



DATA SPACES
SUPPORT CENTRE

DSSC Insight Series

Unlocking synergies and value in data spaces

18 December 2024 | 16:00 to 17:30 CET | online



Gianfranco Cecconi
DSSC



Maaria Nuutinen
VTT



Christoph Mertens
IDSA



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The Data Spaces Support Centre receives funding from the European Union Digital Europe Programme under grant agreement n° 101083412.

Intro:

- Gianfranco Cecconi, Executive Director, Data Spaces Support Centre

Unlocking the power of synergies in data spaces:

- Maaria Nuutinen, Senior Principal Scientist, VTT

Value creation with data spaces:

- Christoph Mertens, Head of Adoption, International Data Spaces Association

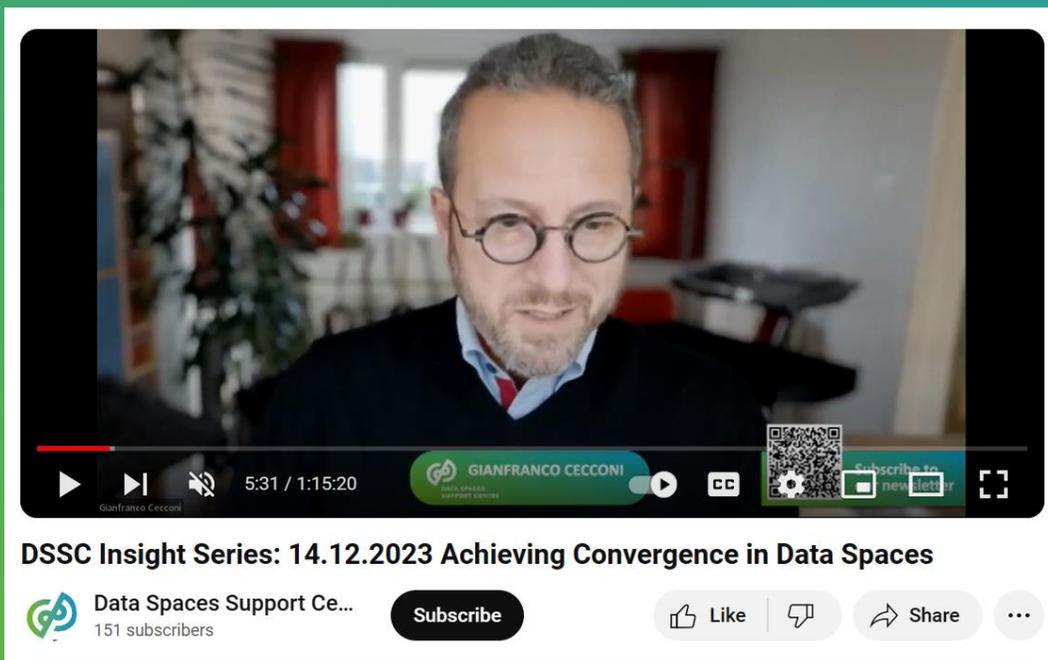
Q&A (You can also ask questions in the chat!)



Simpl Annual Community Event

30 January 2025
Autoworld, Brussels





This webinar is recorded. Did you know? Previous DSSC insight series recordings are available on our Youtube channel. Videos from our annual event are also available!

Check out our YouTube channel here



Stay up to date with Data Spaces Support Centre and the European Union's programme for common European data spaces.

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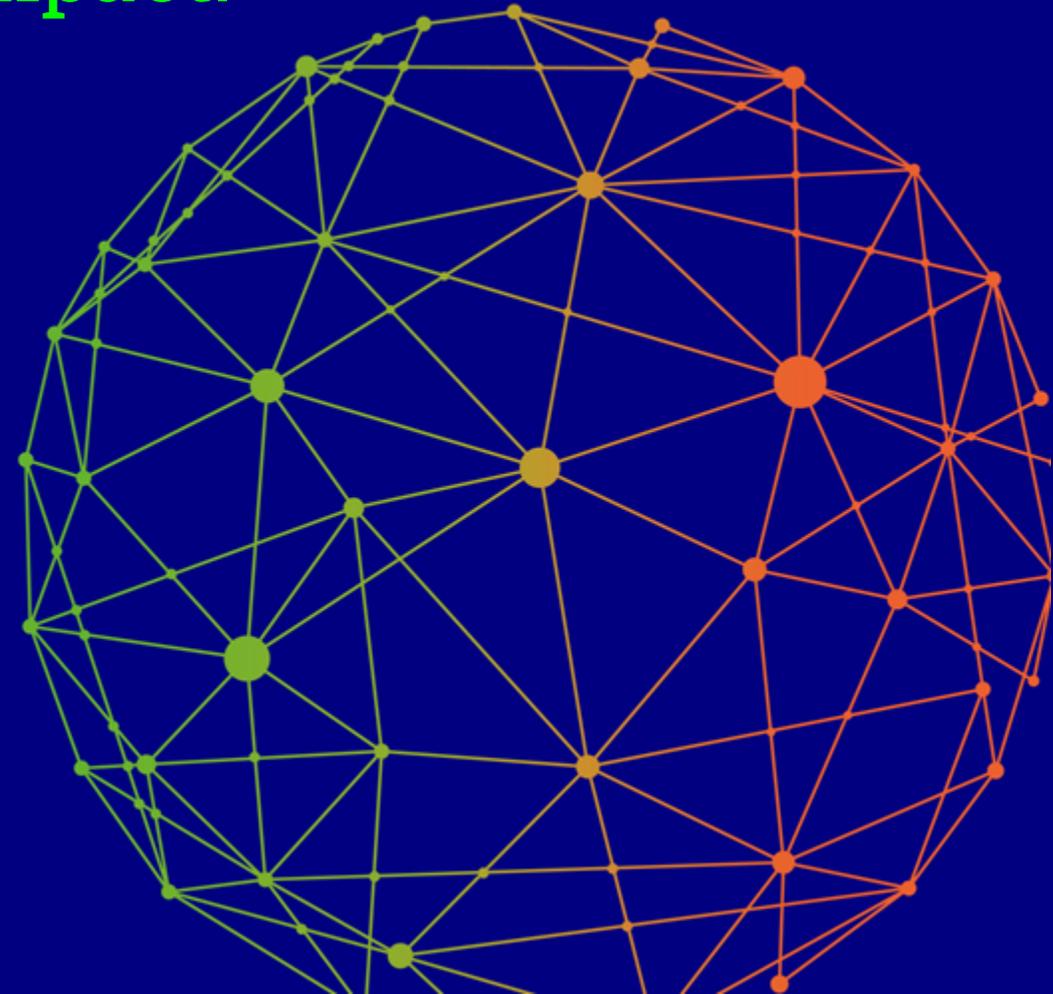
tinyurl.com/dssc-newsletter



Data Spaces Symposium

Share data. Unlock value. Boost impact.

Hilton Hotel, Warsaw | 11 & 12 March 2025



The Data Spaces Support Centre receives funding from the European Union Digital Europe Programme under grant agreement n° 101083412

Data Spaces Symposium

Join us in Warsaw!

You can have a key role and gain great exposure in the world's leading event on data spaces !

Are you a company/project/initiative and you would like to..

- Sponsor the event and gain more exposure?
- Being up to date with the program and developments?
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Visit our website here or write us at events@dssc.eu!





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Unlocking the power of synergies in data spaces

Maaria Nuutinen, VTT

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Discussion paper: Data Spaces' Synergies

- Juha-Pekka Soininen (VTT),
- Daniel Alonso (BDVA),
- Tobias Guggenberger (Fraunhofer),
- Leona King (KUL),
- Heidi Korhonen (VTT),
- Kai Kuikkaniemi (Mydata),
- Gabriella Laatikainen (VTT),
- Maaria Nuutinen (VTT) ,
- D. J. Regeczi (TNO),
- Savvas Rogotis (BDVA)



Data Spaces' synergies

- [Abstract](#)
- [1 Introduction](#)
 - [1.1 Living with multiple data spaces – from the current situation to multiple co-evolving data spaces](#)
 - [1.2 Reaching a joint understanding of data spaces](#)
 - [1.3 Definition of data space and definition of synergy](#)
- [2 Conceptual framework of data space synergies](#)
 - [2.1 Components facilitating synergies](#)
 - [2.2 Elements of synergies](#)
 - [2.3 Building synergetic systems](#)
- [3. Synergies and the evolution of data spaces](#)
 - [3.1. Synergies in data spaces development cycle](#)
 - [3.1 Towards digital single market - an ecosystem of data spaces](#)
- [4. Perspectives on synergies](#)
 - [4.1 User perspective](#)
 - [4.2 Societal perspectives](#)
 - [4.3 Human perspective](#)
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Synergy between data spaces

“The mutual benefits, gained efficiency or increased impact of two or more data spaces working together”.

“the synergies between data spaces can be enabled by common practices, communication concepts, services and/or components, which increase data space interoperability and enable harmonised processes of using different data spaces.”

Why care about cross-data space issues and synergies?

