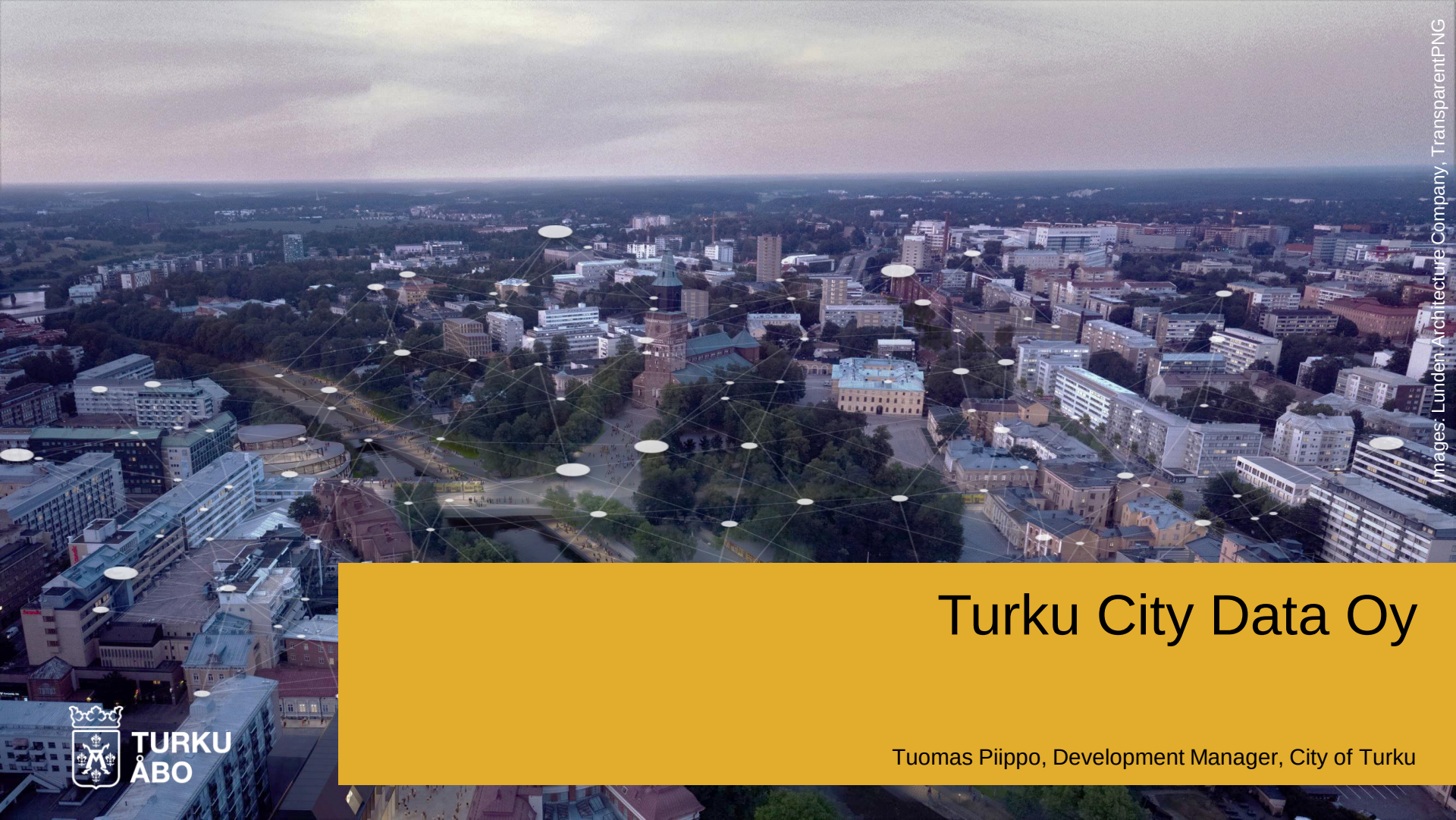

Images: Lunden Architecture Company, TransparentPNG

# Turku City Data Oy

Tuomas Piippo, Development Manager, City of Turku

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# A flagship project with six focal points

**Carbon neutrality and resource wisdom**

**Customership and service management**

**Safety and security**

**Urban design**

**Traffic and mobility**

**Prevention of social exclusion**

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# A cross-cutting concern:
# How to best utilize city's data assets?

