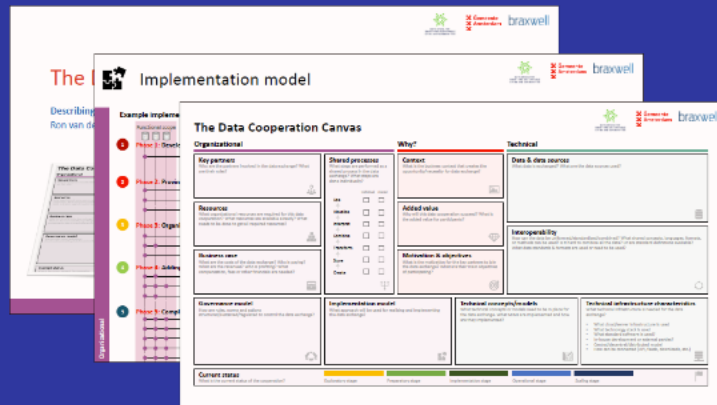
Operational stage

Scaling stage

# The Data Cooperation Canvas

Use the Data Cooperation Canvas to describe an existing data cooperation. Or to explore potential new cooperations.

The Data Cooperation Canvas is designed as part of the preparatory actions for the Data Space for Smart and Sustainable Cities and Communities (DS4SSCC) of the European Commission. It is free to use for all companies, organisations and cooperations.



## Free download

Read the free e-book to learn about setting up a succesfull data cooperation using the Canvas, including lots of examples and models.

Fill in your e-mail address and you'll receive the PDF immediately:

Enter E-mail Address [Download](#)