



European data space  
for smart communities

DEMAND Community Event  
Thursday, 22 May 2025



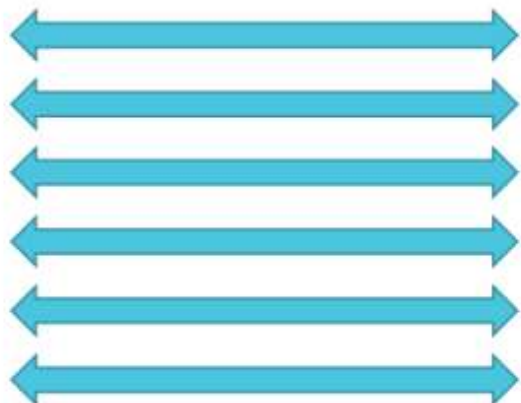
Mieke van Schaik



The CitizenCity project has received funding from the European Union's Horizon Europe Research and Innovation Programme

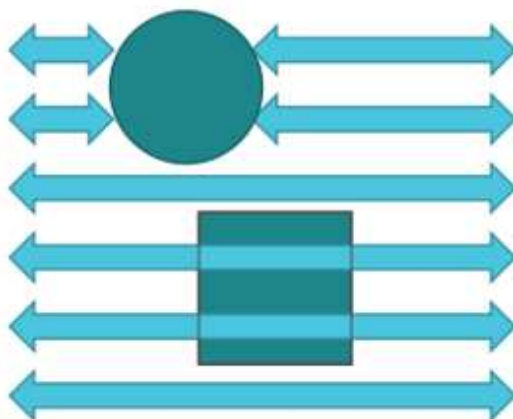
# Data spaces = data infrastructures + governance frameworks

Current situation



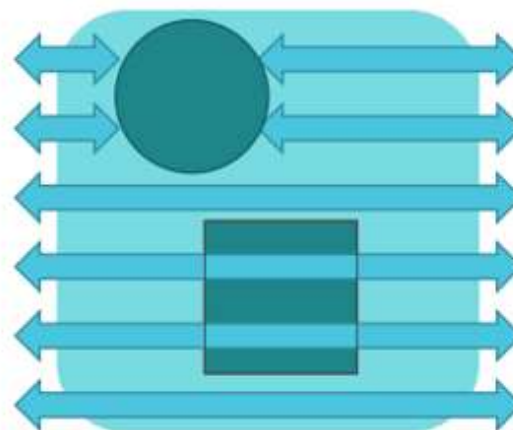
One to one sector-specific data sharing based on contractual agreements.

Taking shape

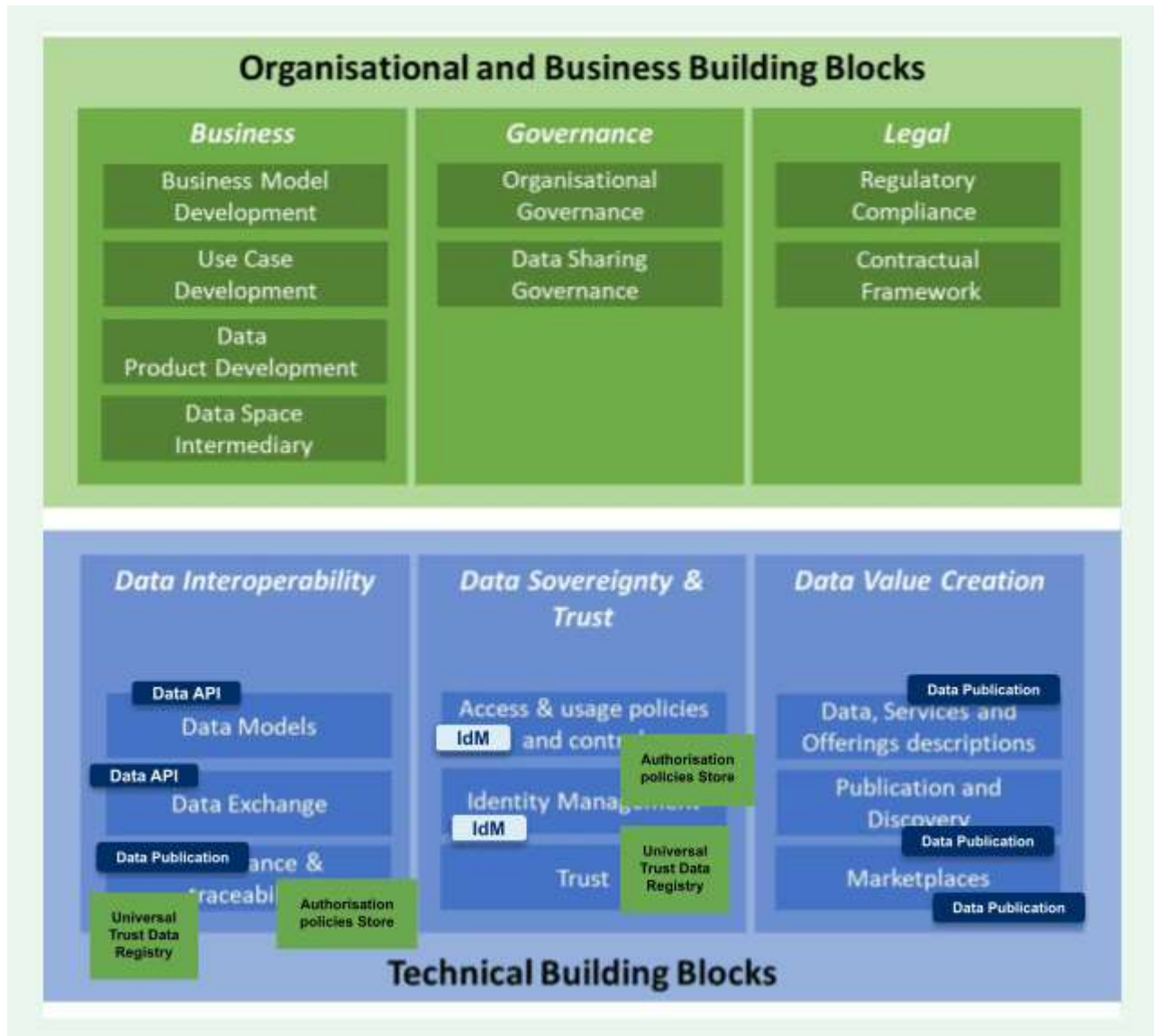


Data sharing infrastructures with centralized data hosting, and/or data marketplaces to enable discovery and reduce transaction costs where data is not held in a central repository.

Data space



Links are created between data space participants. Federated data is stored in a distributed manner with tools to enable discovery, access, and analysis across industries, companies, and entities.