**Carbon neutrality and resource wisdom**

**Customership and service management**

**Safety and security**

**Urban design**

**Traffic and mobility**

**Prevention of social exclusion**

## Platform economy model

## Data utilization

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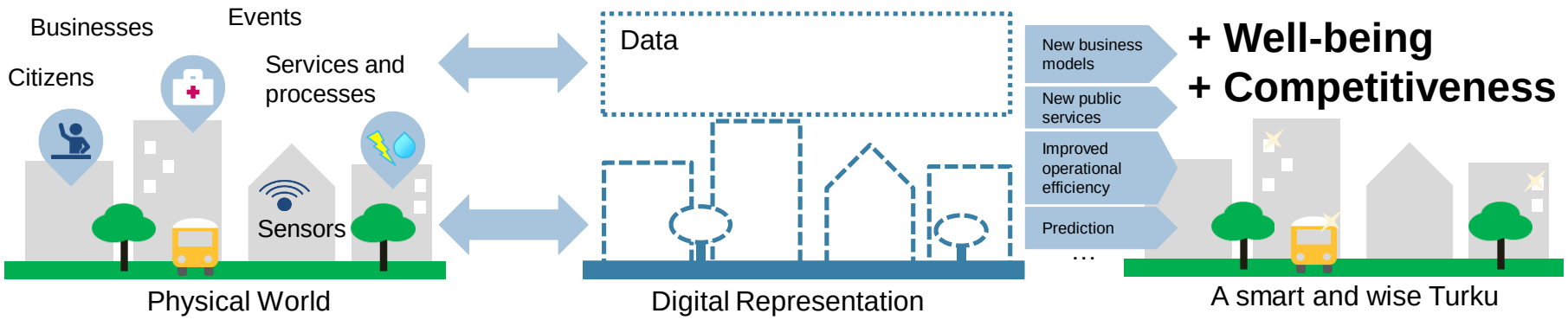
# Our vision: Circular Economy of Data

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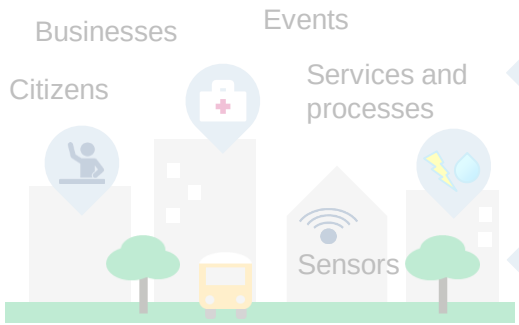
On data-based application's effects on quality-of-life indicators, e.g.:
McKinsey Global Institute, 2018. Smart cities: Digital solutions for a more livable future

# Our vision: Effective management of data assets




Physical World

Digital Representation

New business models

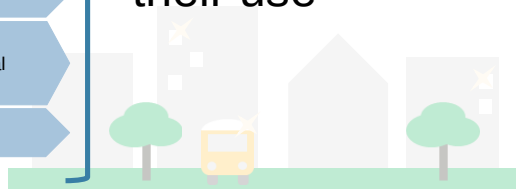
New public services

Improved operational efficiency

Prediction

…

Data assets' value is realized through their use



A smart and wise Turku

+ opportunities for new data capture

Over **200** IT systems

Our **data assets**

+ other available data

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# Challenges

**Challenges regarding open data (Tampere)**

- Challenges with data quality
- Published data does not adhere to relevant standards
- Data granularity and file formats do not match businesses' needs
- Differencies in organizations' data competencies

**Lessons learned from a local data market initiative (Copenhagen)**

- Data market is still immature
- Fragmented data landscape
- Reclutance to share data
- Lack of skills and competencies in data analysis and utilization
- The role of a unified technical data market platform is less relevant than one could think
- Restricted data communities or collaboratives might be more feasible than an open local data market
- Need for solid use cases
- Néed for common standards

https://cphsolutionslab.dk/content/2-what-we-do/3-data-platforms/3-city-data-exchange/1-learnings-from-the-city-data-exchange-project/city-data-exchange-cde-lessons-learned-from-a-public-private-data-collaboration.pdf