- A single data space cannot address all needs and purposes.
 - Need for coexisting data spaces
- Many use cases rely on data and services sourced from multiple data spaces
 - Interoperability is the key to European digital vision
- Most users will need to interact with and participate in multiple data spaces
- Companies participating in multiple data spaces face significant management complexities and overheads due to parallel solutions

The transformative impacts of synergies between data spaces



1. Economic impacts
2. Environmental benefits
3. Societal benefits
4. Enhanced user experiences
5. Strategic autonomy and data sovereignty
6. Cross-sectoral problem solving
7. Building a resilient data ecosystem

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Key messages



- **Synergy by design**
 - Synergy should be built into data spaces at every stage of development
 - Benefits may be realized later, but the approach ensures smooth navigation of complexities
 - Fosters collaboration and seamless data exchange and integration
- **Trust creation mechanisms**
 - Crucial for reliable and trustworthy data-sharing infrastructure
 - Trust results from intention, commitment, agreement, transparency, and liability
 - Mechanisms should be consistent across all data spaces to build a solid foundation
- **Evolutionary, systemic, long-term perspective**
 - Multiple co-evolving data spaces
 - Ensuring long-term sustainability of data spaces
 - Progress towards a cohesive and efficient European data market

Key requirements and enablers to achieve the transformative impacts of synergies

1. Synergy-by-design approach
2. Trust mechanisms
3. Common assets and tools
4. Policy and regulatory support
5. Governance and stakeholder collaboration
6. Continuous adaptation and feedback loops
7. Addressing barriers
8. Trustworthy human-centric data practices
9. Interoperability as the foundation

Interoperability



- **Key aspect:** Interoperability is essential for creating synergies by enabling seamless and effective data exchange across data spaces.
- **Means:** Includes the harmonization of data models, standards, protocols, and governance frameworks across different data spaces.
- **Purpose:** Facilitates smooth data flow, integration, and collaboration between data spaces.
- **Challenges addressed:** Aims to overcome fragmentation in data spaces, promoting larger-scale data sharing and reuse.
- **Scope:** Ensures that European data spaces can collaborate effectively, achieving seamless data exchange and value creation.
- **Impact:** Supports benefits realization for individuals, businesses, and society by enabling data space synergies.

Ongoing work



- Incorporating cross-data space interoperability into the DSSC assets
- We are working on the European Data Spaces Interoperability Framework
- Co-creation with the data space initiatives

Planned topics include:

- Interoperability-by-design principle
- Role of intermediaries in collaboration
- Joint use cases for data space participants
- Business aspects of collaborating data spaces
- Technical considerations of collaborating Data spaces
- Legal aspects of collaborating data spaces
- Federation of data spaces



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Thank you!



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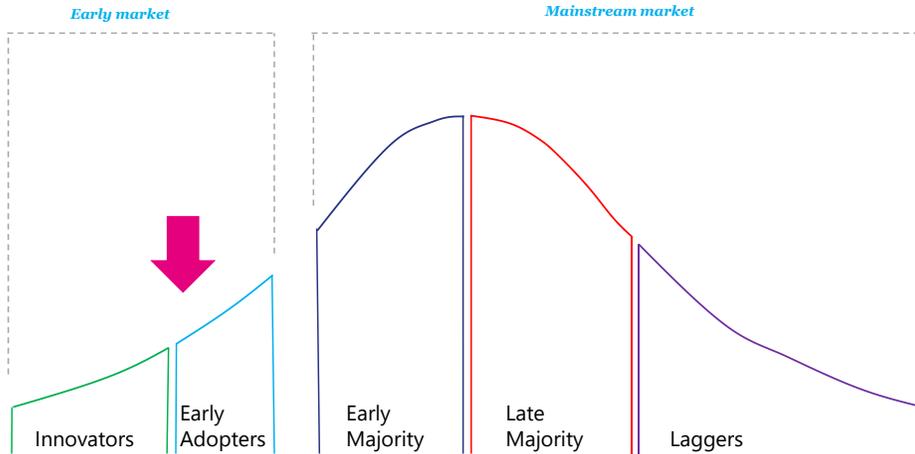
Value creation with data spaces

*Christoph Mertens – Head of Adoption @ IDSA
DSSC Insight Series*

18.12.2024

IDS concepts as baseline for data spaces

Data spaces in multiple sector use IDS principles as blueprint



- Catena-X
- MDS
- SCSN
- DATA-EX
- Manufacturing-X
- Health Data Space
- ERJU-Rail Data Space
- Resilience Data Space
- Eona-X
- Media Data Space (DEP – now TEMS)
- Manufacturing Data Space (DEP)
- Kultur Datenraum
- Skills Data Space (DEP)
- X-Road
- Ouranos-X
- And many more
- More CSAs and Deployment actions
- SIMPL open
- 100 Data Spaces in China

Explore here



Intra Data Space Operability: Catena-X is based on a Gaia-X Compliant IDS System

Example: Open Source SaaS, Green Factory SaaS, SAP, SIEMENS, BASF

Diagram showing data flow between various systems and data spaces.

Motivation & Big Picture

Landscapes of Initiatives in the Context of global manufacturing

Manufacturing-X is international. Our intention is to trigger international R&D, partnerships, cooperation, standardization and deployment with and for customers globally.

| | | |
|--|--|---|
| <p>Global Manufacturing Initiatives</p> <ul style="list-style-type: none"> Manufacturing Initiatives Platform (Industrie 4.0, CESMI, Industry Associations, IRI) Infrastructure Initiatives (EDCEurope, DATA-EX, ISA, Gaia-X) Standards and regulations (ISO 15926, IAS, EC/ANSI) | <p>Global smart manufacturing initiatives are building the foundation for the requirements and needs of infrastructure initiatives, and working together to stage standards.</p> <p>Data and digital infrastructure initiatives have to create building blocks to fulfil manufacturing needs – from cloud to edge to connected devices.</p> <p>Standards are essential for scaling-up. Cooperation and influence are essential for IM-X. Regulations are a given. PCP reports, Battery Passport...</p> | <p>International Manufacturing-X Council</p> <ul style="list-style-type: none"> Orchestrate and cooperate Influence and use Define and lobby |
|--|--|---|