Data governance  
Data management  
Regie op Data



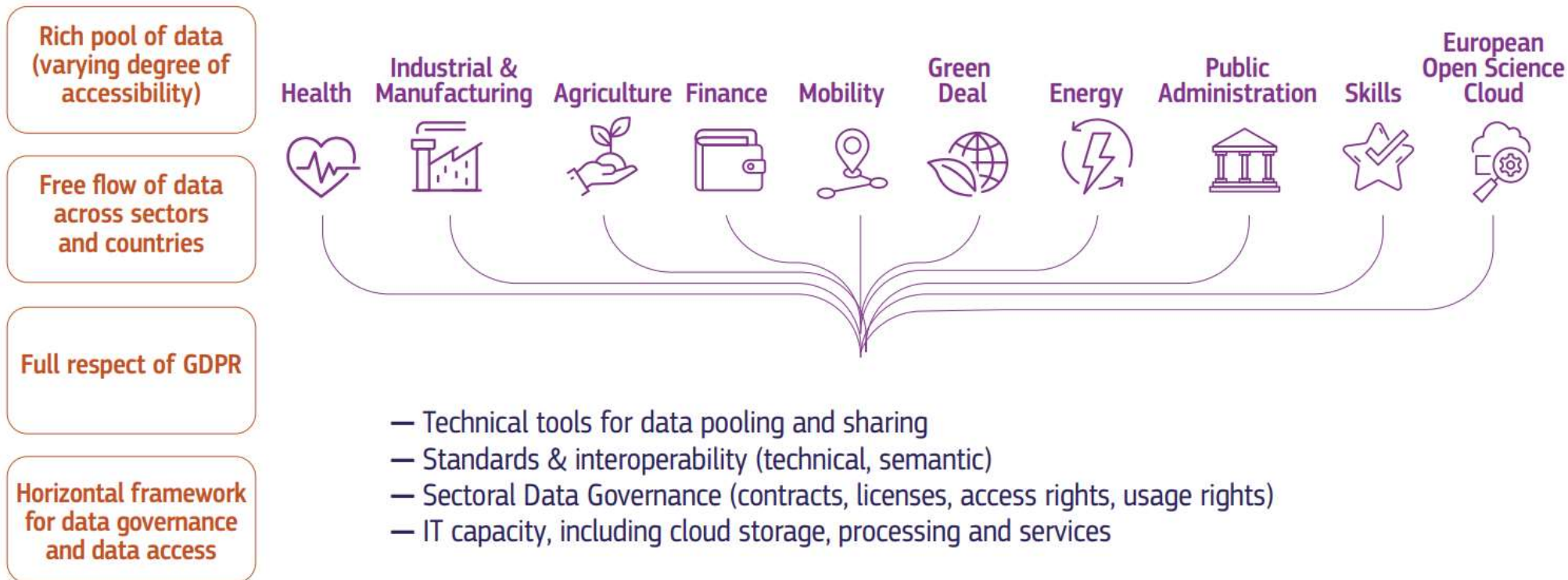
Dataspace

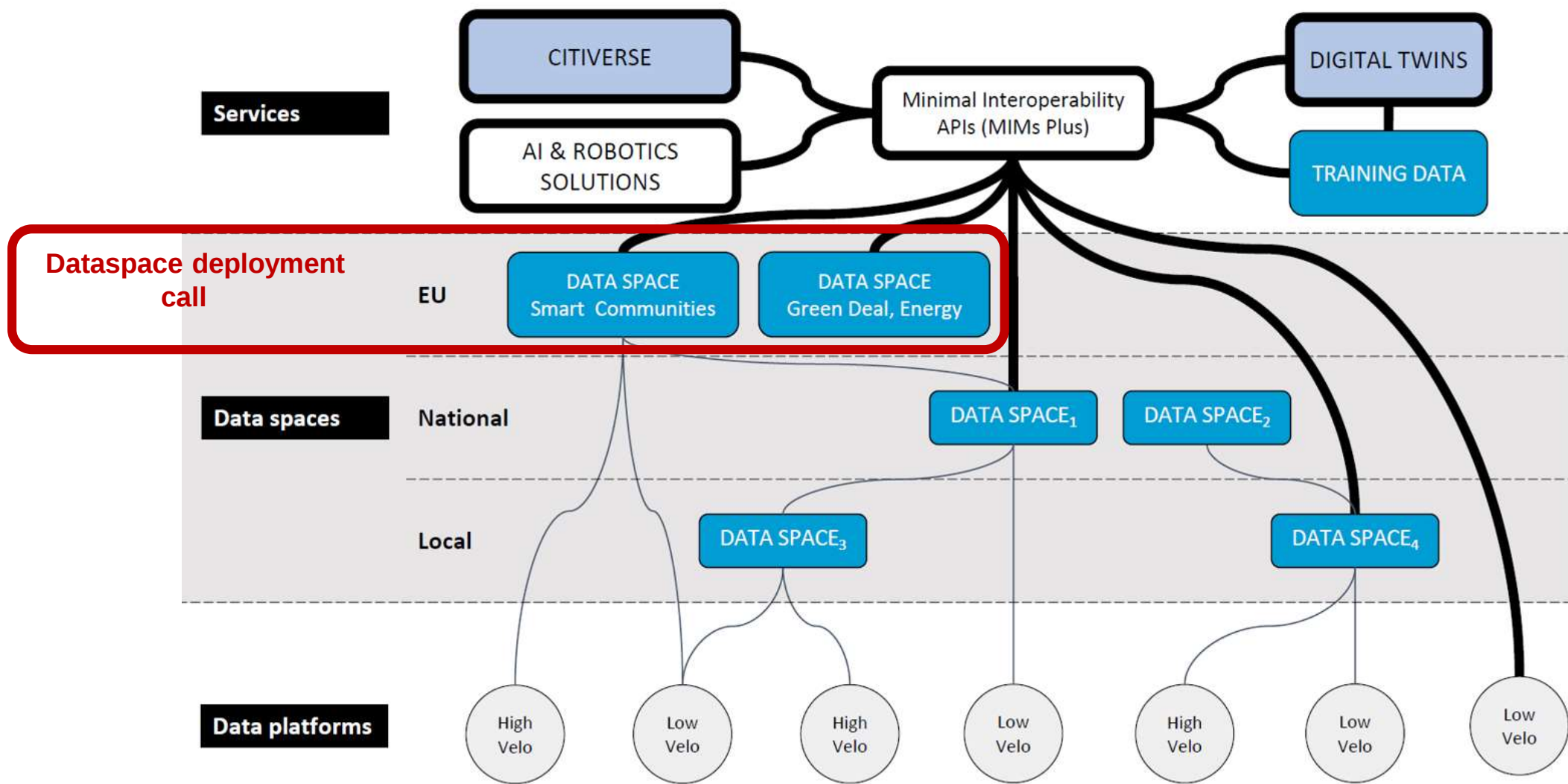
Blueprint

Dataplatform

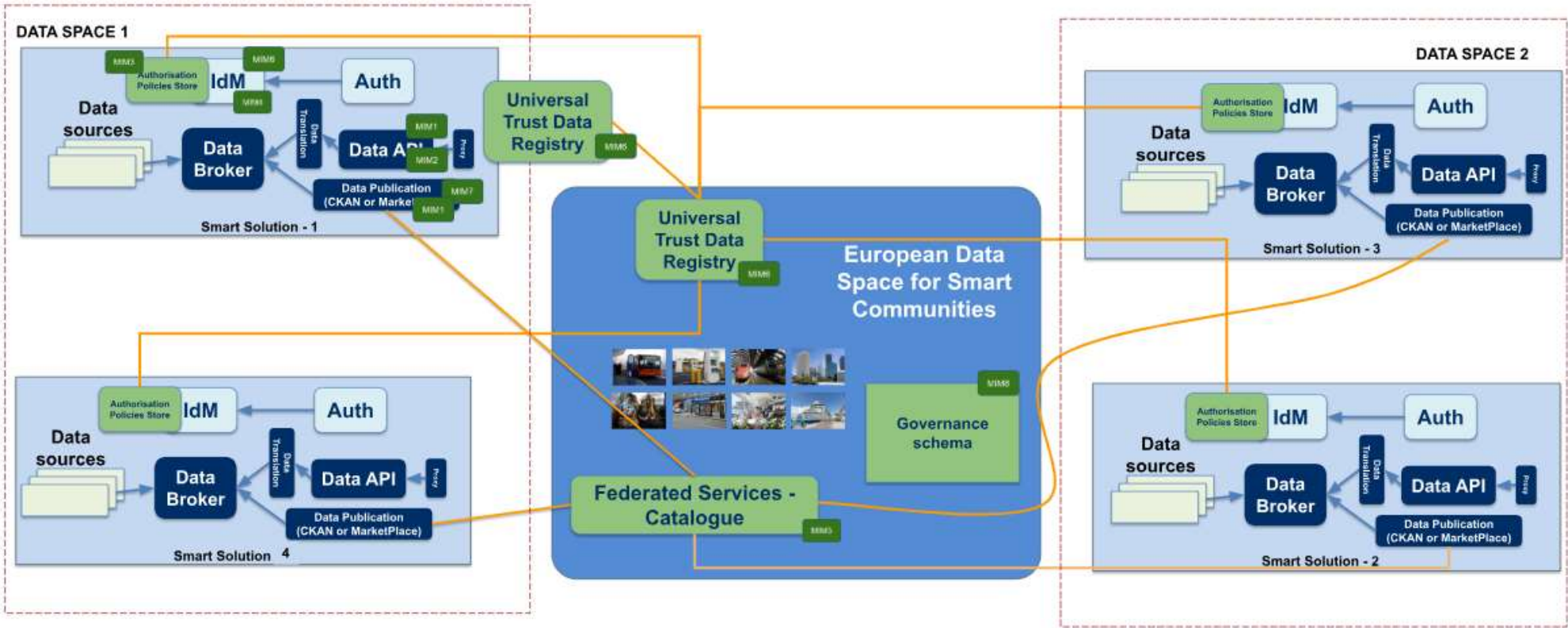
## Data spaces

Naast vrij verkeer van mensen en goederen binnen de EU, ook een vrij verkeer van data mogelijk maken.  
Waarbij de macht van BigTech wordt ingeperkt  
en de macht (lees: kracht) van inwoners wordt vergroot door het hebben van inzicht.





Multi stakeholder Governance Schema



# Consortium



EINDHOVEN

ÁLAVA (Basque Country)



# WP overview



**WP1**, lead Eindhoven, Coordination and Project Management

**WP2**, lead TU/e, Create Stakeholder Engagement model

**WP3**, lead Fontys, Create Blueprint Validation Methodology

**WP4**, lead Fontys, Create Data Security and