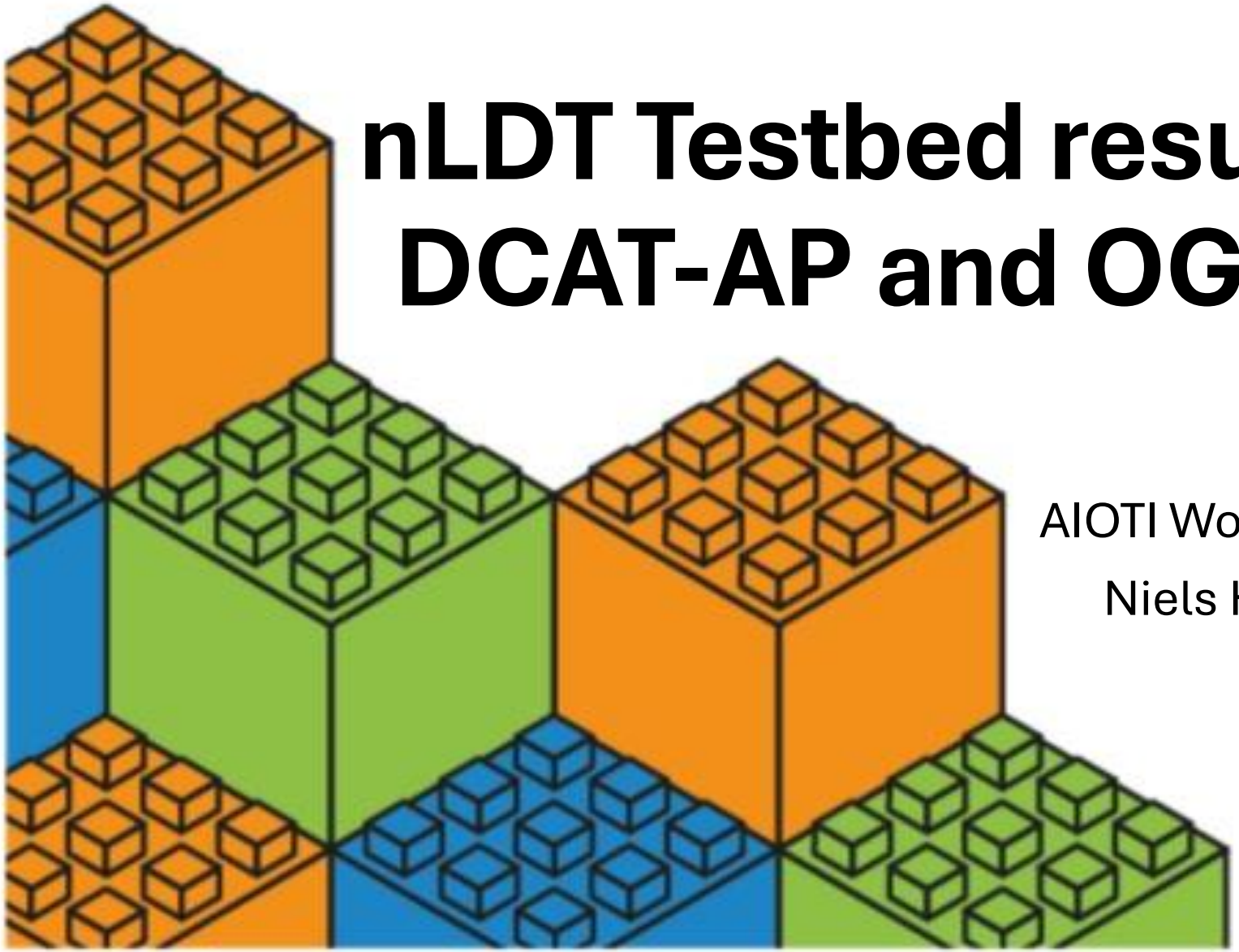
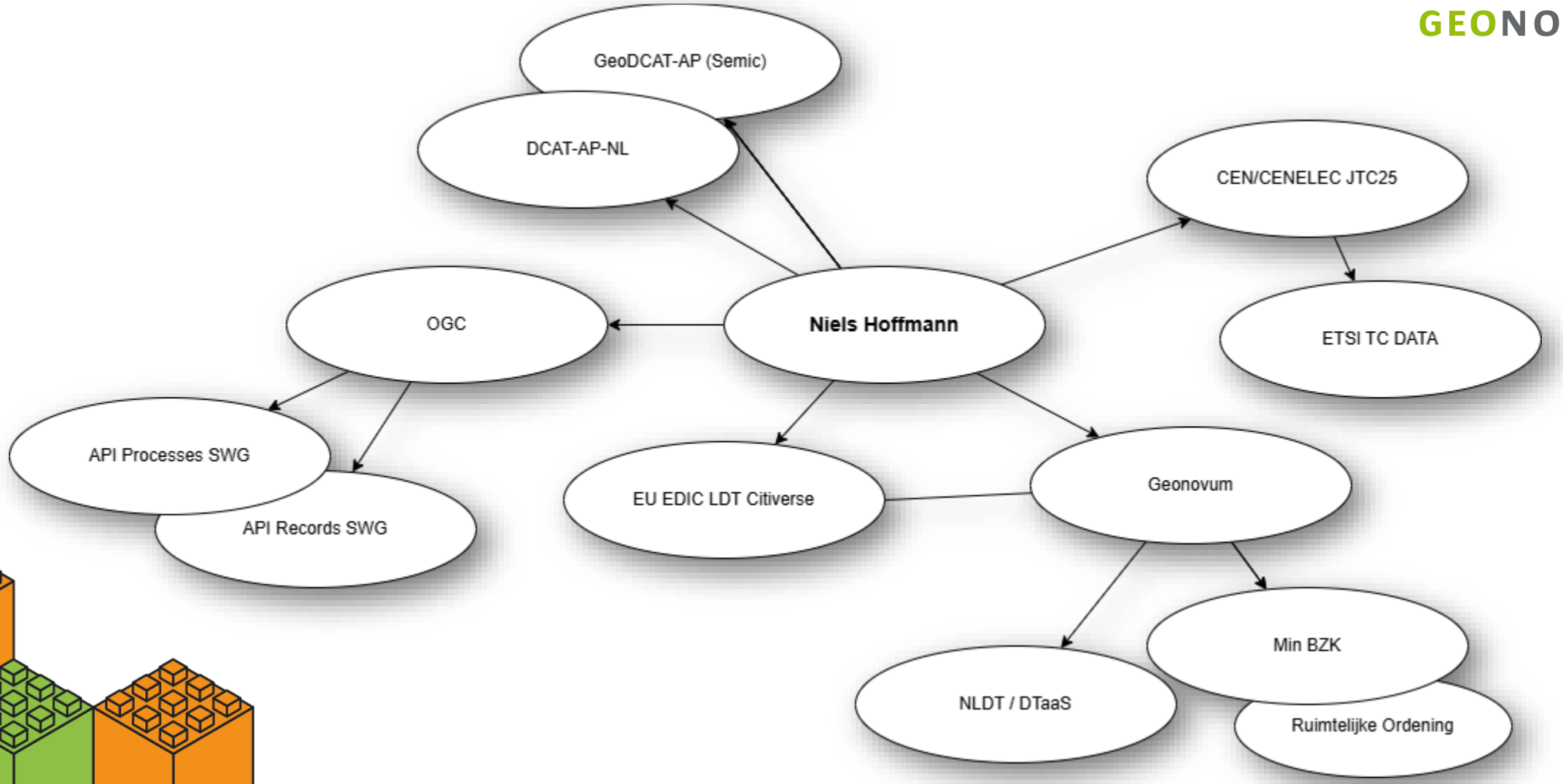