Business Model for Data Spaces

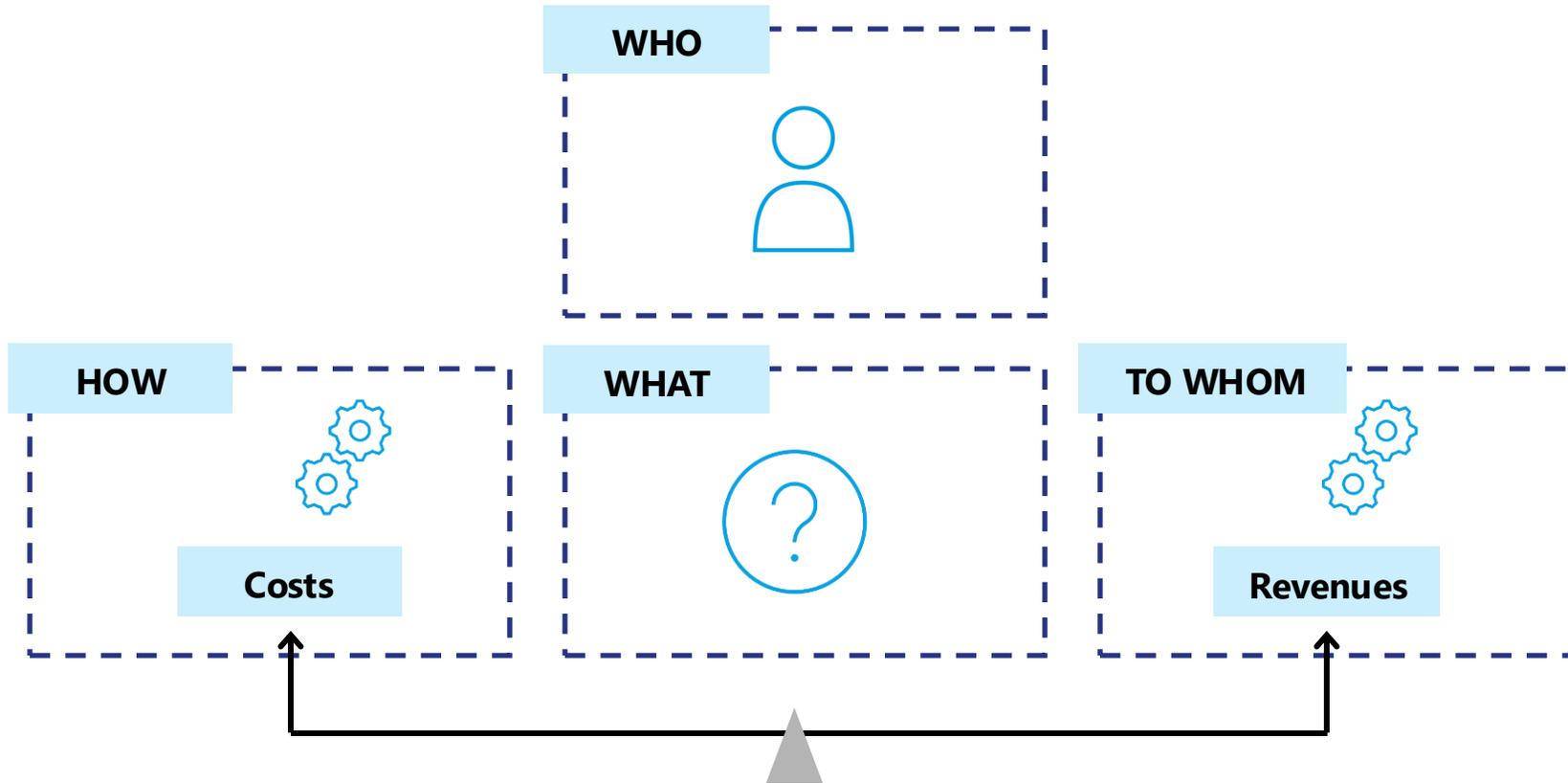
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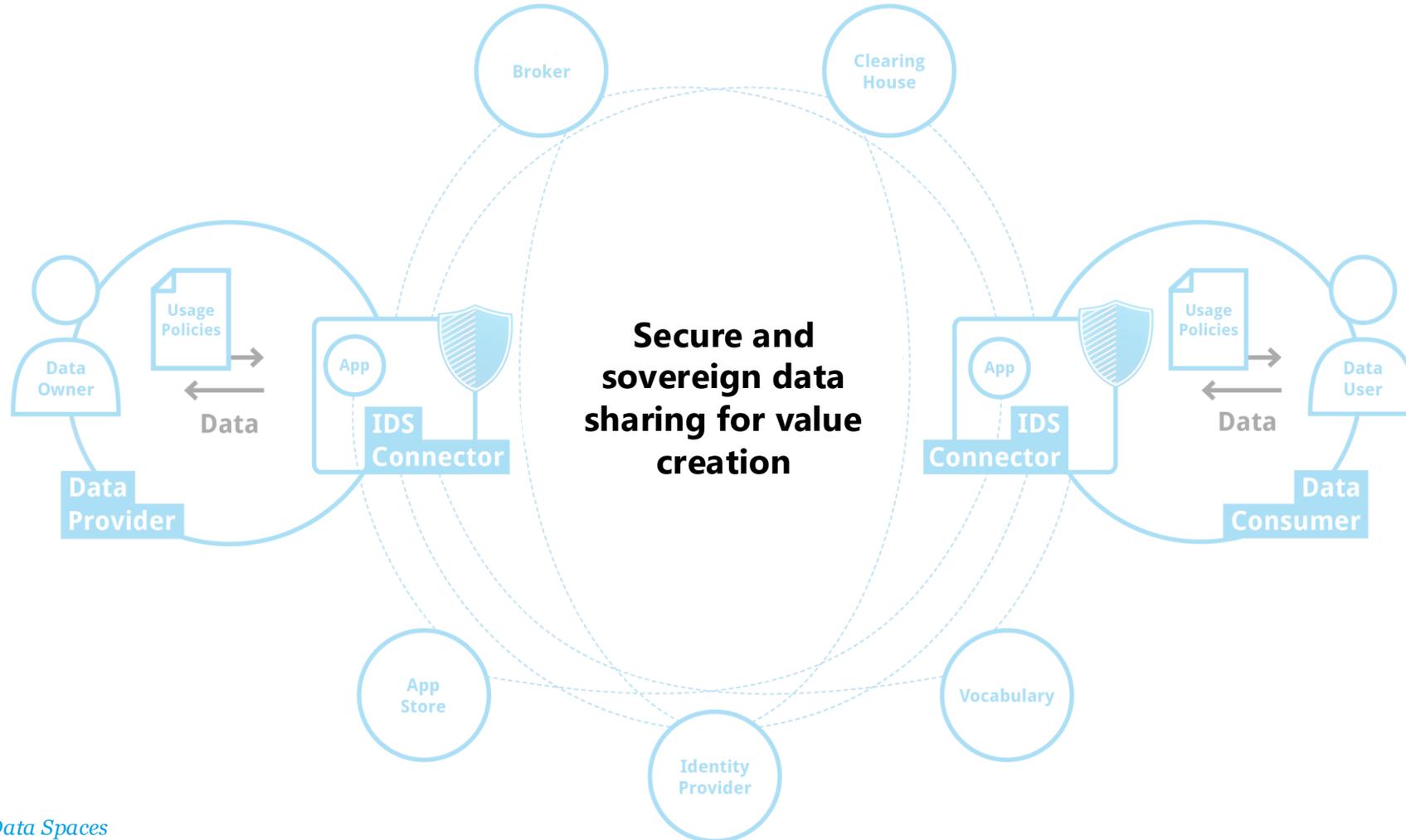
1

Some Essential Concepts

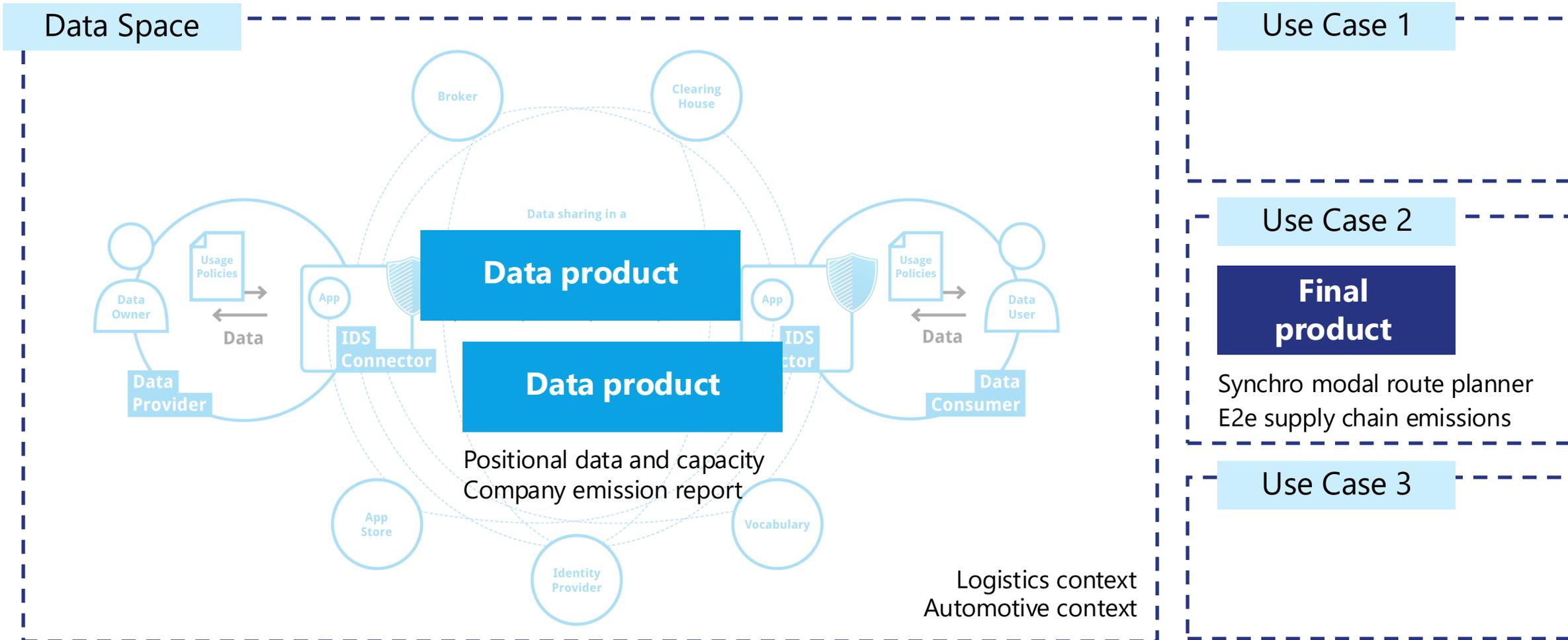
What is a business model?