Privacy Model

**WP5**, lead Eindhoven,

Use Case implementation and co-creation of a sustainable data space business model supporting increased liveability for cities and regions.

- 1 Eindhoven,
- 2 Oulu (FIN)
- 3 Province of Álava (SP)

**WP6**, lead Eindhoven, Communication, Dissemination and Outreach.



# What?

# Use Case Implementation (DS Support Center)

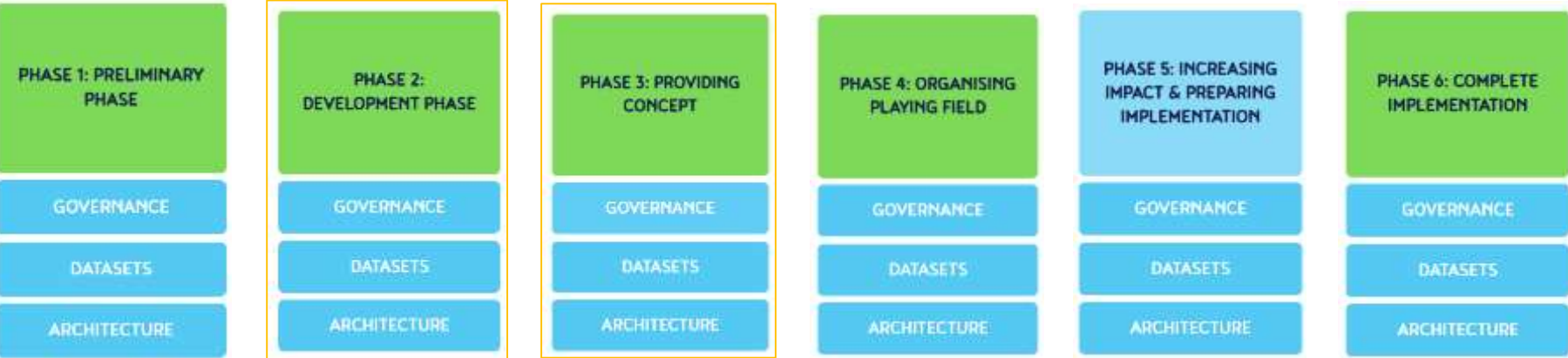


## General



## Action Plan

As the development status of use cases across communities can differ, the DS4SSCC action plan suggests to locate use cases within a maturity level scheme of 6 phases based on completed key performance indicators (KPIs) ensuring right guidance for the next actions to be taken in the context of governance, datasets and architecture.



Link: [DS4SSCC Inventory](#)