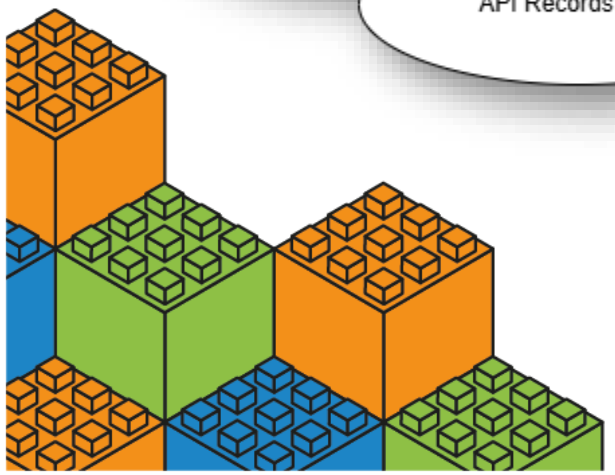
nLDT Testbed results with DCAT-AP and OGC API's

AIOTI Workshop 2026

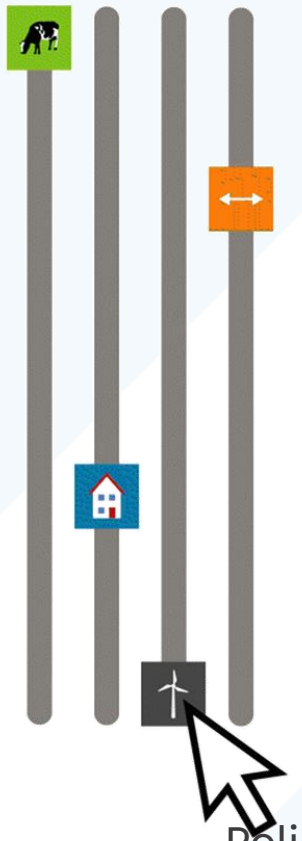
Niels Hoffmann

GEONOVUM

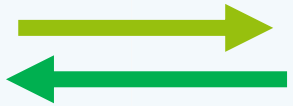

GeoDCAT-AP (Semic)
DCAT-AP-NL
CEN/CENELEC JTC25
OGC
Niels Hoffmann
ETSI TC DATA
API Processes SWG
API Records SWG
EU EDIC LDT Citiverse
Geonovum
Min BZK
NLDT / DTaaS
Ruimtelijke Ordening

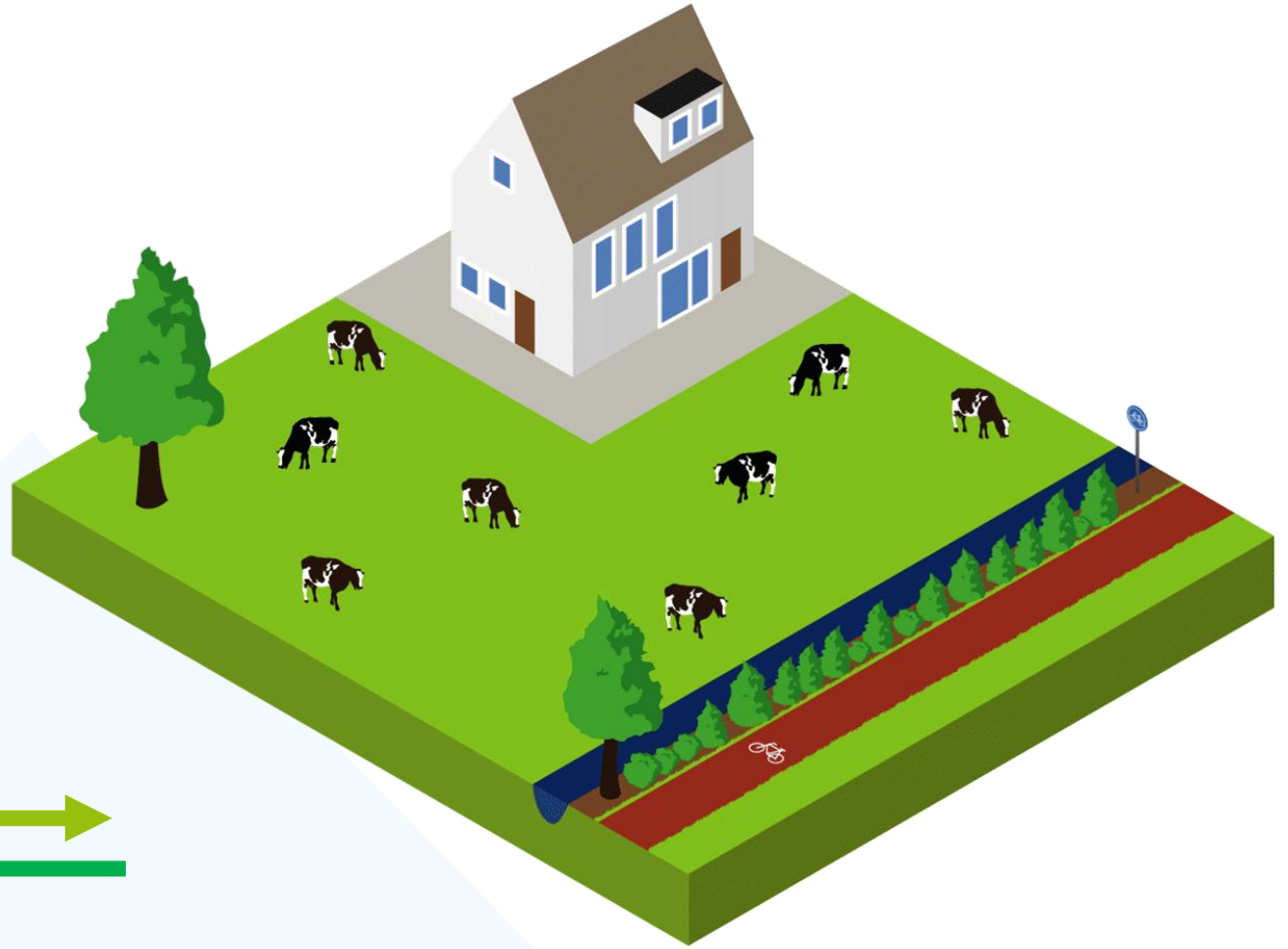


Digital Twin of the physical *living* environment.



