COOCK 3/6/2021

BUILDING TRUST AND VALUE IN DATA ECOSYSTEMS

Ruben D'Hauwers, Mark De Colvenaer, Juanita Devis

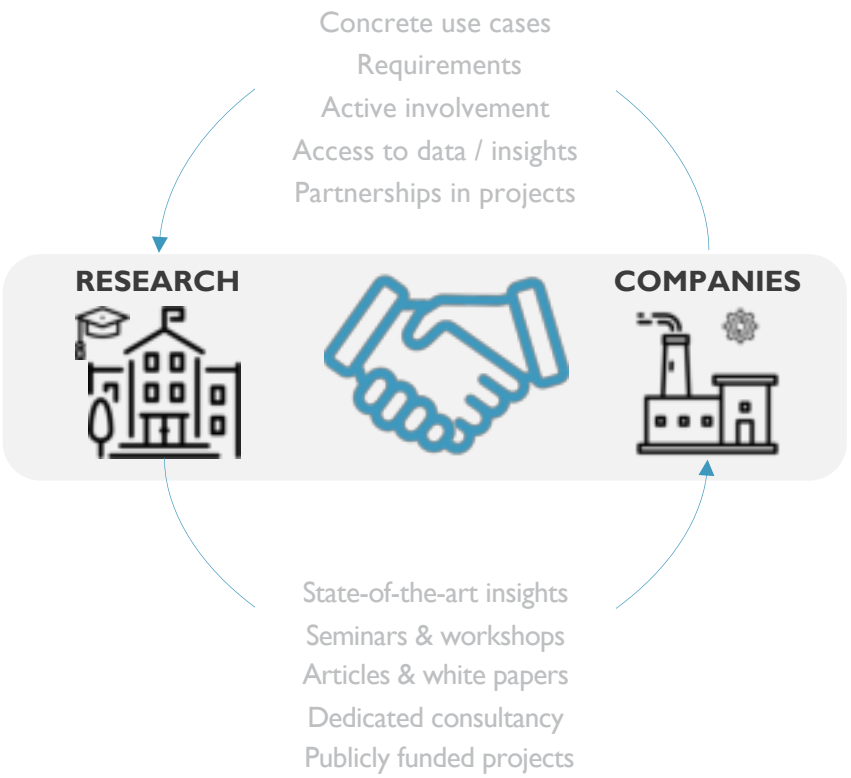
COOCK | OPEN STAD

WHAT IS COOCK?

The COOCK|OPEN STAD project funded by VLAIO, brings together the expertise of 7 knowledge institutes on **data management, data disclosure, data standardization**, and **environmental factors** to enable **companies** to translate knowledge and best practices and apply them into **business cases**.

imec

HOW?



By **sharing knowledge** on data management, data disclosure, data standardization, and environmental factors in a data-driven society.

By generating the basis for **new business cases** in the **environmental domain** with innovative value propositions and revenue models.

By **raising awareness** about the importance of **standardization** and (open) data sharing in a smart city context.

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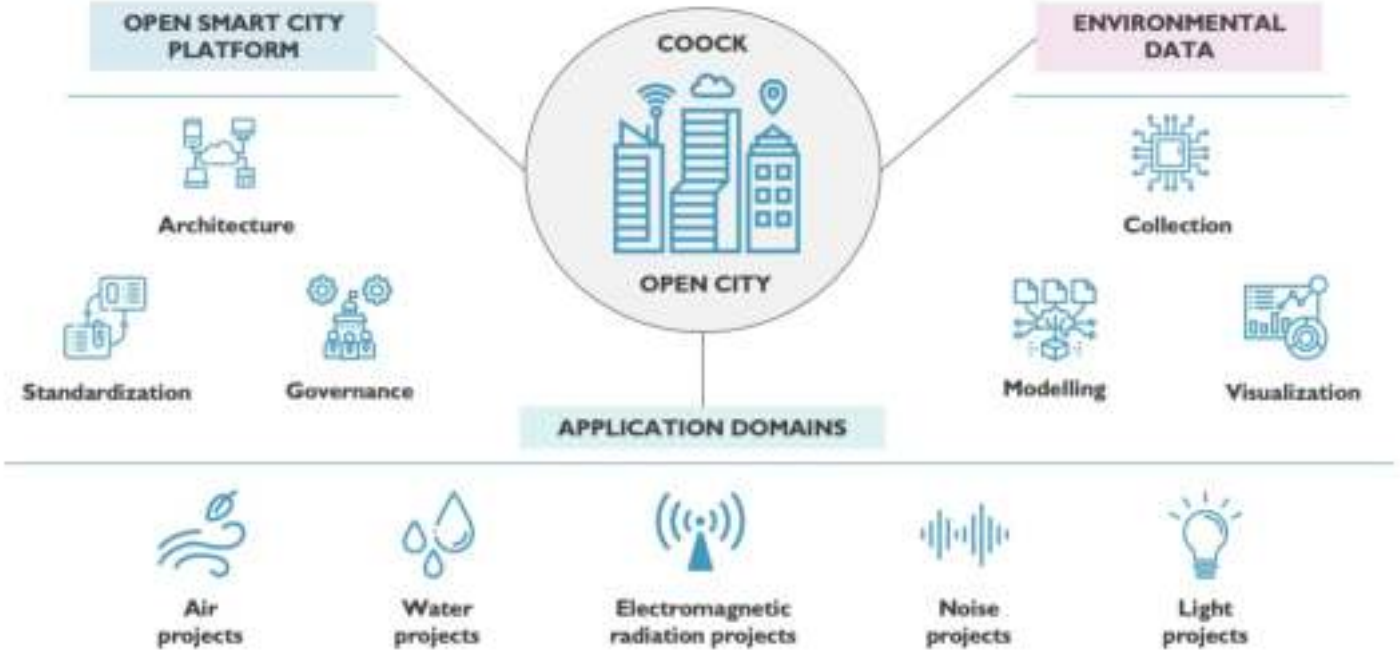
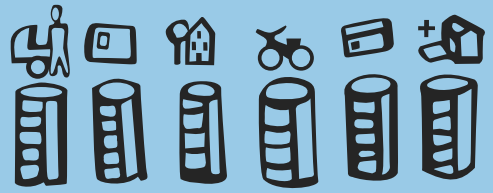



