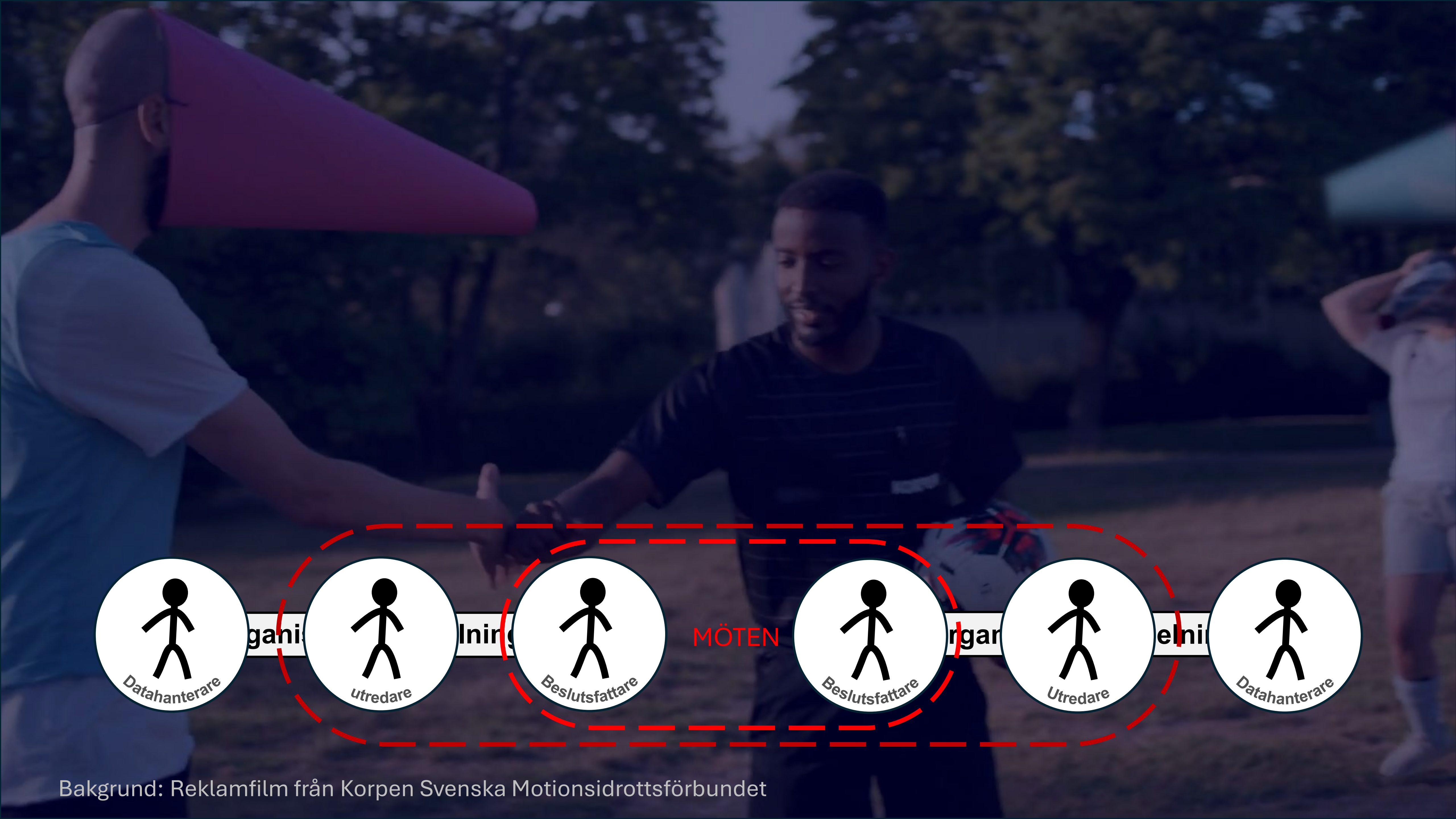
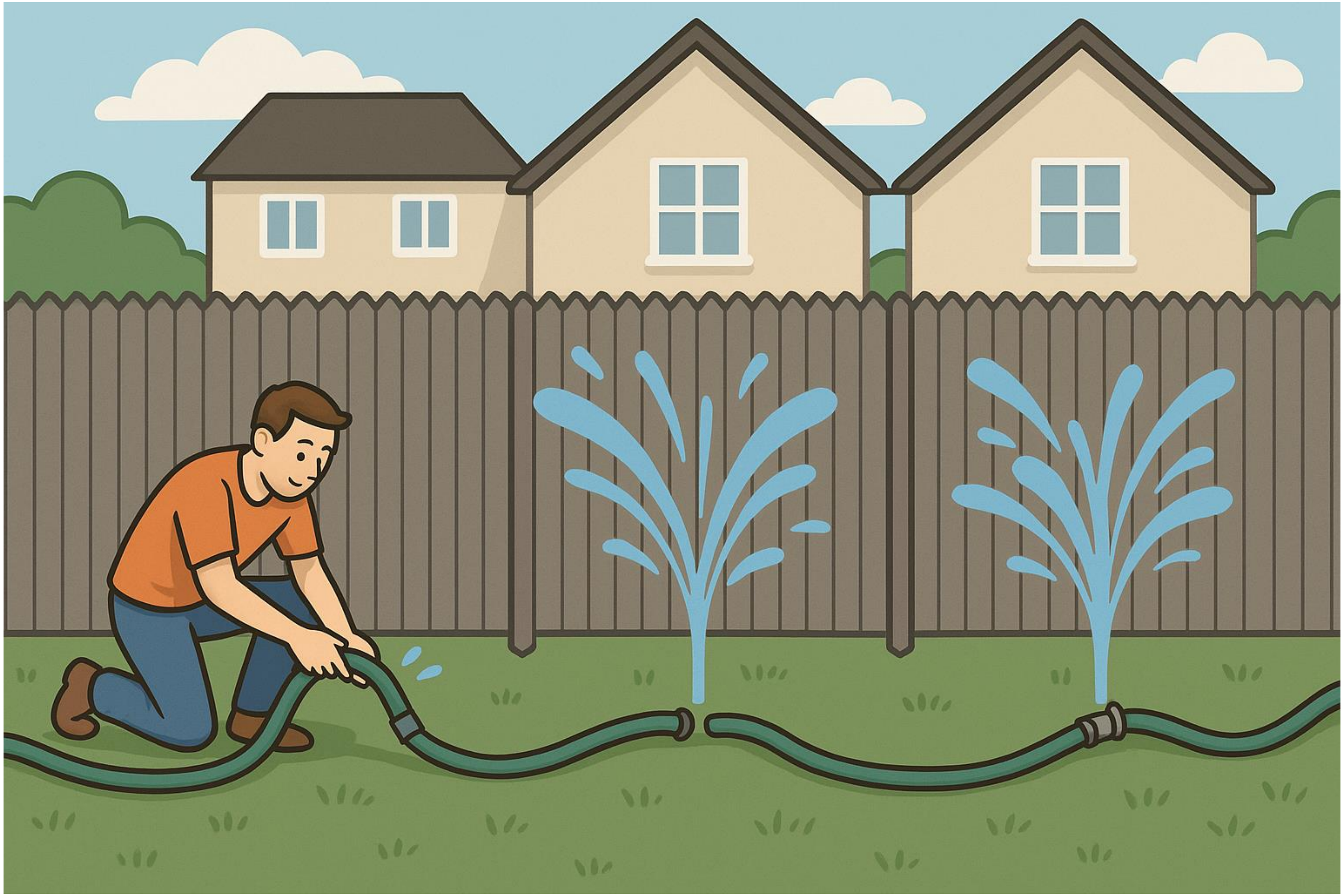
Om data kunde tala!

Från Citiverse till Cyberverse



Bakgrund: Reklamfilm från Korpen Svenska Motionsidrottsförbundet




Gemensamma lägesbilder
Attraktiva & tillgängliga städer
Trygghet & blåljus
Resursoptimering
Datahantering

DIGITAL VISION KISTA

WP 3 SUPPORTING COLLABORATIONS TECHNICALLY

LEVEL 4 — Be able to interact around data

LEVEL 3 — Be able to connect/link data in a city

LEVEL 2 — Be able to access data in a city

LEVEL 1 — Be able to find data in a city

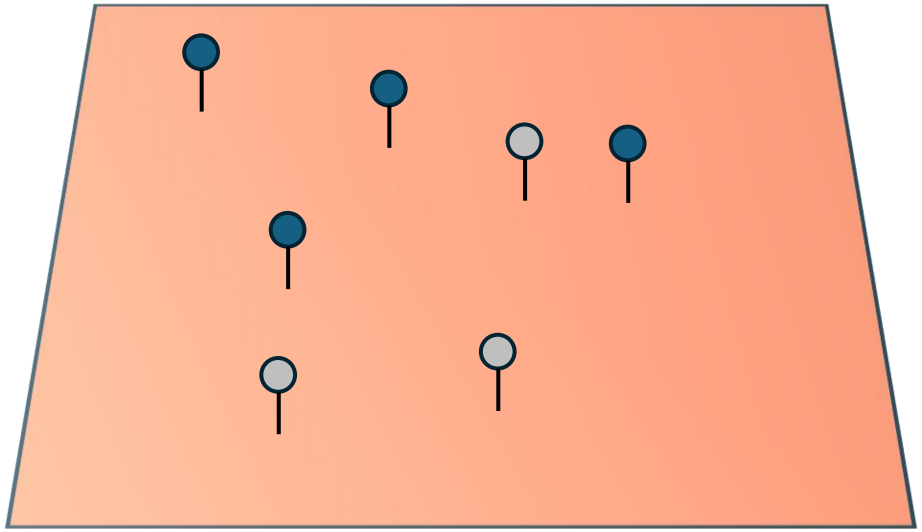
LEVEL 5 — Data with intent

LEVEL 4 — Be able to interact around data

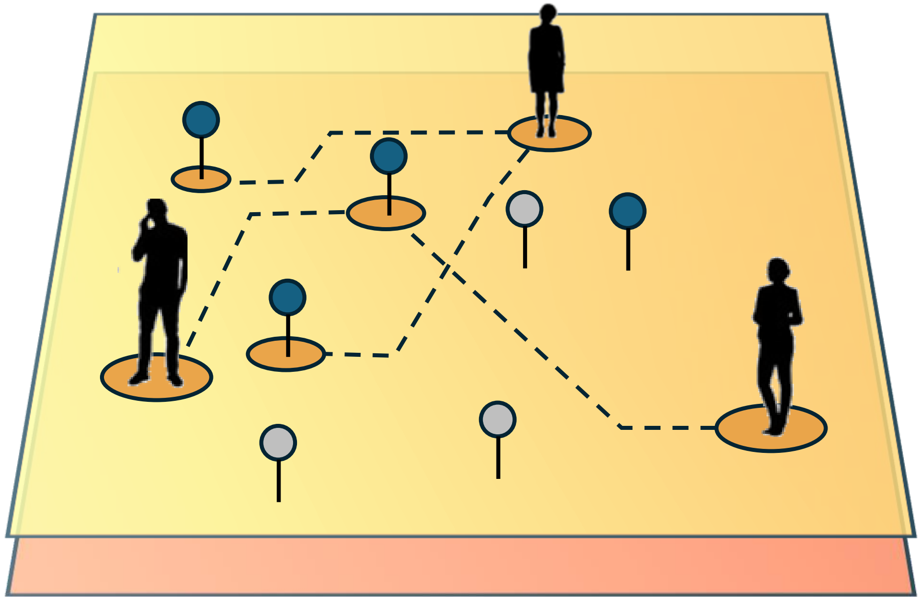
LEVEL 3 — Be able to connect/link data in a city