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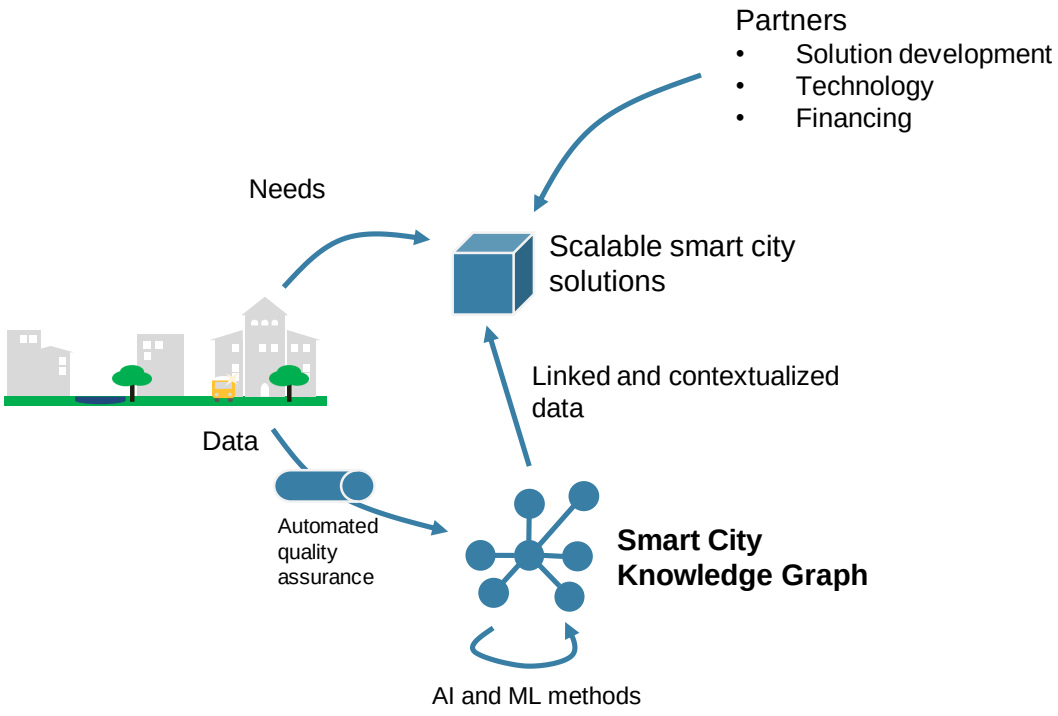
# Our Approach: Turku City Data Oy

- A city-owned company that tackles urban problems with better use of (open) data
- Has an economically sustainable operating model, the company will operate on open and competitive markets
- Close collaboration with a network of both academic and commercial partners, but open for collaboration with anyone
- A key asset: **Smart City Knowledge Graph**

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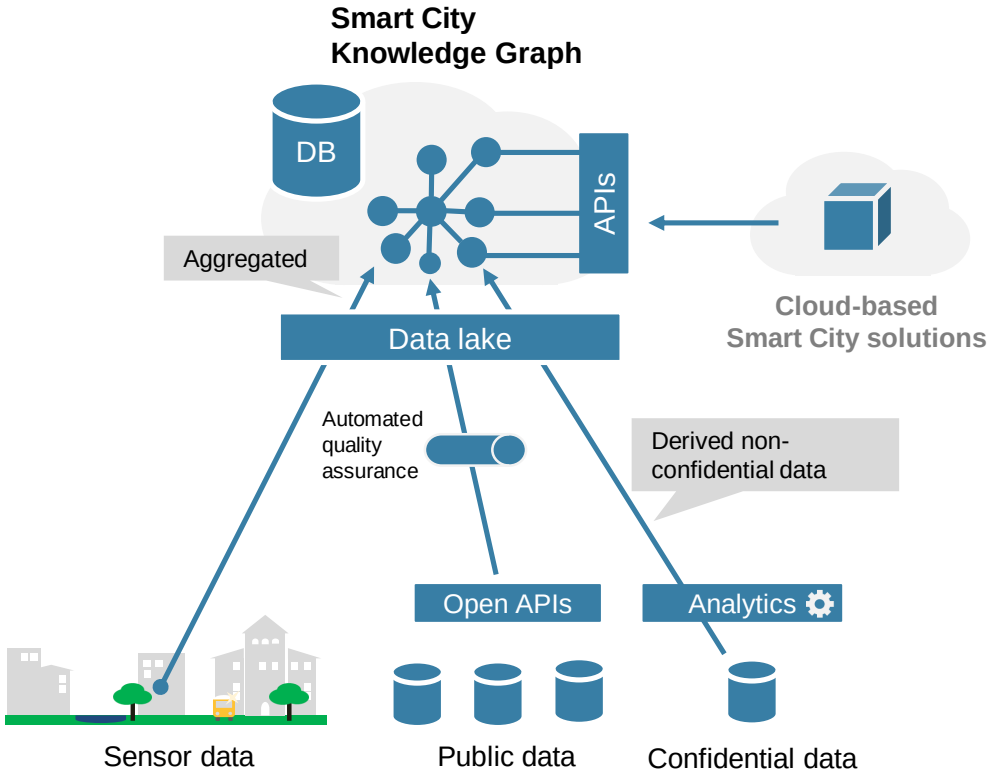
# Technical solution