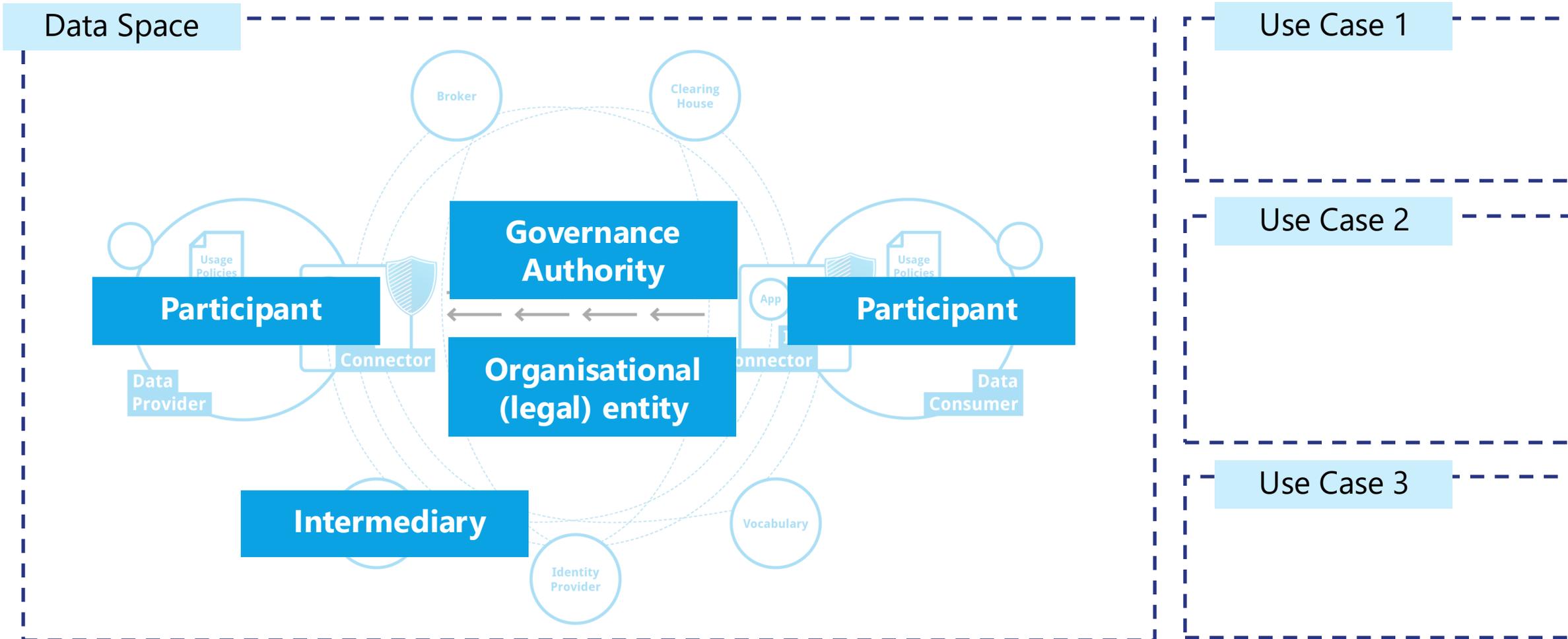
Value proposition of a data space



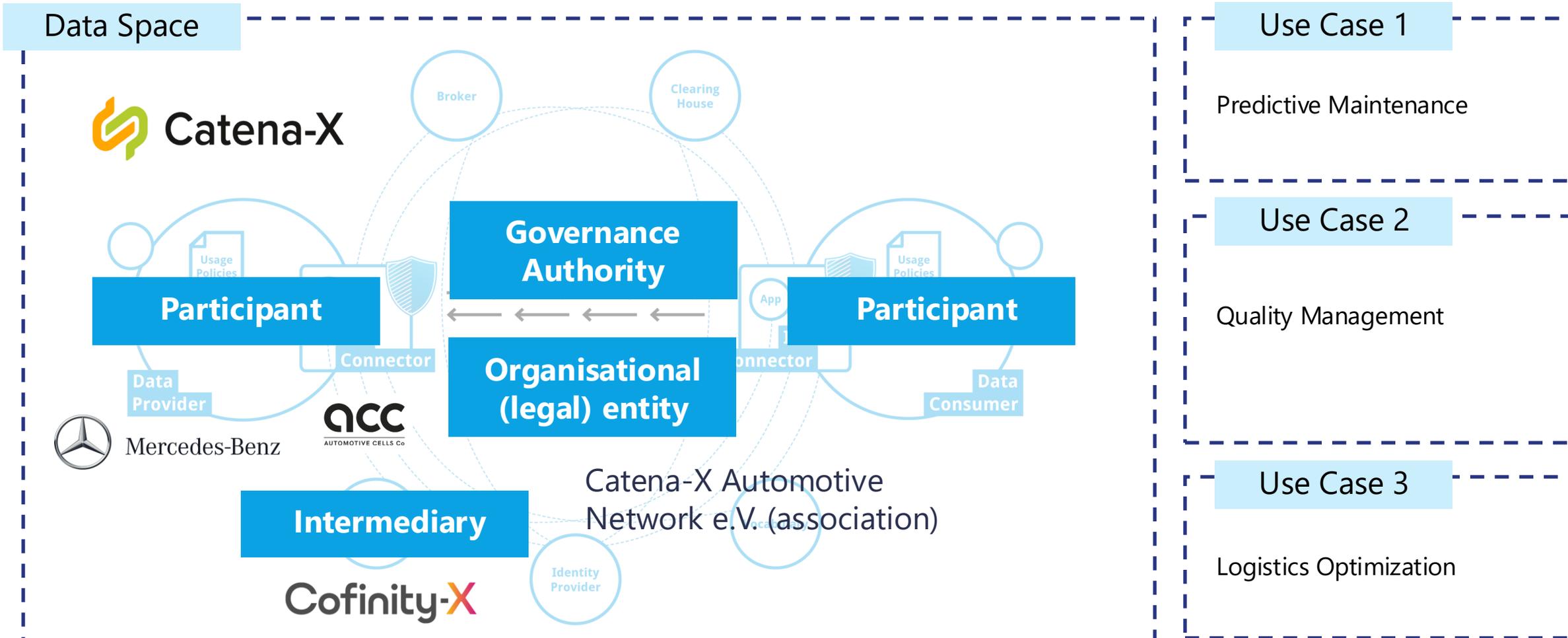
Actual value is created in use cases



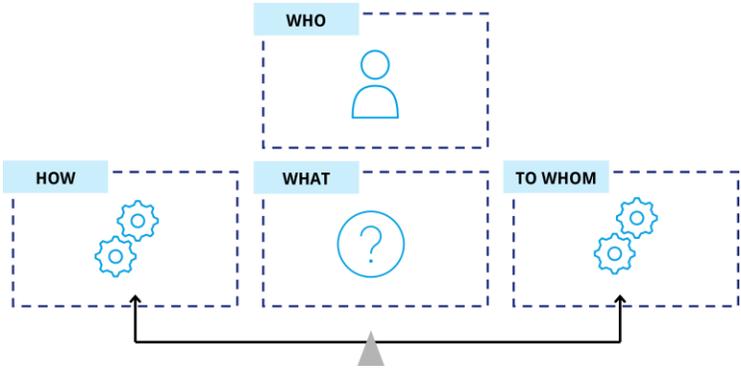
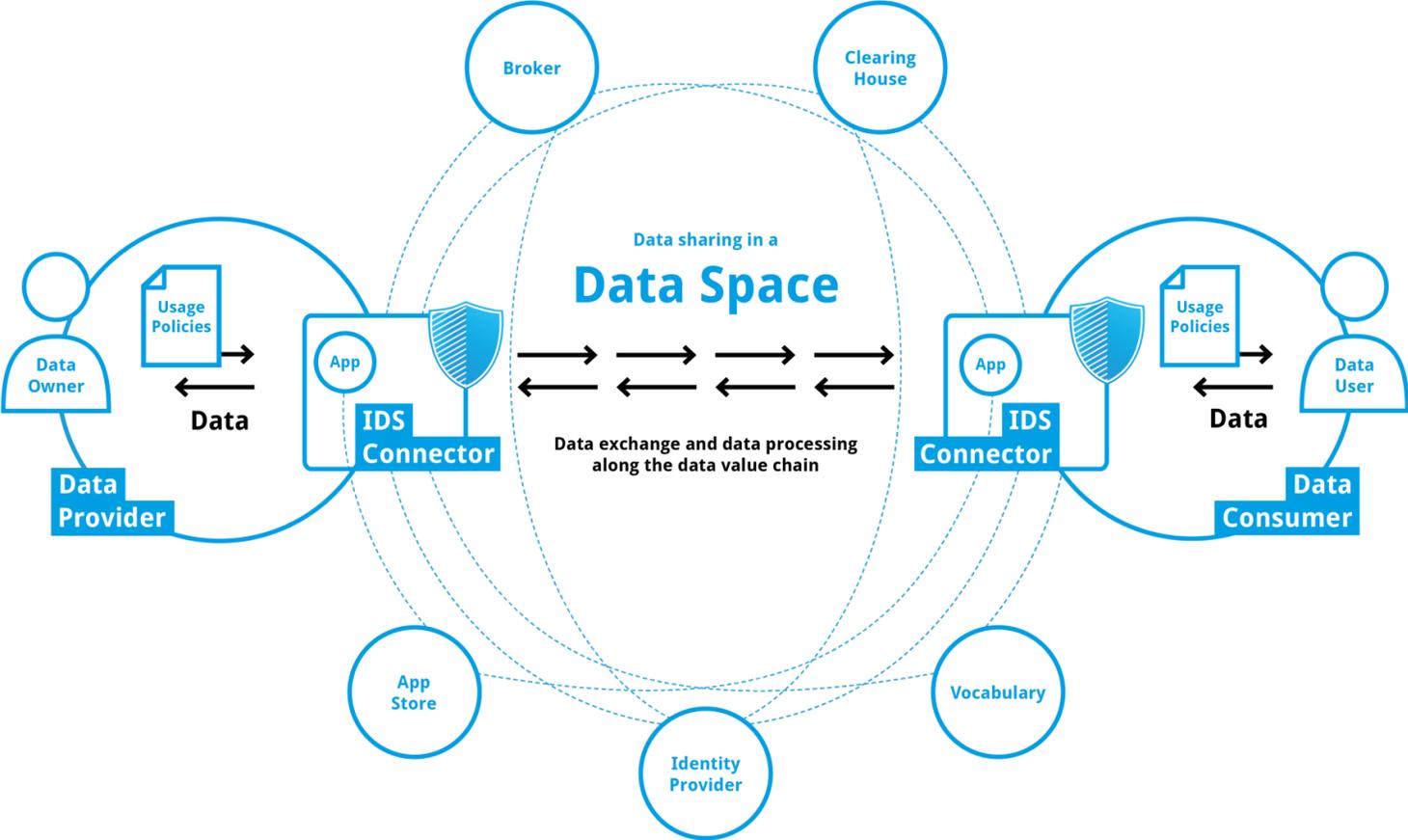
What is the actor's perspective?