COOCK
TRUST
OPEN CITY
SHARED DATA AS KEY TO THE SMART CITY

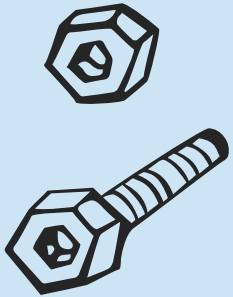
COOCK | OPEN STAD

DATA SILOS

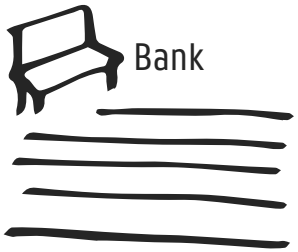


DATA SHARING TODAY

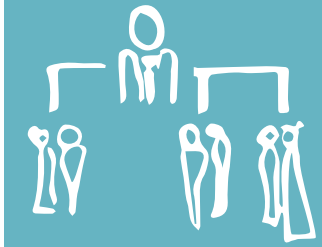
TECHNICAL INTEROPERABILITY



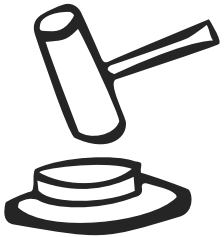
SEMANTIC INTEROPERABILITY



ORGANISATIONAL INTEROPERABILITY



LEGAL INTEROPERABILITY

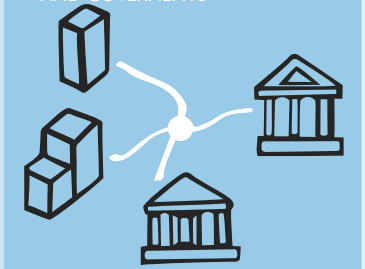


TRUST

DATA SHARING ECOSYSTEM

ENVIROMENTAL DATA

DATA SHARING COMPANIES AND GOVERMENTS



MACHINE/HUMAN READABLE

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AGENDA

14:00 - 14:10 Welcome *Juanita Devis, imec-SMIT*

14:10 - 15:00 A framework for understanding value and trust in data ecosystems and an interactive discussion (part 1). *Ruben D'Hauwers, imec-SMIT*

15:00 - 15:05 Break

15:05 - 15:25 A framework for understanding value and trust in data ecosystems and an interactive discussion (part 2). *Ruben D'Hauwers, imec-SMIT*

15:25 - 15:45 Data ecosystems and Value Models in the open city: what are we talking about. *Mark De Colvenaer DSP Valley*

15:45 - 16:00 Wrap-up and next steps

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BEFORE WE START…

The meeting will be recorded

Rise your hand if you have comments, ideas, inputs, you disagree etc.

If you don't see the desired answer in the poll, please comment

COOCK

A FRAMEWORK TO UNDERSTAND VALUE AND TRUST IN DATA ECOSYSTEMS

RUBEN D'HAUWERS – IMEC-SMIT-VUB

DISCUSSION

Are you already active in data sharing?

- Yes
- Planning to
- Never

DISCUSSION

Which way does your company (wish) to participate in data sharing?

- Recipient
- Data provider
- Data platform
- Data enricher
- Other (please comment)
- Not active

DISCUSSION

Do you think that by sharing data you could bring an added value to your company?

- Yes
- No
- Maybe

DISCUSSION

What are the main challenges/barriers you face to share data?

- I am not active in data sharing
- No value proposition
- No revenue model
- Data is unstructured, not accessible or not available
- No trust in other players (competitors, sharing risk,..)
- Sensitive data
- Other

MAIN QUESTIONS COVERED IN THIS WORKSHOP

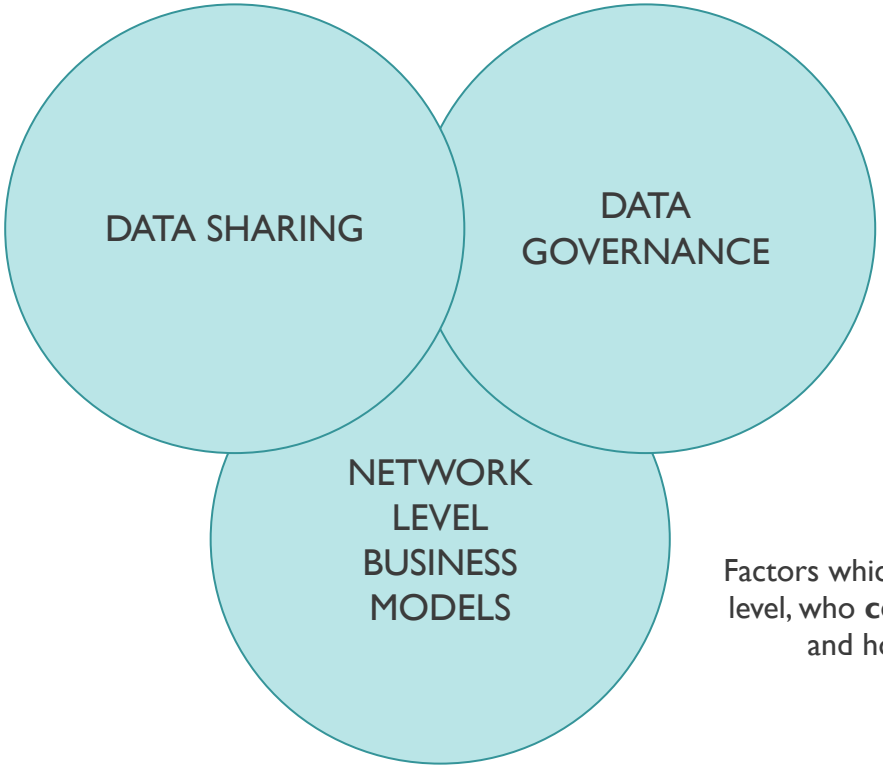
How can **value** be created in a **data ecosystem**?

What are the important **pre-conditions** to create value in a data ecosystem?

TOWARDS DATA SHARING BUSINESS MODELS

3 RESEARCH DISCIPLINES

Which factors influence the **willingess to share data between organisations**?



Which factors influence the **quality and governance of the data** in an organisation?

Factors which determine, on a network level, who **controls** the value network and how **value** is created?