Policy





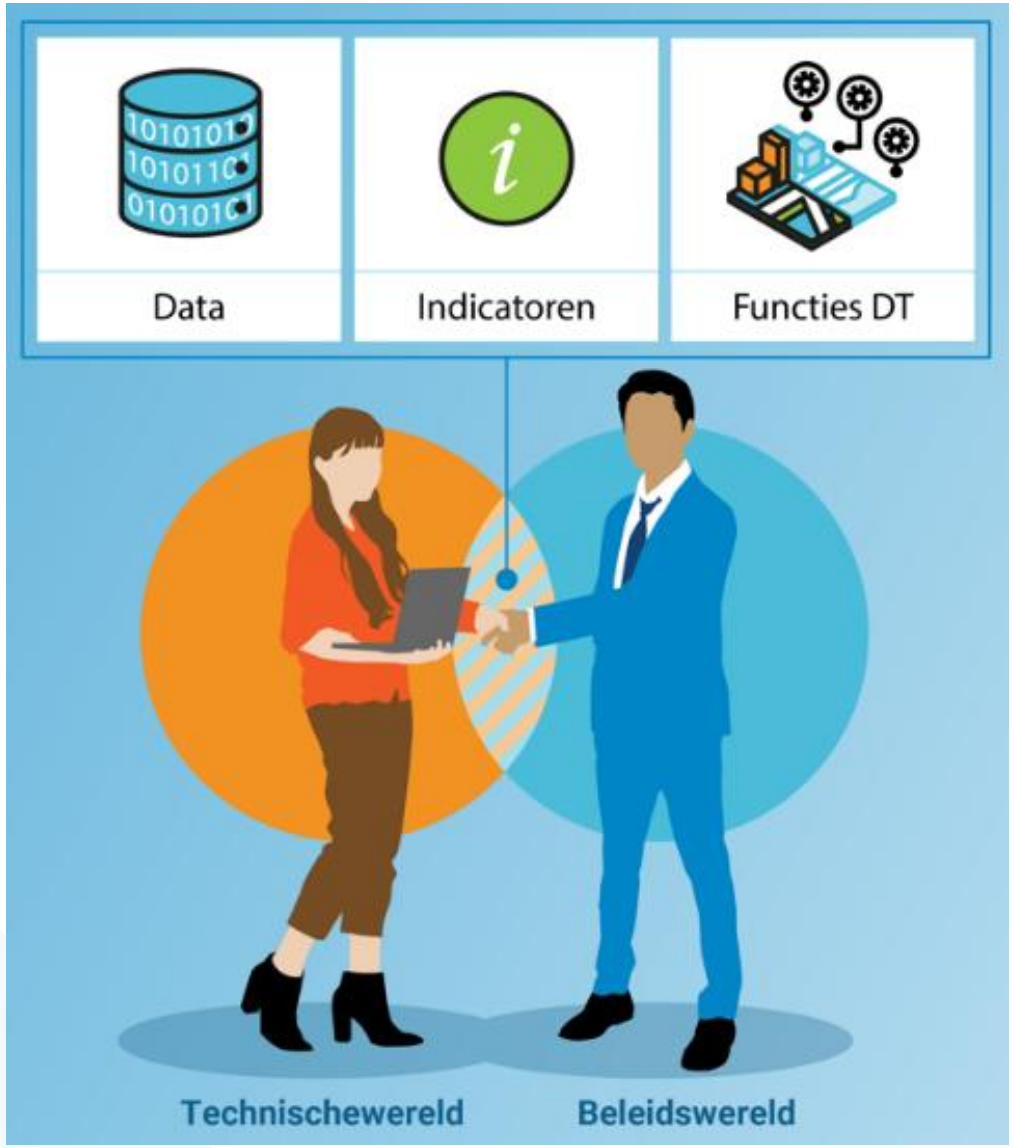
Experience it, before it’s real”

Policy and Digital Twins

Digital Twins connect data, people, and policy.

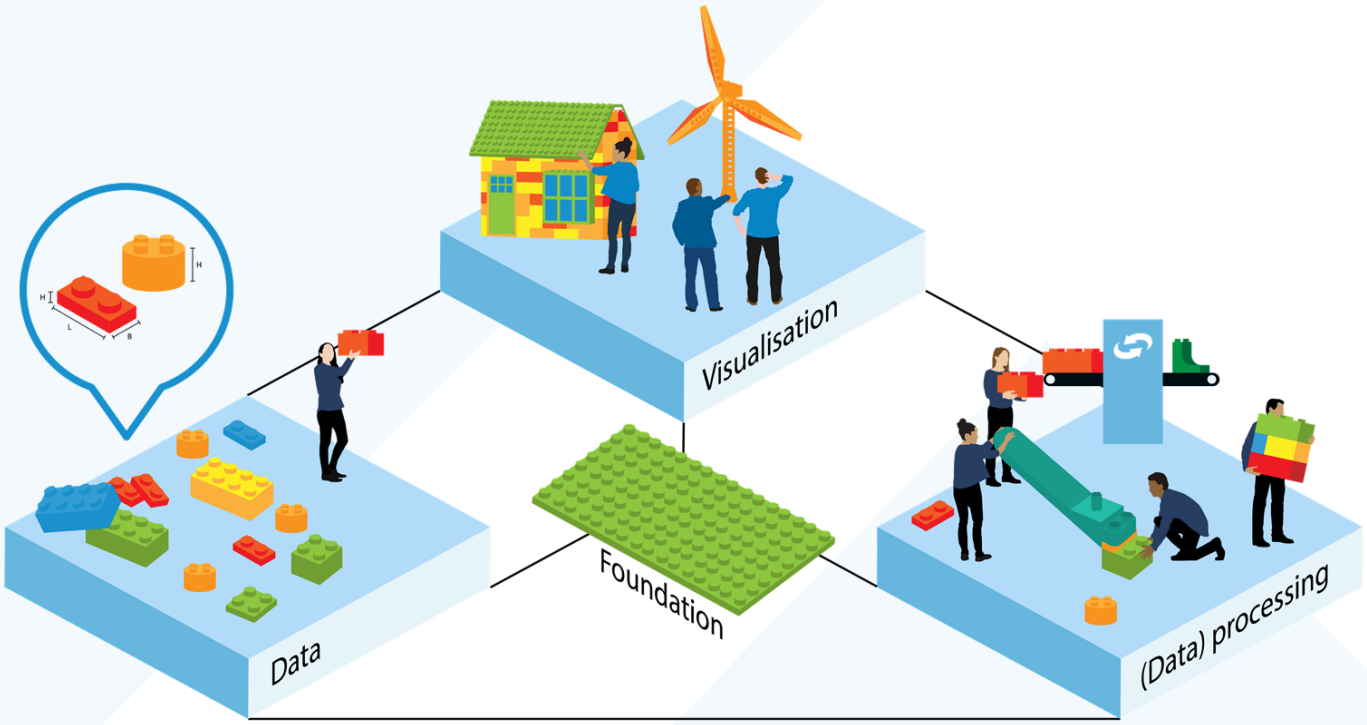
Creating a Digital Twin also requires connection between the technical world and the policy world.

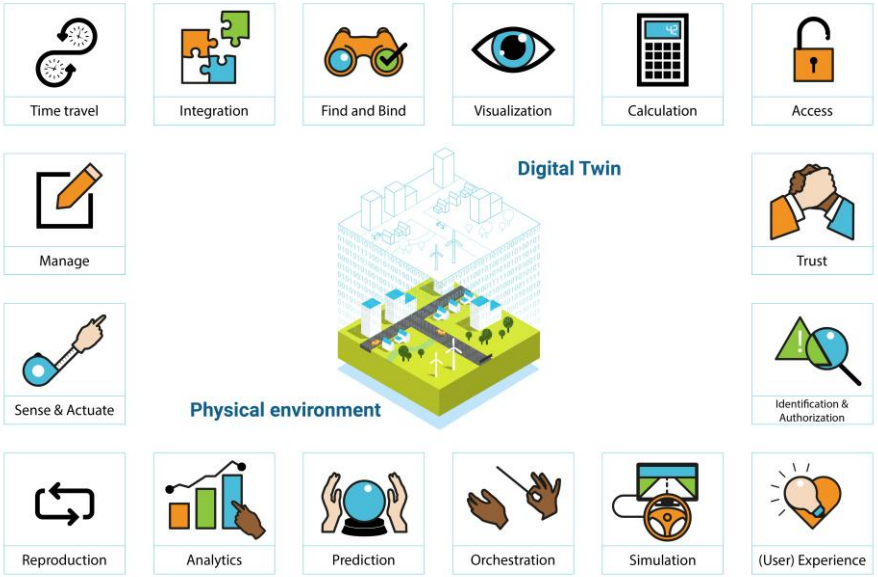
Two worlds, each with its own language.