LEVEL 2 — Be able to access data in a city

LEVEL 1 — Be able to find data in a city



LEVEL 1



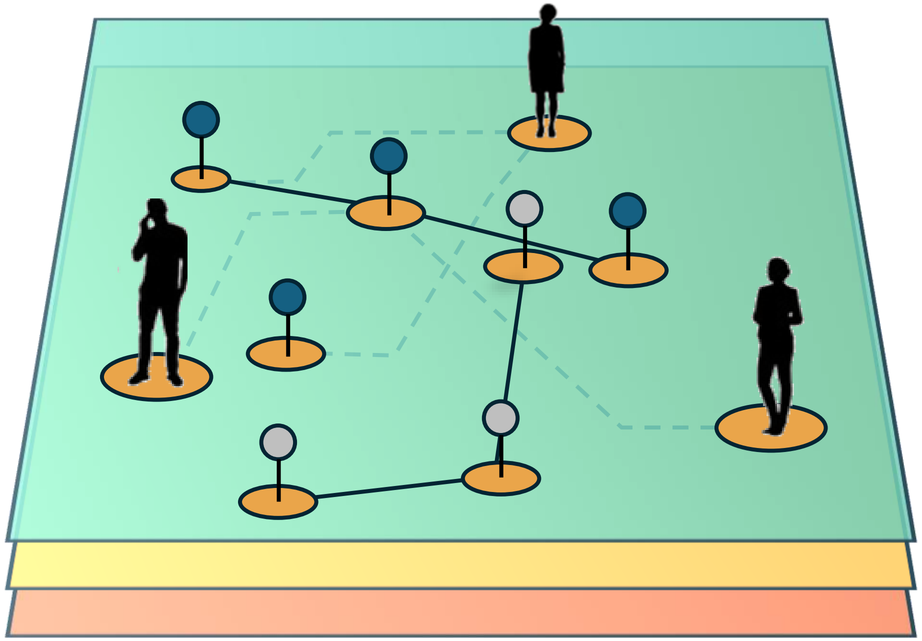
LEVEL 2

LEVEL 1

LEVEL 3

LEVEL 2

LEVEL 1

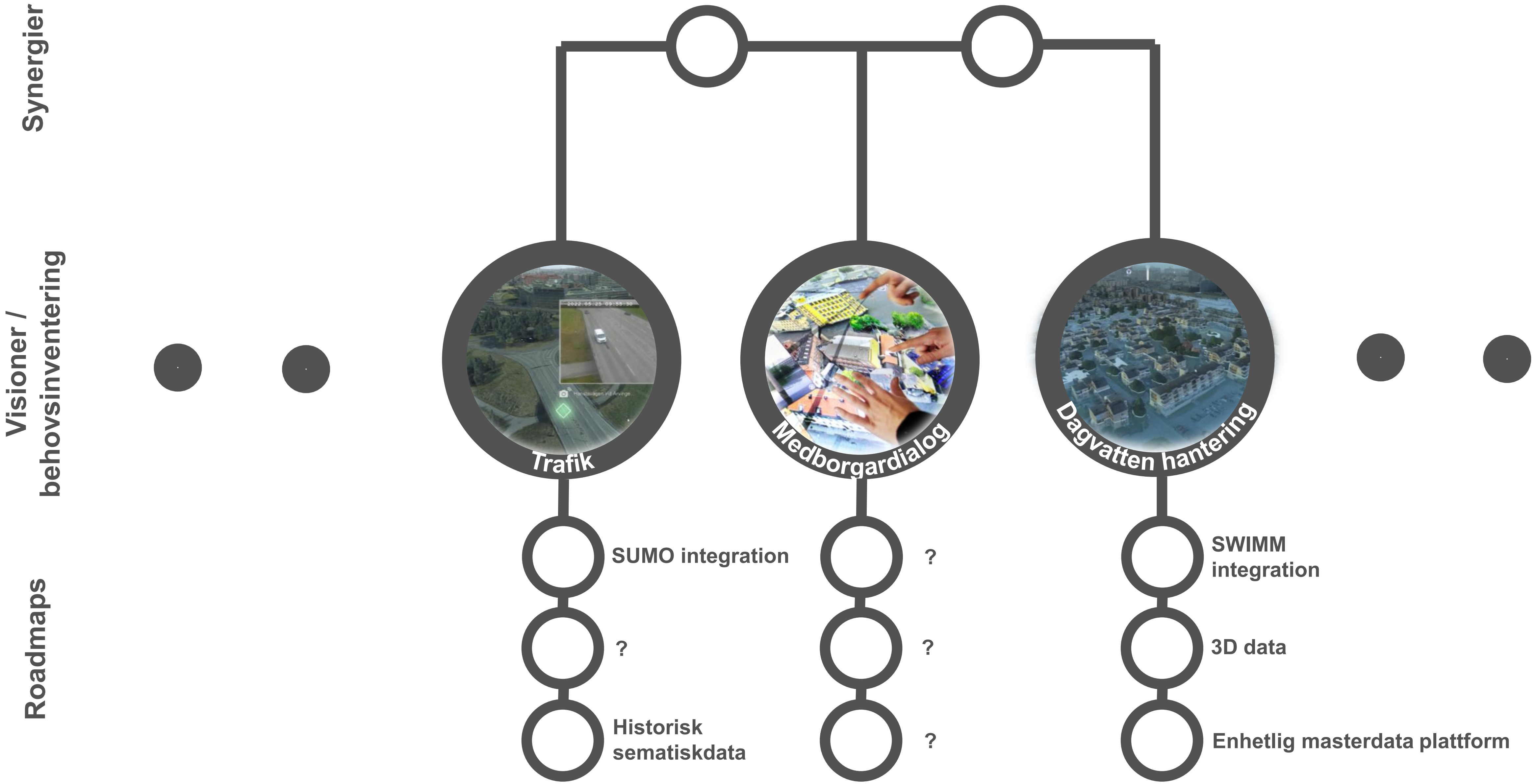


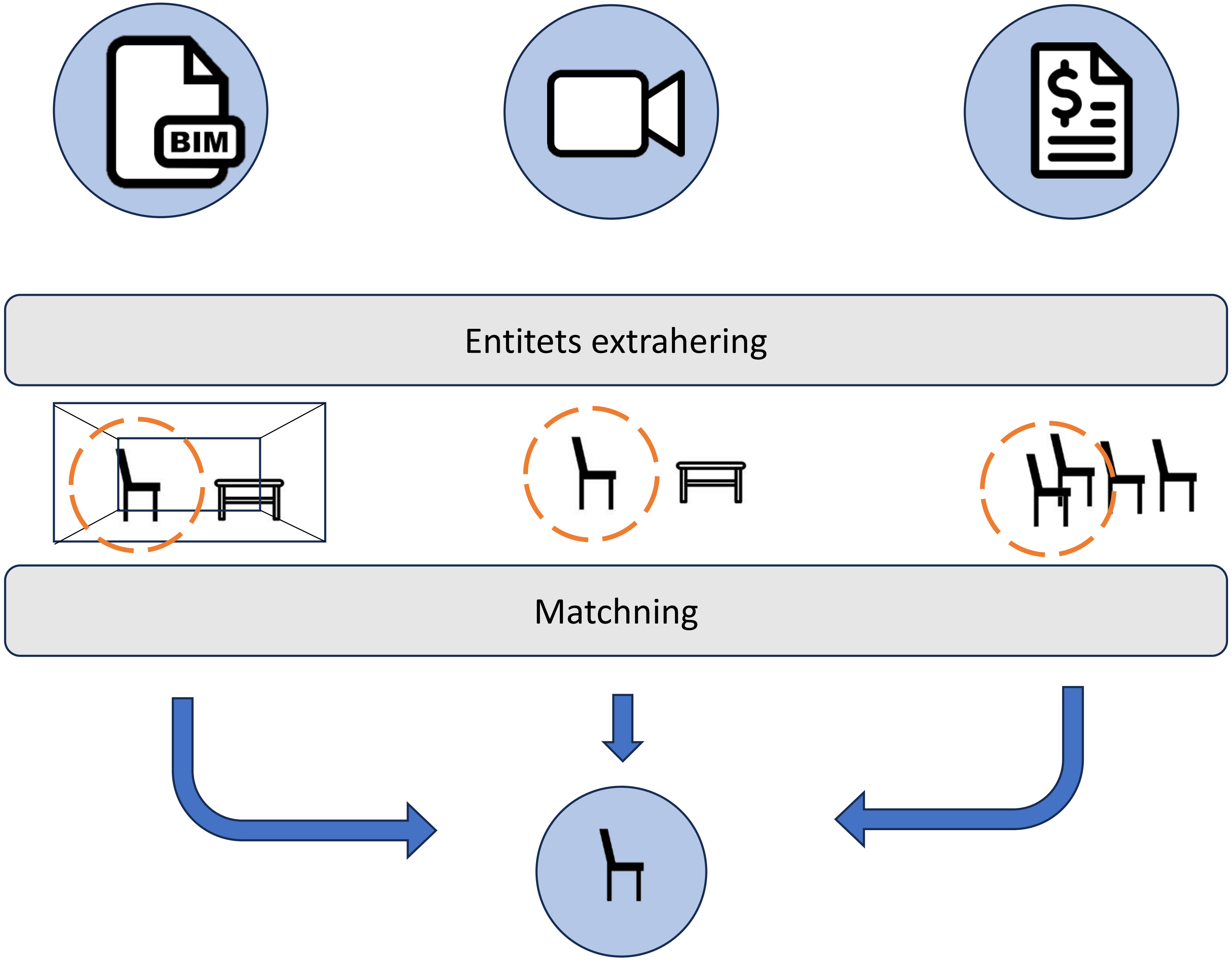
Synergier

Visioner / behovsinventering

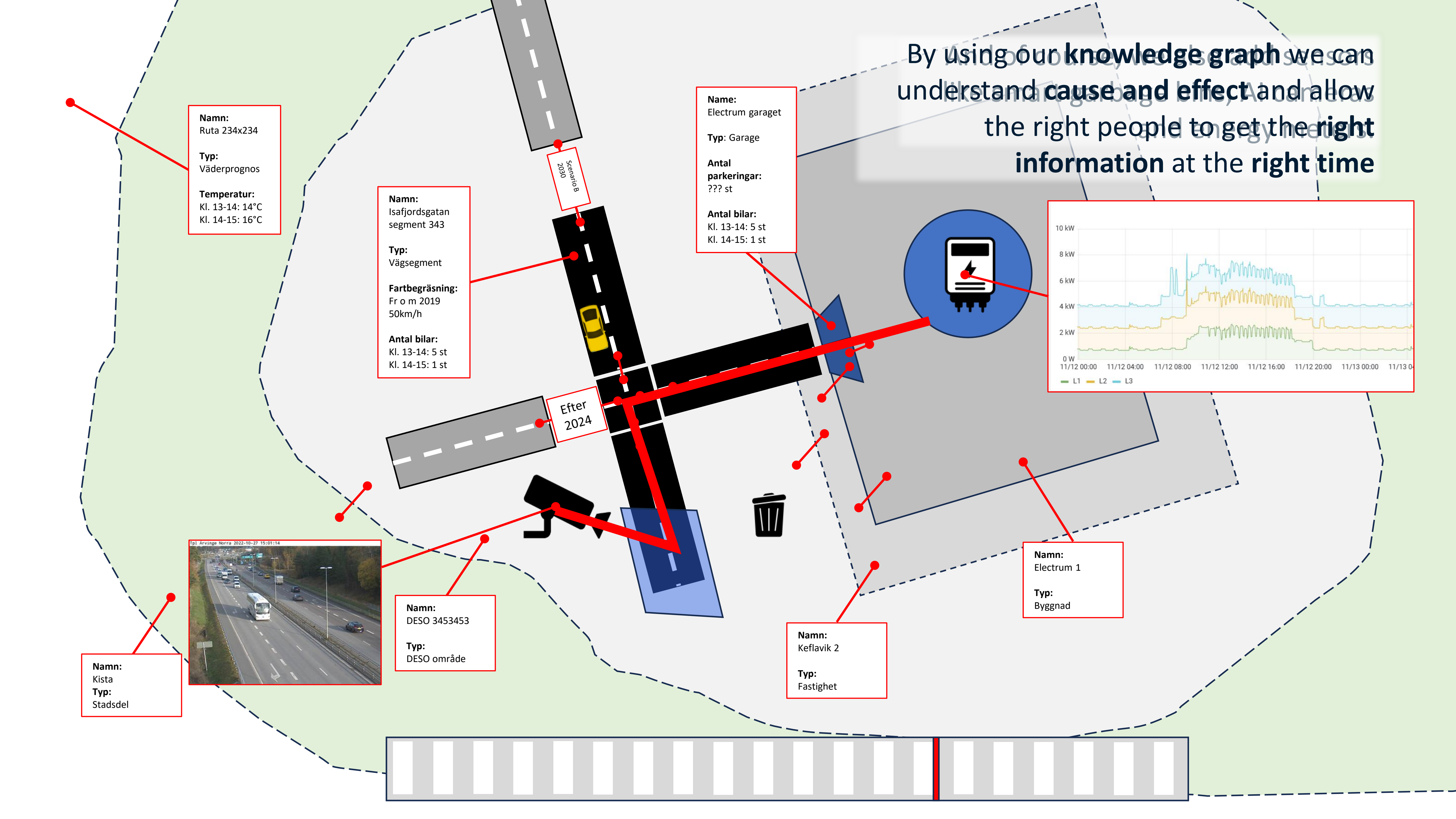
Roadmaps

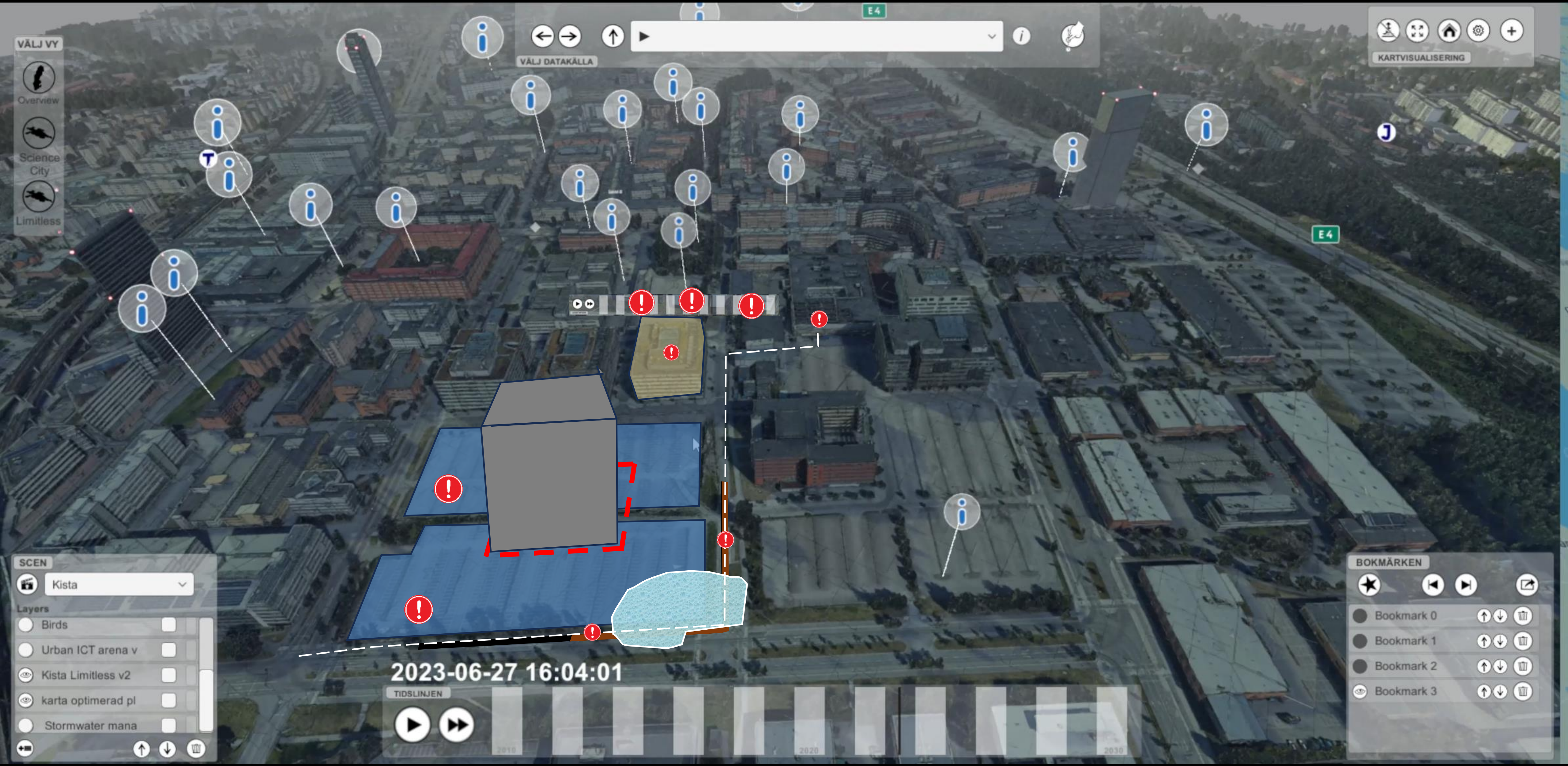
Trafik	Medborgardialog	Dagvatten hantering
SUMO integration	?	SWIMM integration
?	?	3D data
Historisk sematiskdata	?	Enhetlig masterdata plattform


Synergier
Visioner / behovsinventering
Roadmaps
Trafik
Medborgardialog
Dagvatten hantering
SUMO integration
?
Historisk sematiskdata
?
?
?
SWIMM integration
3D data
Enhetlig masterdata plattform


BIM
Entitets extrahering
Matchning

By using our **knowledge graph** we can understand **cause and effect** and allow the right people to get the **right information** at the **right time**

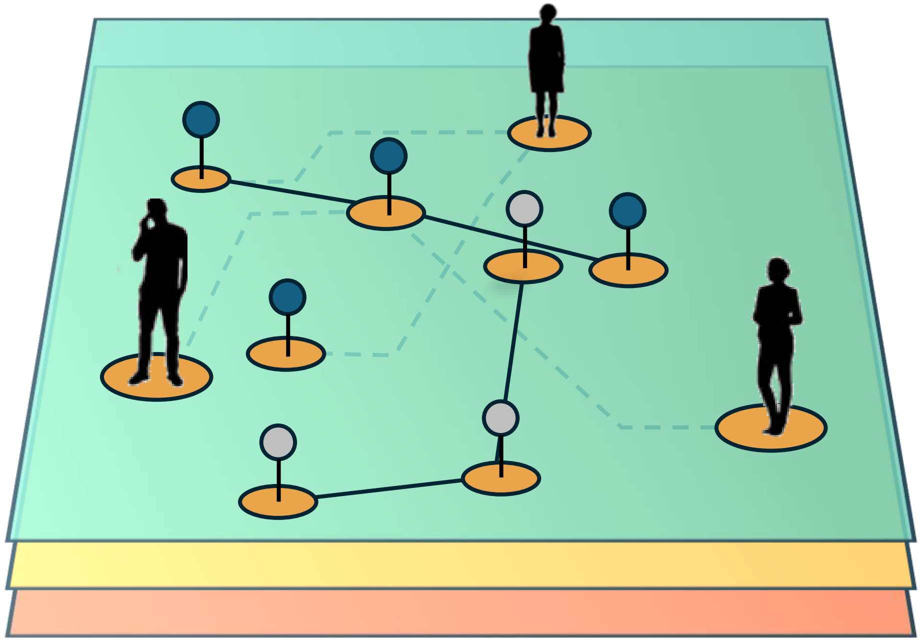



VÄLJ VY
Overview
Science City
Limitless
VÄLJ DATAKÄLLA
KARTVISUALISERING
E4
E4
SCEN
Kista
Layers
Birds
Urban ICT arena v
Kista Limitless v2
karta optimerad pl
Stormwater mana
2023-06-27 16:04:01
TIDSLINJEN
2010
2020
2030
BOKMÄRKEN
Bookmark 0
Bookmark 1
Bookmark 2
Bookmark 3

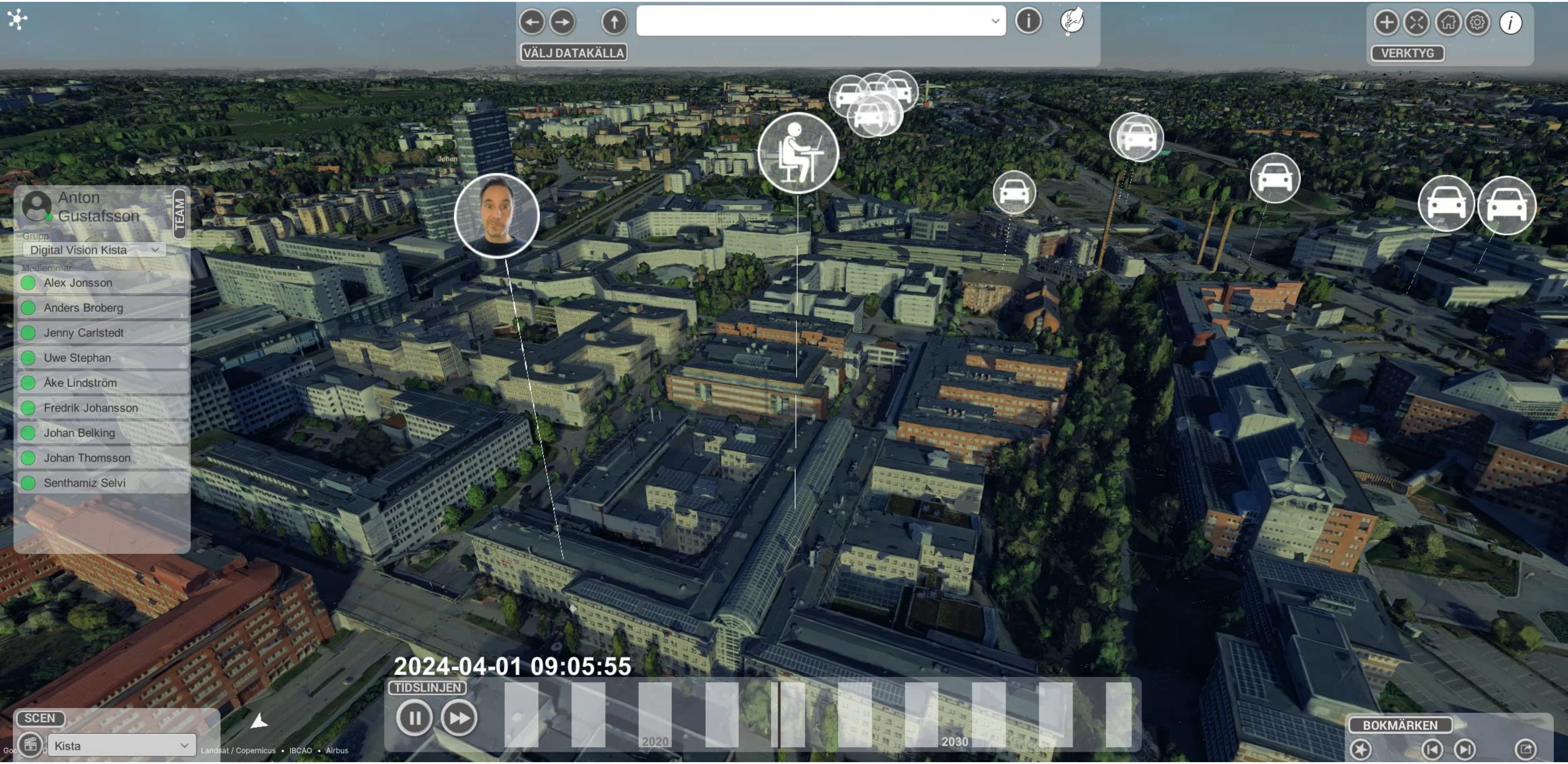
LEVEL 3

LEVEL 2

LEVEL 1



Connecting data

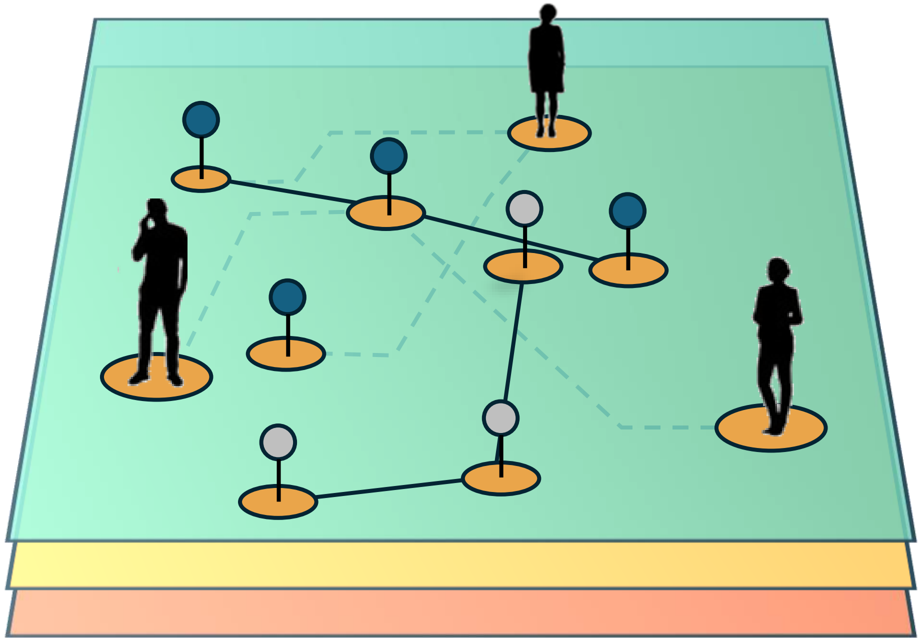


VÄLJ DATAKÄLLA
VERKTYG
Anton Gustafsson
TEAM
Grupp
Digital Vision Kista
Medlemmar
Alex Jonsson
Anders Broberg
Jenny Carlstedt
Uwe Stephan
Åke Lindström
Fredrik Johansson
Johan Belking
Johan Thomsson
Senthamiz Selvi
2024-04-01 09:05:55
TIDSLINJEN
2020
2030
SCEN
Kista
Landsat / Copernicus • IBCAO • Airbus
BOKMÄRKEN