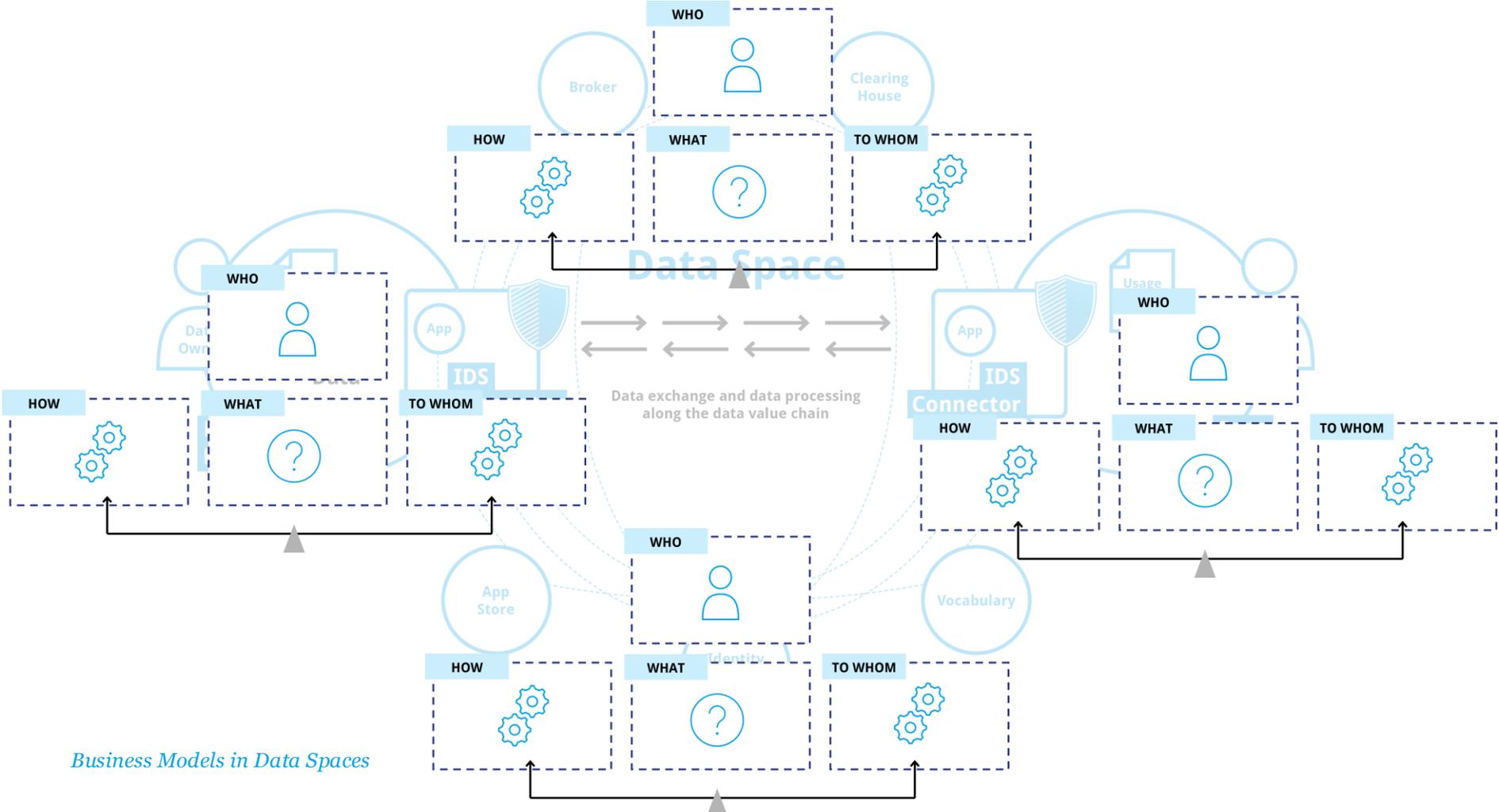
What is the appropriate level of analysis?



Combination of Multiple Business Models



Combination of Multiple Business Models



Business Models in Data Spaces

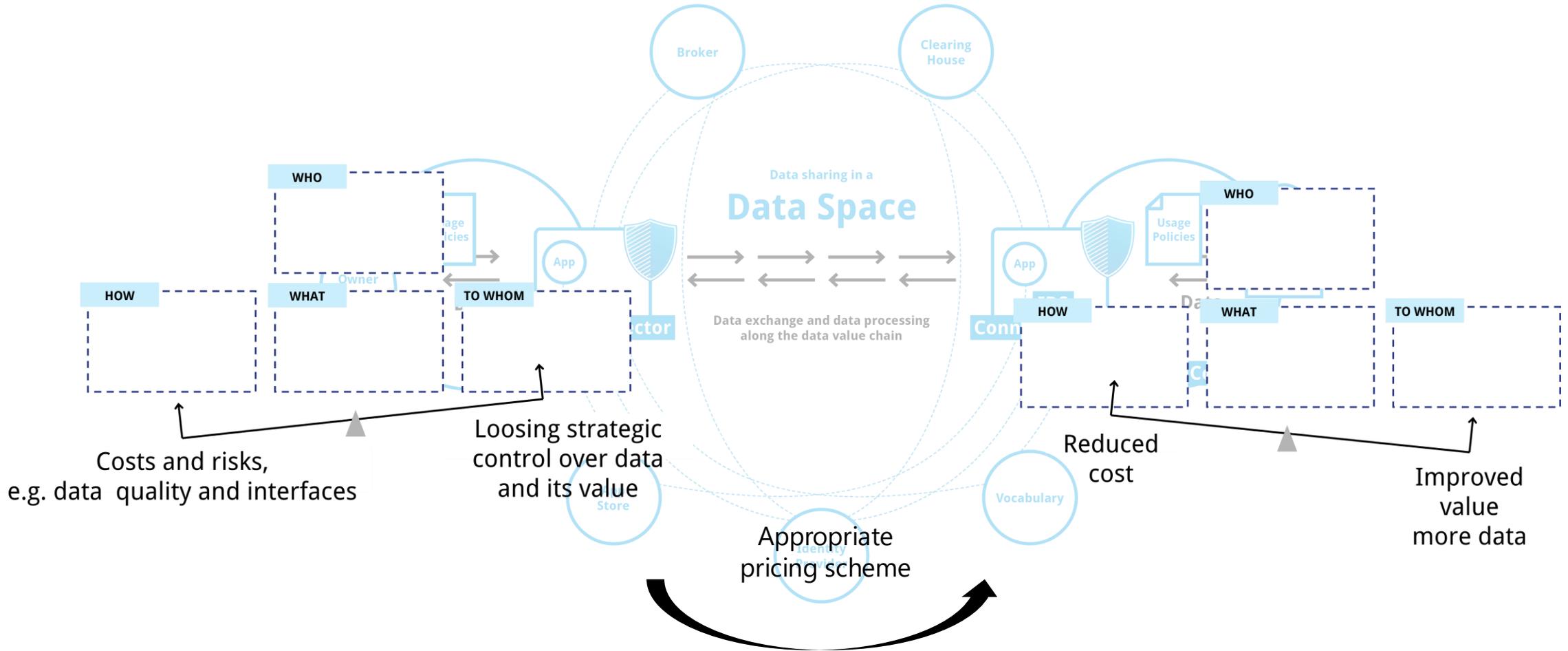


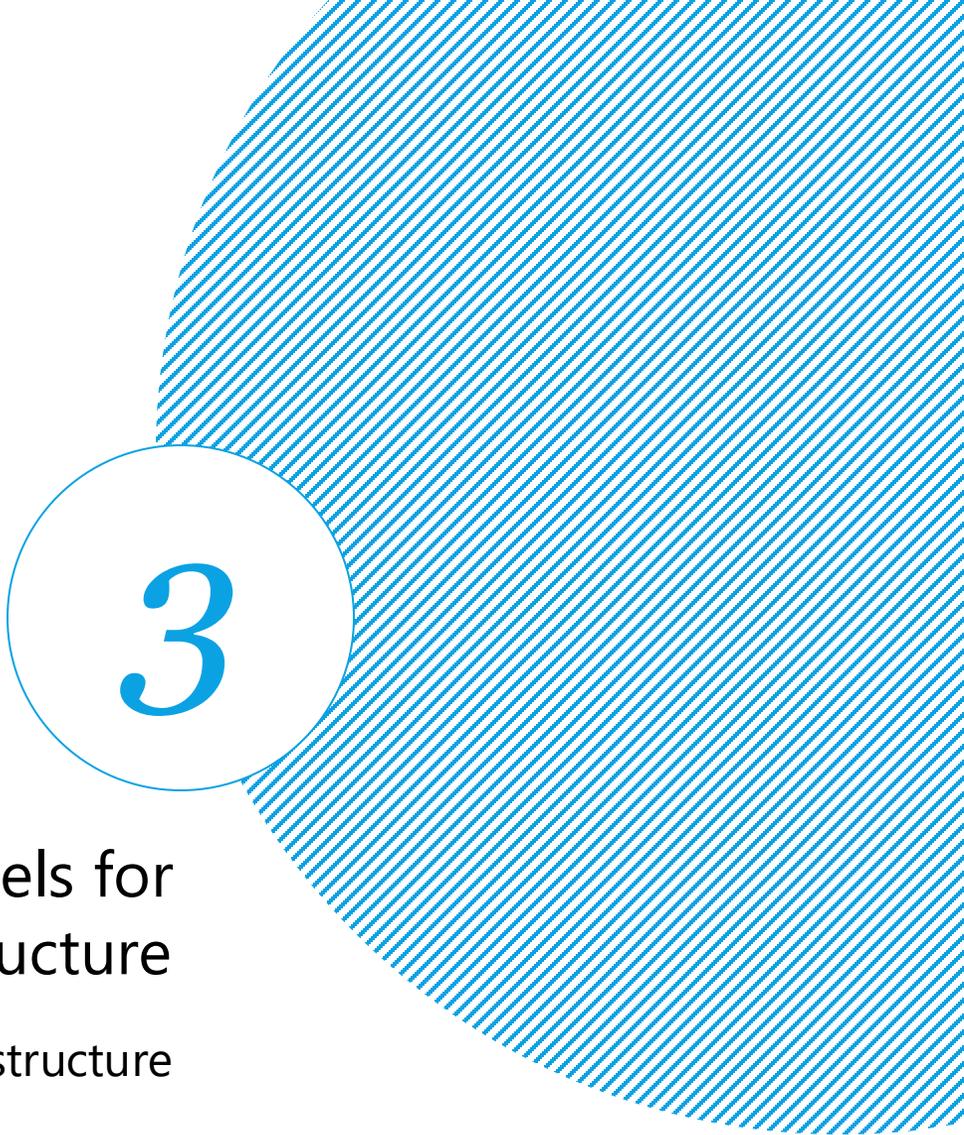
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Business Models for
Participants vs. Infrastructure