Digital Twin Building Blocks (nLDT)

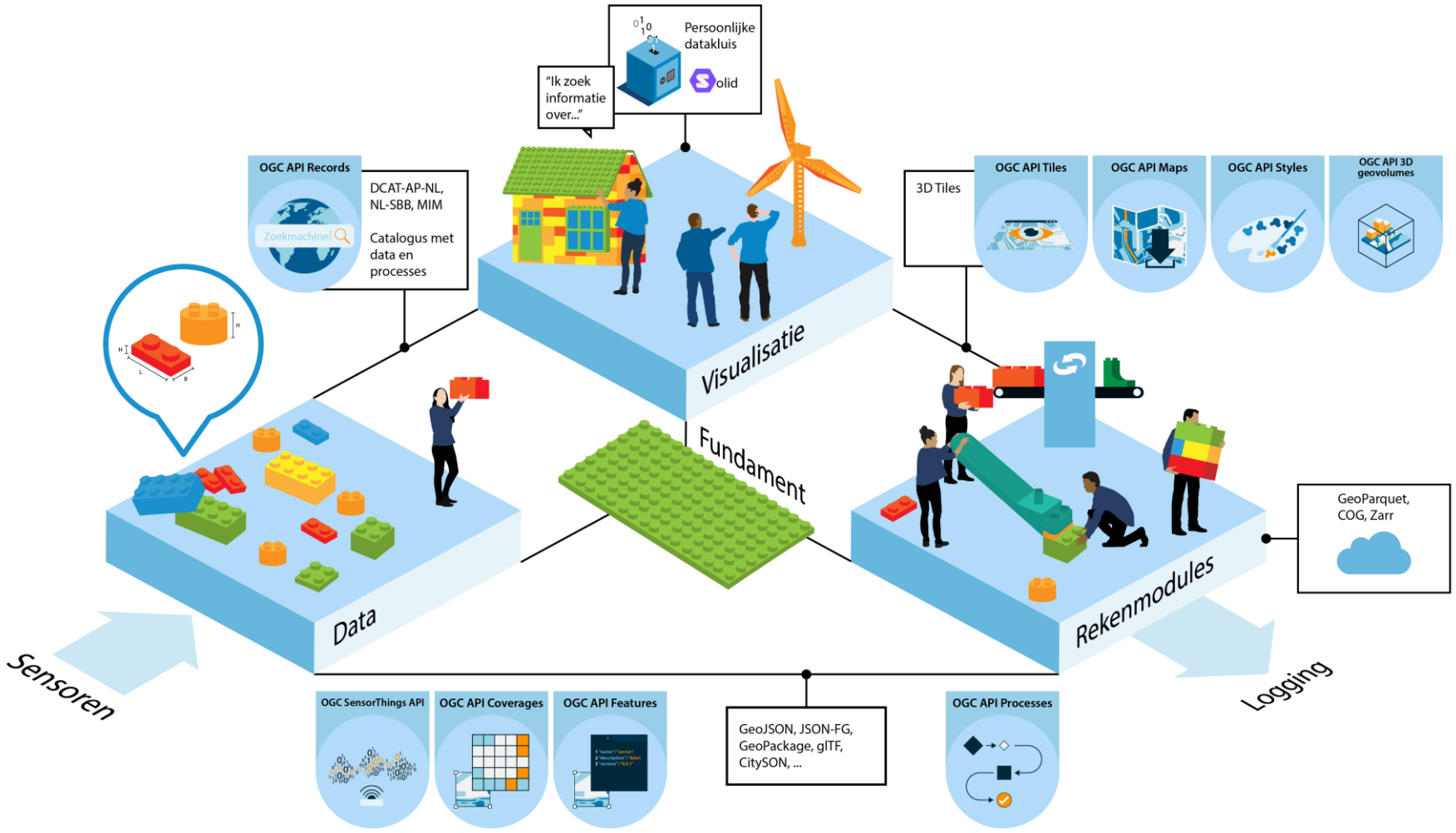
Interoperable, modular, scalable





https://geonovum.github.io/NLDT-Architectuur/en/

Standards in play between building blocks



From a “user” perspective

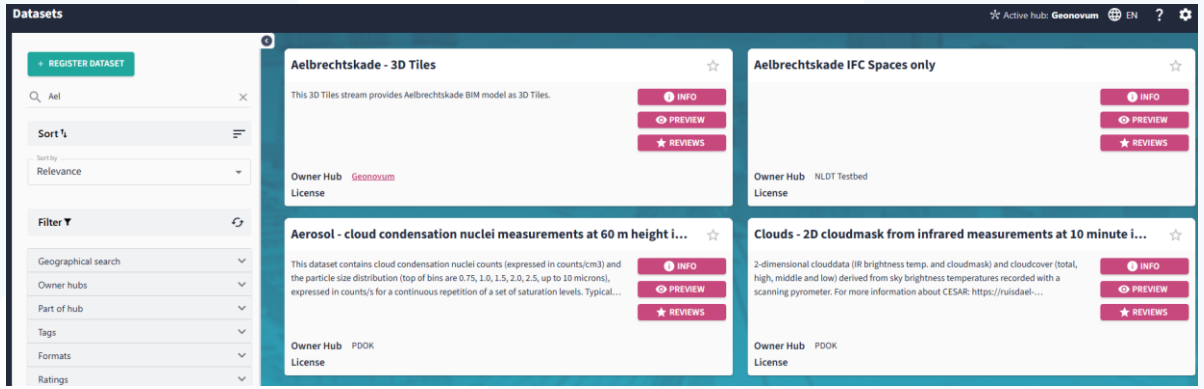
How easy to find are:

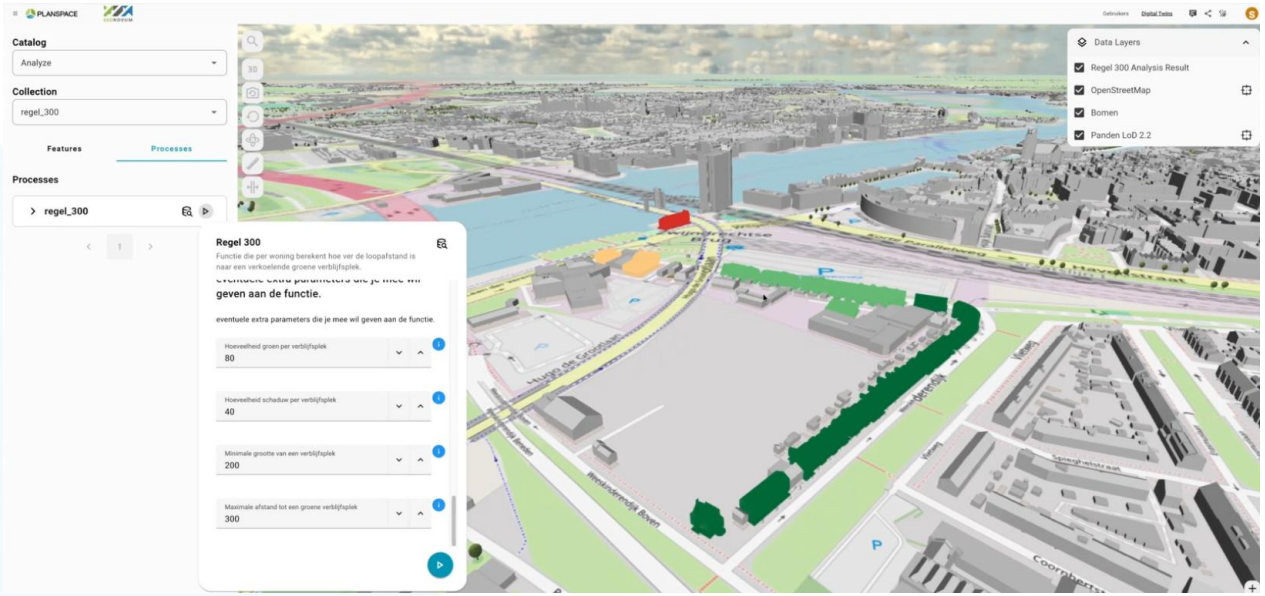
- Data
- Calculation modules
- Predefined scenes/scenarios (AppStore)