DATA SHARING BUSINESS MODEL FRAMEWORK

Value

- Value Creation
- Value Sharing
- Revenue model

Data governance

- Accuracy, readability, timeliness, standardisation… of data

Ecosystem trust

- Ensuring the trustworthiness of the ecosystem

Data trust

- Ensuring provenance (control and transparency) of the data

DATA SHARING BUSINESS MODEL FRAMEWORK

Value	Data governance	Ecosystem trust	Data trust
• Value Creation • Value Sharing • Revenue model	• Accuracy, readability, timeliness, standardisation… of data	• Ensuring the trustworthiness of the ecosystem	• Ensuring provenance (control and transparency) of the data

CREATING VALUE IN DATA ECOSYSTEMS

SMART RETAIL DASHBOARD: Veldstraat Gent
23 November 2019 – 15:43

Passantendata
19.043
+12% ivm vorig jaar

Gemiddelde aankoop
47 €
In oktober2019

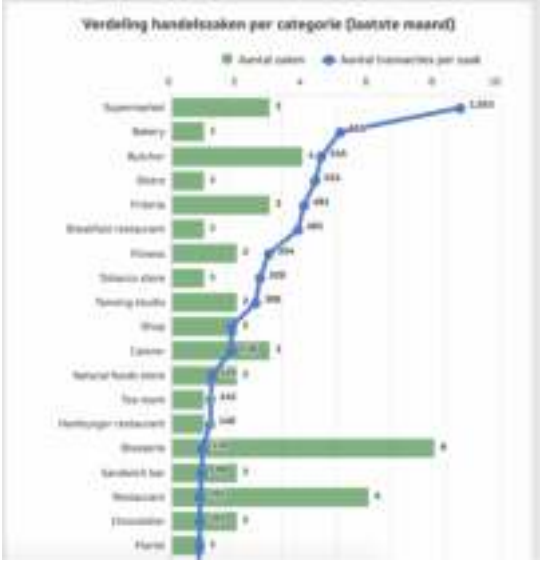
Duur bezoek
1h43
-0,3% ivm vorige week

Weer
5°C, Regen
Warm voor oktober

- Impactrapport
- Heatmap
- Koopstromen
- Evolutie
- Real-Time data

Heatmap

Impactrapport



CREATING VALUE IN DATA ECOSYSTEMS

Smart Retail Dashboard use case

OVERHEIDSDATA

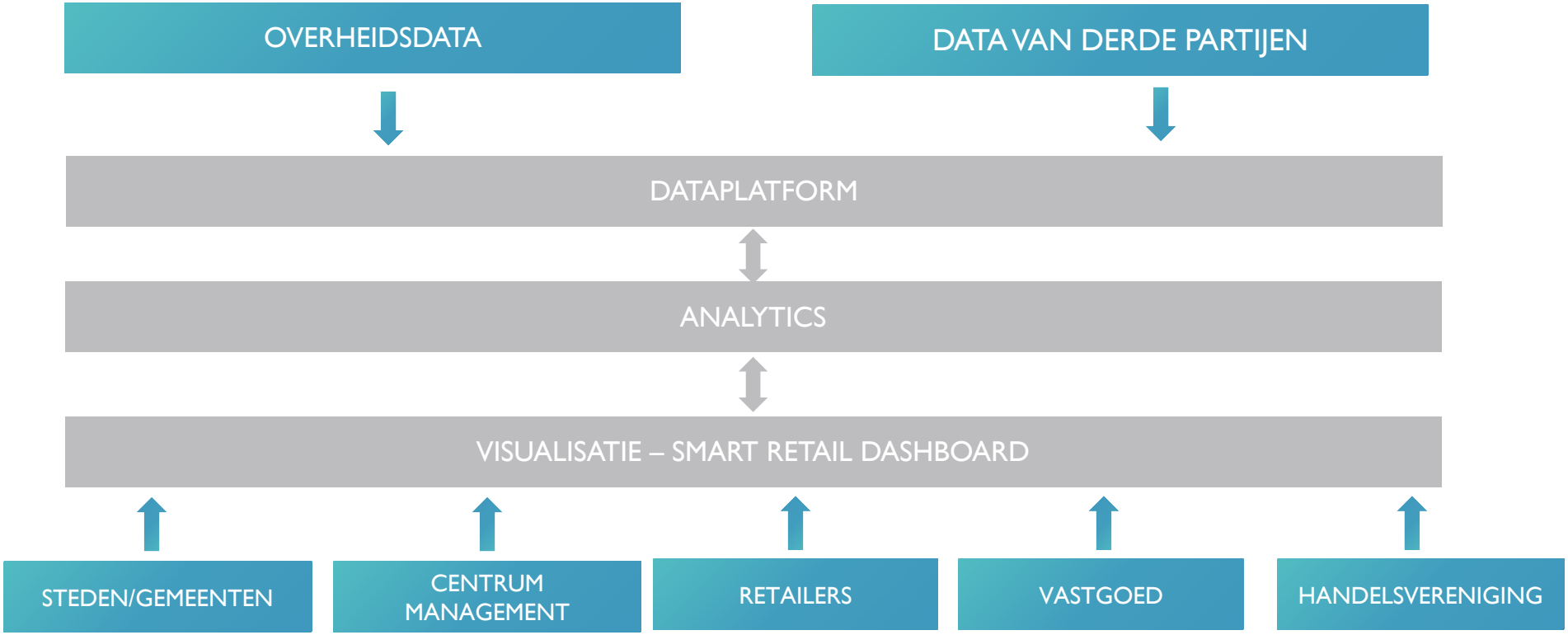
- Openingsuren
- Ondernemingsgegevens
- Socio-demografische data
- Kalender evenementen
- GIS