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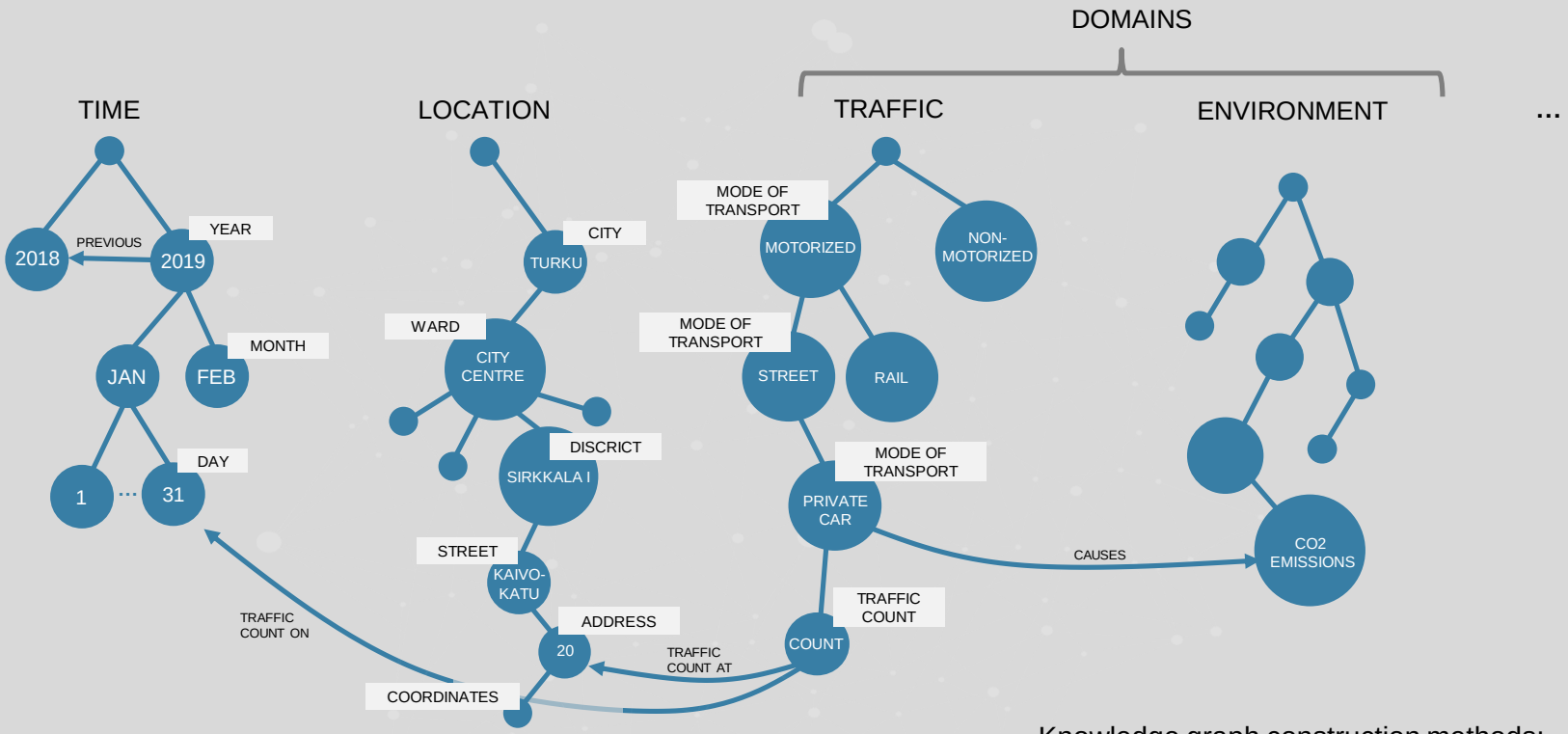
# A key asset: Smart City Knowledge Graph