LEVEL 3

LEVEL 2

LEVEL 1



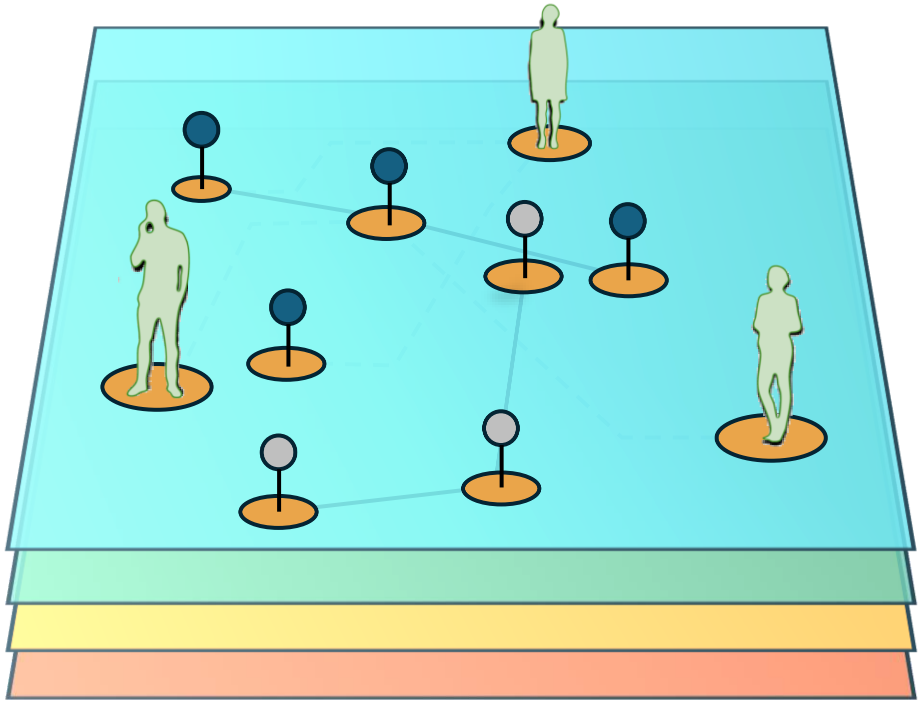
Connecting data

LEVEL 4

LEVEL 3

LEVEL 2

LEVEL 1

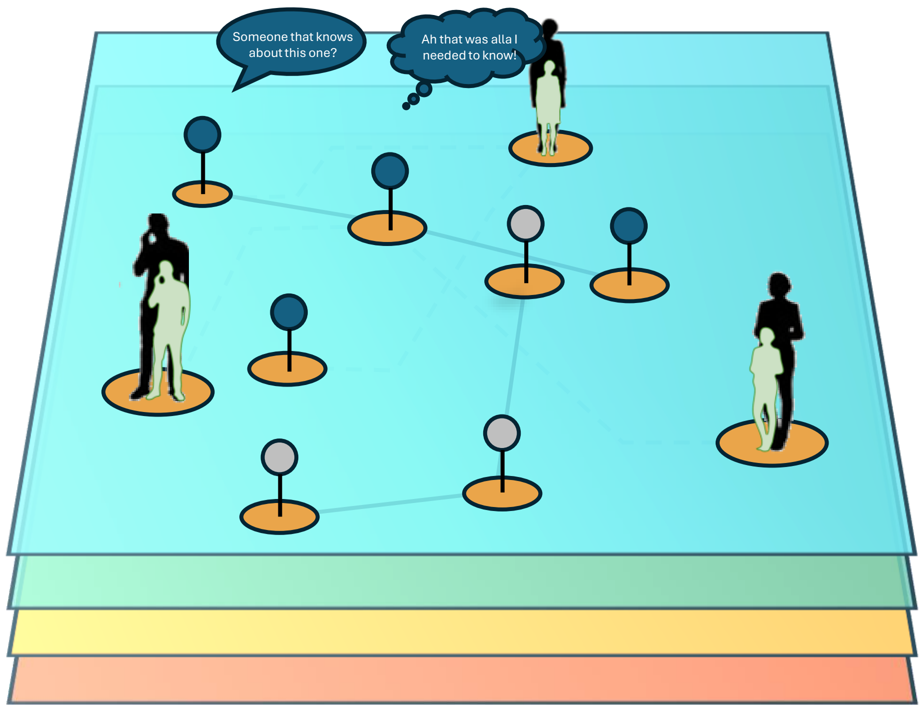


LEVEL 4

LEVEL 3

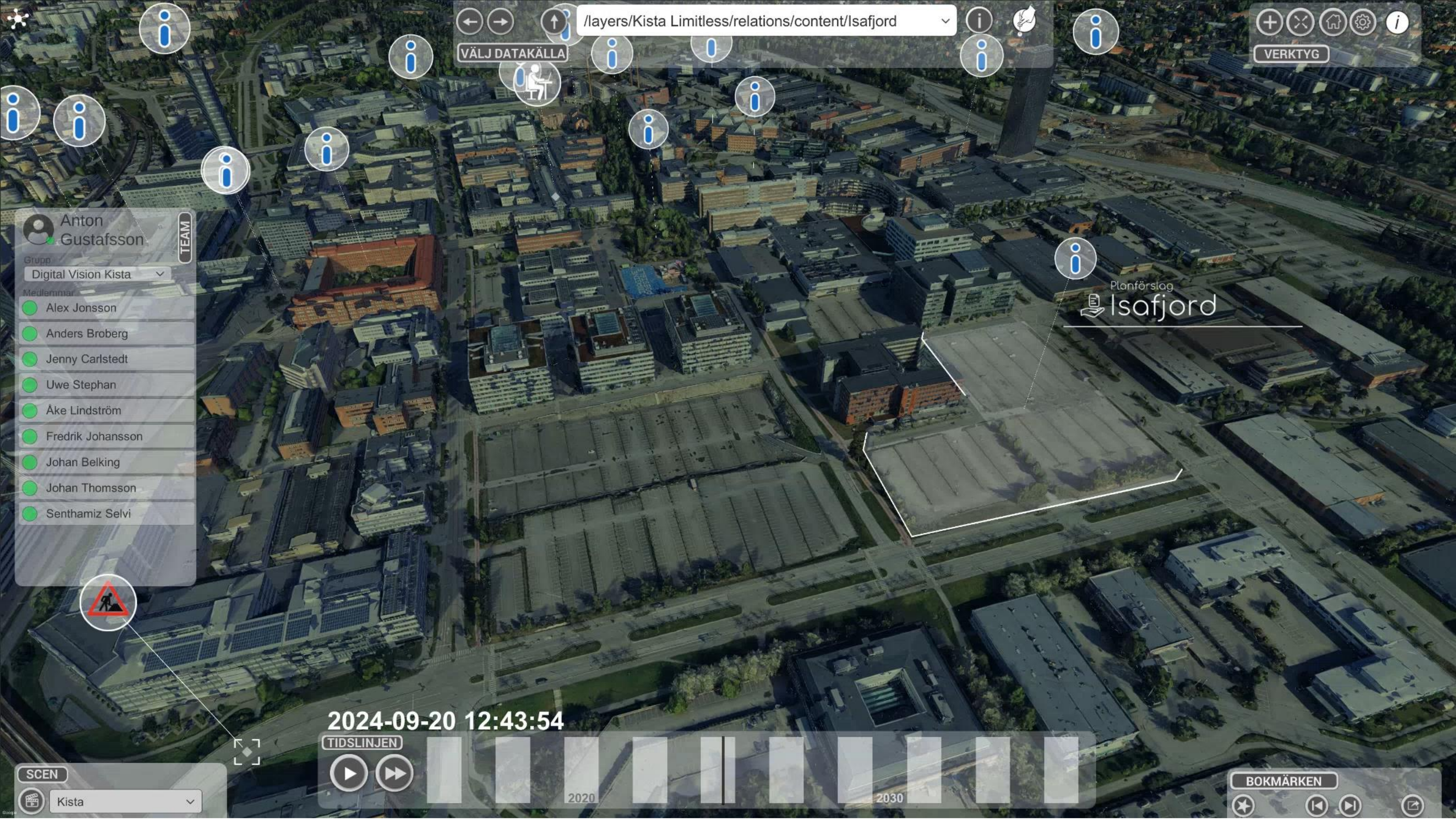
LEVEL 2

LEVEL 1



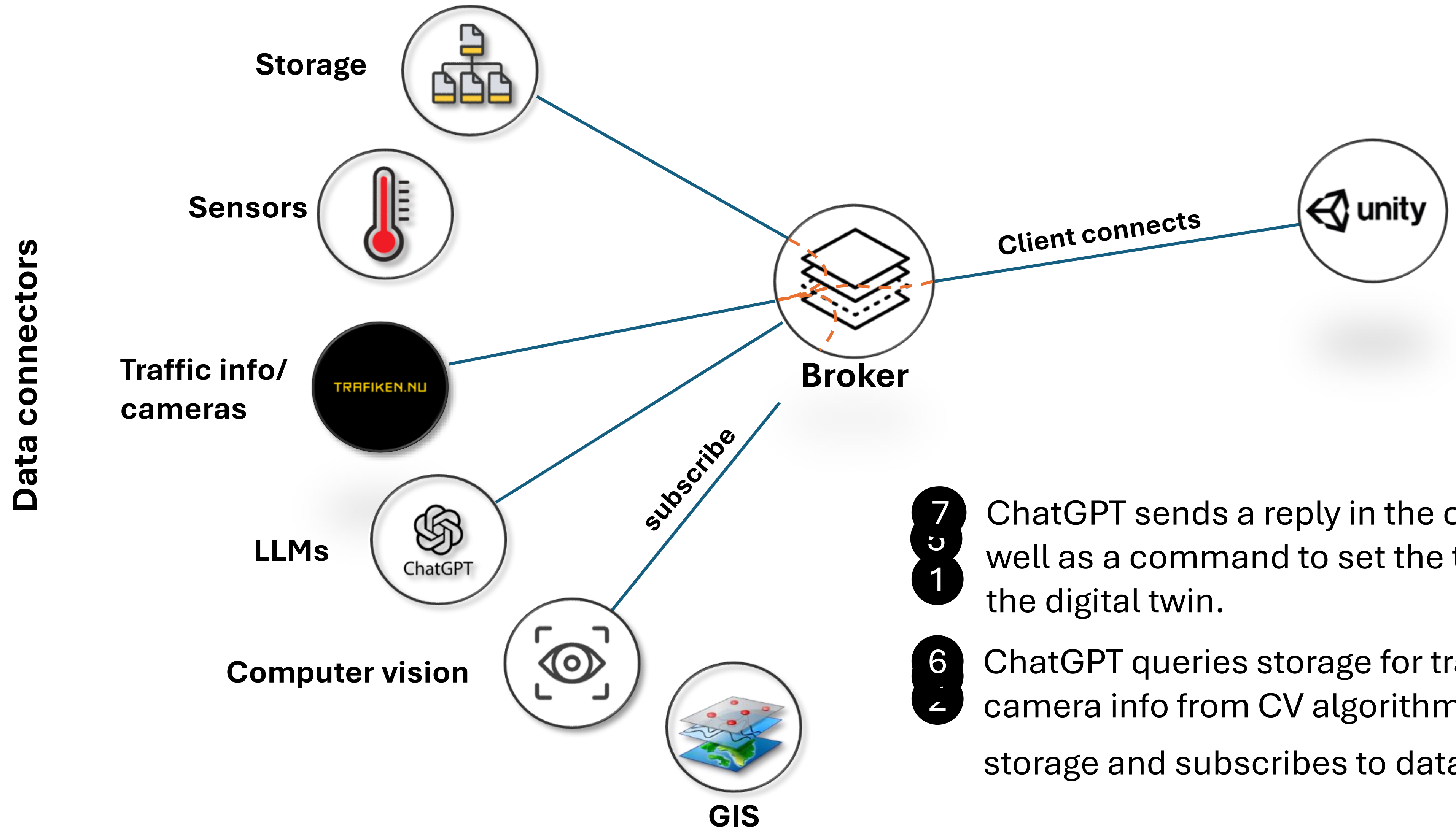
Interacting around data

Chattfunktioner


/layers/Kista Limitless/relations/content/Isafjord
VÄLJ DATAKÄLLA
VERKTYG
Anton Gustafsson
TEAM
Grupp
Digital Vision Kista
Medlemmar
Alex Jonsson
Anders Broberg
Jenny Carlstedt
Uwe Stephan
Åke Lindström
Fredrik Johansson
Johan Belking
Johan Thomsson
Senthamiz Selvi
Planförslag
Isafjord
2024-09-20 12:43:54
TIDSLINJEN
2020
2030
SCEN
Kista
BOKMÄRKEN


VÄLJ DATAKÄLLA
VERKTYG
TEAM
2025-09-22 14:35:35
TIDSLINJEN
2020
2030
SCEN
Default
BOKMÄRKEN
A, U.S. Navy, NGA, GEBCO • IBCAO • U.S. Geological Survey

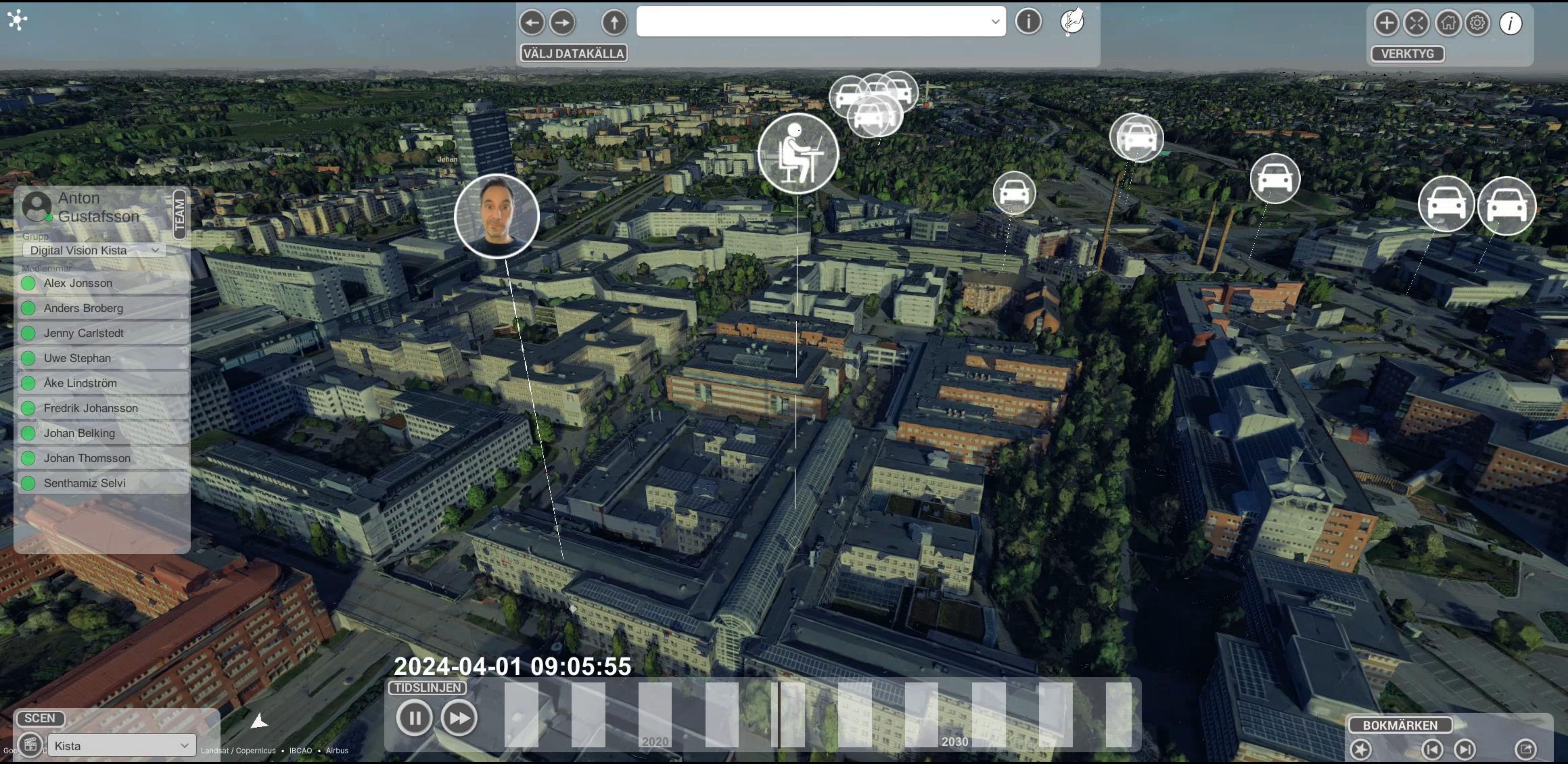
Middle layer to connect services and datasources