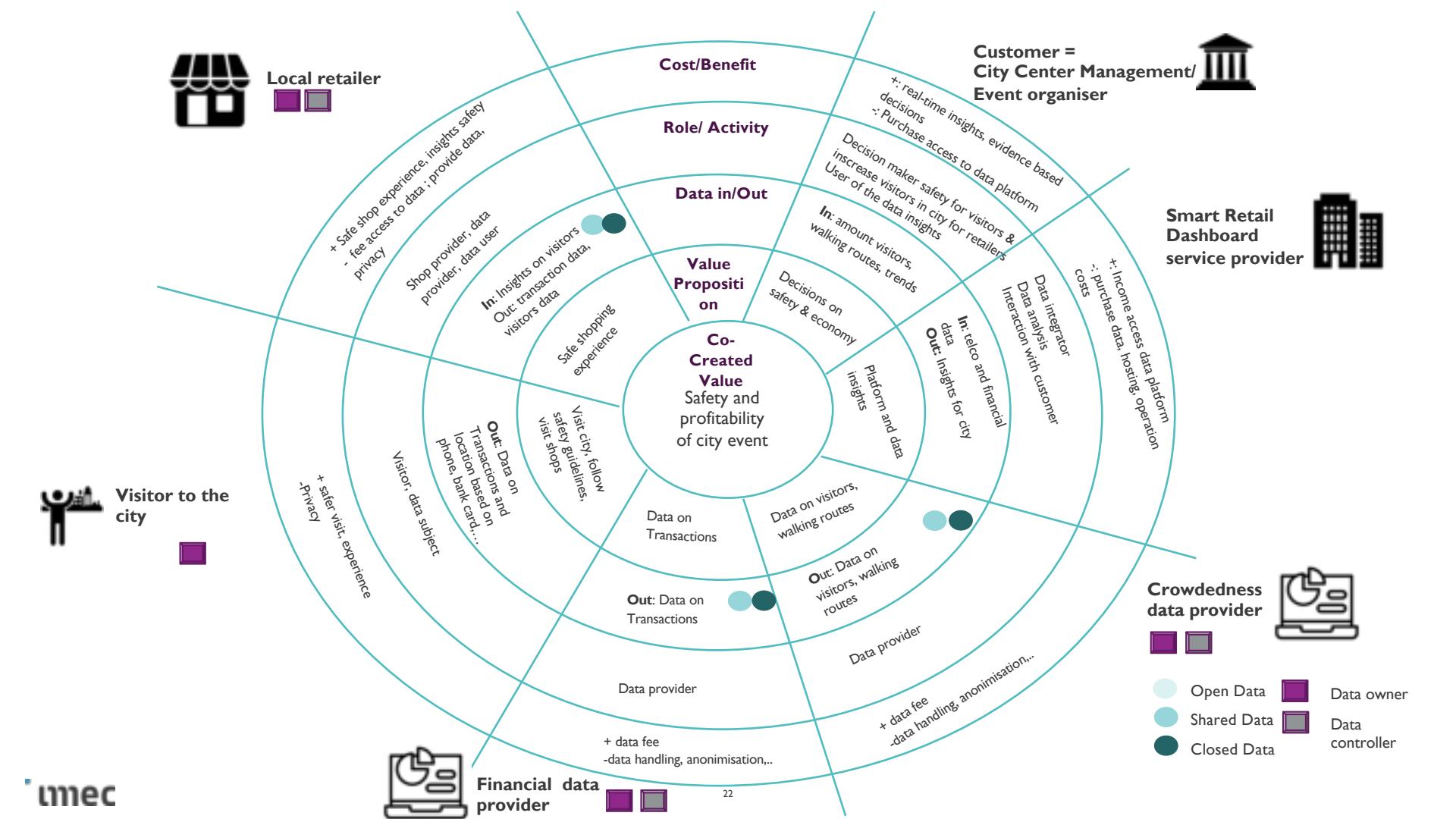
DATA VAN DERDE PARTIJEN

- Passantendata
- Mobiliteitsdata
- Transacties
- Aanbodsdata
- Koopstromen

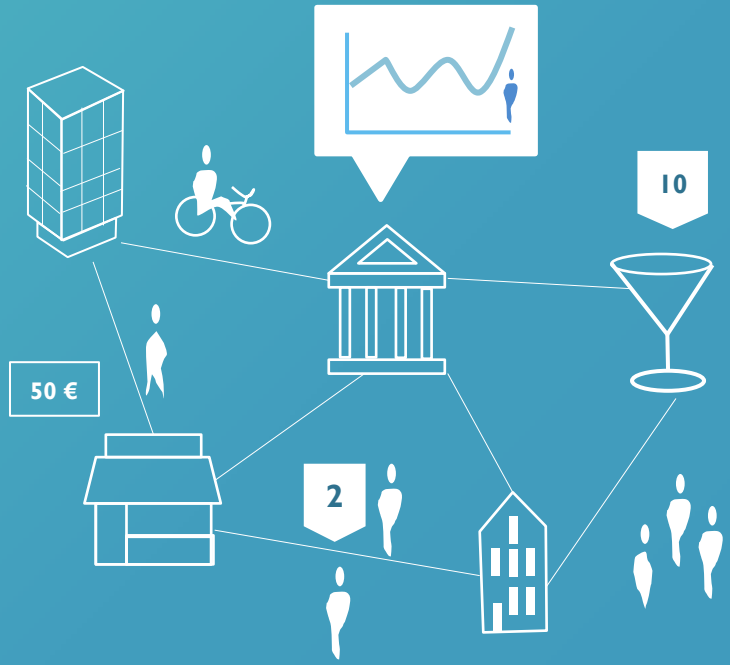
CREATING VALUE IN DATA ECOSYSTEMS

Smart Retail Dashboard use case




Local retailer
Cost/Benefit
Role/ Activity
Data in/Out
Value Propositi on
Co-Created Value
Safety and profitability of city event
Customer = City Center Management/ Event organiser
+: real-time insights, evidence based decisions
-: Purchase access to data platform
Decision maker safety for visitors & inscrease visitors in city for retailers
User of the data insights
In: amount visitors, walking routes, trends
Decisions on safety & economy
Platform and data insights
In: telco and financial data
Out: Insights for city
Data integrator
Data analysis
Interaction with customer
+: Income access data platform
-: purchase data, hosting, operation costs
Smart Retail Dashboard service provider
+ Safe shop experience, insights safety
- fee access to data ; provide data, privacy
Shop provider, data provider, data user
In: Insights on visitors
Out: transaction data, visitors data
Safe shopping experience
Visit city; follow safety guidelines, visit shops
Out: Data on Transactions and location based on phone, bank card,…
Visitor: data subject
+ safer visit, experience
-Privacy
Visitor to the city
Data on Transactions
Out: Data on Transactions
Data on visitors, walking routes
Out: Data on visitors, walking routes
Data provider
Data provider
+ data fee
-data handling, anonimisation,..
+ data fee
-data handling, anonimisation,..
Crowdedness data provider
Financial data provider
Open Data
Shared Data
Closed Data
Data owner
Data controller
imec
22

SMART CITY DATA COLLABORATIONS



DATA SHARING BUSINESS MODEL FRAMEWORK

Value	Data governance	Ecosystem trust	Data trust
• Value Creation • Value Sharing • Revenue model	• Accuracy, readability, timeliness, standardisation… of data	• Ensuring the trustworthiness of the ecosystem	• Ensuring provenance (control and transparency) of the data
Sufficient value creation? Who pays? Equitable value equation?	Is the data qualitative (accurate, readable, up to data)?	Can consortium collaborate? Trust between competitors?	Control over the data resources? Ethical use of data?

DISCUSSION

- What are **challenges/bottlenecks** you came across in order to create value for the ecosystem in a data ecosystem?