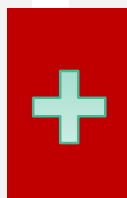




DS4SSCC Inventory



Capacity Building



DS4SSCC Inventory



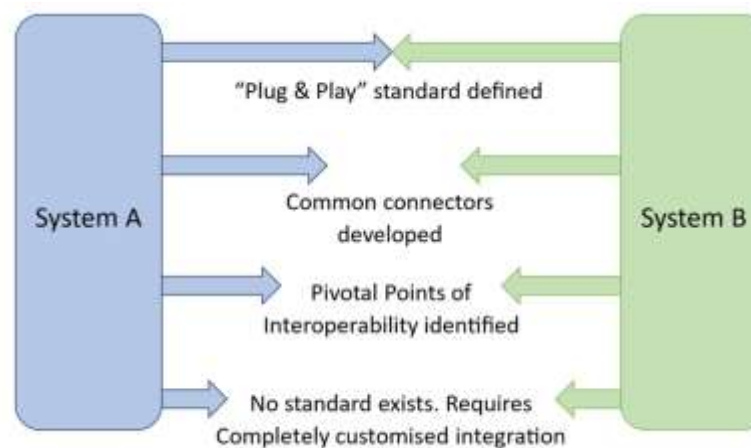
Recommended Action for Standardisation



DS4SSCC Inventory



Vision for the Federation of Data Spaces



# Data Cooperation Canvas (DS Support Center)



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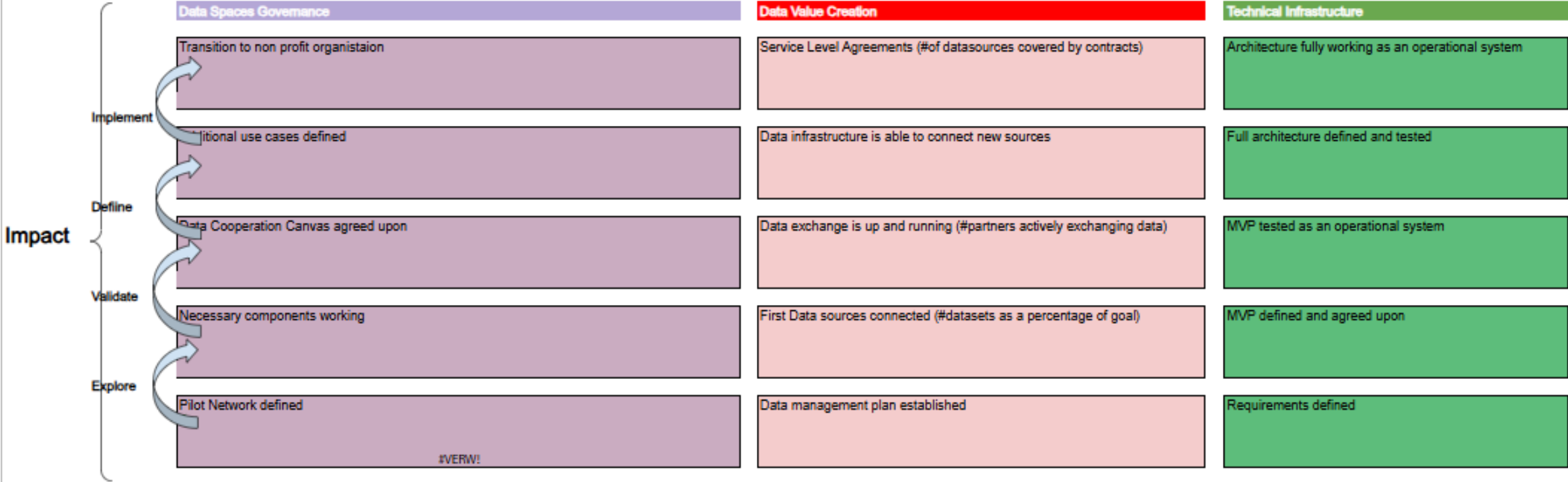
Pilot  
Profile



| ORGANIZATIONAL                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | WHY ?                                                                                                                                        | TECHNICAL                                                                                                                                                                                                                                                                 |        |     |       |       |           |       |       |           |       |       |         |       |       |           |       |       |       |       |       |        |       |       |                                                                                                           |                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----|-------|-------|-----------|-------|-------|-----------|-------|-------|---------|-------|-------|-----------|-------|-------|-------|-------|-------|--------|-------|-------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Key Partners</b><br>Who are the partners involved in the data exchange? What are their roles?                                                                                   | <b>Shared Process</b><br>What steps are performed as a shared process in the data exchange? What steps are done individually?<br><table border="1"><thead><tr><th></th><th>Individual</th><th>Shared</th></tr></thead><tbody><tr><td>Use</td><td>FALSE</td><td>FALSE</td></tr><tr><td>Visualise</td><td>FALSE</td><td>FALSE</td></tr><tr><td>Interpret</td><td>FALSE</td><td>FALSE</td></tr><tr><td>Combine</td><td>FALSE</td><td>FALSE</td></tr><tr><td>Transform</td><td>FALSE</td><td>FALSE</td></tr><tr><td>Store</td><td>FALSE</td><td>FALSE</td></tr><tr><td>Create</td><td>FALSE</td><td>FALSE</td></tr></tbody></table> |                                                                                                                                              | Individual                                                                                                                                                                                                                                                                | Shared | Use | FALSE | FALSE | Visualise | FALSE | FALSE | Interpret | FALSE | FALSE | Combine | FALSE | FALSE | Transform | FALSE | FALSE | Store | FALSE | FALSE | Create | FALSE | FALSE | <b>Context</b><br>What is the business context that creates the opportunity/ necessity for data exchange? | <b>Data &amp; data sources</b><br>What data is exchanged? What are the data sources used? |
|                                                                                                                                                                                    | Individual                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Shared                                                                                                                                       |                                                                                                                                                                                                                                                                           |        |     |       |       |           |       |       |           |       |       |         |       |       |           |       |       |       |       |       |        |       |       |                                                                                                           |                                                                                           |
| Use                                                                                                                                                                                | FALSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FALSE                                                                                                                                        |                                                                                                                                                                                                                                                                           |        |     |       |       |           |       |       |           |       |       |         |       |       |           |       |       |       |       |       |        |       |       |                                                                                                           |                                                                                           |
| Visualise                                                                                                                                                                          | FALSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FALSE                                                                                                                                        |                                                                                                                                                                                                                                                                           |        |     |       |       |           |       |       |           |       |       |         |       |       |           |       |       |       |       |       |        |       |       |                                                                                                           |                                                                                           |
| Interpret                                                                                                                                                                          | FALSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FALSE                                                                                                                                        |                                                                                                                                                                                                                                                                           |        |     |       |       |           |       |       |           |       |       |         |       |       |           |       |       |       |       |       |        |       |       |                                                                                                           |                                                                                           |
| Combine                                                                                                                                                                            | FALSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FALSE                                                                                                                                        |                                                                                                                                                                                                                                                                           |        |     |       |       |           |       |       |           |       |       |         |       |       |           |       |       |       |       |       |        |       |       |                                                                                                           |                                                                                           |
| Transform                                                                                                                                                                          | FALSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FALSE                                                                                                                                        |                                                                                                                                                                                                                                                                           |        |     |       |       |           |       |       |           |       |       |         |       |       |           |       |       |       |       |       |        |       |       |                                                                                                           |                                                                                           |
| Store                                                                                                                                                                              | FALSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FALSE                                                                                                                                        |                                                                                                                                                                                                                                                                           |        |     |       |       |           |       |       |           |       |       |         |       |       |           |       |       |       |       |       |        |       |       |                                                                                                           |                                                                                           |
| Create                                                                                                                                                                             | FALSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FALSE                                                                                                                                        |                                                                                                                                                                                                                                                                           |        |     |       |       |           |       |       |           |       |       |         |       |       |           |       |       |       |       |       |        |       |       |                                                                                                           |                                                                                           |
| <b>Resources</b><br>What organisation resources are required for this data cooperation? What resources are available already? What needs to be done to get all required resources? |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Added value</b><br>Why will this data cooperation succeed? What is the added value for participants?                                      | <b>Interoperability</b><br>Is it hard to combine all the data? Or are standards definitions available? What data standards & formats are used or need to be used?                                                                                                         |        |     |       |       |           |       |       |           |       |       |         |       |       |           |       |       |       |       |       |        |       |       |                                                                                                           |                                                                                           |
| <b>Business Case</b><br>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?   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Motivation &amp; Objectives</b><br>What is the motivation for the key partners to join? What are their main objectives of participating?  |                                                                                                                                                                                                                                                                           |        |     |       |       |           |       |       |           |       |       |         |       |       |           |       |       |       |       |       |        |       |       |                                                                                                           |                                                                                           |
| <b>Governance Model</b><br>How are rules, norms and actions structured/sustained/regulated to control the data exchange?                                                           | <b>Implementation Roadmap</b><br>What approach will be used for realising and implementing the data exchange?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Technical Concepts/models</b><br>What technical concepts/models need to be in place for data exchange? What MIMs are implemented and how? | <b>Technical Infrastructure characteristics</b><br>Name of Cloud/Server infrastructure<br><br>Technology stack name<br>Standard software name<br>In-house development or external parties?<br>Distribution model<br>How can be connected?<br>(APIs, Feeds, downloads etc) |        |     |       |       |           |       |       |           |       |       |         |       |       |           |       |       |       |       |       |        |       |       |                                                                                                           |                                                                                           |