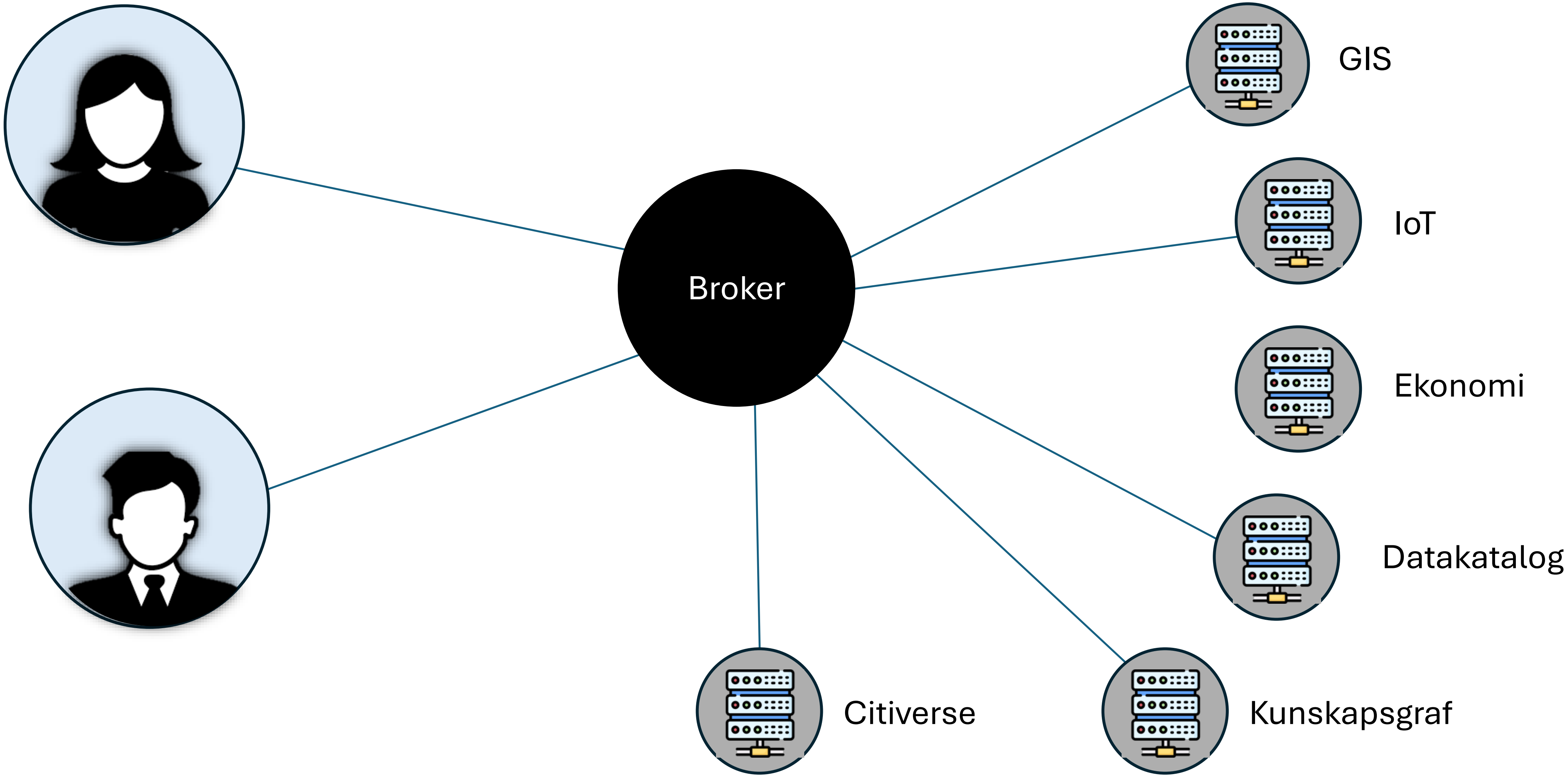


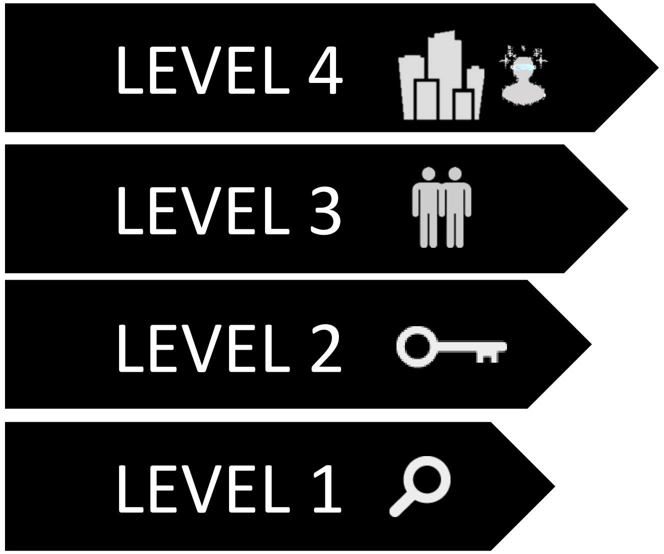
7 ChatGPT sends a reply in the chat. As well as a command to set the time in the digital twin.

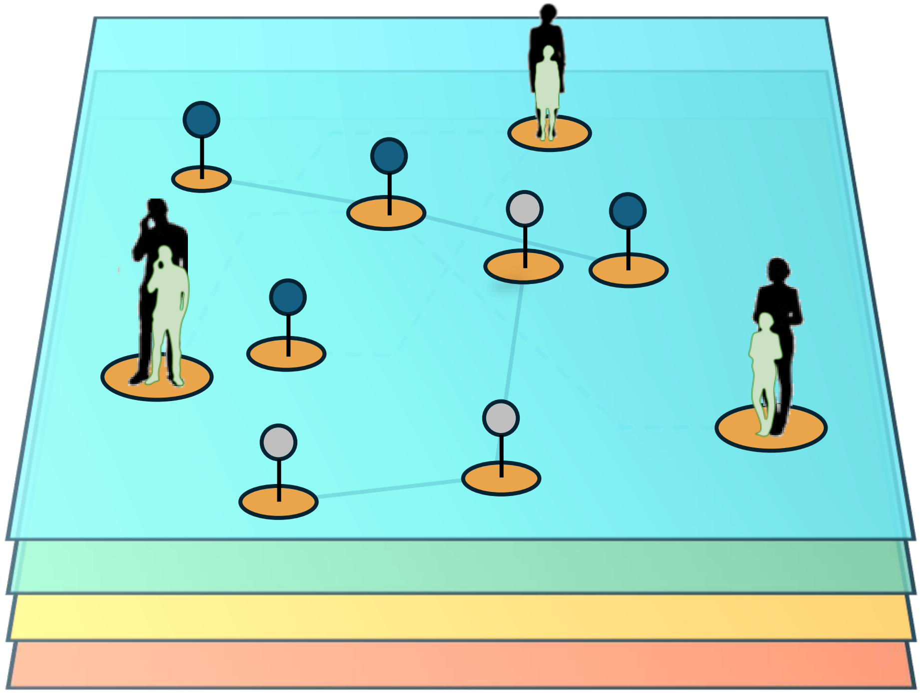
6 ChatGPT queries storage for traffic camera info from CV algorithm.

storage and subscribes to datastream.


VÄLJ DATAKÄLLA
VERKTYG
Anton
Gustafsson
TEAM
Grupp
Digital Vision Kista
Medlemmar
Alex Jonsson
Anders Broberg
Jenny Carlstedt
Uwe Stephan
Åke Lindström
Fredrik Johansson
Johan Belking
Johan Thomsson
Senthamiz Selvi
2024-04-01 09:05:55
TIDSLINJEN
2020
2030
SCEN
Kista
Landsat / Copernicus • IBCAO • Airbus
BOKMÄRKEN


GIS
IoT
Broker
Ekonomi
Datakatalog
Citiverse
Kunskapsgraf





Interacting around data

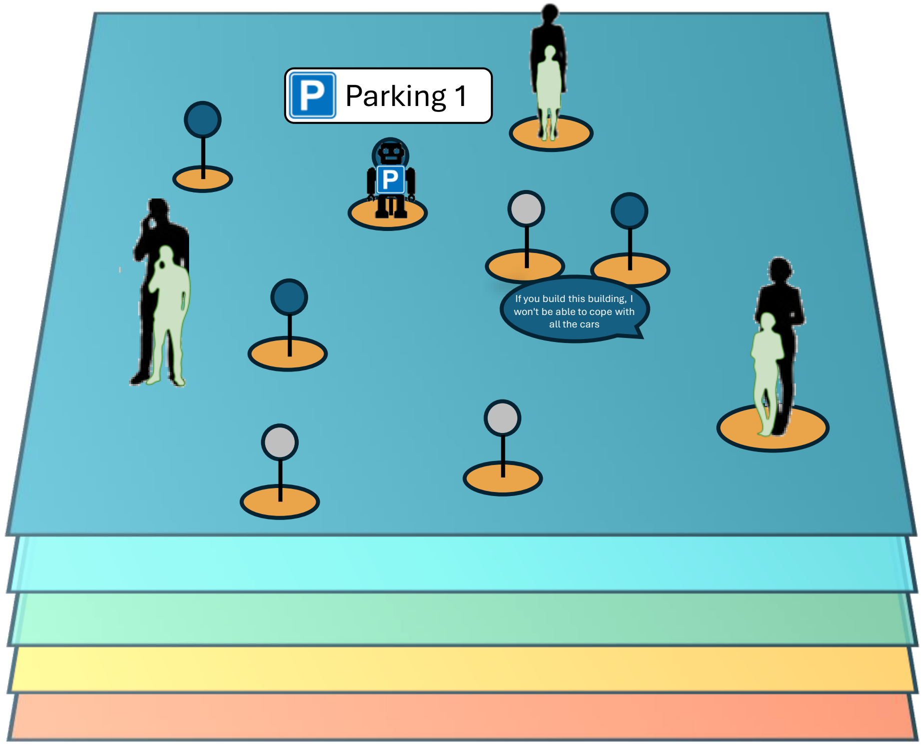
LEVEL 5

LEVEL 4

LEVEL 3

LEVEL 2

LEVEL 1

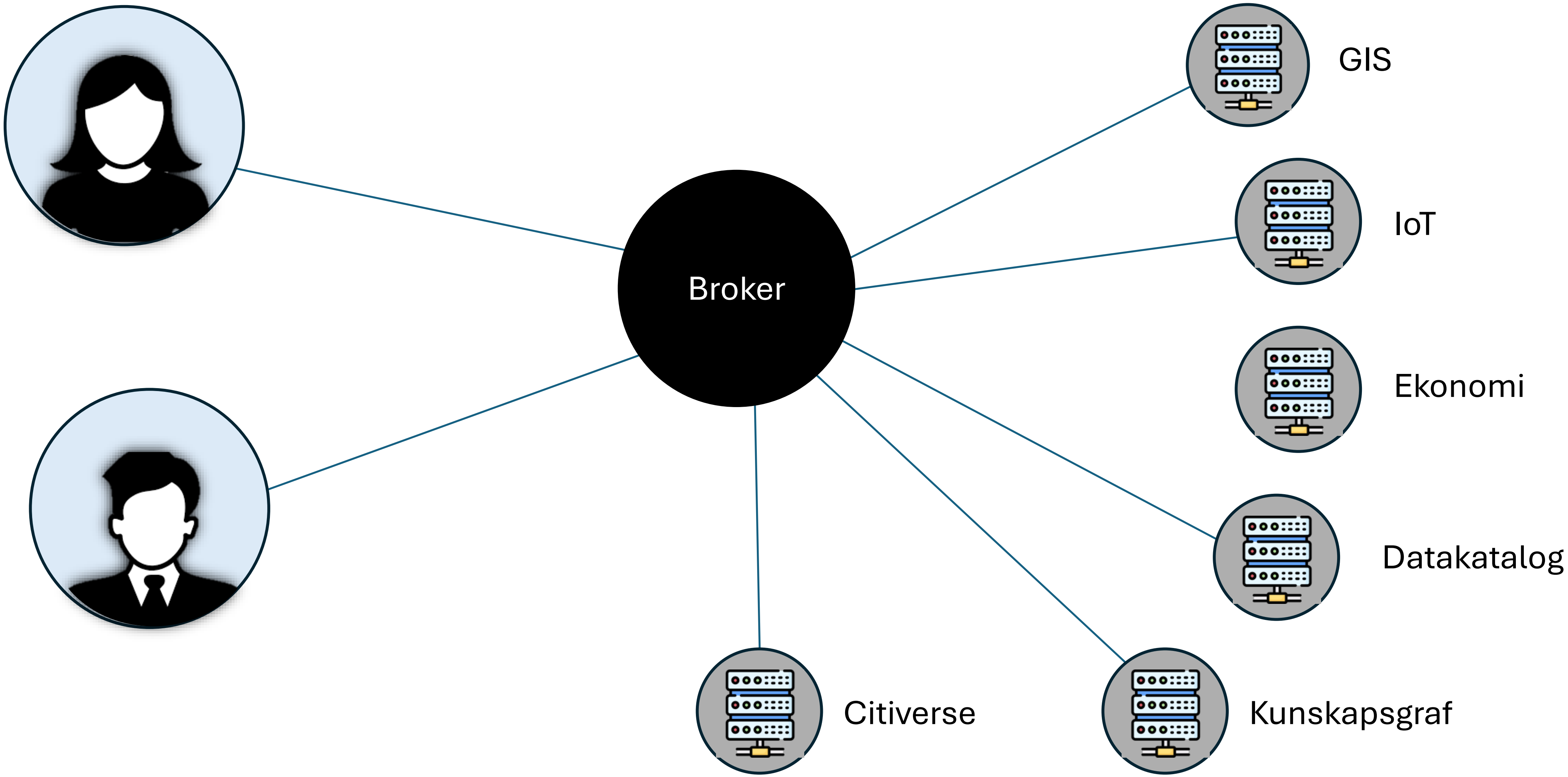


Om data kunde tala!

Från Citiverse till Cyberverse

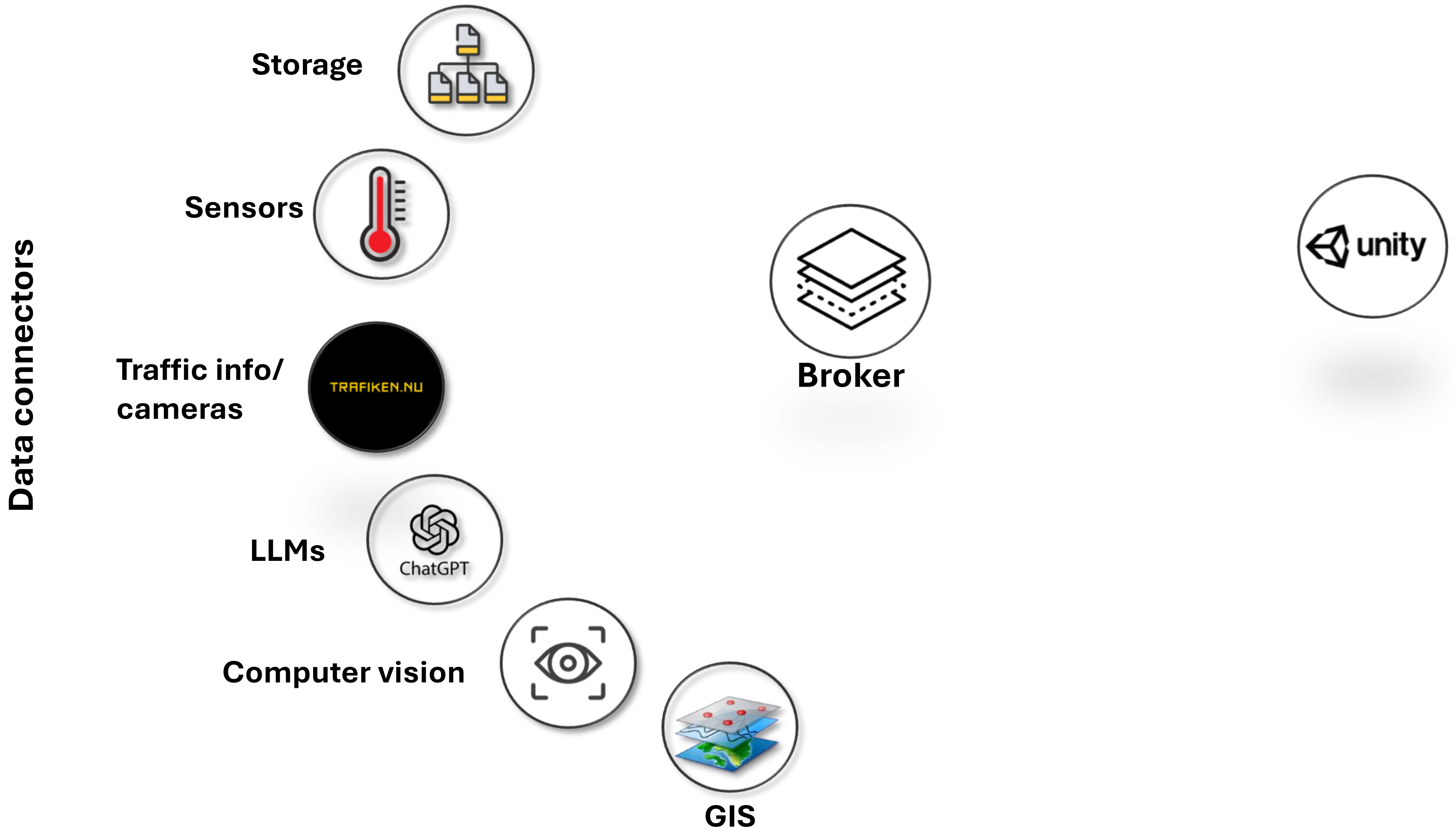

How would it affect you if we turn this park into a parking lot?
It won't be able to cool down that part during hot summer days.
We'll lose habitat and food sources.
We can't provide oxygen or shelter if we're gone.
Great! More space for cars.
Could improve traffic flow.
CITY PARK
CITY ANIMALS
CITY TREES
CITY ROADS