SOME IDEAS ON HOW TO SOLVE THESE CHALLENGES

DATA SHARING BUSINESS MODEL FRAMEWORK

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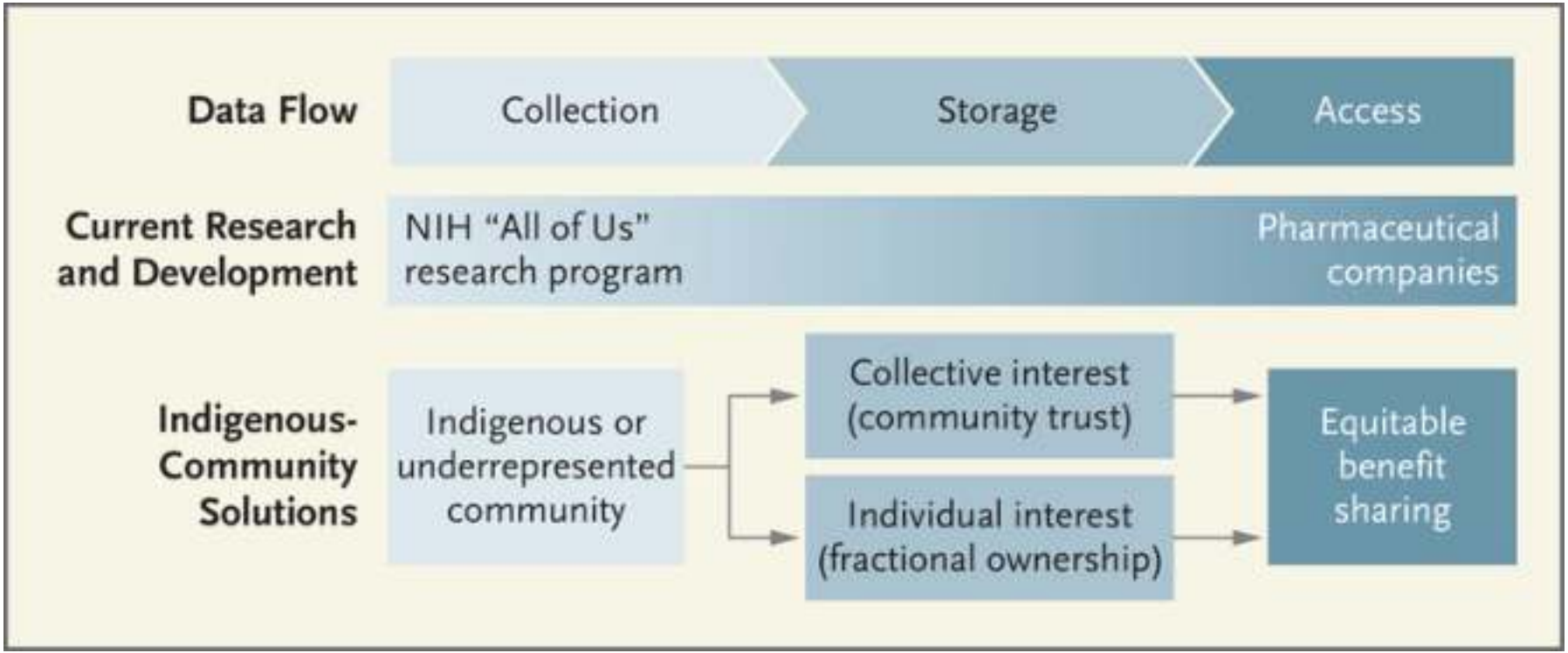
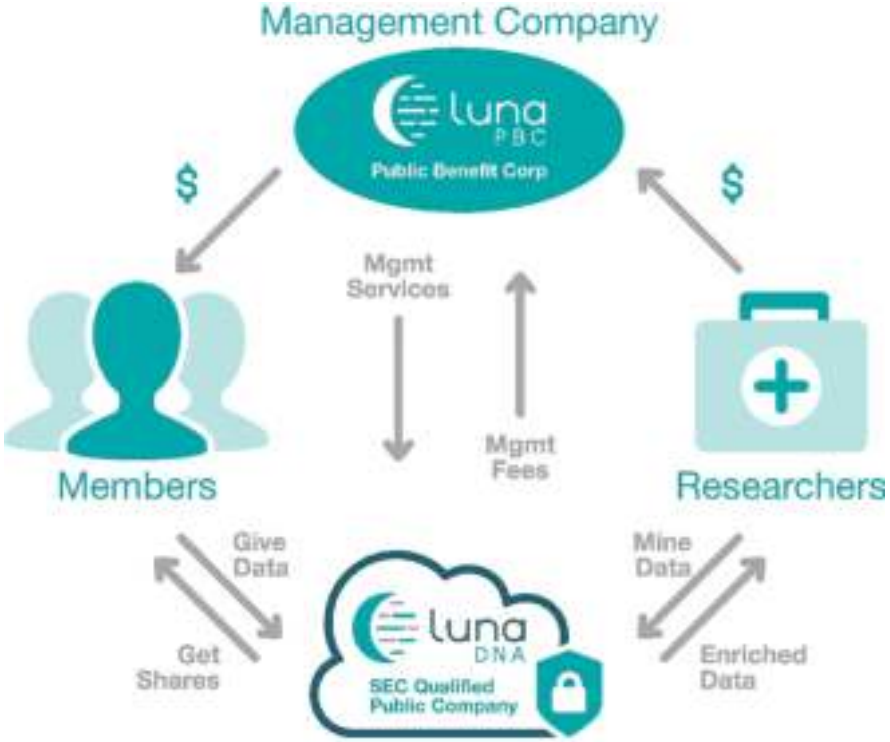
EQUITABLE BENEFIT SHARING

VALUE



EQUITABLE BENEFIT SHARING: LUNA DNA

VALUE



DISCUSSION

- Can you share the value of data with the data subject?
  - Yes
  - No
  - Maybe