How easy to bind are:

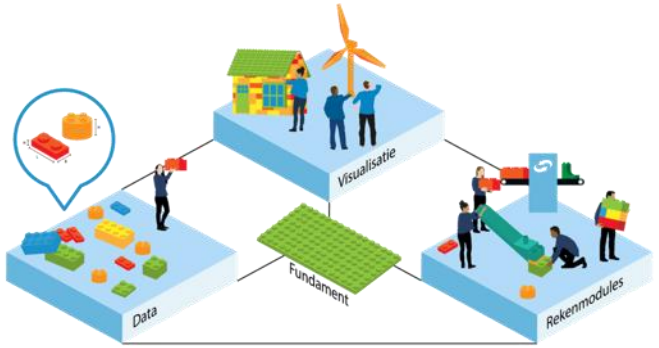
- Data
- Calculation modules
- Predefined scenes/scenarios (AppStore)

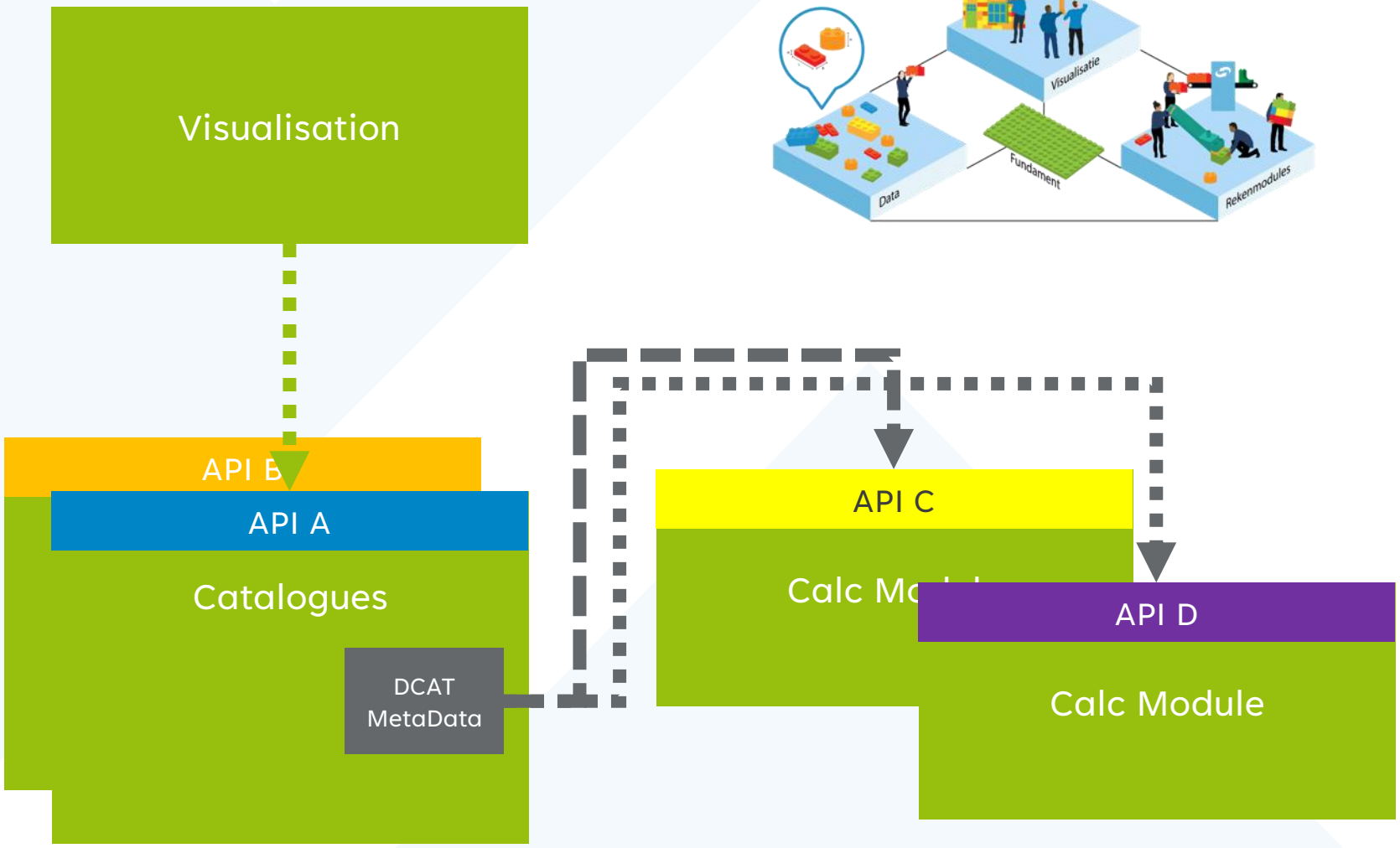
Focus on policy-related functions, not IT functions.





Which API to choose for Catalog and Calculation Modules?





We made a choice:

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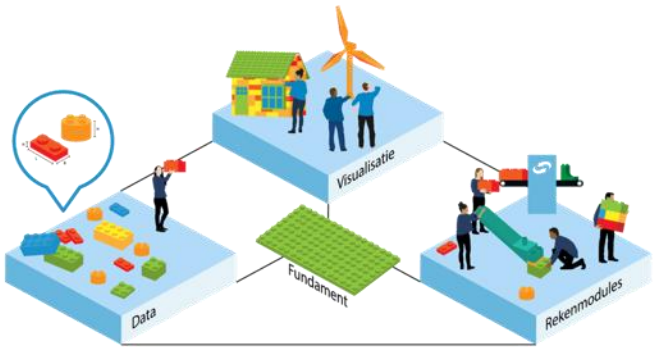
Visualisation