Citiverse

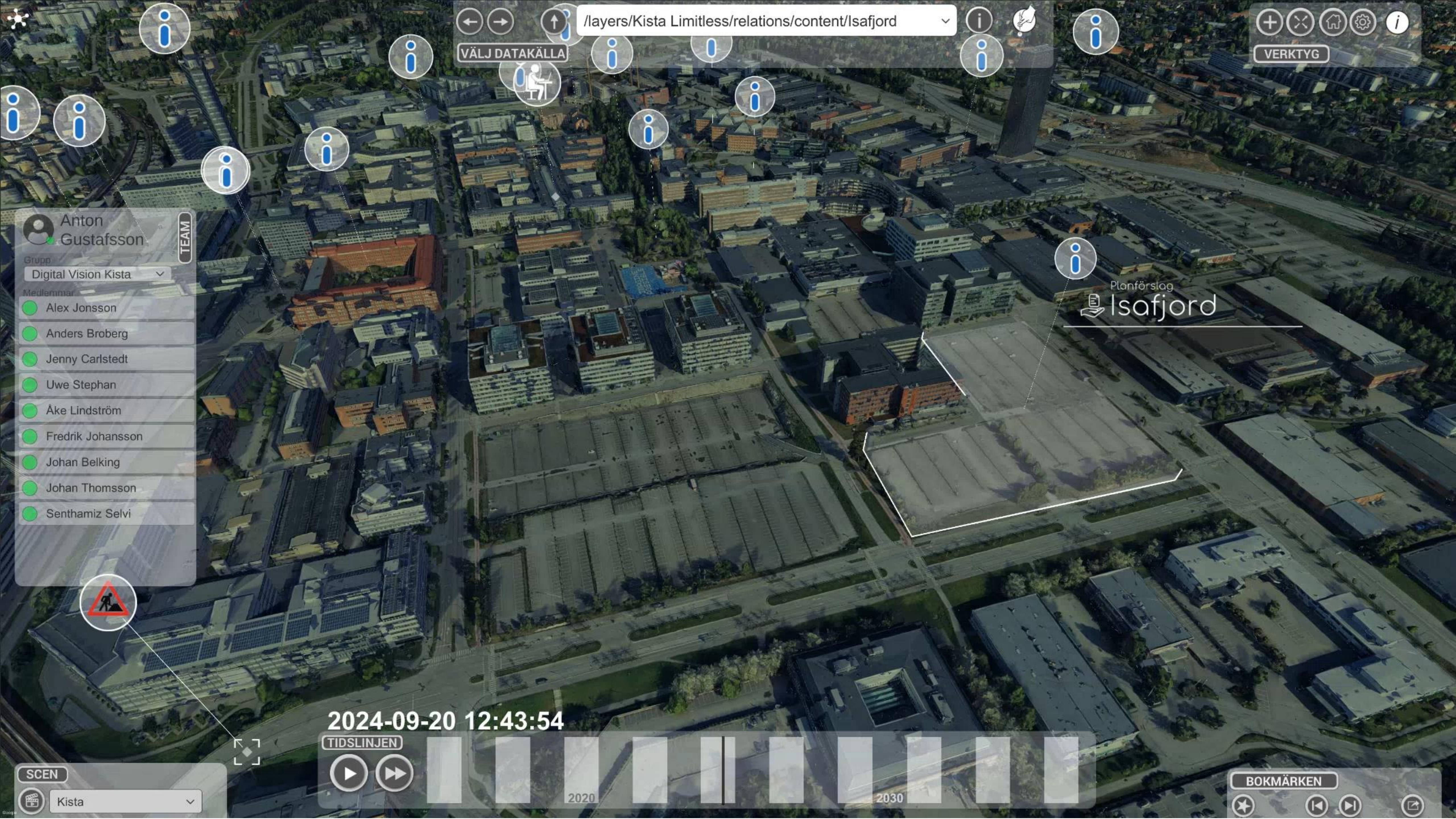


Broker
GIS
IoT
Ekonomi
Datakatalog
Citiverse
Kunskapsgraf

Middle layer to connect services and datasources



Chattfunktioner



VÄLJ DATAKÄLLA
/layers/Kista Limitless/relations/content/Isafjord
VERKTYG
Anton Gustafsson
TEAM
Grupp
Digital Vision Kista
Medlemmar
Alex Jonsson
Anders Broberg
Jenny Carlstedt
Uwe Stephan
Åke Lindström
Fredrik Johansson
Johan Belking
Johan Thomsson
Senthamiz Selvi
Planförslag
Isafjord
2024-09-20 12:43:54
TIDSLINJEN
2020
2030
SCEN
Kista
BOKMÄRKEN


VÄLJ DATAKÄLLA
VERKTYG
TEAM
2025-09-22 14:35:35
TIDSLINJEN
2020
2030
SCEN
Default
BOKMÄRKEN
U.S. Navy, NGA, GEBCO • IBCAO • U.S. Geological Survey

TODO

Eva Stattin (Omställningslab)

Feedback att vi måste prata om vilka problem vi angriper.

Shift 3 stuprören

Intraservice (Mathilda Persson)

Matilda Persson <matilda.persson@intraservice.goteborg.se> är stadens projektledare för SVADA (omställningslabbet)

Någon anna ska ha anvar för lagret.

Lars Samuelsson <lars.samuelsson@miljo.goteborg.se>

Simuleringar
Sensor data
Modeller
Interaktiv visualisering

Video
CAD modeller
Sensor data
BIM modeller
Dialog / Annoteringar
Point clouds
Digitala tvilling
GIS 2D data
Simulation modeller
3D kartor

Synergier

Visioner / behovsinventering

Roadmaps

SUMO integration

?

Historisk sematiskdata

?

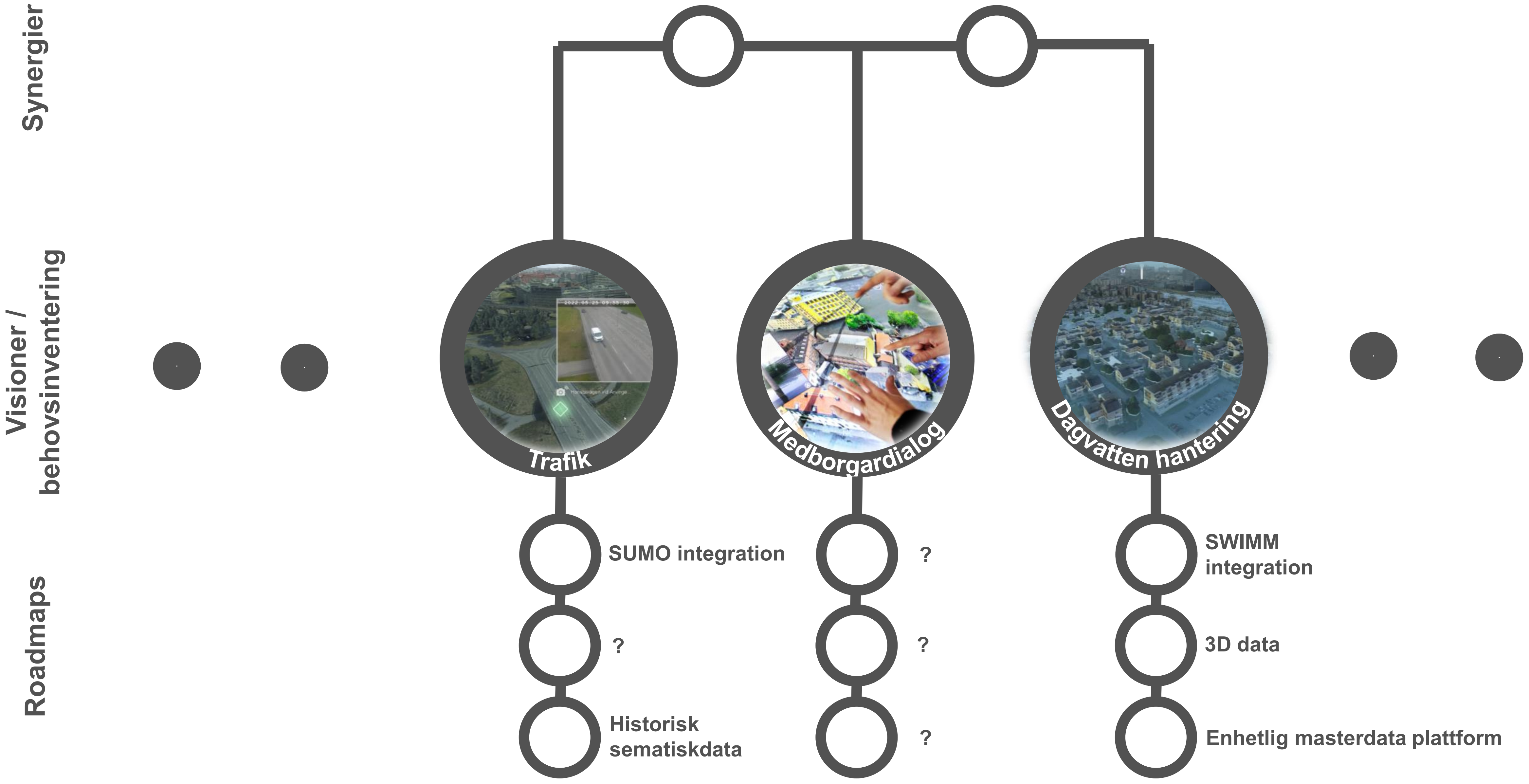
?

?

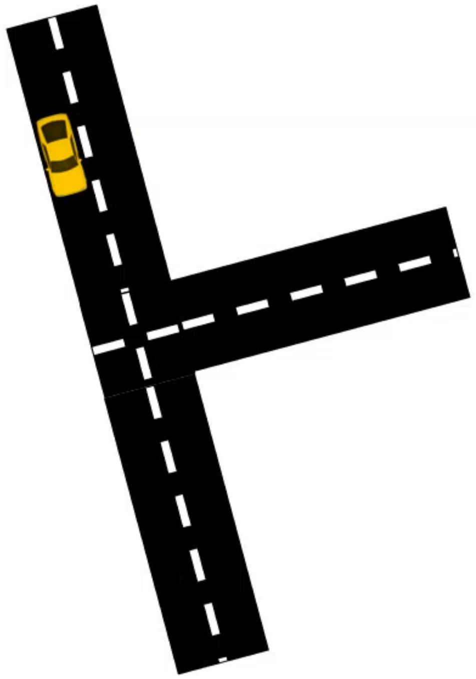
SWIMM integration

3D data

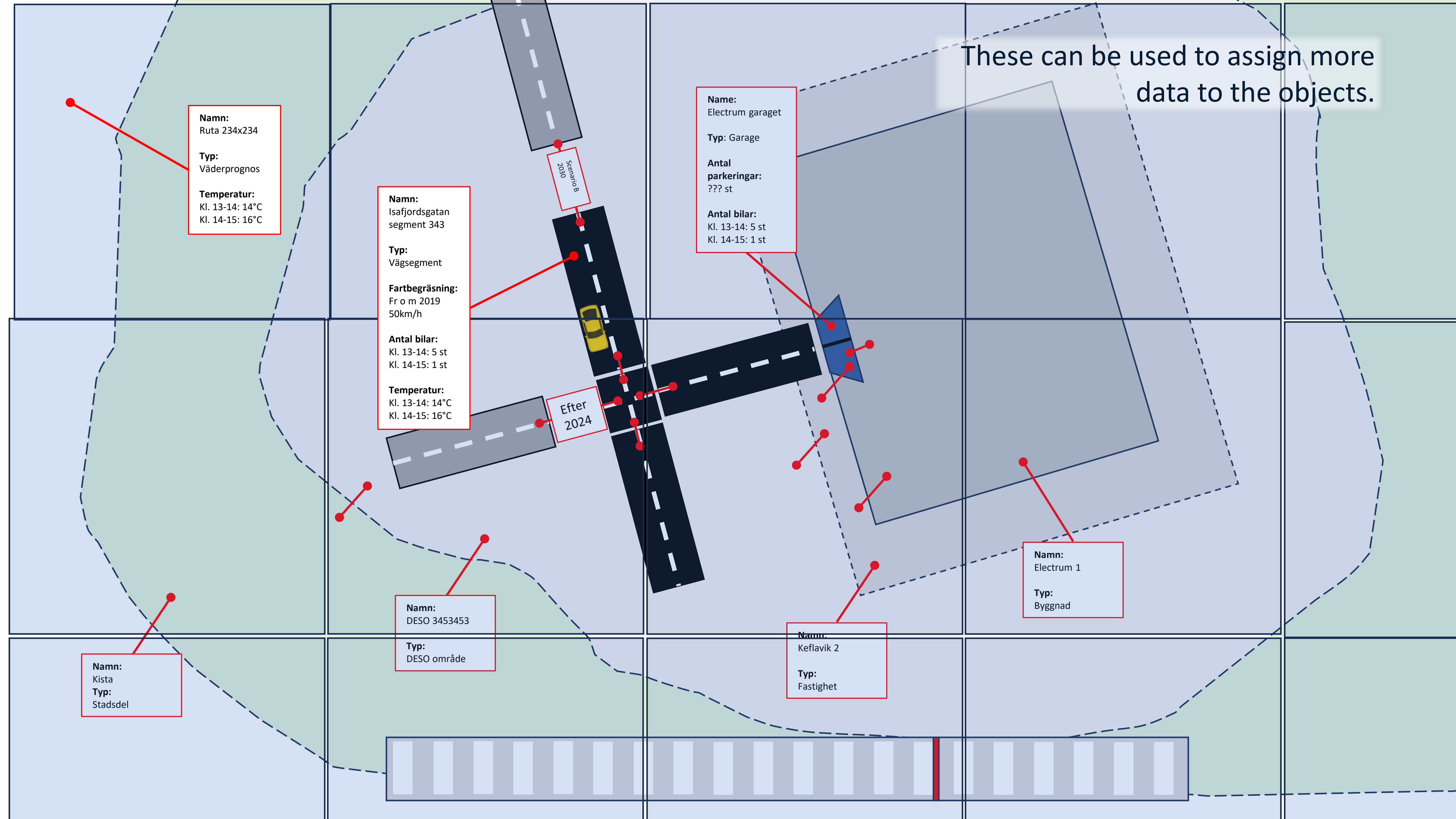
Enhetlig masterdata plattform



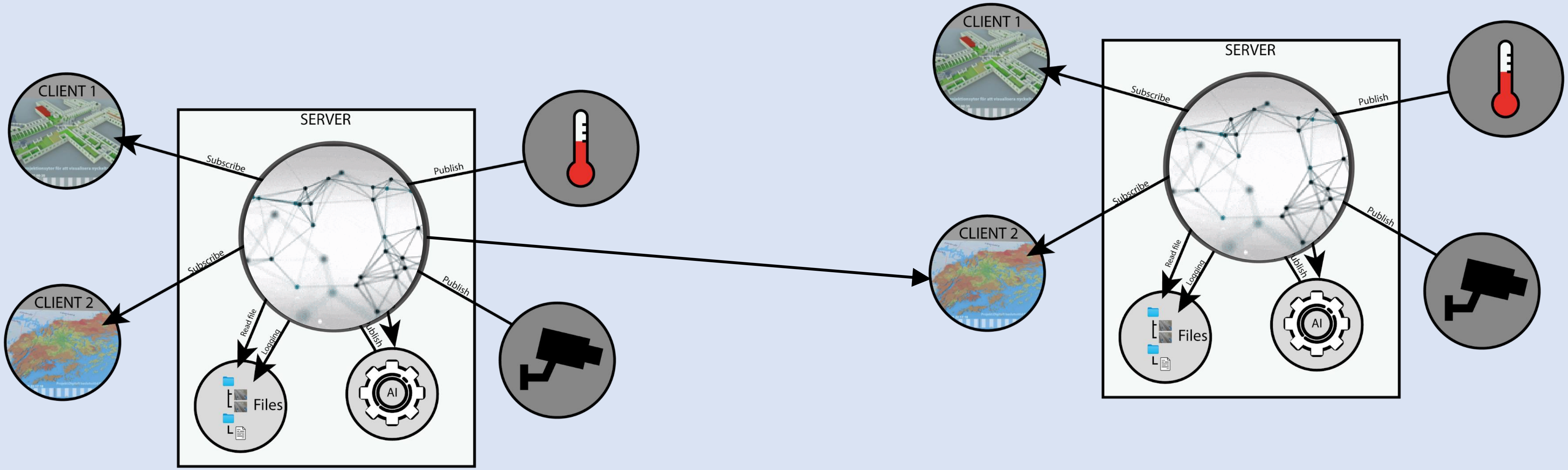
Synergier
Visioner / behovsinventering
Roadmaps
Trafik
Medborgardialog
Dagvatten hantering
SUMO integration
?
Historisk sematiskdata
?
?
?
SWIMM integration
3D data
Enhetlig masterdata plattform