Data  
Cooperation  
Canvas

# Data Cooperation Canvas (DS Support Center)



# Data Cooperation Canvas (DS Support Center)



Building Blocks

| Organisational             |                                            |                       | Technical                 |                                     |                                           |
|----------------------------|--------------------------------------------|-----------------------|---------------------------|-------------------------------------|-------------------------------------------|
| Business                   | Governance                                 | Legal                 | Data Interoperability     | Sovereignty & Trust                 | Data Value Creation                       |
| Business Model Development | Organisational form & Governance Authority | Regulatory Compliance | Data Models               | Access & Usage policies enforcement | Data, Services, and offerings description |
| Use Case Development       | Participation management                   | Contractual framework | Data Exchange             | Identity and Attestation Management | Publication & Discovery                   |
| Data Product Development   |                                            |                       | Provenance & Traceability | Trust Framework                     | Value added Services                      |
| Data Space Intermediary    |                                            |                       |                           |                                     |                                           |



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## Pilot Progress Report



|                          | Describe                                                         | KPI                 | Remarks |
|--------------------------|------------------------------------------------------------------|---------------------|---------|
|                          | Phase 1: Explore                                                 |                     |         |
| Governance               | Has the pilot network been identified? Please describe it here   | no                  |         |
|                          | Necessary components working                                     | no                  |         |
| Value Creation           | Data management plan established                                 | no                  |         |
|                          | First Data sources connected (#datasets as a percentage of goal) | % of total datasets |         |
| Technical Infrastructure | Requirements defined                                             | no                  |         |
|                          | MVP defined and agreed upon                                      | no                  |         |



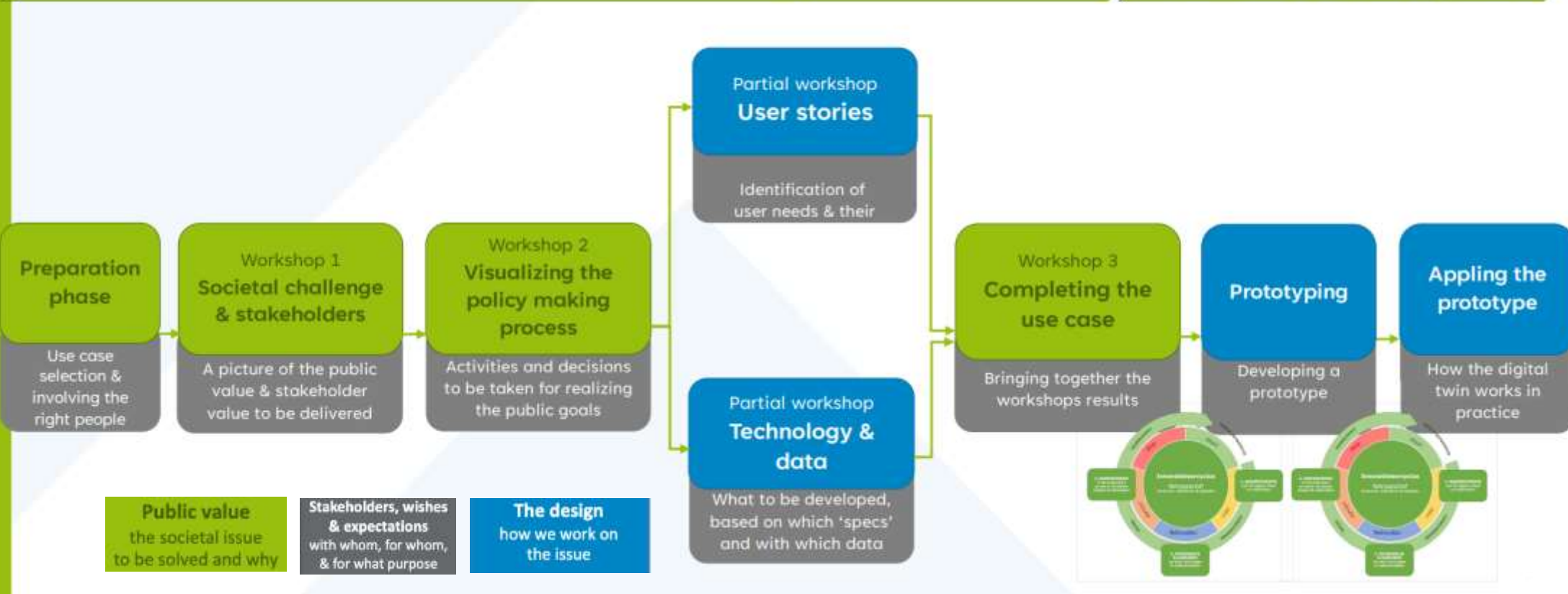
# How?