Participants

Data space participants: imbalance



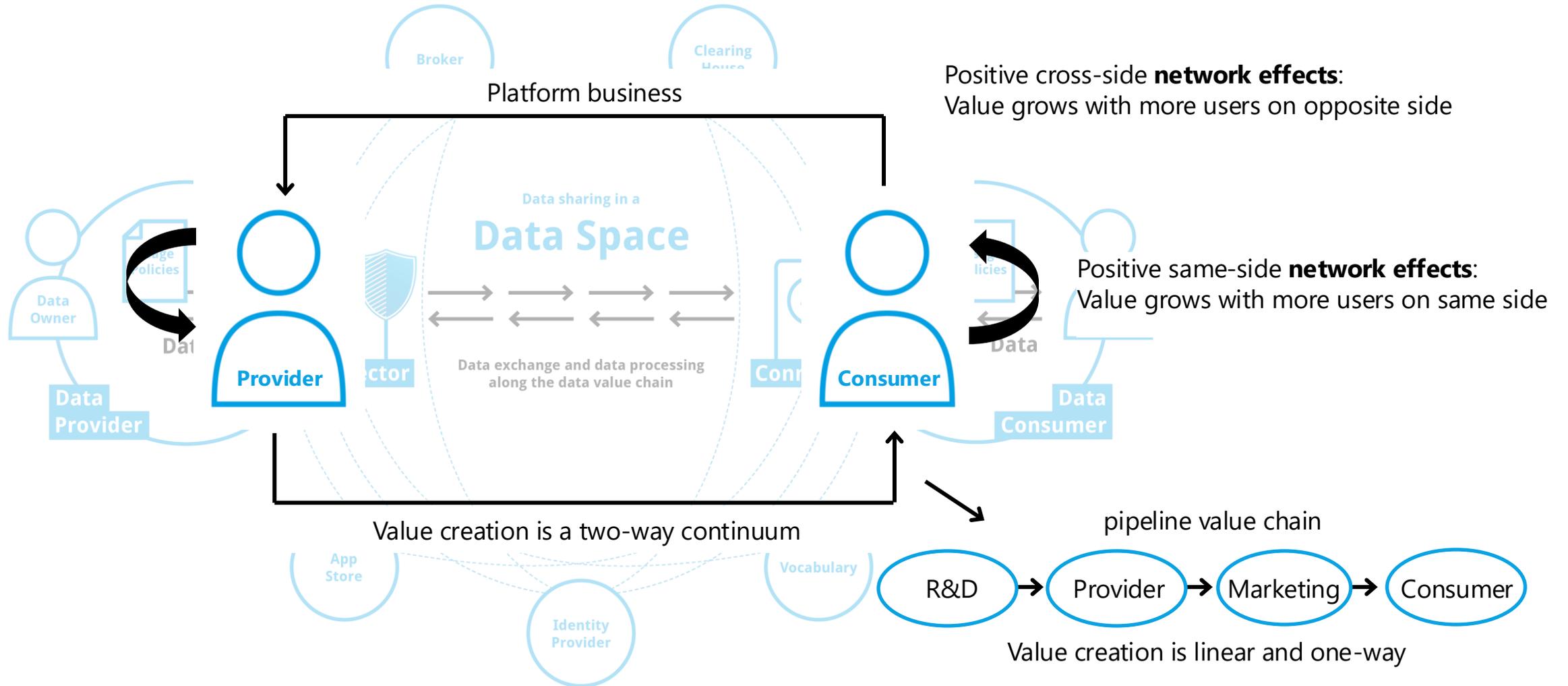


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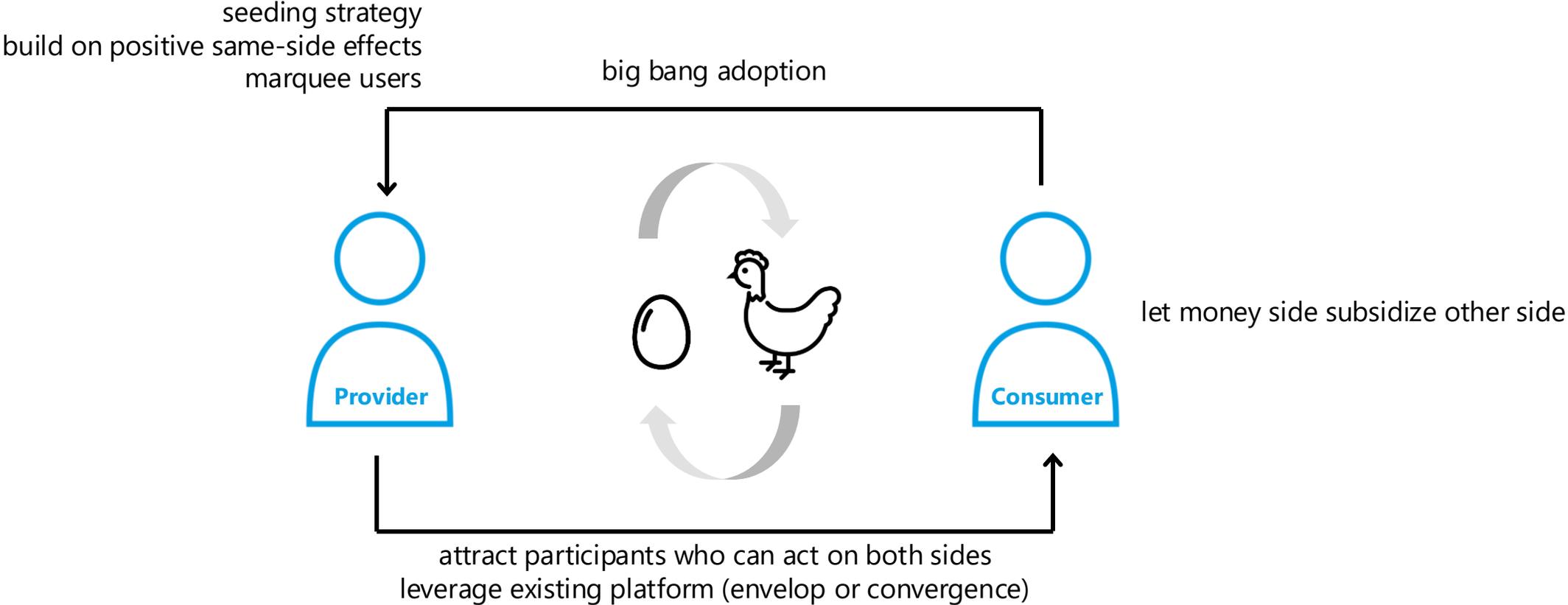
Business Models for
Participants vs. Infrastructure