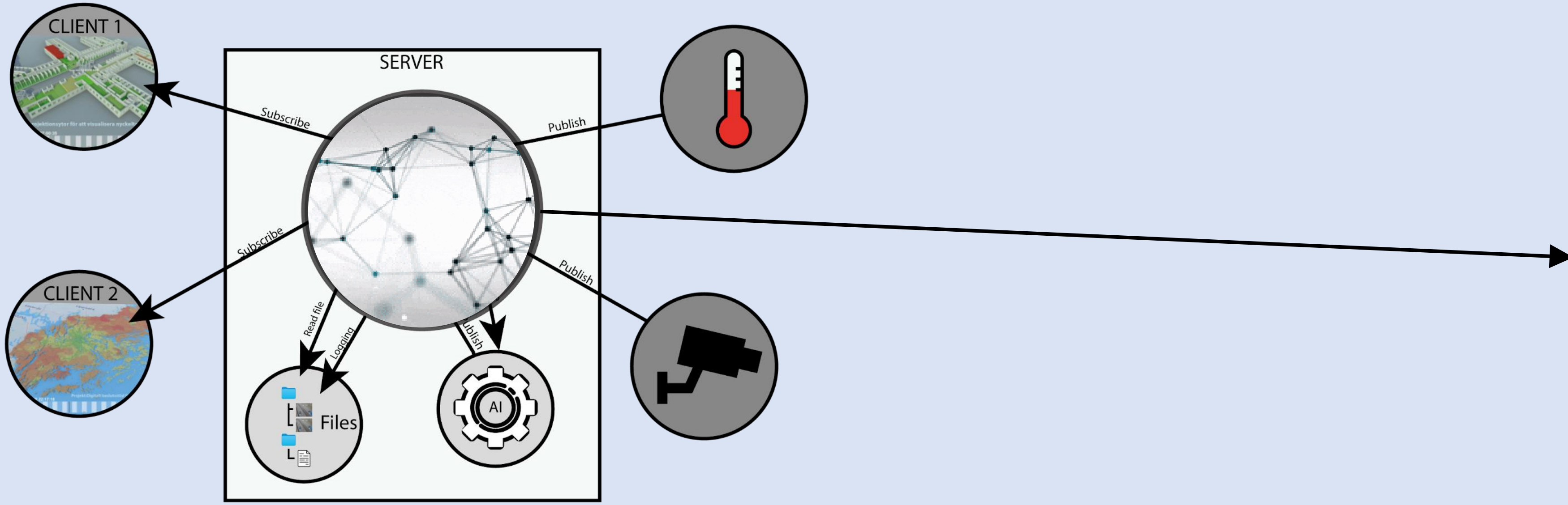
The world needs to be divided into pieces

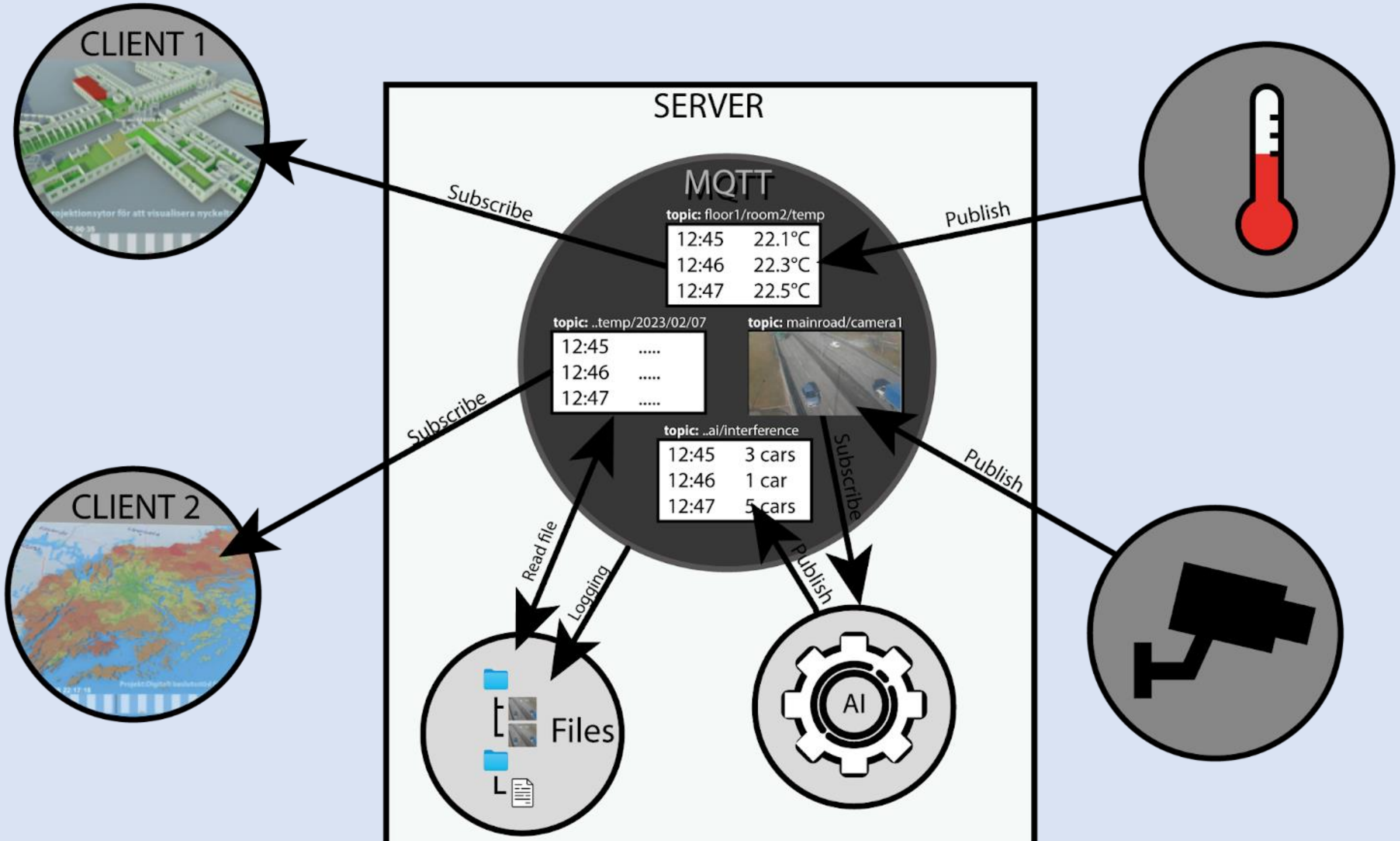

These can be used to assign more data to the objects.
Namn: Ruta 234x234
Typ: Väderprognos
Temperatur: Kl. 13-14: 14°C Kl. 14-15: 16°C
Namn: Isafjordsgatan segment 343
Typ: Vägsegment
Fartbegräsning: Fr o m 2019 50km/h
Antal bilar: Kl. 13-14: 5 st Kl. 14-15: 1 st
Temperatur: Kl. 13-14: 14°C Kl. 14-15: 16°C
Scenario B 2030
Efter 2024
Name: Electrum garaget
Typ: Garage
Antal parkeringar: ??? st
Antal bilar: Kl. 13-14: 5 st Kl. 14-15: 1 st
Namn: Electrum 1
Typ: Byggnad
Namn: Keflavik 2
Typ: Fastighet
Namn: DESO 3453453
Typ: DESO område
Namn: Kista
Typ: Stadsdel

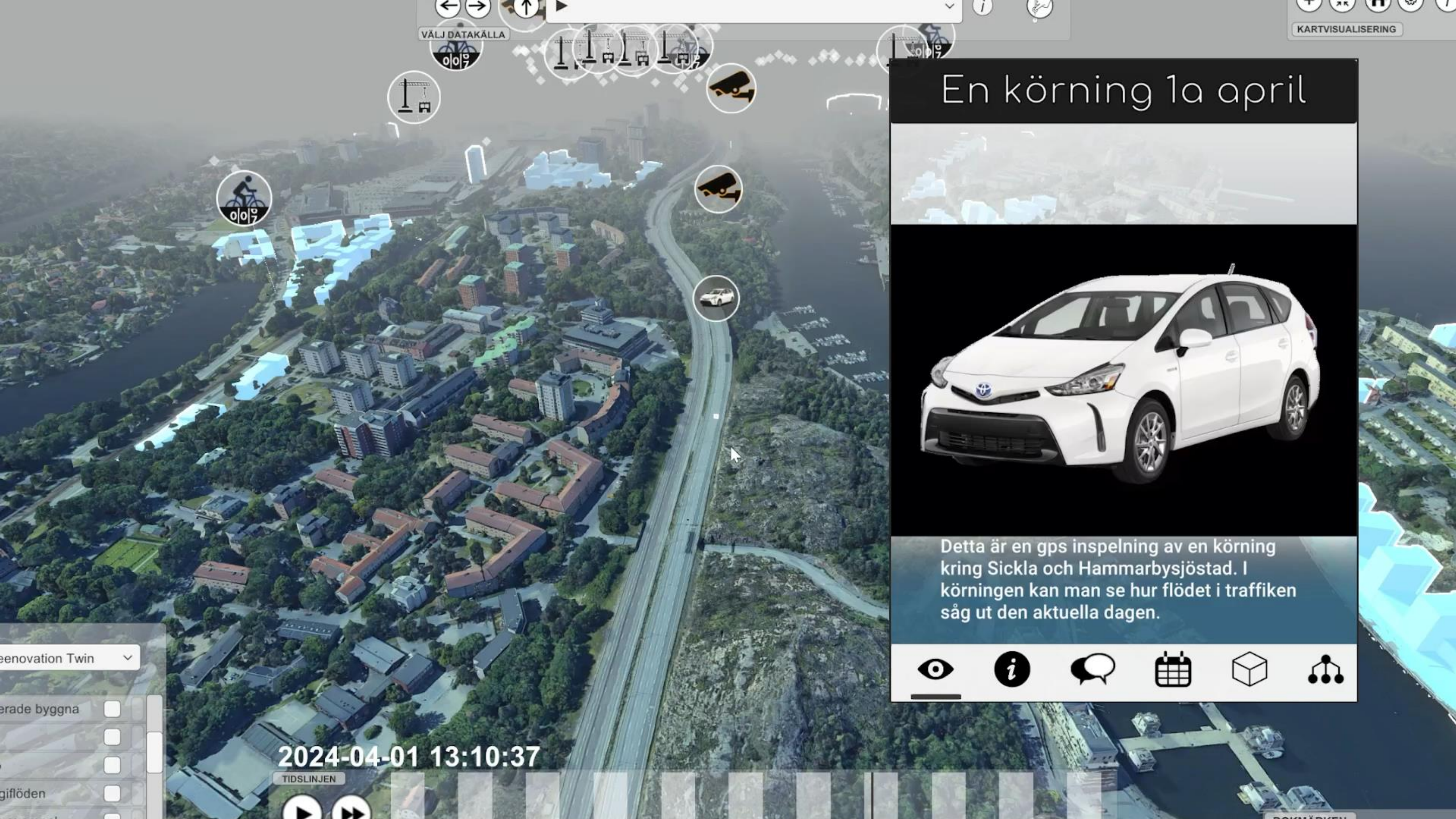
Distributed 5D Realtime Knowledge graph



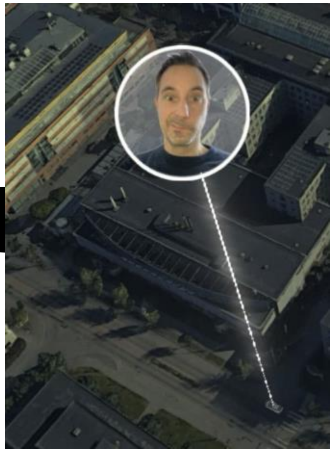
Distributed 5D Realtime Knowledge graph

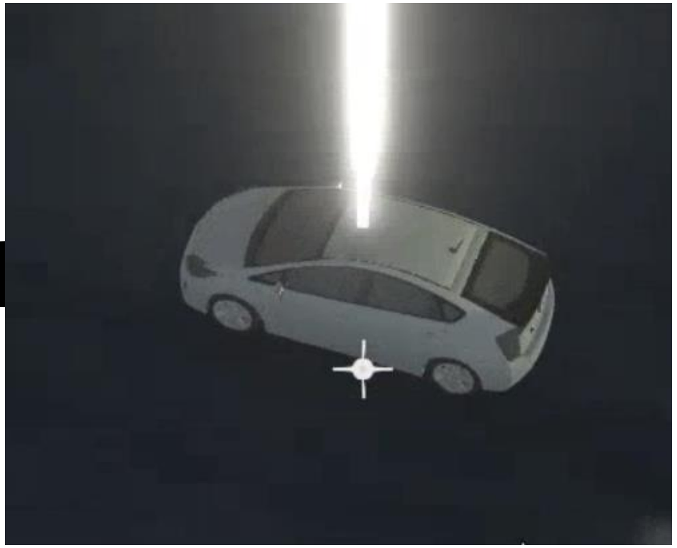


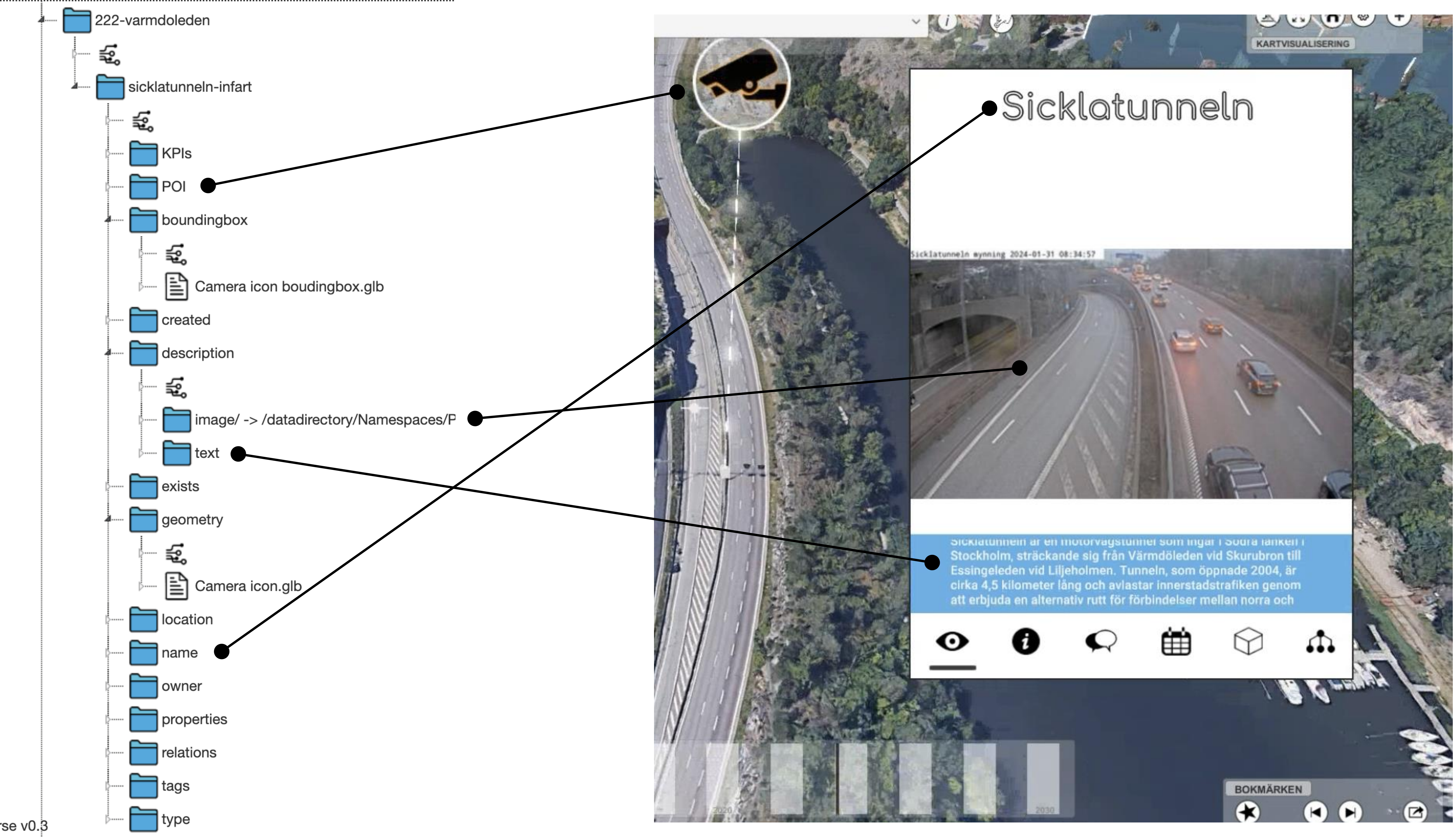

CLIENT 1
CLIENT 2
SERVER
MQTT
topic: floor1/room2/temp
12:45 22.1°C
12:46 22.3°C
12:47 22.5°C
topic: ..temp/2023/02/07
12:45 .....
12:46 .....
12:47 .....
topic: mainroad/camera1
topic: ..ai/interference
12:45 3 cars
12:46 1 car
12:47 5 cars
Subscribe
Subscribe
Publish
Publish
Subscribe
Publish
Read file
Logging
Files
AI