API Records

Catalog

DCAT
MetaData

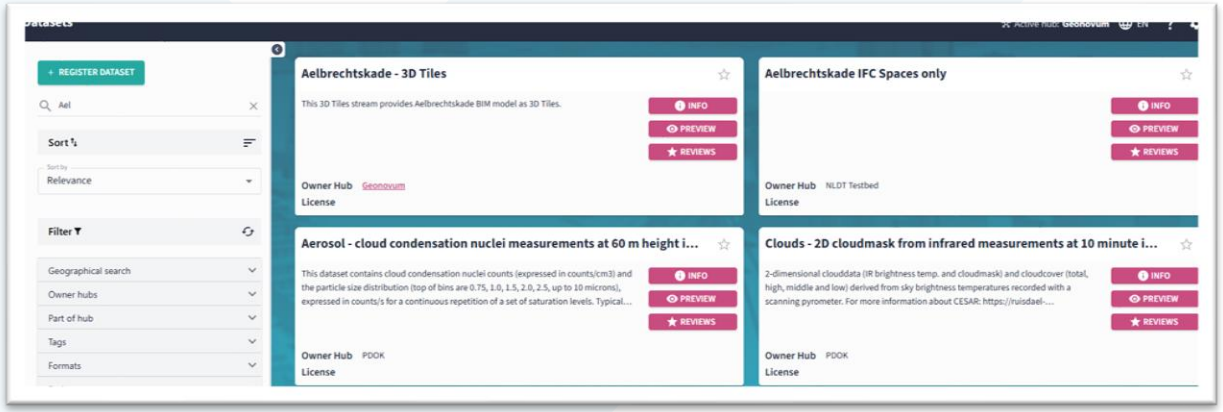
API Processes

Calcul

API Processes

Calculation

OGC API Records with DCAT

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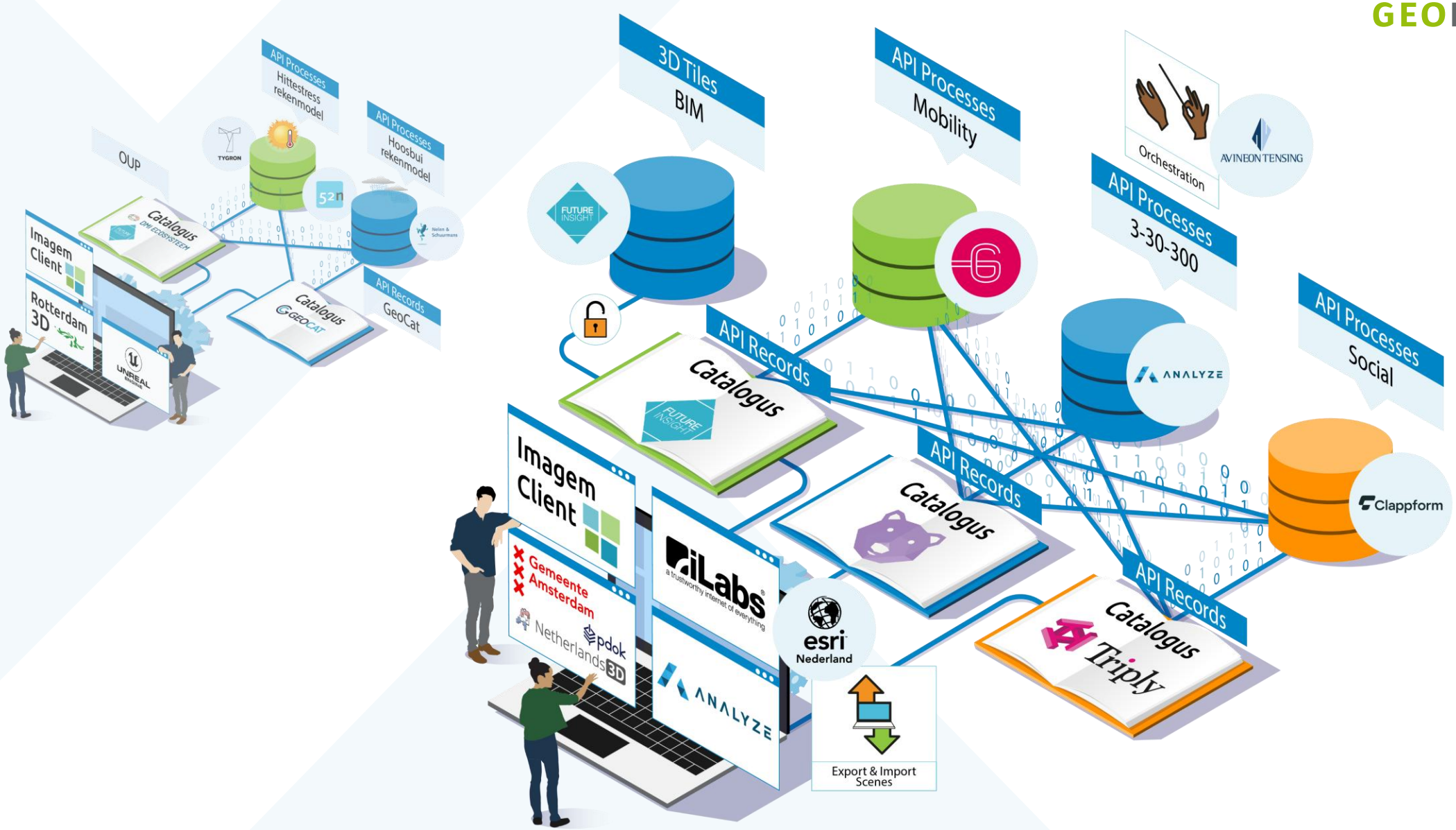
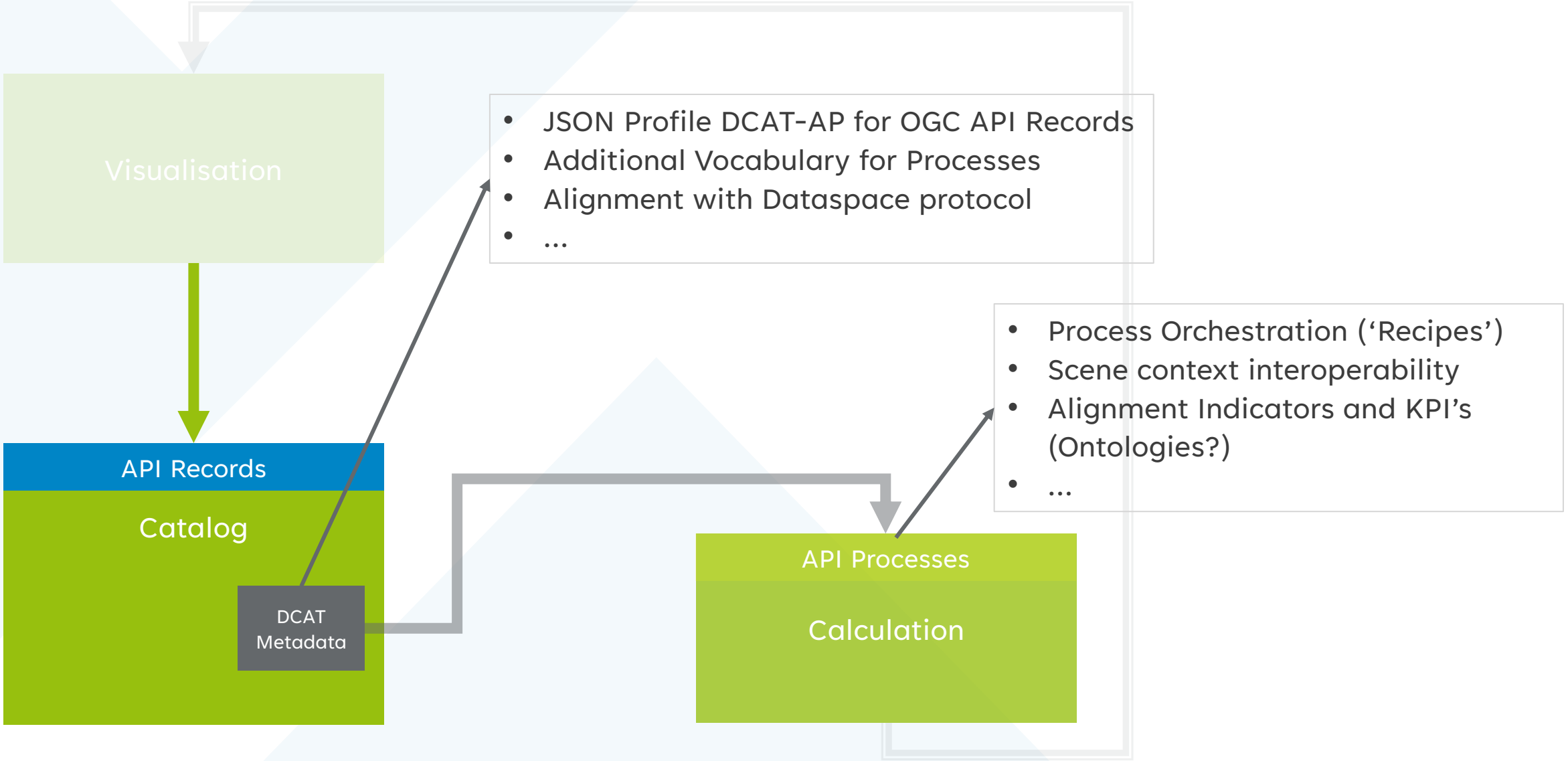
Architecture proven in Testbeds