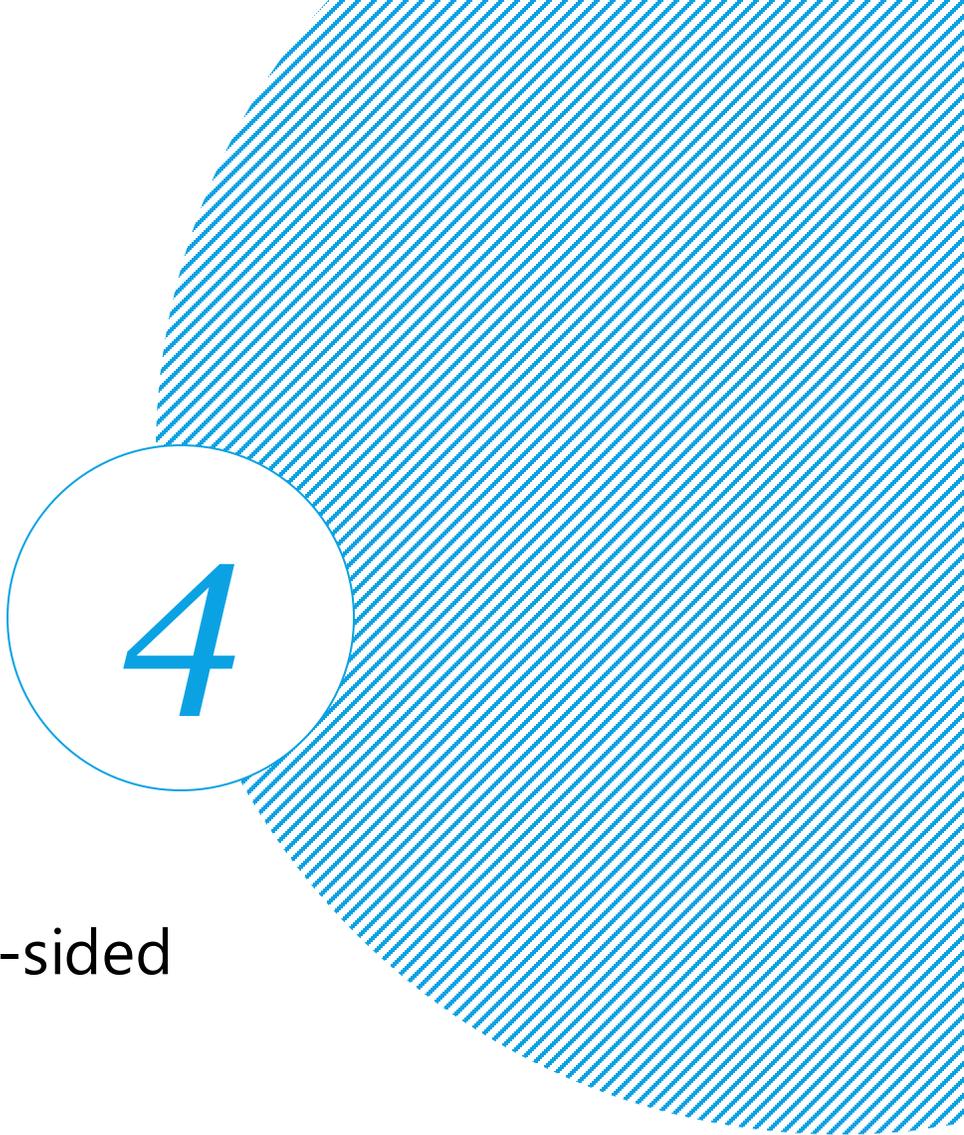
Infrastructure

Multi-sided business model



How to bootstrap platform business?

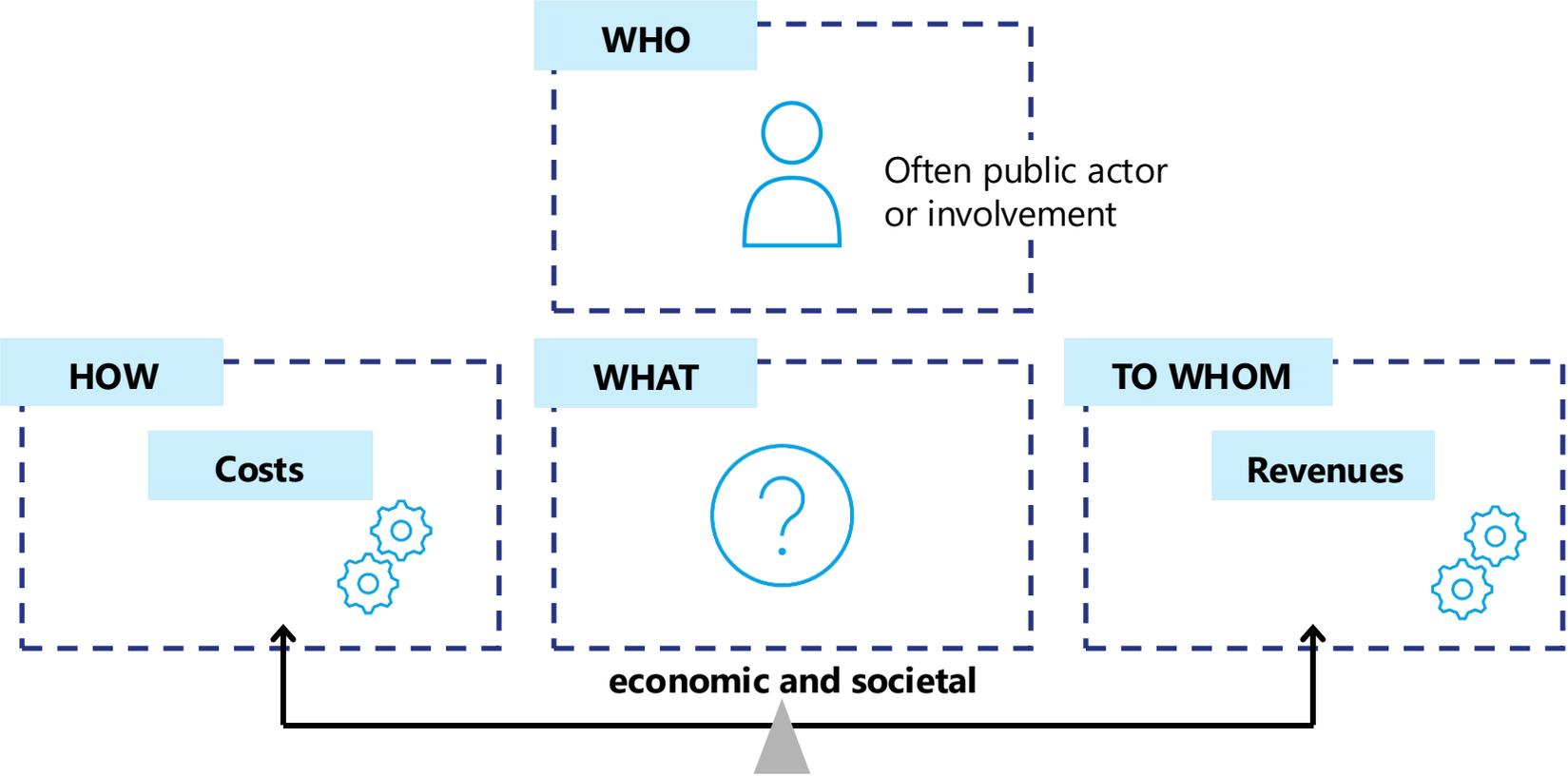




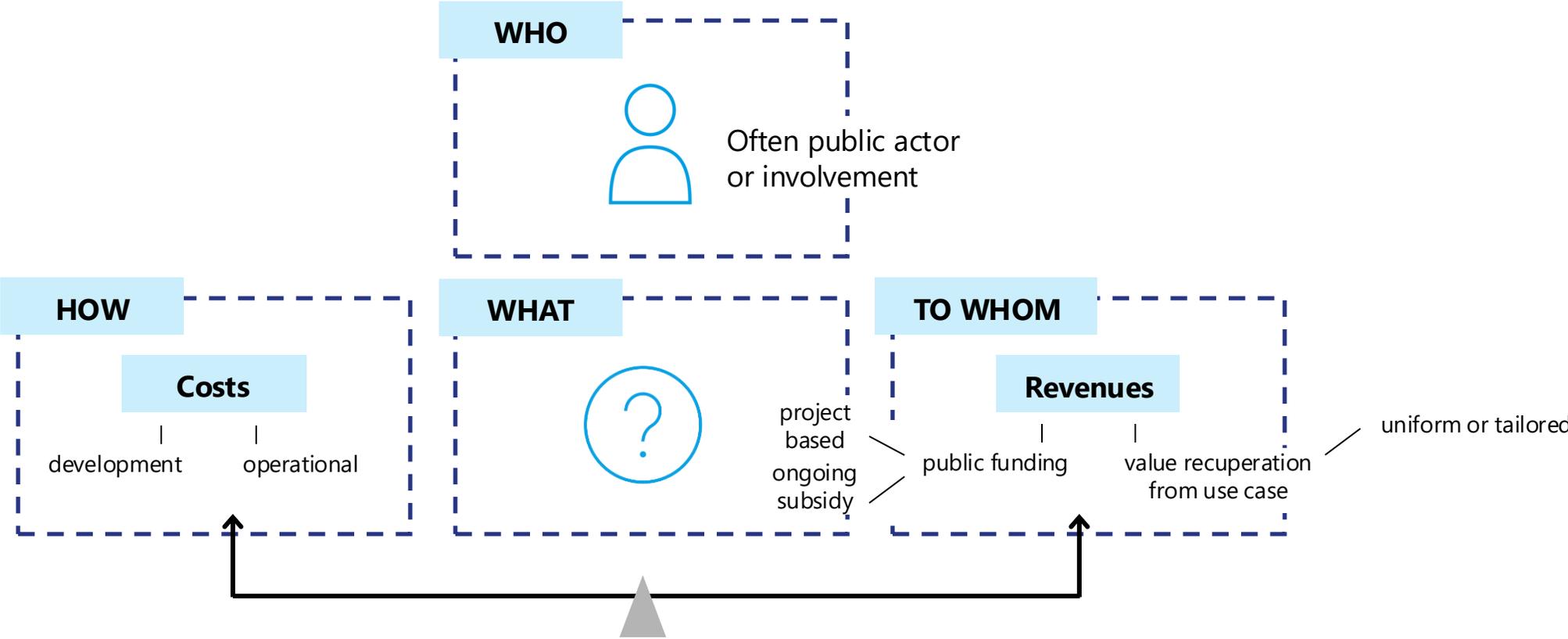
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Business model is multi-sided