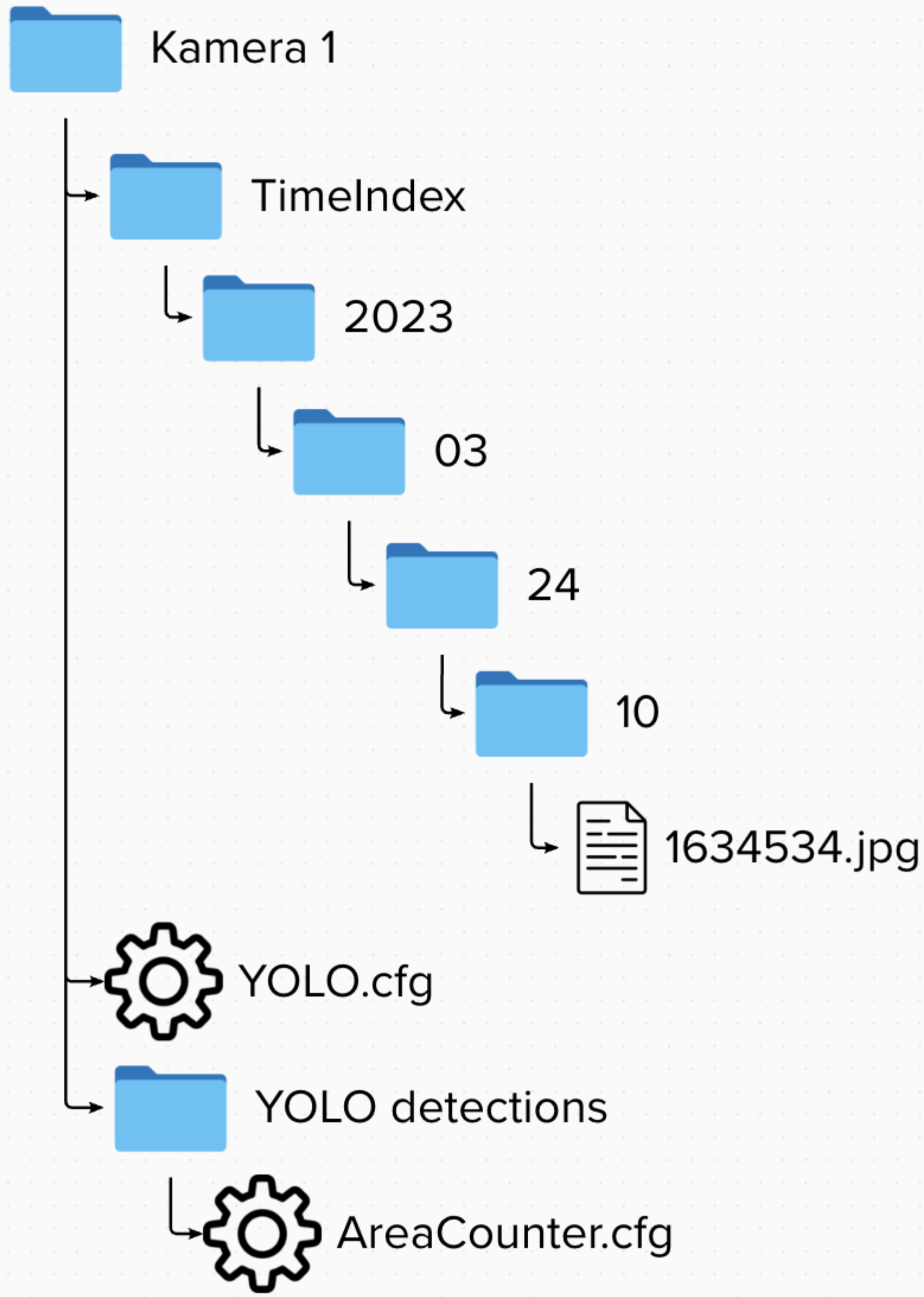

VÄLJ DATAKÄLLA
KARTVISUALISERING
En körning 1a april
Detta är en gps inspelning av en körning kring Sickla och Hammarbysjöstad. I körningen kan man se hur flödet i traffiken såg ut den aktuella dagen.
eenovation Twin
erade byggna
giflöden
2024-04-01 13:10:37
TIDSLINJEN

- antons_car
  - KPIs
  - POI
    - Anton.png
  - boundingbox
  - created
  - description
    - image
    - text
      - **default:** Antons bil, som han anv
      - last_msg.txt
  - exists
  - geometry
    - Prius.glb
  - location
    - **EPSG:4326**
      - **longitude:** 17.9484684
      - **latitude:** 59.4042892
      - **altitude:** 16.9000000014122
    - **ECEF**
    - **Rotation**
    - **Scale**
    - TimeIndex
    - last_msg.txt
  - name

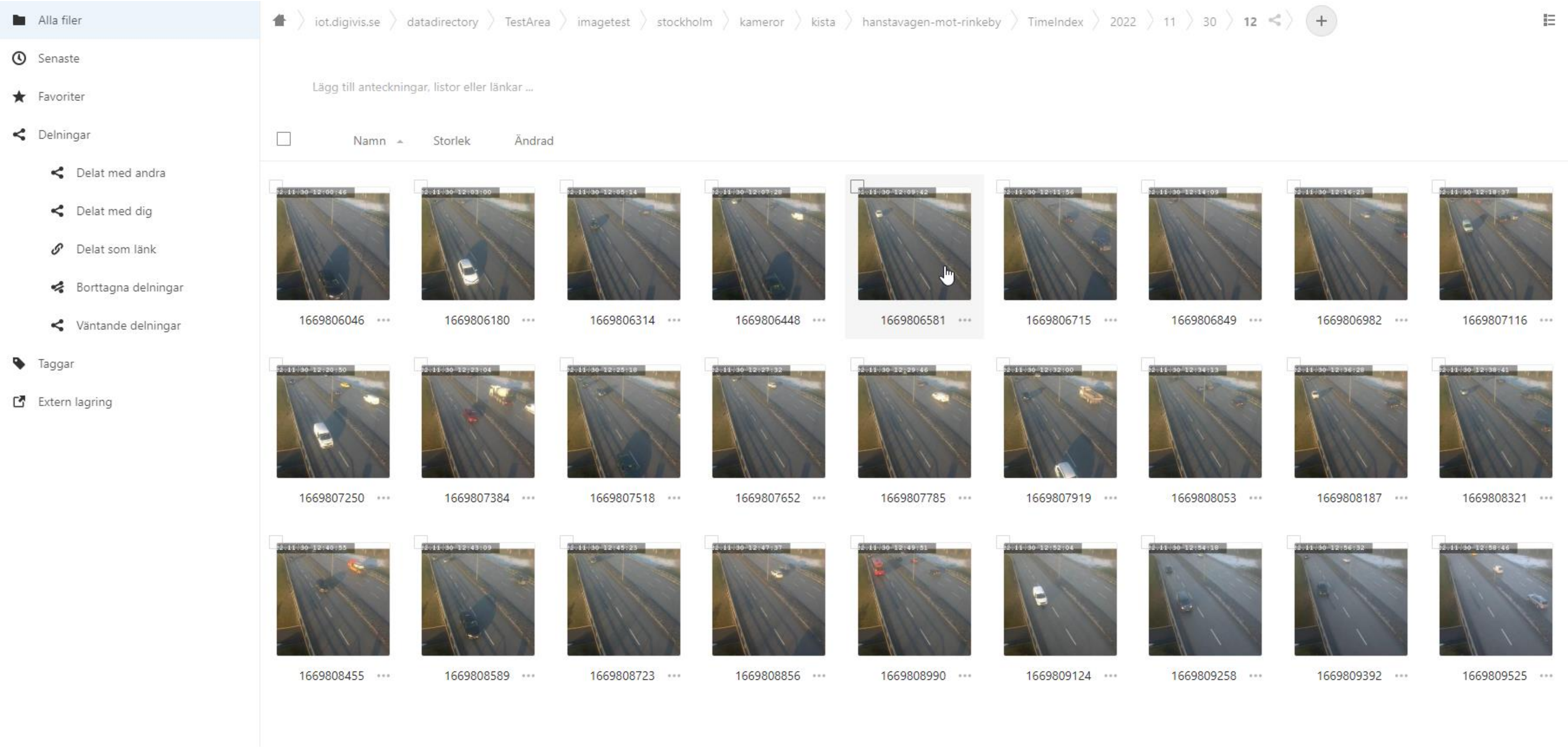





222-varmdoleden
sicklatunneln-infart
KPIs
POI
boundingbox
Camera icon boudingbox.glb
created
description
image/ -> /datadirectory/Namespaces/P
text
exists
geometry
Camera icon.glb
location
name
owner
properties
relations
tags
type
rse v0.3
KARTVISUALISERING
Sicklatunneln
Sicklatunneln mynning 2024-01-31 08:34:57
Stockholm, sträckande sig från Värmdöleden vid Skurubron till
Essingeleden vid Liljeholmen. Tunneln, som öppnade 2004, är
cirka 4,5 kilometer lång och avlastar innerstadstrafiken genom
att erbjuda en alternativ rutt för förbindelser mellan norra och
BOKMÄRKEN


Kamera 1
TimeIndex
2023
03
24
10
1634534.jpg
YOLO.cfg
YOLO detections
AreaCounter.cfg


VÄLJ VY
Overview
Science City
Limitless
VÄLJ DATAKÄLLA
KARTVISUALISERING
2022.05.25 09:55:30
Hanstavägen vid Ärvinge
SCEN
Kista
Layers
Birds
Urban ICT arena v
Kista Limitless v2
karta optimerad pl
Stormwater mana
2022-11-30 12:47:23
TIDSLINJEN
2010
2020
2030
BOKMÄRKEN


Alla filer
Senaste
Favoriter
Delningar
Delat med andra
Delat med dig
Delat som länk
Borttagna delningar
Väntande delningar
Taggar
Extern lagring
iot.digivis.se › datadirectory › TestArea › imagetest › stockholm › kameror › kista › hanstavagen-mot-rinkeby › TimeIndex › 2022 › 11 › 30 › 12
Lägg till anteckningar, listor eller länkar ...
Namn
Storlek
Ändrad
1669806046
1669806180
1669806314
1669806448
1669806581
1669806715
1669806849
1669806982
1669807116
1669807250
1669807384
1669807518
1669807652
1669807785
1669807919
1669808053
1669808187
1669808321
1669808455
1669808589
1669808723
1669808856
1669808990
1669809124
1669809258
1669809392
1669809525

The request-response model

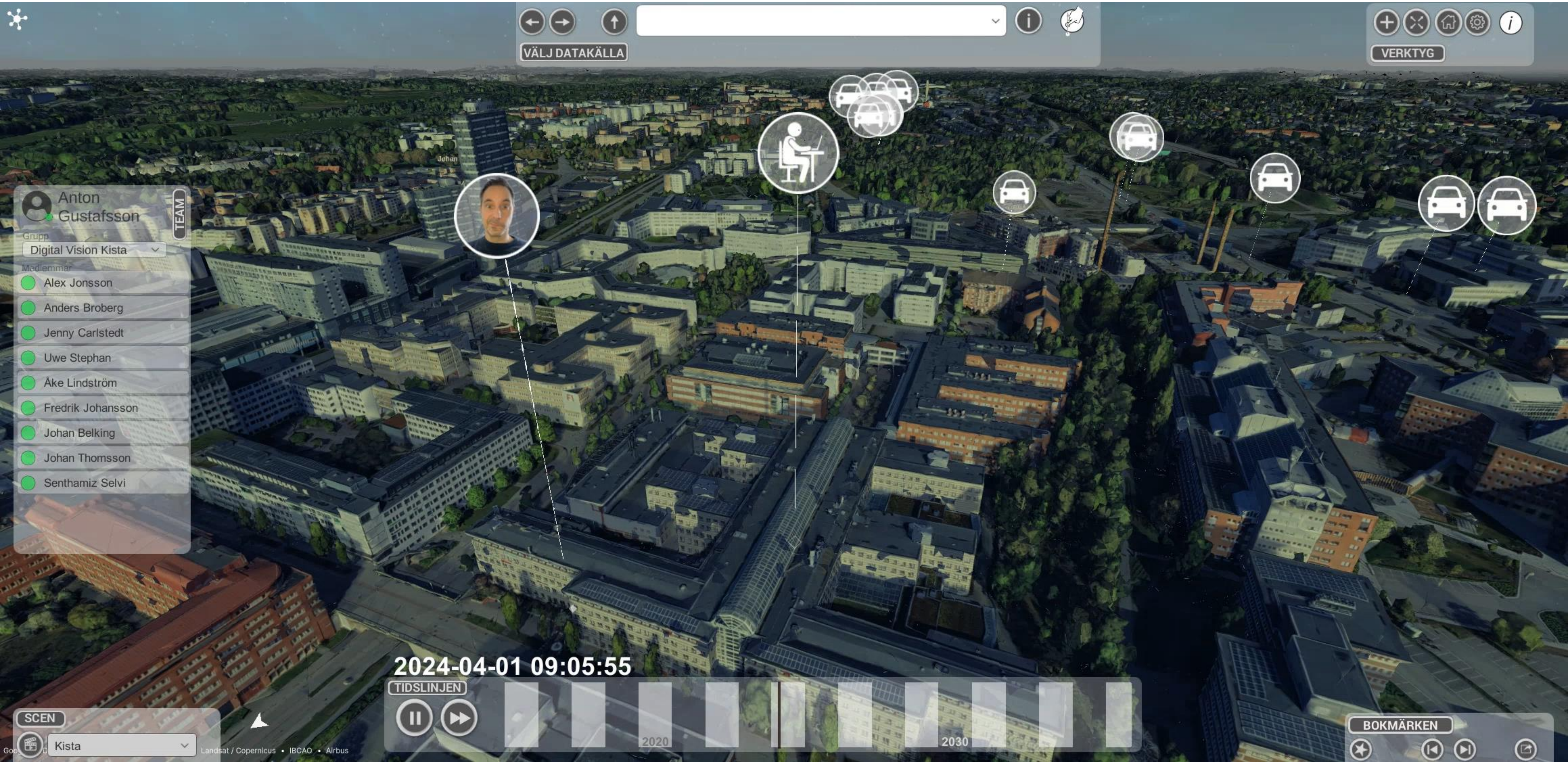
LEVEL 4 — Be able to interact around data

LEVEL 3 — Be able to connect/link data in a city

LEVEL 2 — Be able to access data in a city

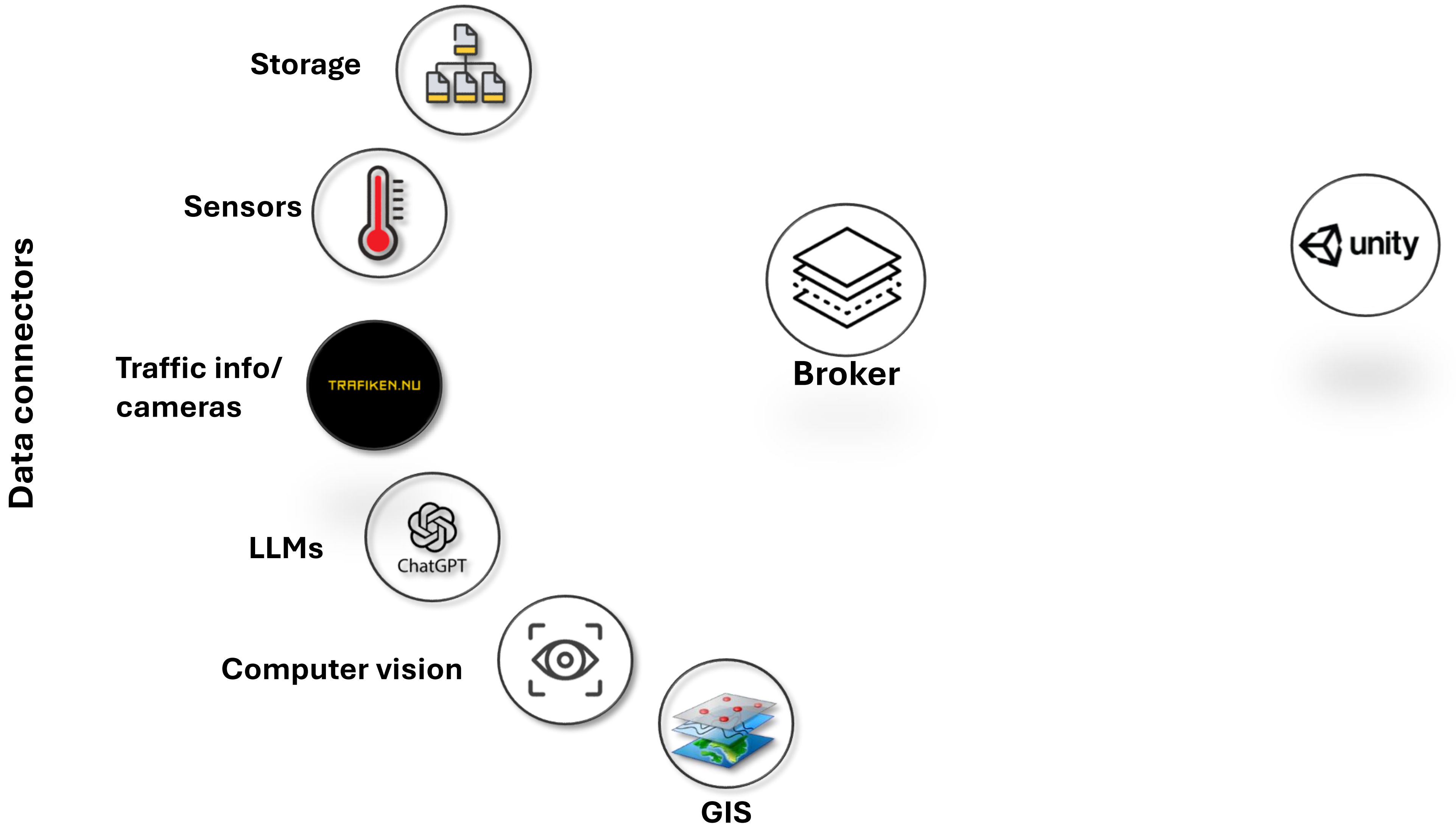
LEVEL 1 — Be able to find data in a city