DATA SHARING BUSINESS MODEL FRAMEWORK

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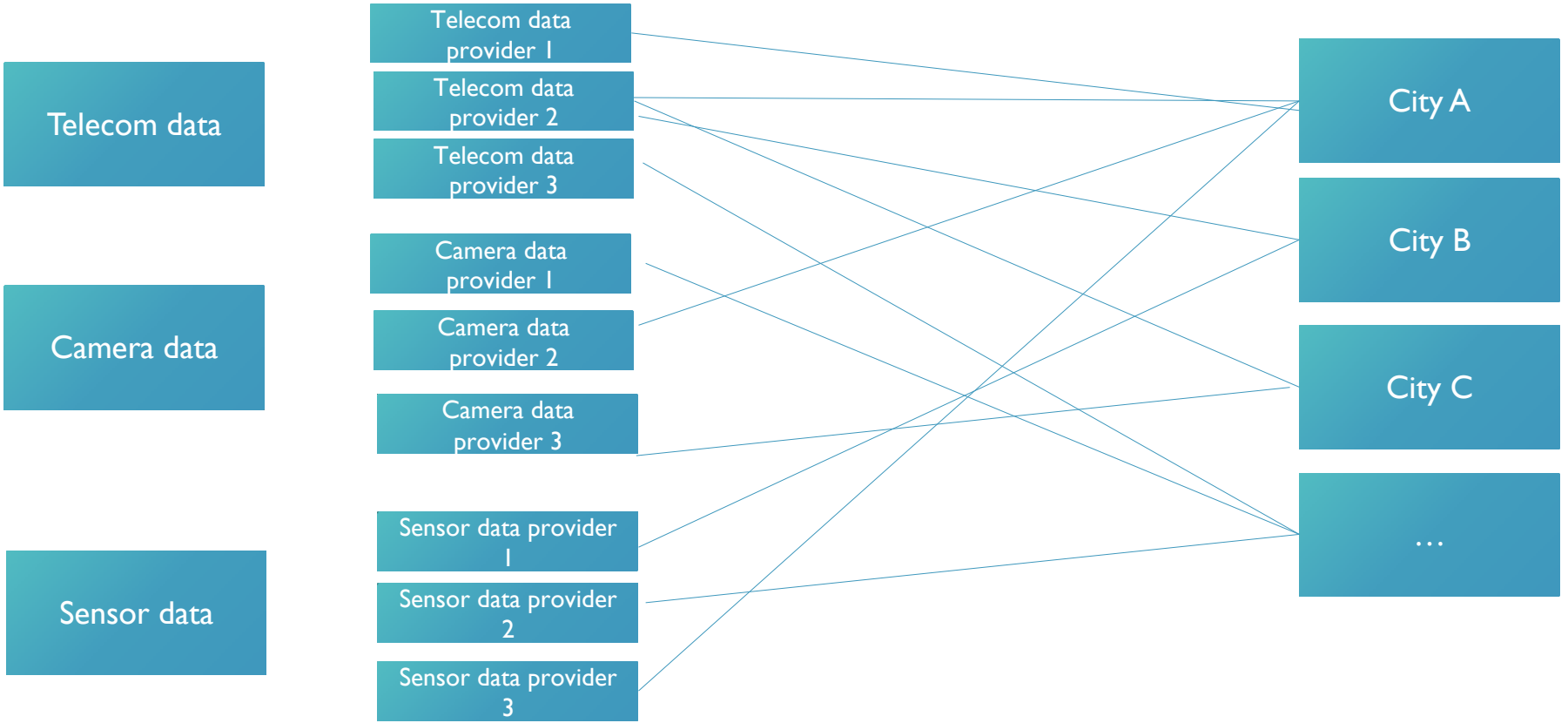
CHALLENGES IN MEASURING CROWD IN CITIES

DATA GOVERNANCE



MAIN CHALLENGES

DATA GOVERNANCE

- No clarity on what is measured
- Historical measurements: if change technology/provider
- All cities have their own formats – costly for providers

SEMANTIC INTEROPERABILITY OF DATA

PROFILES BASED ON DIFFERENT CHARACTERISTICS

ACCURATE AND READABLE DATA

	Dagbezoeker	Verblijfsbezoeker
Structureel	*bvb: pendelende student, pendelende werknemers*	*bvb: kotstudenten, seizoenarbeiders*
Niet-structureel	*bvb: dagtoerist, shopper*	*bvb: citytripper*

https://smart.flanders.be/kennis-en-instrumenten/data-piloten/drukte/

DISCUSSION

- Do you experience a lack of common data definitions (semantics) when willing to share data?
  - Yes
  - No

DATA SHARING BUSINESS MODEL FRAMEWORK

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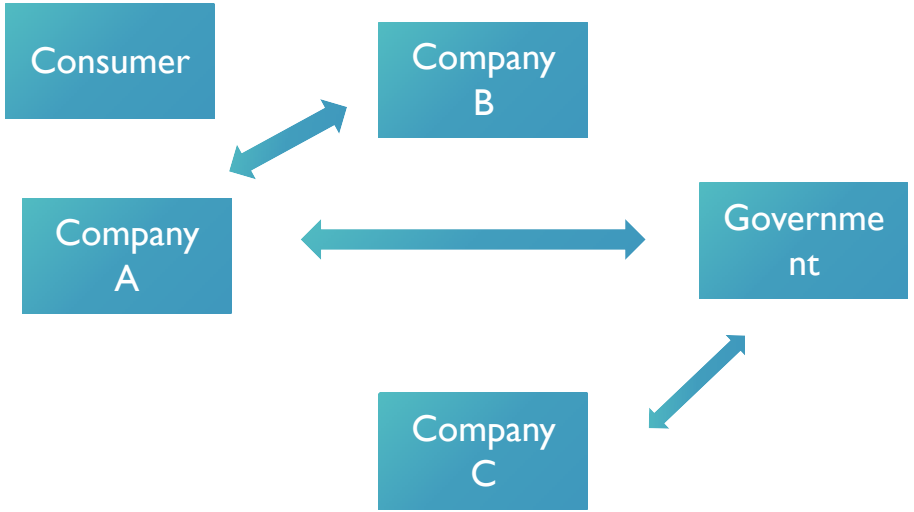
TRUST IN THE ECOSYSTEM

ECOSYSTEM TRUST

SUPPLY CHAIN

- Contracts
- Bilateral agreements

ECOSYSTEM

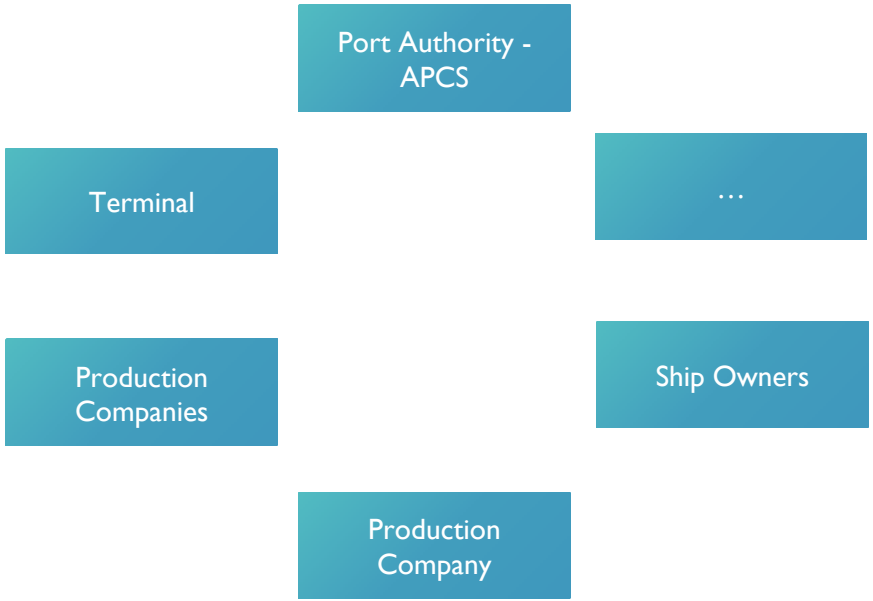


- Competition vs. cooperation
- Power dynamics
- Centralised vs distributed ownership
- Type of data (commercial data, personal)
- Transparancy