Business model for infrastructure provider



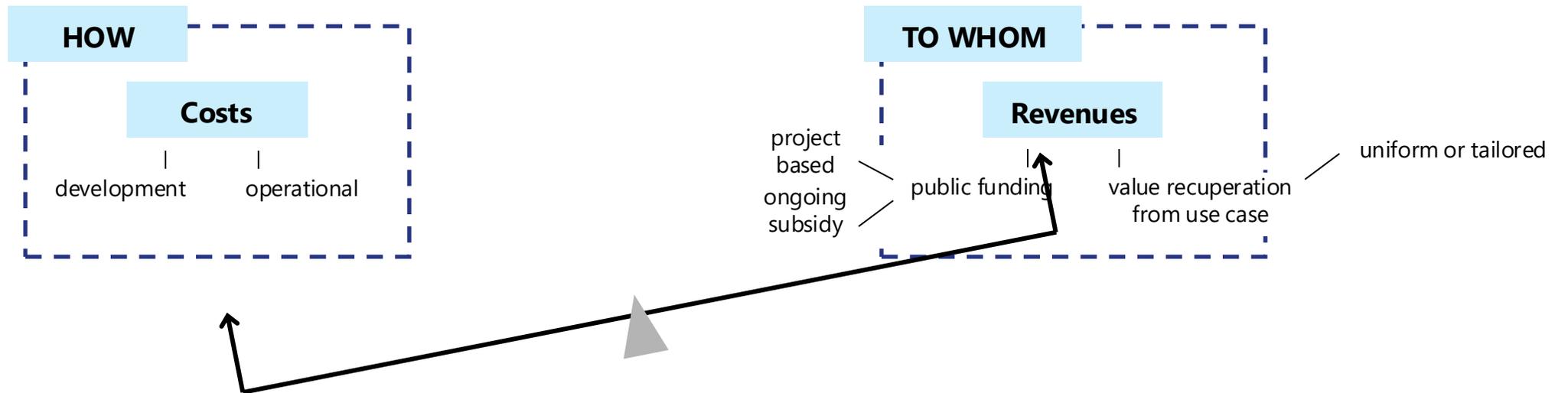
Infrastructure provider: balance



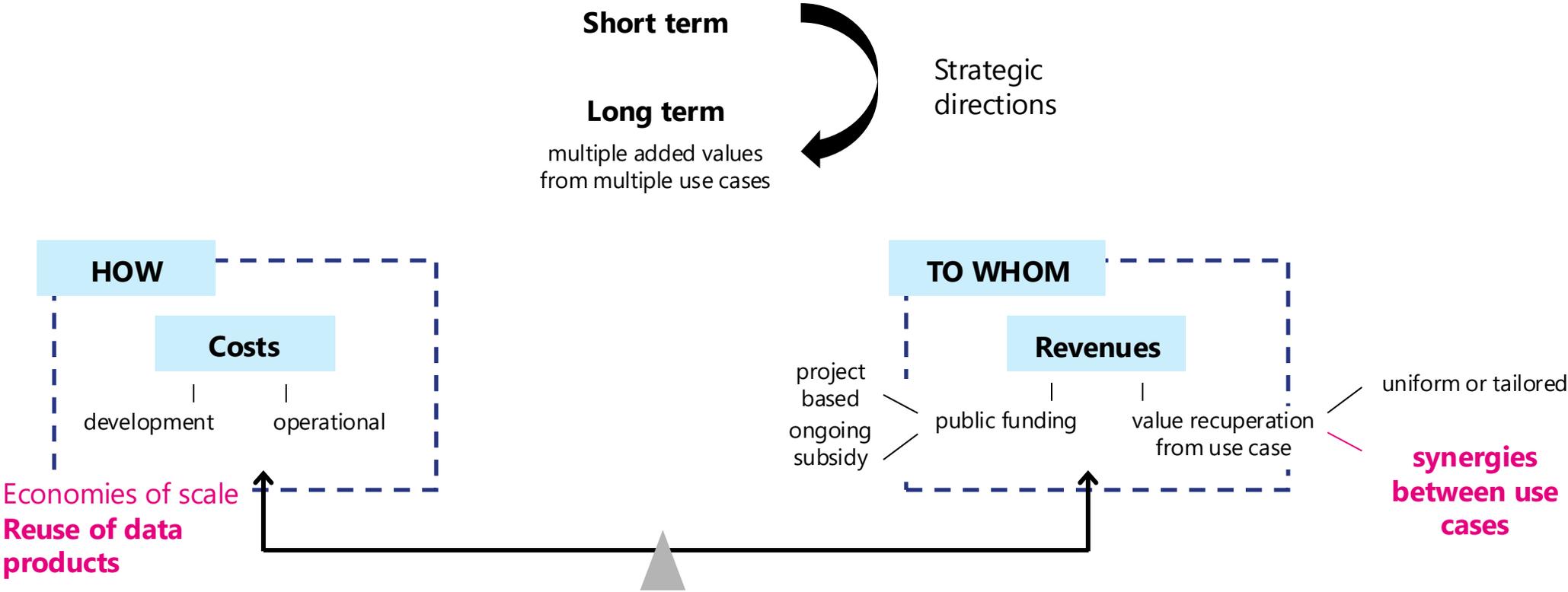
Infrastructure provider: balance



Short term



Infrastructure provider: balance





Business Model for Data Spaces

?



**The ONE business model
for data spaces
does not exist!**

Data Spaces Business Models

Prof. Sofie Verbrugge et al.

New position paper:

INTERNATIONAL DATA SPACES ASSOCIATION

Position Paper | Version 1.0 | November 2024

Data Spaces Business Models

Position Paper of members of the IDS Association and of the IDS-Industrial Community
 Position Paper of bodies of the IDS Association
 Position Paper of the IDS Association
 White Paper of the IDS Association

INTERNATIONAL DATA SPACES ASSOCIATION

Provide inspiration from real-life cases reflecting on the perspective of three examples from the group of innovators.

Innovators
 Early Adopters
 Early Majority
 Late Majority
 Laggards

• Manufacturing X
 • Health Data Space
 • ERJU Rail Data Space
 • Resilience Data Space
 • Eona X
 • Media Data Space (DEP - now TMS)
 • Manufacturing Data Space (DF)
 • Kultur Datenraum
 • AgriMarket
 • Skills Data Space (DFP)
 • xRoad
 • Ouranos X
 • And many more

• More CSAs and Deployment actions
 • SIMPL
 • Shanghai Data Exchange

1: Adoption of data spaces with some examples

Business models for data spaces

Section starts by defining the concept of a business model. Then, it introduces the concept of a data space, to explain what is meant by a business model for data spaces. Finally, it discusses the complexity of business model analysis for data spaces and the actors therein.

The concept of business models

Start by explaining the concept of a business model.

The most widely used business model definition today is that of Alex Osterwalder, stating that a business model "describes the rationale of how an organization creates, delivers and captures value."

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INTERNATIONAL DATA SPACES ASSOCIATION

Table 1: Overview of common definitions of the term 'business model'

| Reference | Business model definition |
|------------------------------|---|
| Hamel (2002)[3] | The "core strategy, the strategic resources, the customer interface, and the value network as the main components". He stated that "customer benefits, the configuration of competencies, and the company boundaries are acting as intermediaries between the four components". |
| Shafer et al. (2005)[4] | A business model as a representation of a firm's underlying core logic and strategic choices for "creating and capturing value within a value network." |
| Mitchell and Coles (2003)[5] | Business model as the "combination of "who", "what", "when", "where", "why", "where", and "how" a company provides its customers with its products." |
| Morris et al. (2005)[6] | A business model is a concise representation of how an interrelated set of decision variables in the areas of venture, strategy, architecture and economics are addressed to create sustainable competitive advantage in defined markets |
| (Zott & Huy, 2007)[7] | A business model (Zott & Huy, 2007) consists of an activity system (i.e. the goods/information that are being exchanged and the resources and capabilities required to enable the exchange), a structure (i.e. the participating parties, their linking, order of exchanges and exchange mechanism for enabling transactions) and governance (how to control the flow of information, resources and goods and provide incentives for the participants in the transactions). |
| Teece (2010)[8] | A business model articulates the logic, the data and other evidence that support a value proposition of the customer, and a viable structure of revenues and costs for the enterprise delivering value |
| Alex Osterwalder (2010)[9] | The business model describes the rationale of how an organization creates, delivers and captures value. |

It is clear in the Osterwalder canvas, as well as in a lot of the definitions from Table 1, that the "value proposition" in the central concept in the business model: what we bring to the market and what our customers are interested in. It is the "promise of value" to be delivered. Once we have the value proposition clear, the business model aims to understand how this value is created, delivered, and captured.

A rather restricted view on the value proposition talks about value the company promises to deliver to customers should they choose to buy their product[10]. This definition explicitly talks about "a company" that is offering a product. More generically, the company can be

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Q&A

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