# Use Case Canvas Implementation Methode ism Geonovum



The use case canvas: basis of the learning process

Starting periodic retrospectives:  
continuation of the learning process

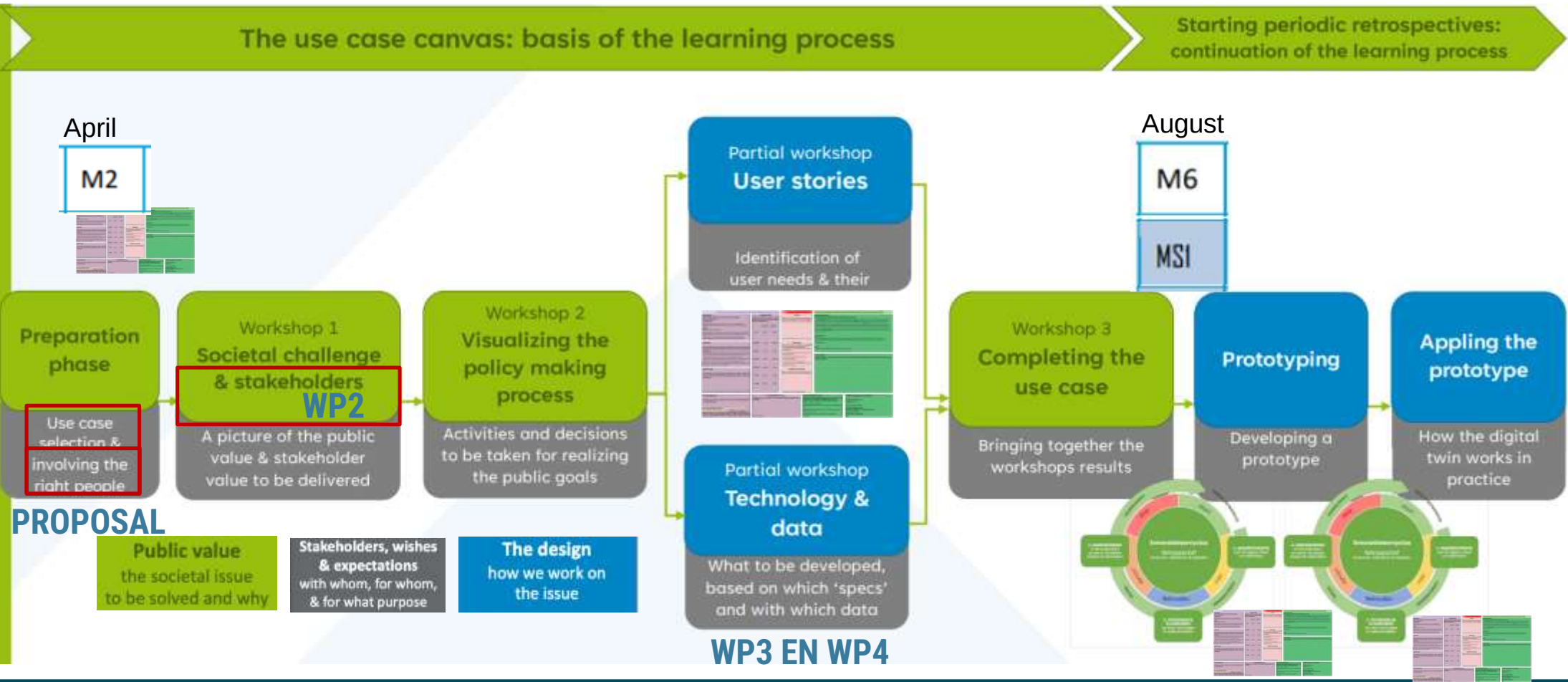




## Periodic retrospectives



# Use Case Canvas Implementation Methode



# Use Case Eindhoven Positief Energie District



## Energie transitie



The CitizenCity is project has received funding from the European Union's Horizon Europe Research and Innovation Programme



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# Use Case Eindhoven <1>



Realisatie van een Positief Energie District

Verzamelde energie data als nieuwe data(set)  
toevoegen aan de (open) data van de Buurtkijker monitor & verbonden met data gebruikt in de Woningbouwmonitor (Juno)

Zodat een nieuwe dataservice ontstaat

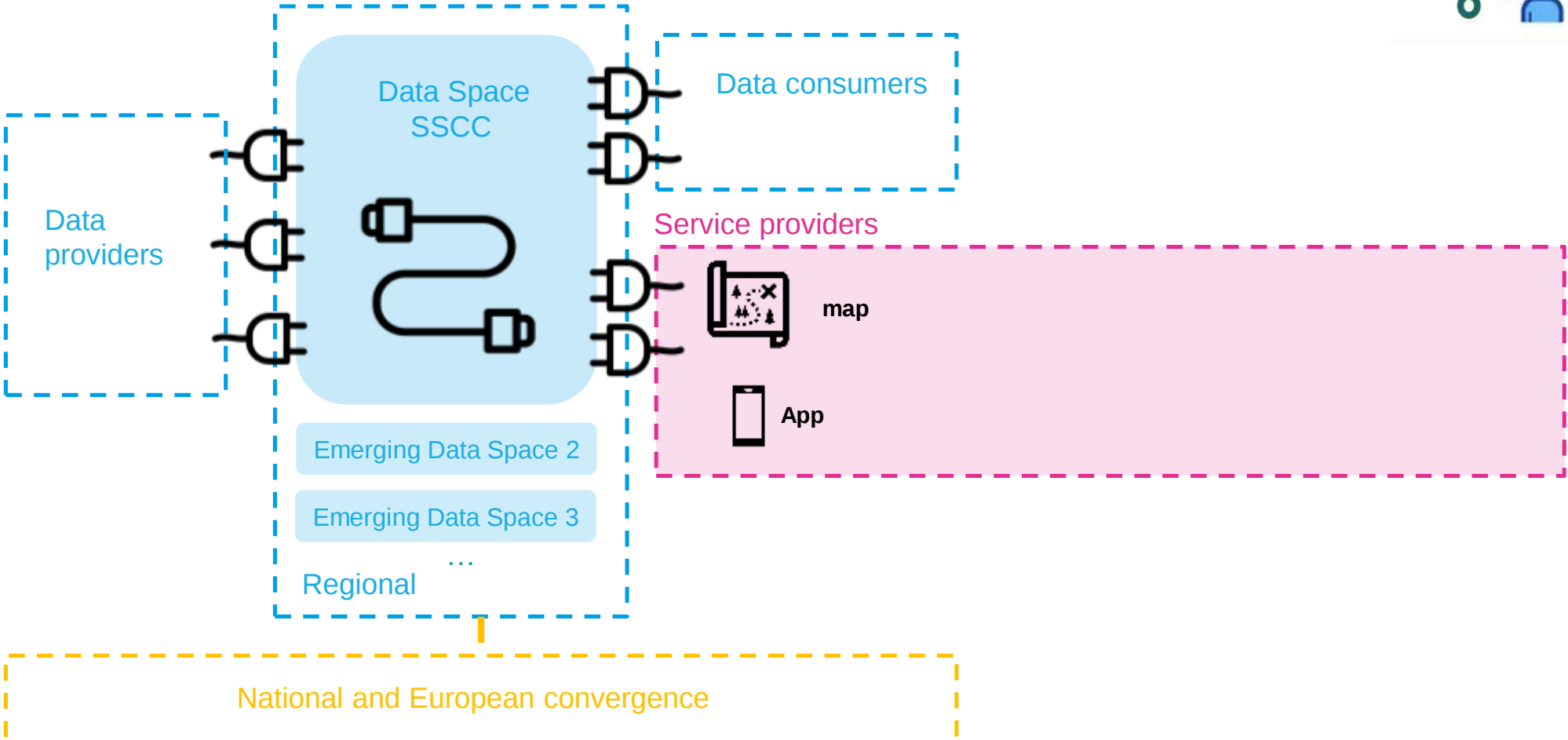
Waarmee:

- Energie metingen gestandaardiseerd worden
- (maatwerk) advisering voor energiebesparing en bijdragen tot een betere leefbaarheid
- Data soeveriniteit, secure en privacy proof
- Ter bevordering van bewoners initiatieven
- Opties inzichtelijk voor duurzame renovaties

Nieuwe dataservice\* ontstaan, waarmee impact wordt bereikt.