PORT ECOSYSTEM

PRIOR TO NXTPORT – NXTPORT ECOSYSTEM

ECOSYSTEM TRUST



MAIN CHALLENGE

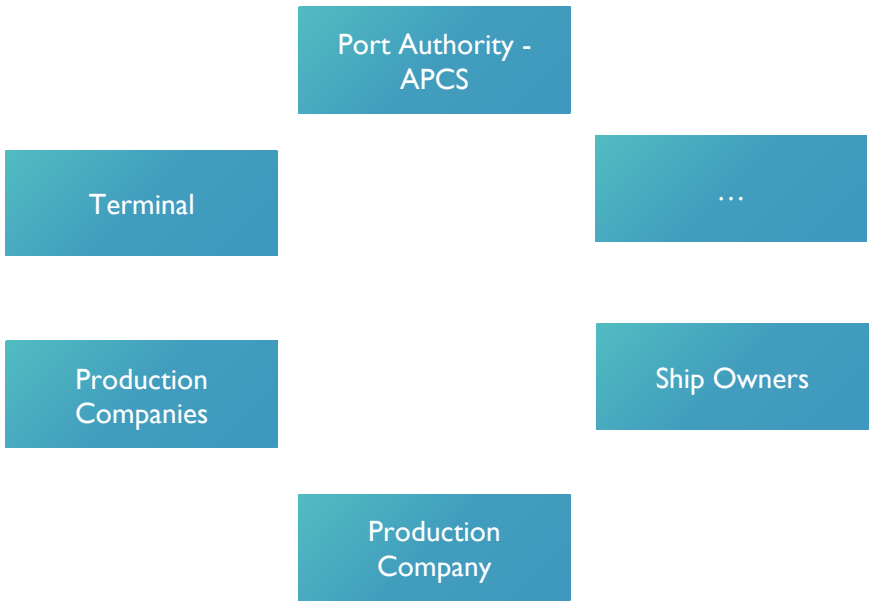
ECOSYSTEM TRUST

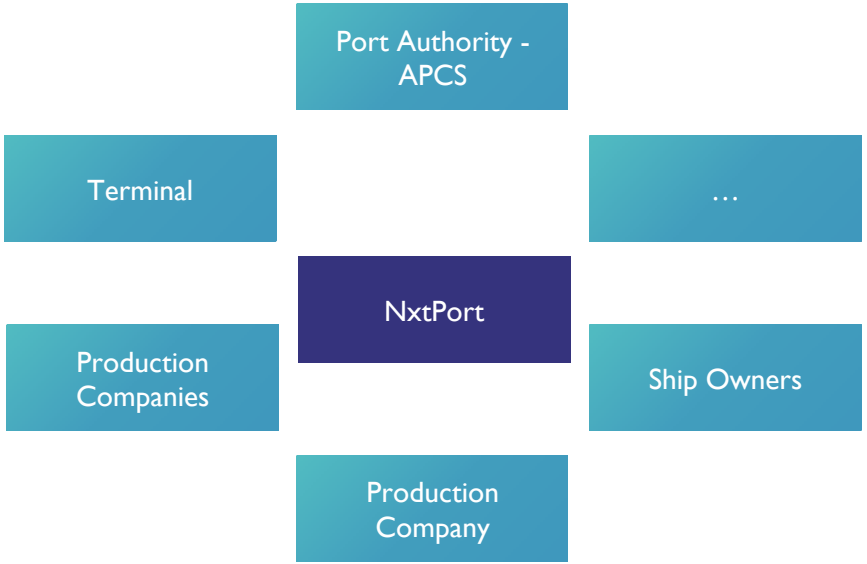
- Harbour ecosystem did not trust the middle player (the port authority)
- Data was not exchanged between actors due to competition,…
- Data had different formats, which did not enable sharing the data

PORT ECOSYSTEM

PRIOR TO NXTPORT – NXTPORT ECOSYSTEM

ECOSYSTEM TRUST





NXTPORT – A TRUSTED TECHNOLOGY PLATFORM

ECOSYSTEM TRUST

A trusted **technology** platform

- Microsoft Azure
- Governance rules
- Single Sign On

NxtPort

PRINCIPLES TO CREATE TRUST IN THE DATA ECOSYST

NxtPort's Golden Principles

- Everybody is welcome as data provider or as data user.
- NxtPort platform is low entry barrier initiative (cost+) - benefits or "value at stake" falls within the industry.
- Data providers always stay owner of the data and decide in what context their data can be used.
- Strict divide between data layer and applications layer. NxtPort runs the data platform, app creation is left to "the market".
- Data users "share" profit as and when added value is created on the data. Monetization of data.

NxtPort

DISCUSSION

- Do you think it is important to define principles in a ecosystem to share data?
  - Yes
  - No

- ?

DISCUSSION

- Do you think there is a need for a trusted middle player in a data ecosystem?
  - Yes
  - no