Future work


Visualisation
API Records
Catalog
DCAT Metadata
API Processes
Calculation
• JSON Profile DCAT-AP for OGC API Records
• Additional Vocabulary for Processes
• Alignment with Dataspace protocol
• …
• Process Orchestration (‘Recipes’)
• Scene context interoperability
• Alignment Indicators and KPI’s (Ontologies?)
• …

OGC: Machine-Readable Standards Ecosystem

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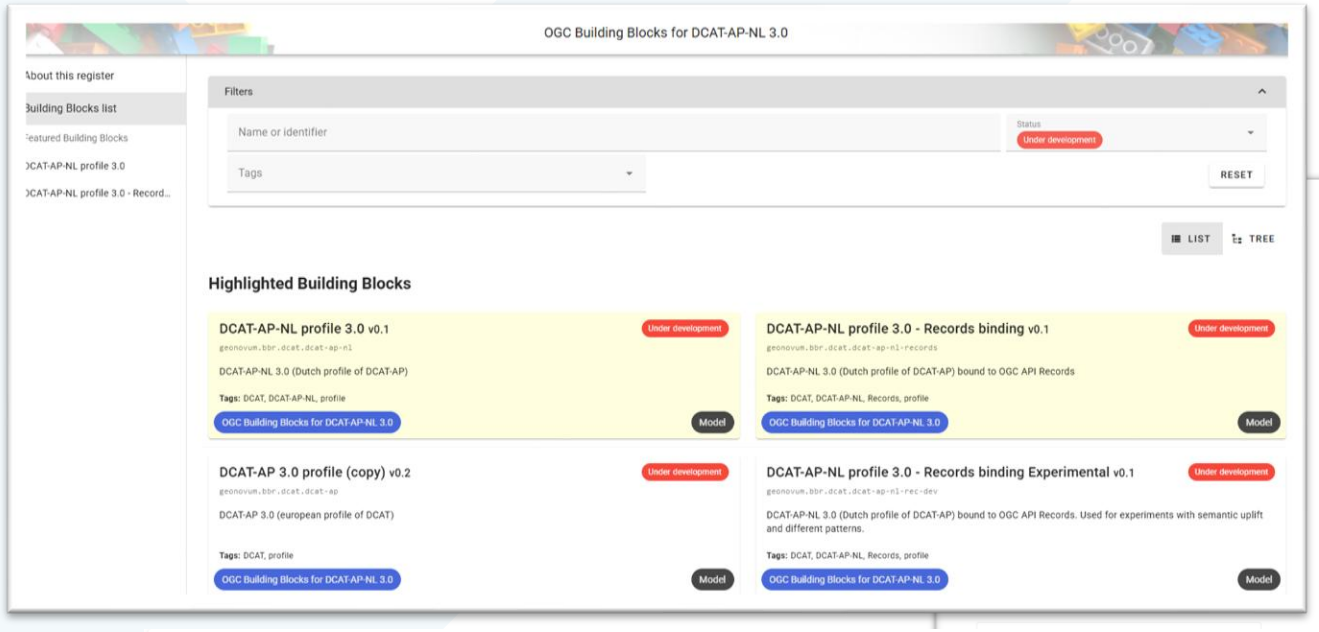

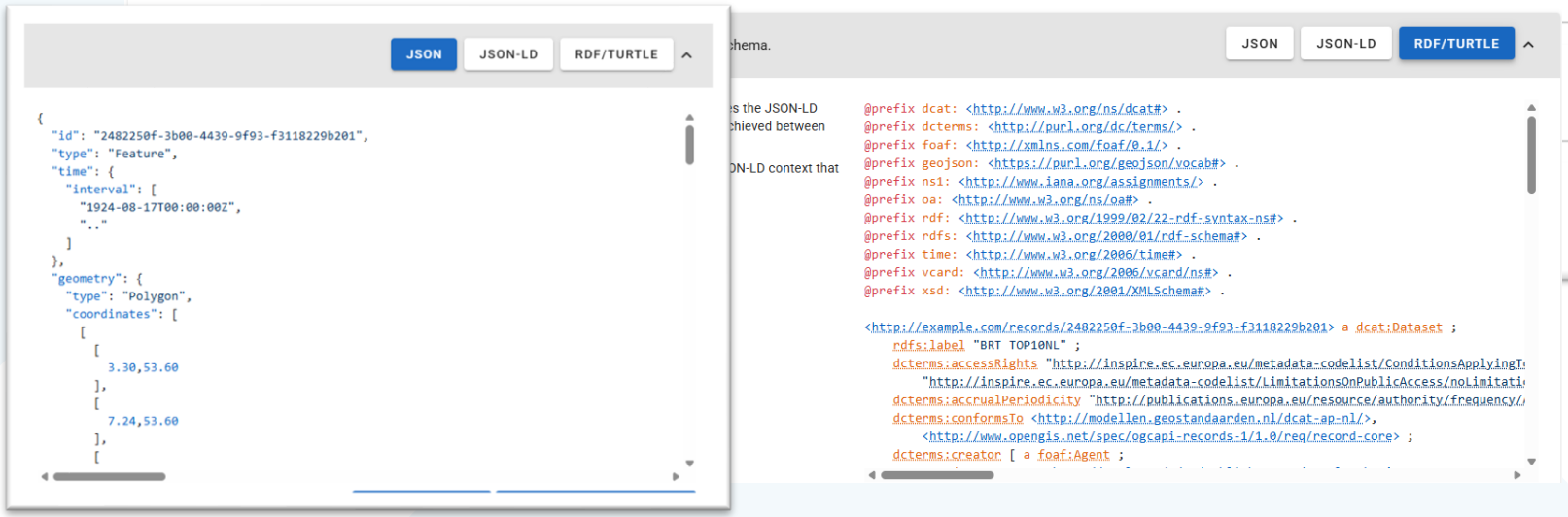

Thank You!