Knowledge graph construction methods:

- **Curated**
- Collaborative
- Automated from semi-structured or unstructured data

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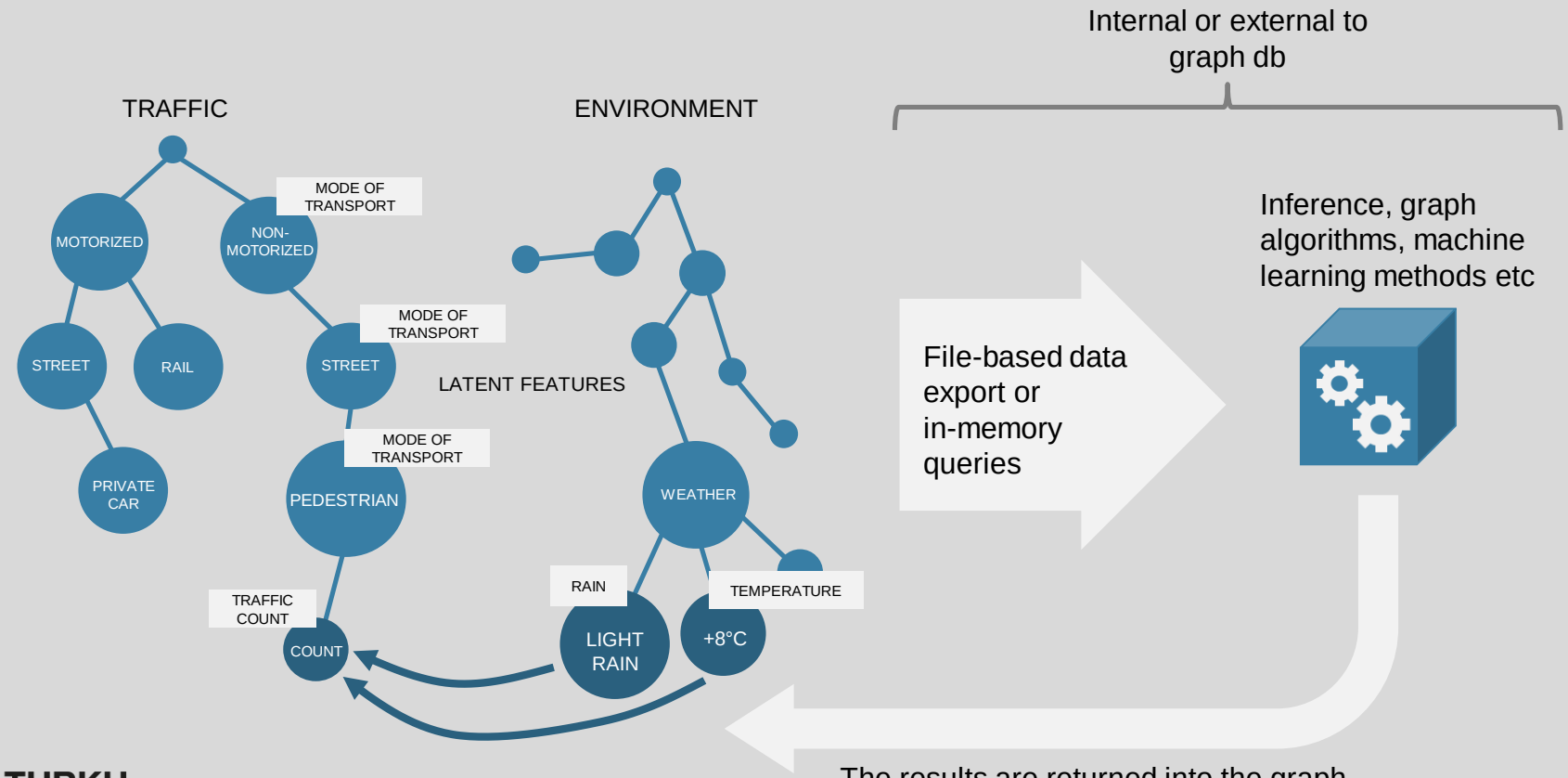
# Turning a data graph into a knowledge graph






The results are returned into the graph, as connections with properties or node labels.