Wat herbruikbaar, dus schaalbaar is.....

# NEW DATA SERVICES



# Use Case Eindhoven <2>

Gebruik van het “Shinto” data platform (Stratum-data-platform)

Stratum-data-platform verbinden met dataspace,  
+ nieuw: Toevoegen van energiedata **Inwoners** en/of **Energieleverancier**

- Werken aan standaardisering van energiedata
- Green deal (Klimaat opgave) KPI's matchen met de standaard energie data

**Inwoners zijn in de Eindhovense use case**

**Stakeholder**

**Data leverancier**

**Data gebruiker**

Duurzame data deel omgeving, waarin als eco-systeem kan worden samengewerkt, met een social en financieel business model, wat levensvatbaar is.



# Irisbuurt



## Stichting Iris Elektrick

De inwoners van Irisbuurt in Eindhoven hebben ‘samen’ hoog in het vaandel staan en zo ontstonden gezamenlijke burgerinitiatieven, zoals het starten van een autodeelgroep in 2018. Op 12 mei 2020 werd Stichting Iris Elektrick opgericht om deze initiatieven officieel in te verenigen. De doelen van de stichting zijn:

*“Bevordering van de energietransitie en andere klimaatdoelen in Eindhoven door groepen burgers, die zulke doelen gezamenlijk aanpakken. De stichting ondersteunt en faciliteert deze burgergroepen met raad en daad in hun contacten en contracten met overheden en faciliterende bedrijven”*

Naast het zelf starten van een autodeelgroep wil het bestuur en de deelnemers graag hun kennis met Eindhovenaren delen als ze zelf iets willen opzetten. Iris Elektrick fungeert als intermediair tussen autodeelgroepen enerzijds en overheden en bedrijven anderzijds. Overheden zijn de gemeente Eindhoven en de provincie Noord-Brabant. Bedrijven zijn verzekeraars, autoverkopers, providers van kilometerregistratiesystemen, laadpaalinstallateurs en anderen. Als intermediair ontzorgt Iris Elektrick de autodeelgroepen bij de opstelling van contracten.

**Opschaling wens over de gehele stad, regio en verder**



Een ander initiatief werd in 2024 gestart om door burgers en anderen opgewekte elektriciteit onderling te verhandelen en eventueel op te slaan in een buurtbatterij.

## Buurtbatterij

In de zomer van 2024 startte er een nieuw duurzaamheidsinitiatief, namelijk in coöperatief verband onderling stroom verhandelen en evt., aanschaf buurtbatterij. Dit, omdat de verrekening per individueel huishouden, van teveel opgewekte stroom vergeleken met het individuele gebruik op jaarbasis, zou worden afgeschaft.

Zo'n 14 huishoudens bepaalden in 2 avondsessies onderling de doelen die ze zouden nastreven.

In februari 2025 werden we door de gemeente Eindhoven en de TUE wel uitgenodigd om als pilootstudie deel te nemen aan een EU-H [redacted] verwachting is dat als dit voorstel wordt gehonoreerd er in 2026 gestart kan worden,

**CitizenCity is voorbereiding van IV op de executie van de Irisbuurt initiatieven**

Inwoners in staat stellen om 'eigen' data beschikbaar te stellen, gekoppeld aan het doel, betrouwbaar, reproduceerbaar.

# TU/e Stakeholder Engagement



## Stichting Iris Elektrick

Henk Kok  
Zubin Nayak  
Rik van der Velden

## Gemeente Eindhoven

Energie transitie  
Mobiliteit opgave  
Participatie  
Duurzaamheid  
Leefbaarheid  
Stadslab  
Woningbouw opgaaf  
Inkoop  
Architectuur  
REO