COFFEE BREAK

DATA SHARING BUSINESS MODEL FRAMEWORK

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NXTPORT PRINCIPLES

DATA PROVIDER STAYS OWNER OF THE DATA AND DECIDE CON

DATA TRUST

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NxtPort

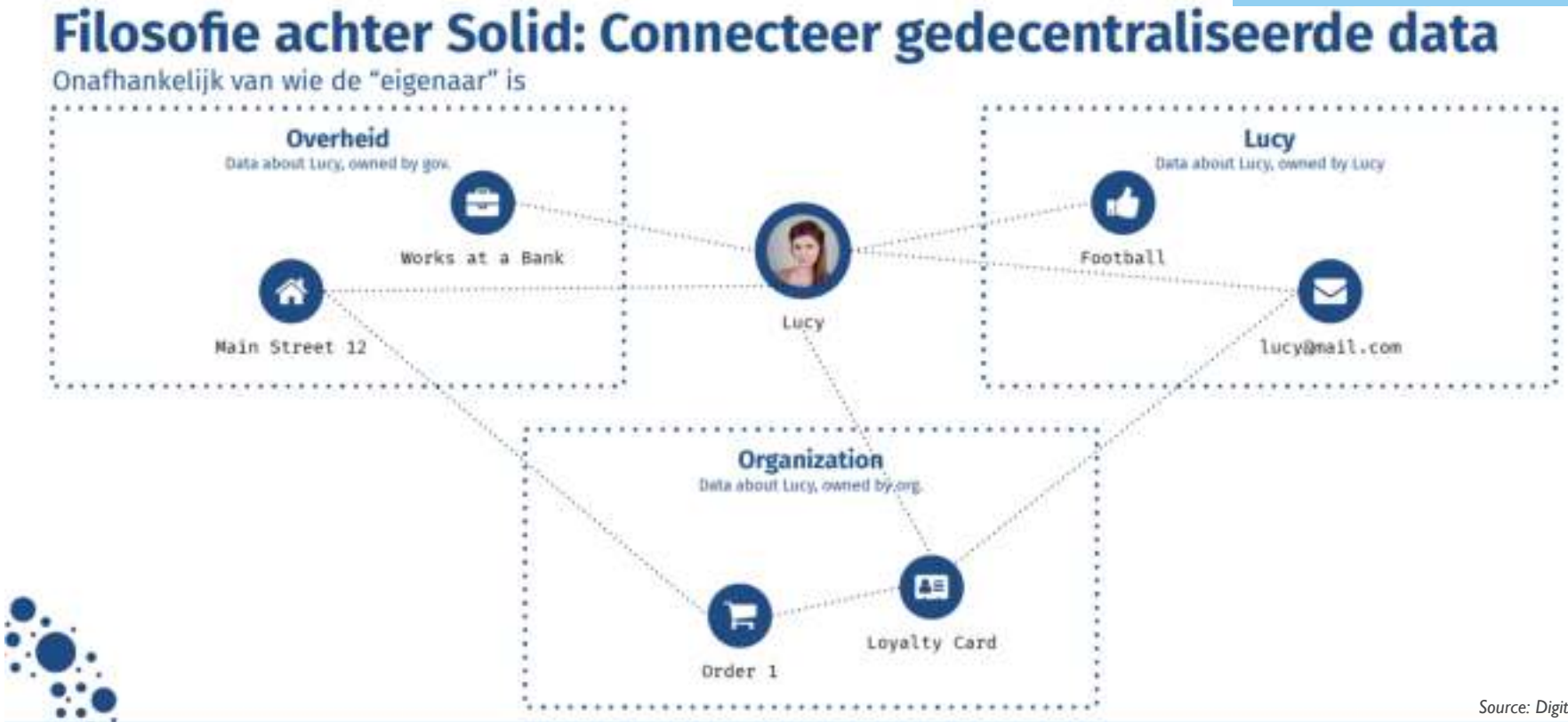
Source: website NxtPort

SOLID PRINCIPLES

- **End users become data controllers**. This is the most well-known decentralization aspect: we store our data in places of our choice, which improves privacy and control.
- **Apps become views**. As apps become decoupled from data, they start acting as interchangeable views rather than the single gateway to that data.
- **Interfaces become queries**. Data will be distributed across highly diverse interfaces, so sustainable apps need declarative contracts instead of custom data requests.

Source: Blog of Prof. Dr. Ruben Verborgh

INTERCONNECT DECENTRALISED DATA

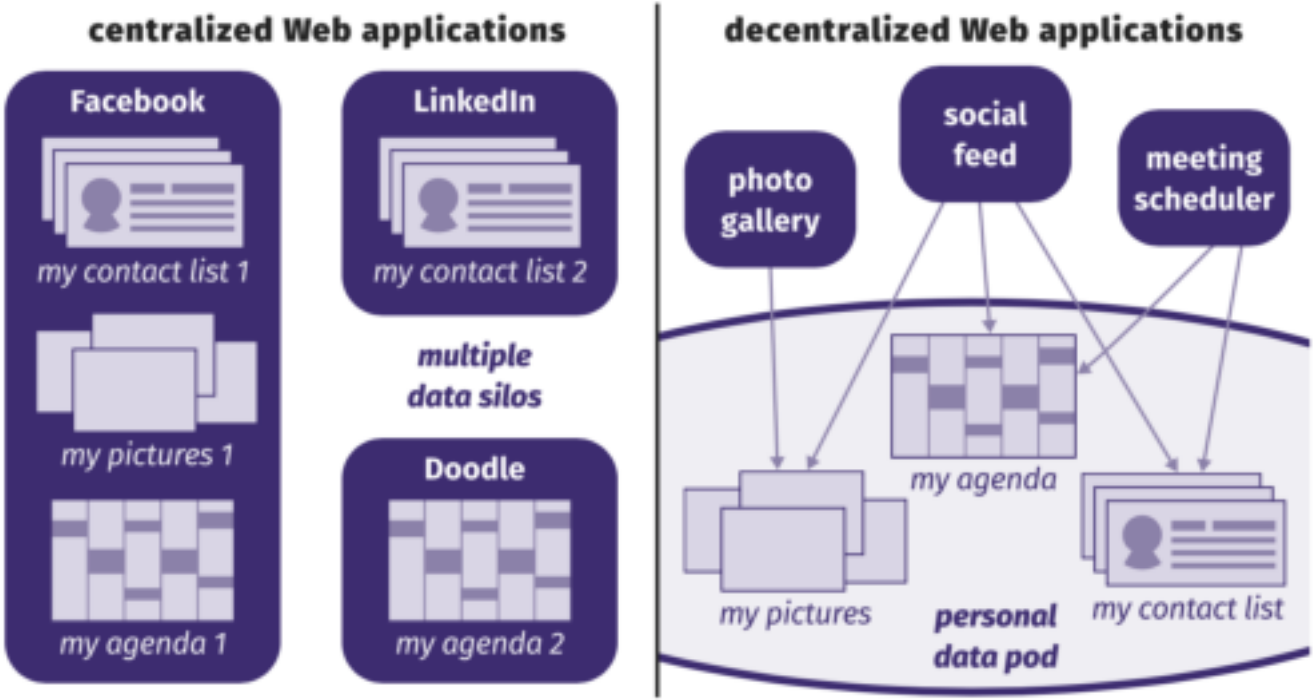


Source: Digita

SOLID: FROM CENTRALISATION TOWARDS DECENTR

LINKING WEB APPLICATIONS

DATA TRUST



Source: Blog of Prof. Dr. Ruben Verborgh

WHO OWNS THE DATA?

DATA TRUST

- Data you **own** as a consumer
  - Data you create yourself , behavioural data
  - E.g. Data of social media (likes, photos, pictures)
  - Rights as a consumer: edit, delete, update

- Data you **don't own** as a consumer
  - Data describing you, and could lead to fraud, issues,.. if the consumer would own the data
  - E.g. your bank statement
  - Data you should be able to edit/view

Source: Digita

DISCUSSION

- Do you see benefits in transfering the data control to the data provider?
  - Yes, it can increase trust and transparancy
  - Yes, it can improve the quality of the data
  - Yes, for another reason
  - No, there are too many barriers
  - I don't know but I am interested to investigate
  - Other

CONCLUSION

CONCLUSION

- Data ecosystems can create significant **value**
- One major **precondition is trust** in the ecosystem and trust in the data
- Potential solutions which could improve trust
  - **Value**
    - Value sharing
  - **Data Governance**
    - Standardisation and agreements
  - **Trust in ecosystem**:
    - Trusted Data Intermediary & principles
  - **Trust in data**
    - Principles: Control of the data

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