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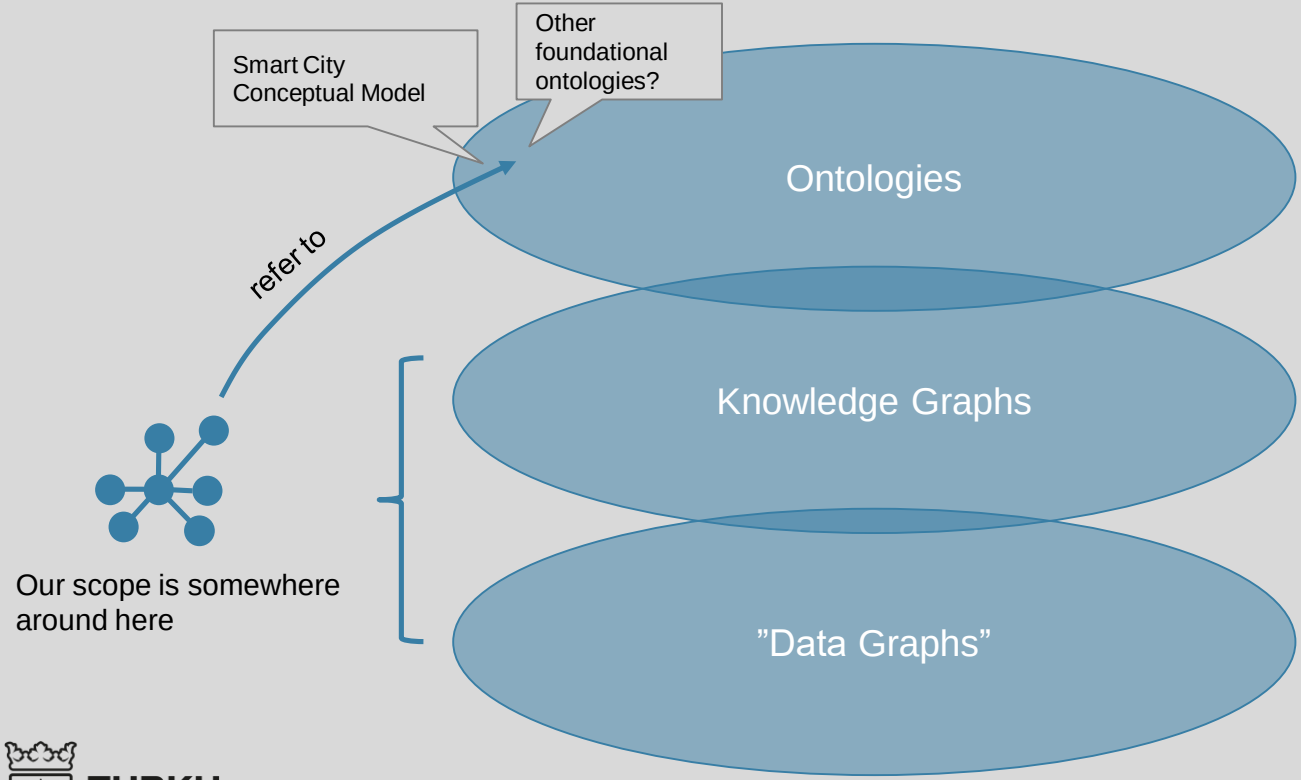
# Ontology, knowledge graph, data graph…?






Concerned with
classes of things, not instances.
*”City”, ”Street”*

Entities are typically slowly
changing or time-independent
things, like *”Turku” or
”Linnankatu”.*

May contain fast accumulating
event data. *”Traffic density at
9:00 on Linnankatu”*

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# Challenges revisited

Challenges regarding open data (Tampere)

- **Challenges with data quality**
- Published data does not adhere to relevant standards
- Data granularity and file formats do not match businesses' needs
- **Differencies in organizations' data competencies**

These are addressed

Lessons learned from a local data market initiative (Copenhagen)

- **Data market is still immature**
- Fragmented data landscape
- **Reclutance to share data**
- Lack of skills and competencies in data analysis and utilization
- The role of a unified technical data market platform is less relevant than one could think
- Restricted data communities or collaboratives might be more feasible than an open local data market
- **Need for solid use cases**
- Néed for common standards

Definitely remain as a challenge

Finding relevant smart city problems to be solved is a key activity

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# THANK YOU!

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Images: Lunden Architecture Company, TransparentPNG