TU/e

ShintoLabs

Fontys

Externe  
Ethische  
Commissie

Bredere groep Inwoners

## Brainport Development

MRE

UDI

TNO

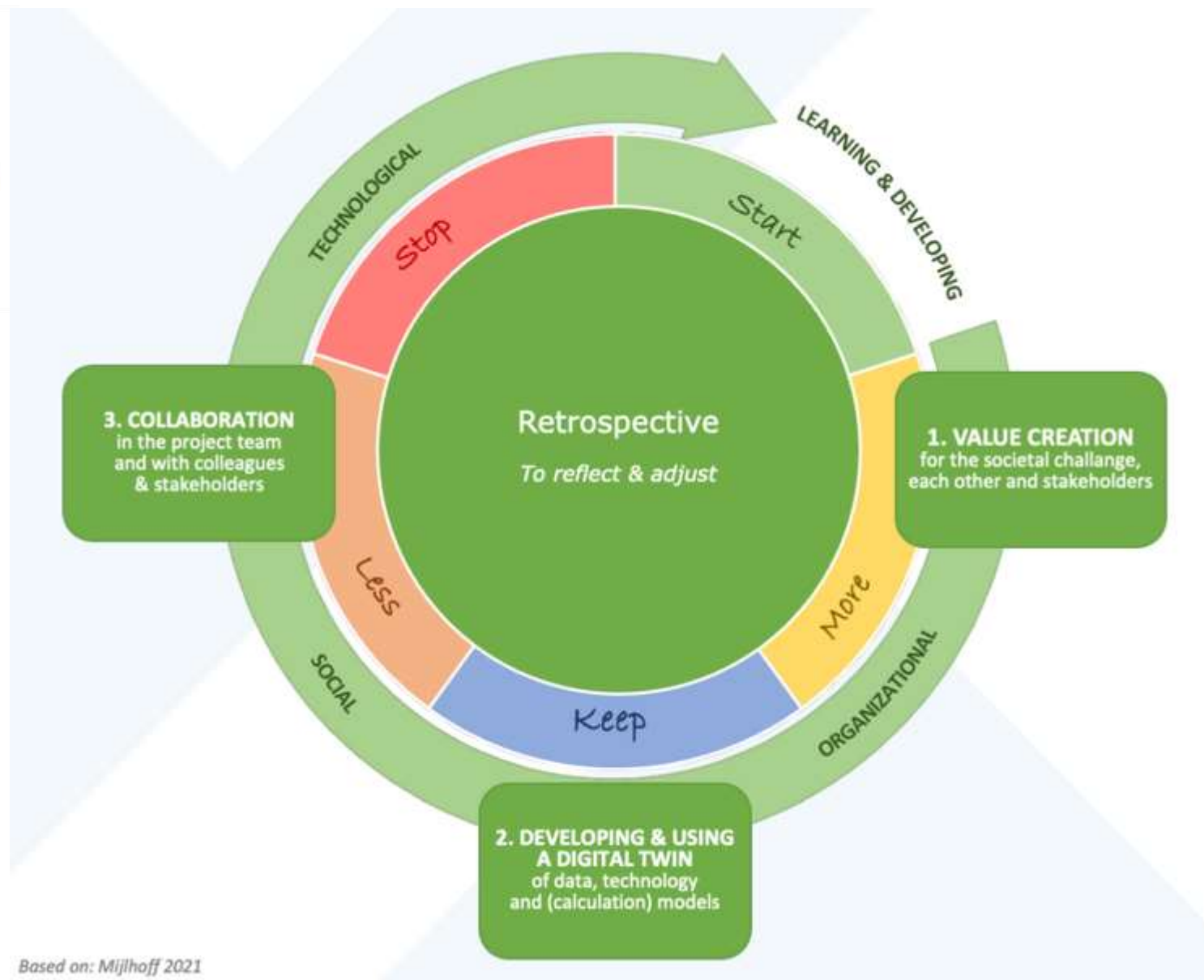
Enexis

# Update Data Cooperatie Canvas



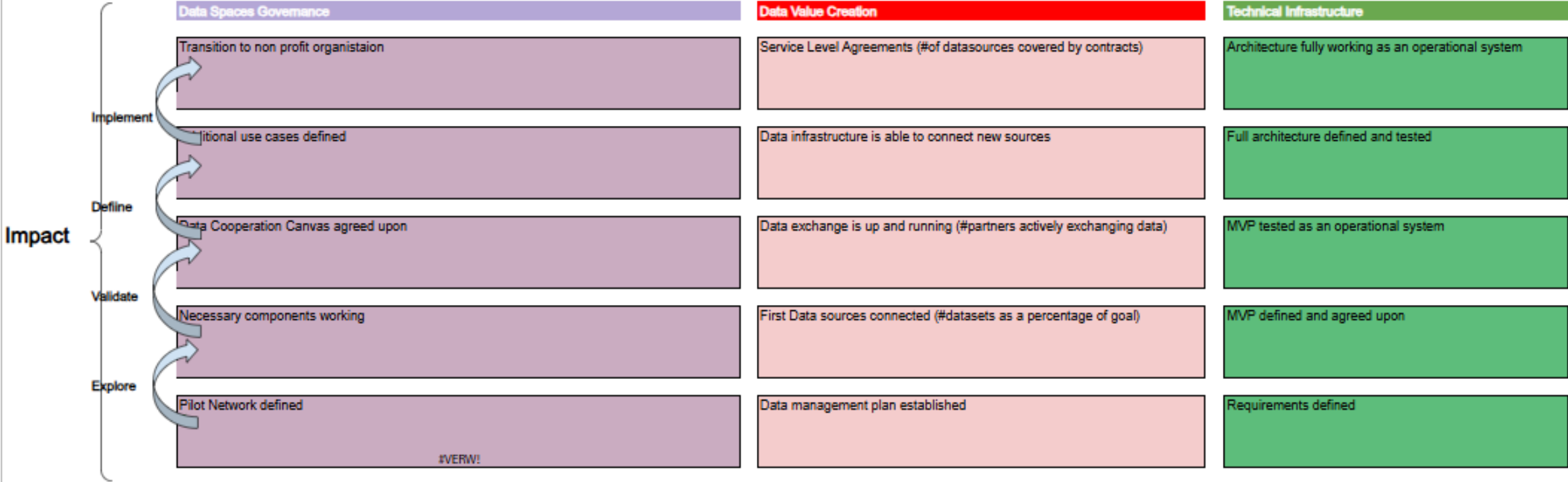
| ORGANIZATIONAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | WHY?                                                                                                                                                                         | TECHNICAL                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Key Partners</b><br>Who are the partners involved in the data exchange? What are their roles?<br>Municipality of Eindhoven initiator, coordinator, data-owner, data-provider, data-consumer, financier, developer, dataright holders<br>Shinto Labs contributor, data visualisation, data modelling, developer<br>Enexis data-owner, data-provider, data-consumer, developer, dataright holders<br>Citizens participant, data-owner, data-provider, data-consumer, developer, dataright holders<br>Fontys ICT use-case participants, developer<br>TU/e use-case participants, developer                            | <b>Context</b><br>What is the business context that creates the opportunity/ necessity for data exchange?<br>Citizens in the Irisbuurt in Eindhoven                          | <b>Data &amp; data sources</b><br>What data is exchanged? What are the data sources used?<br>CBS Microdata, citizen surveys, basisregistraties, which is gathered in an Excel spreadsheet. The                                                                                                          |
| <b>Resources</b><br>What organisation resources are required for this data cooperation? What resources are available already? What needs to be done to get all required resources?<br>a new partner must developed. Structured data governance-schema must be deployed in a eco-system way of thinking and managed datamanagement is a topic that needs attention in co-creation. (Shinto Labs: woningbouwmonitor, leefbaarheidsmonitor, monitor sociale veerkracht, Azure Stratumplatform (precieze werking via Shinto Labs inzien), Gemeente Eindhoven delivers data to Shinto Labs through tools like spreadsheets | <b>Added value</b><br>succeed? What is the added value for participants?<br>Encourage energy companies like En                                                               | <b>Interoperability</b><br>formats, or methods can be used? Is it hard to combine all the data? Or are standards definitions available? What data standards & formats are used or need to be used?<br>Spreadsheet used to help interpret data, there are various standards used in national datasets wh |
| <b>Business Case</b><br>What are the costs of the data exchange? Who is paying? What are the revenues? Who is profiting? What compensation, dees or other financials are needed?<br>Costs are tied to having Shinto Labs run these dashboards                                                                                                                                                                                                                                                                                                                                                                         | <b>Motivation &amp; Objectives</b><br>partners to join? What are their main objectives of participating?<br>Gemeente Eindhoven wants to create                               |                                                                                                                                                                                                                                                                                                         |
| <b>Governance Model</b><br>How are rules, norms and actions structured/sustained/regulated to control the data exchange?<br>As Municipality we have an internal Data Governance organisation and managed data management framework. (Coordinated controle of data-use and re-use). This is the way of working we want to scale to the eco-system. The wished result is a Data Governance Board of Brainport Eindhoven, where data sharing is supporting innovation for a better way of living for our citizens.                                                                                                       | <b>Implementation Roadmap</b><br>What approach will be used for realising and implementing the data exchange?<br>WP5 will have a work plan that describes this process using | <b>Technical Concepts/models</b><br>place for data exchange? What MIMs are implemented and how?                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                              | <b>Technical Infrastructure characteristics</b><br>Name of Cloud/Server infrastructure<br>Technology stack name<br>Standard software nam<br>In-house development or external parties?<br>Distribution model<br>connected? (APIs, Feeds, downloads etc)                                                  |





Based on: Mijlhoff 2021

# Data Cooperation Canvas (DS Support Center)



# Data Cooperation Canvas (DS Support Center)



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| Data Space Intermediary    |                                            |                       |                           |                                     |                                           |



Next step...



Use case  
Deployment...



# IMPACT



## Eindhoven shows

### KPI1

25 deelnemende inwoners, betrokken tijdens de implementatie van de use case, waarbij inwoners data leveren, worden getraind in bescherming van gegevens bij het gebruik van een dashboard of slimme app.

### KPI2

een startbijeenkomst organiseren om gezamenlijk te werken aan de herinrichting van stadsdelen, vanuit een energietransitie perspectief