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Digital Twin as a Service
Developed by

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DMI·ECOSYSTEEM

Ministry of Housing and Spatial Planning

IMAGEM

52n

kadaster

pdok

iLabs
a trustworthy internet of everything

Clappform

Goudappel

ANALYZE

Netherlands3D

esri
Nederland

Gemeente Utrecht

Triply

FUTURE INSIGHT

Gemeente Amsterdam

AVINEON TENSING

GEOCAT

the people group

TYGRON

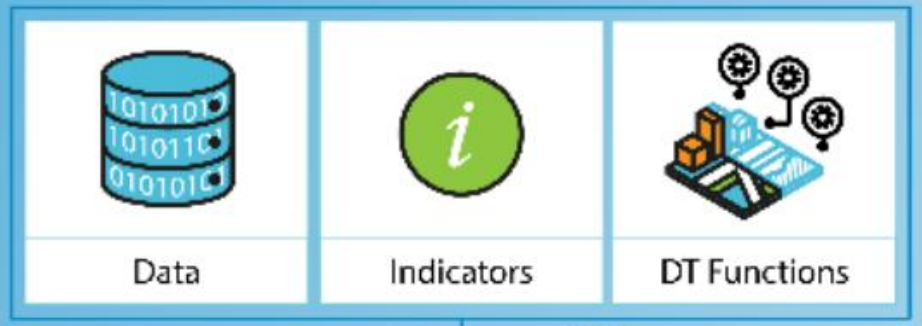
Gemeente Rotterdam

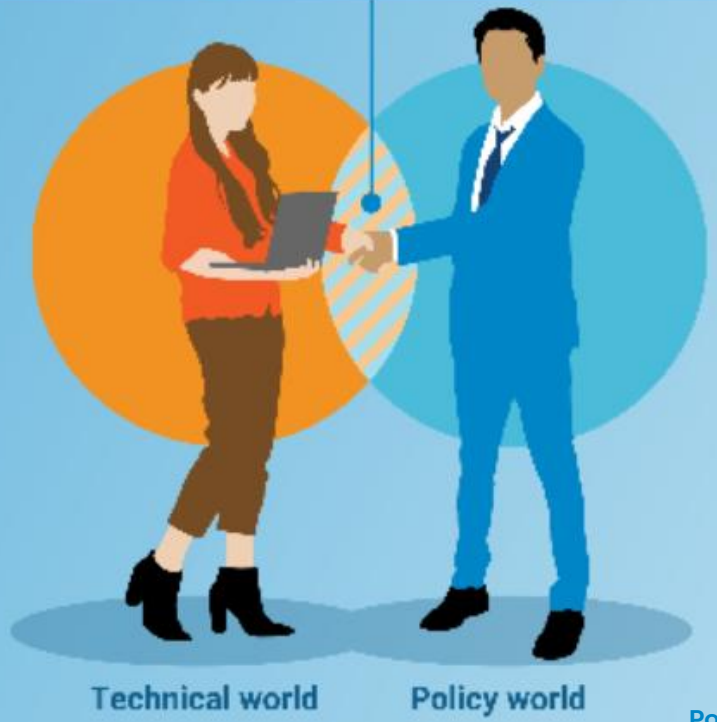
Nelen & Schuurmans

UNREAL ENGINE

Digital Twins: a powerful connector

Digital twins connect data, people and policy. Connection is also needed when creating a Digital Twin. Between the technical world and the policy world. Two worlds, each with their own language.





[Policy processes and building blocks for Digital Twins]

Where policy and technology meet

Be more concrete. This helps us better understand each other.

On the one hand, the technological side, we reduce the 64 possible functions of a digital twin to 16. On the other hand, the policy side, we translate major policy themes into concrete indicators.

Together, we determine which data sources and functions contribute to implementing the indicators in one or more Digital Twins.

Nature policy:
Every citizen needs access to a park/forest by 202X

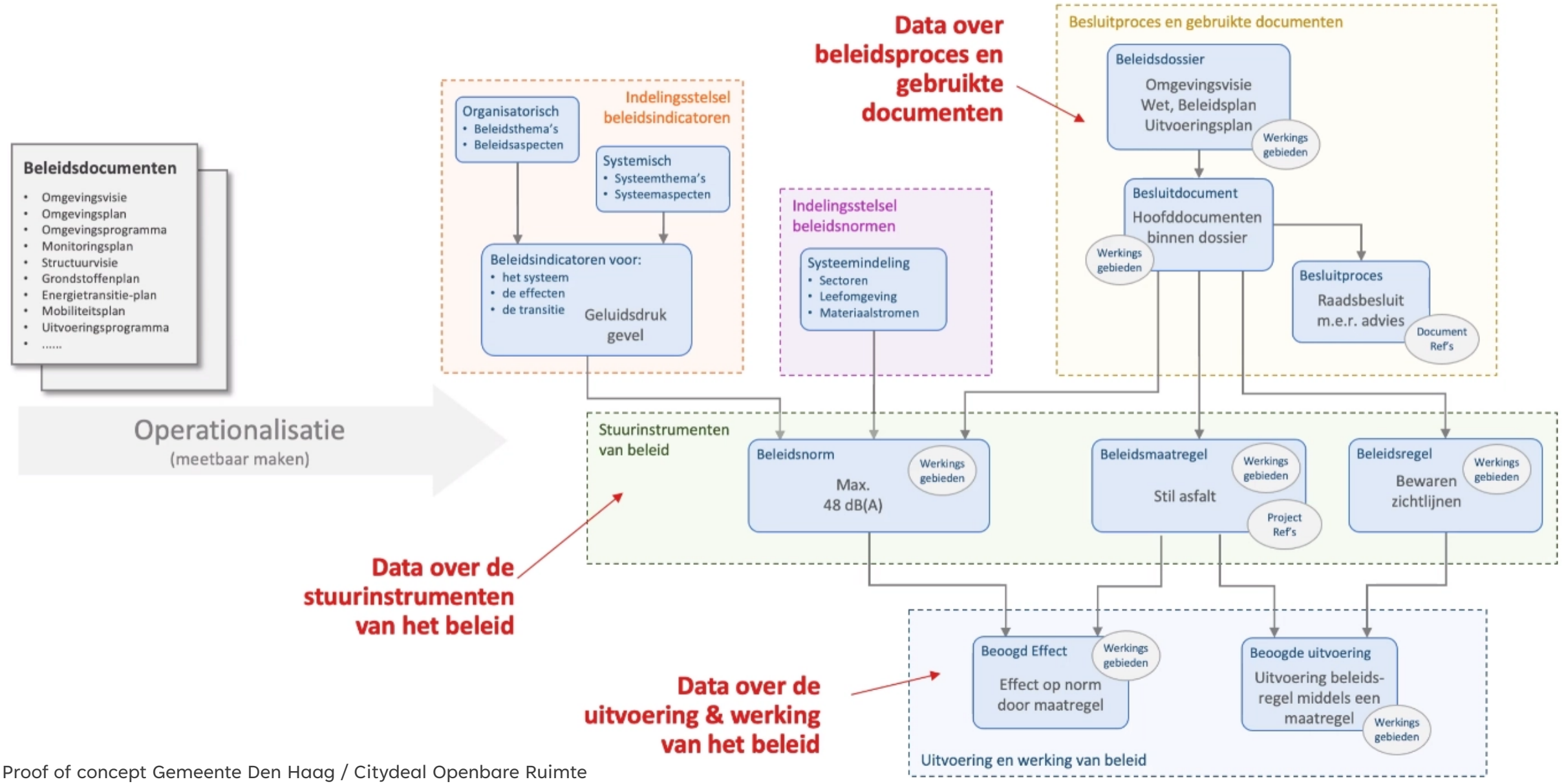
Indicator:
Presence of nature reserve

Indicator:
Wooded nature reserves within a radius of 300 m

Data source:
BGT

Functionalities:
Visualization, Prediction, Simulation, Time travel...

Ontology for Policies in assetmanagement



Proof of concept Gemeente Den Haag / Citydeal Openbare Ruimte