Citiverse

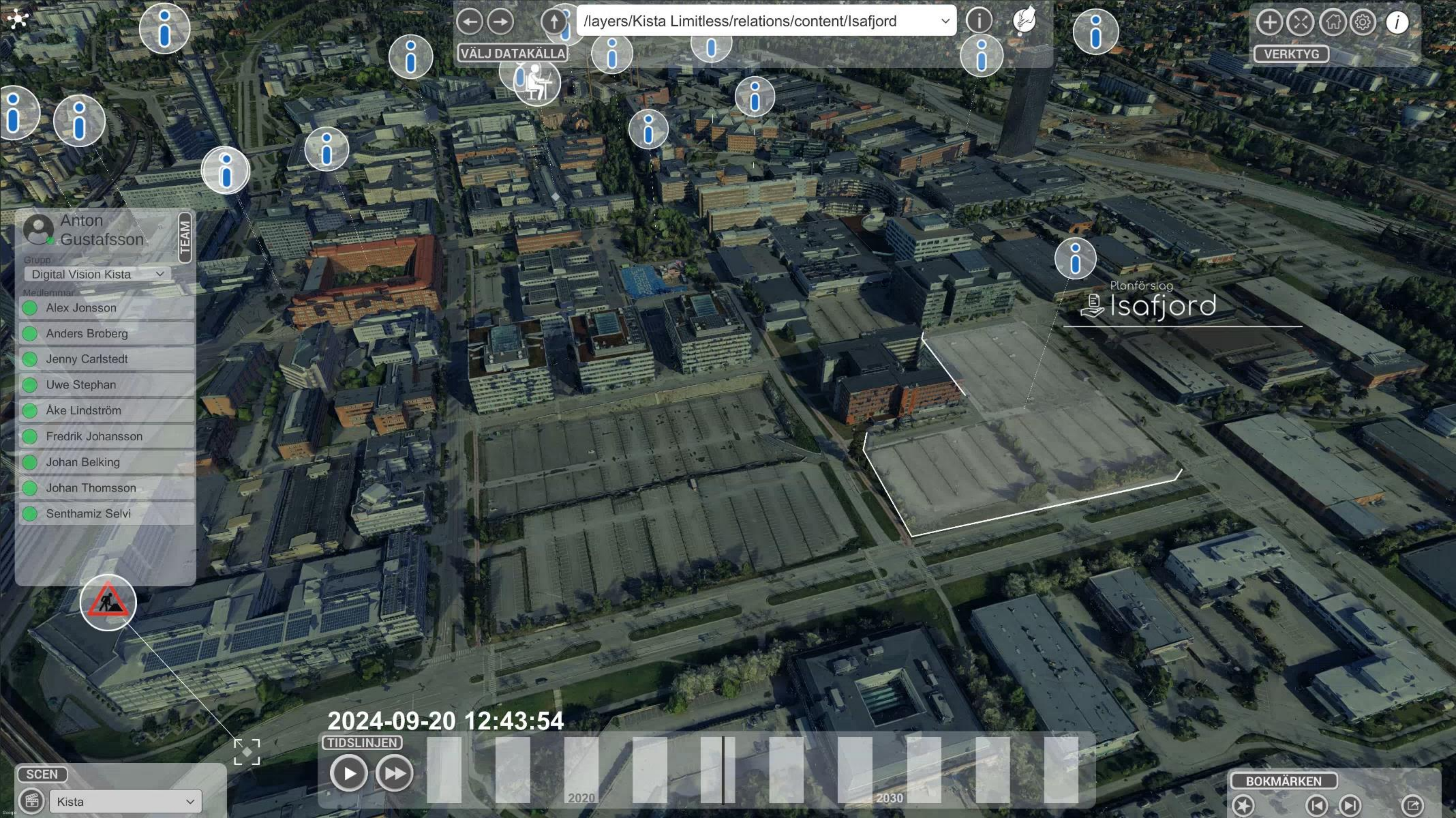


VÄLJ DATAKÄLLA
VERKTYG
Anton
Gustafsson
TEAM
Grupp
Digital Vision Kista
Medlemmar
Alex Jonsson
Anders Broberg
Jenny Carlstedt
Uwe Stephan
Åke Lindström
Fredrik Johansson
Johan Belking
Johan Thomsson
Senthamiz Selvi
2024-04-01 09:05:55
TIDSLINJEN
2020
2030
SCEN
Kista
Landsat / Copernicus • IBCAO • Airbus
BOKMÄRKEN

Middle layer to connect services and datasources

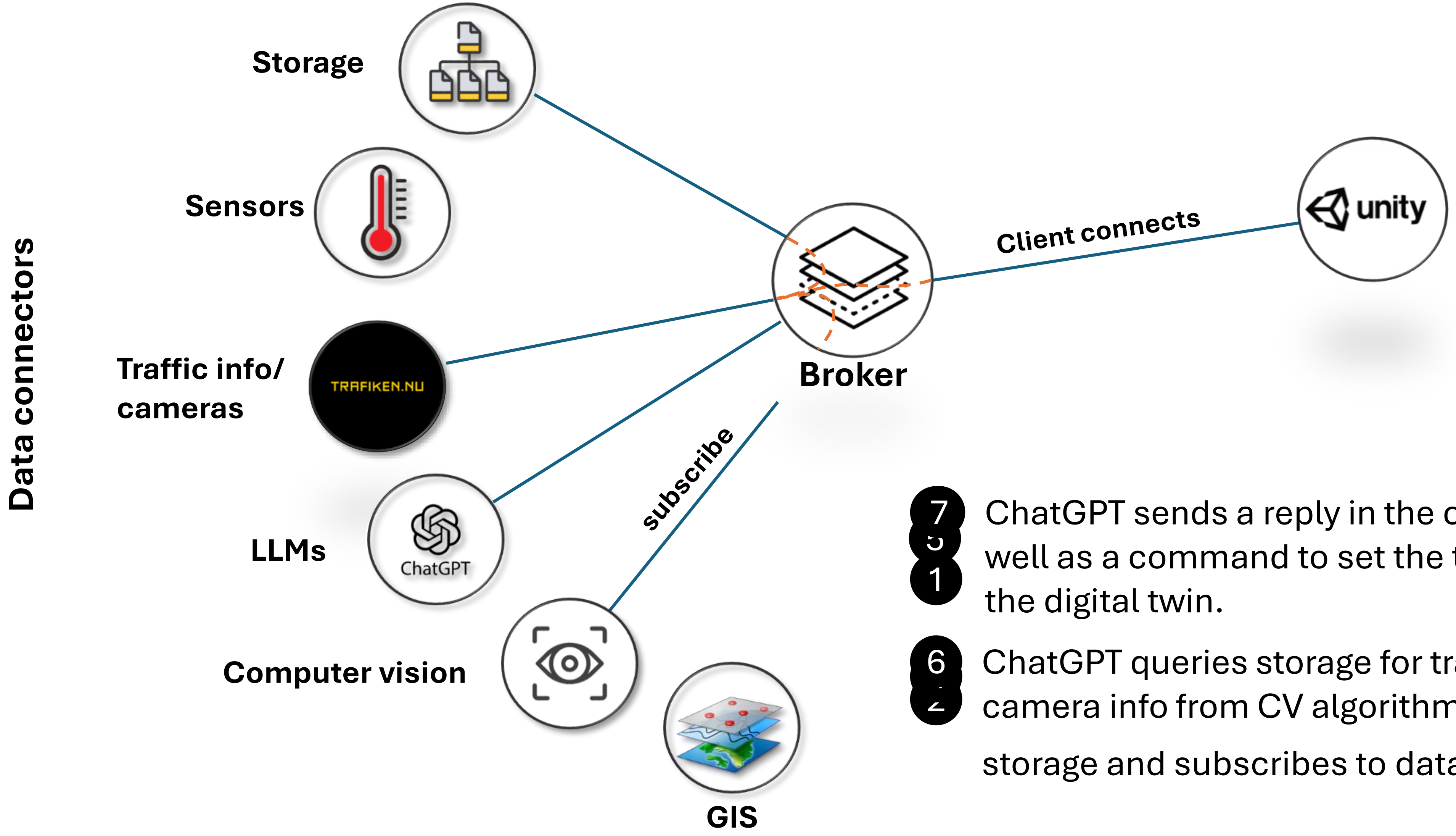


Chattfunktioner


/layers/Kista Limitless/relations/content/Isafjord
VÄLJ DATAKÄLLA
VERKTYG
Anton Gustafsson
TEAM
Grupp
Digital Vision Kista
Medlemmar
Alex Jonsson
Anders Broberg
Jenny Carlstedt
Uwe Stephan
Åke Lindström
Fredrik Johansson
Johan Belking
Johan Thomsson
Senthamiz Selvi
Planförslag
Isafjord
2024-09-20 12:43:54
TIDSLINJEN
2020
2030
SCEN
Kista
BOKMÄRKEN


VÄLJ DATAKÄLLA
VERKTYG
TEAM
2025-09-22 14:35:35
TIDSLINJEN
2020
2030
SCEN
Default
BOKMÄRKEN
U.S. Navy, NGA, GEBCO • IBCAO • U.S. Geological Survey

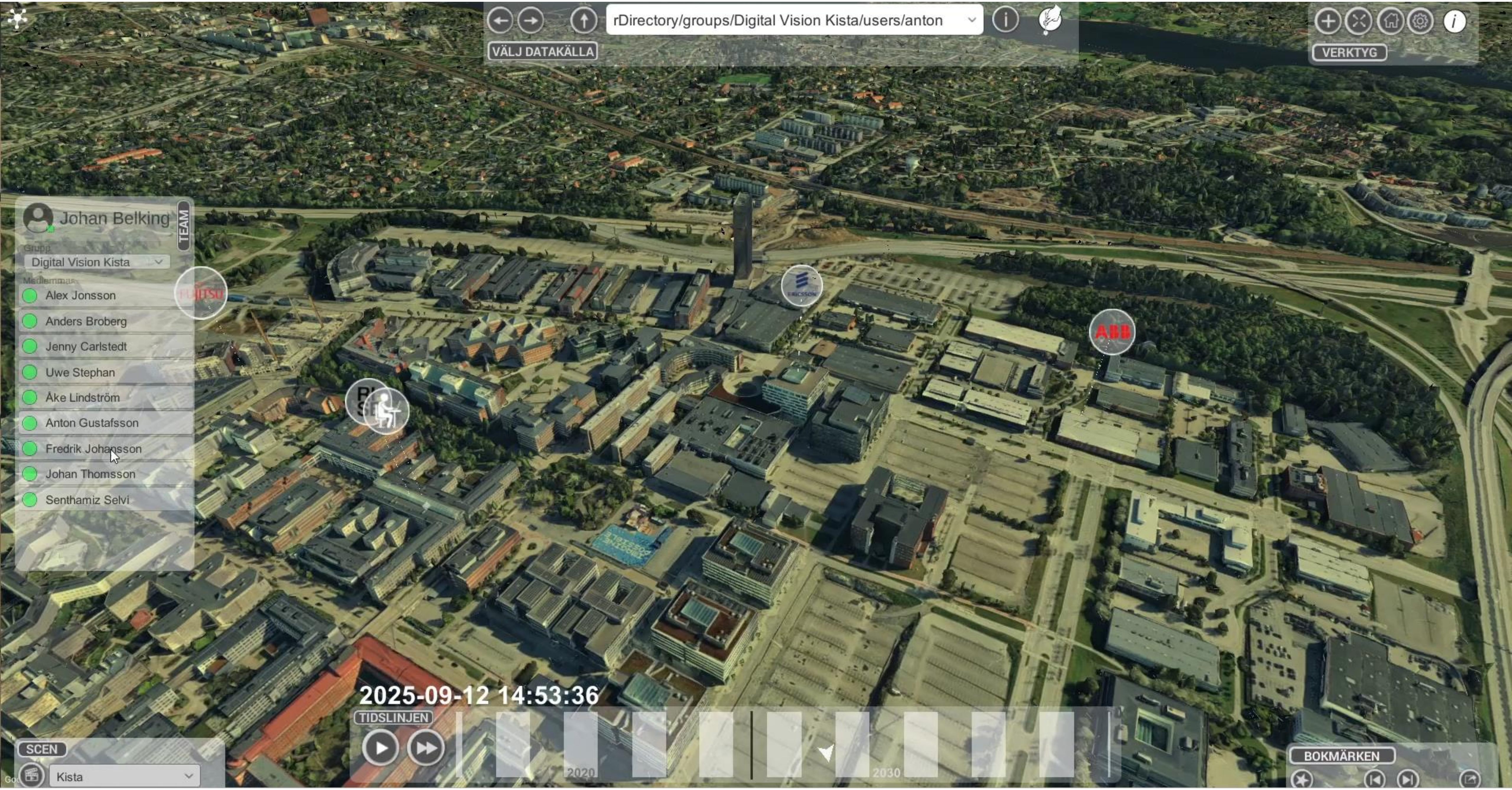
Middle layer to connect services and datasources



7 5 1 ChatGPT sends a reply in the chat. As well as a command to set the time in the digital twin.

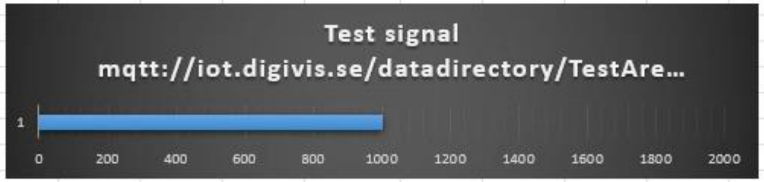
6 2 ChatGPT queries storage for traffic camera info from CV algorithm.

storage and subscribes to datastream.


rDirectory/groups/Digital Vision Kista/users/anton
VÄLJ DATAKÄLLA
VERKTYG
Johan Belking
TEAM
Grupp
Digital Vision Kista
Medlemmar
Alex Jonsson
Anders Broberg
Jenny Carlstedt
Uwe Stephan
Åke Lindström
Anton Gustafsson
Fredrik Johansson
Johan Thomsson
Senthamiz Selvi
ABB
2025-09-12 14:53:36
TIDSLINJEN
2020
2030
SCEN
Kista
BOKMÄRKEN

Y25 =H18+H23

Here you can enter username and password.
Credentials added at 2025-03-12 13:12:18



Test signal
mqtt://iot.digivis.se/datadirectory/TestArea/signalA[power]
1003

Listing of powermeters
["C45BBE6A79EC/", "C45BBE6B1A24/", "C45BBE6C0E33/", "C45BBE7886EB/", "C45BBE78A677/", "C45BBE79764C/", "C45BBE79970A/"]
["C45BBE6A79EC/", "C45BBE6B1A24/", "C45BBE6C0E33/", "C45BBE7886EB/", "C45BBE78A677/", "C45BBE79764C/", "C45BBE79970A/"]

Subscribe
mqtt://iot.digivis.se
4222.320000

Meter 1
mqtt://iot.digivis.se/datadirectory/TestSites/RISE/Electrum/Namespaces/MAC-addresses/content/C45BBE6A79EC/total/meterevent[power]
3303,12

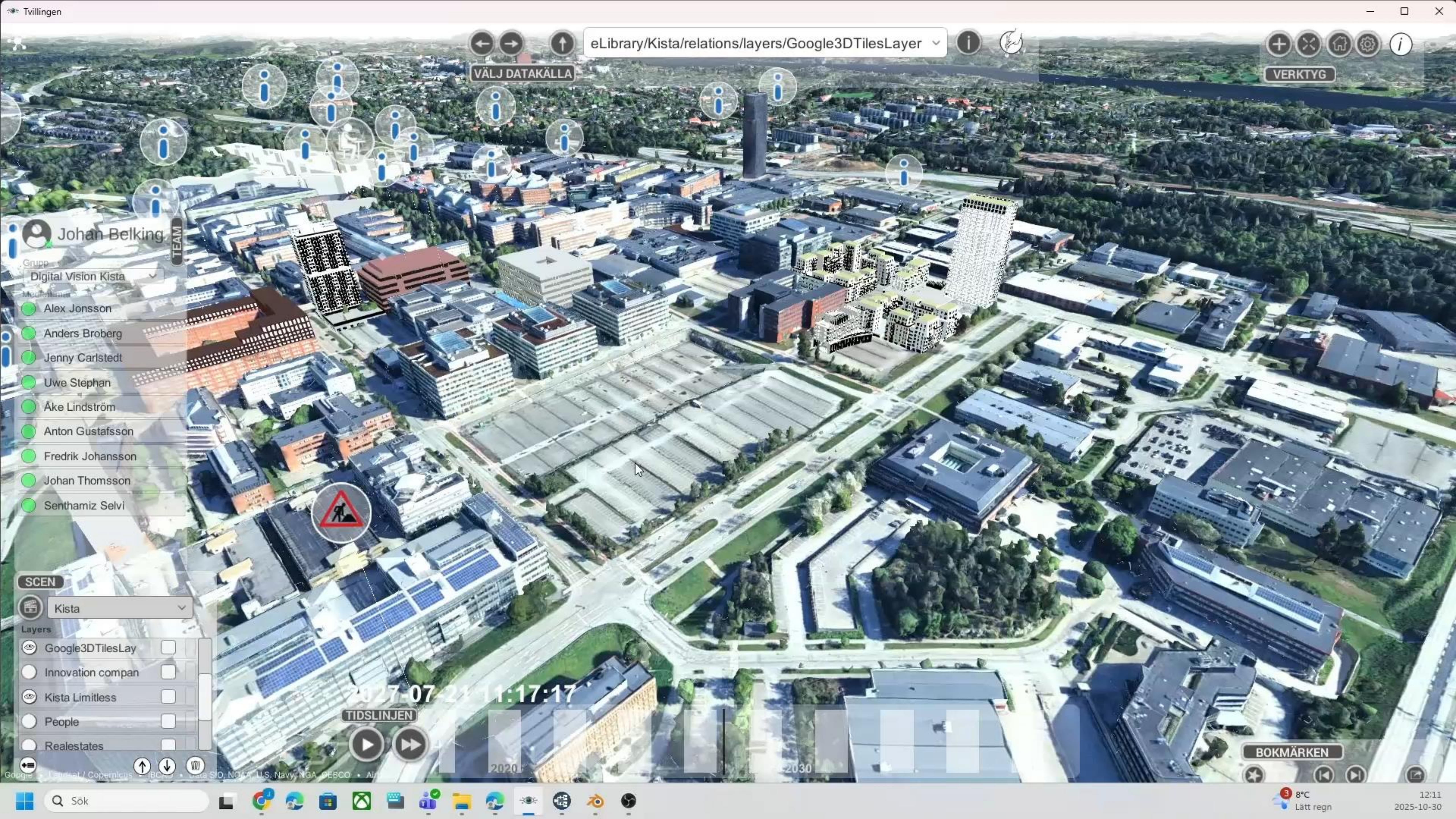
Publish
mqtt://iot.digivis.se
4245.300000 publisl

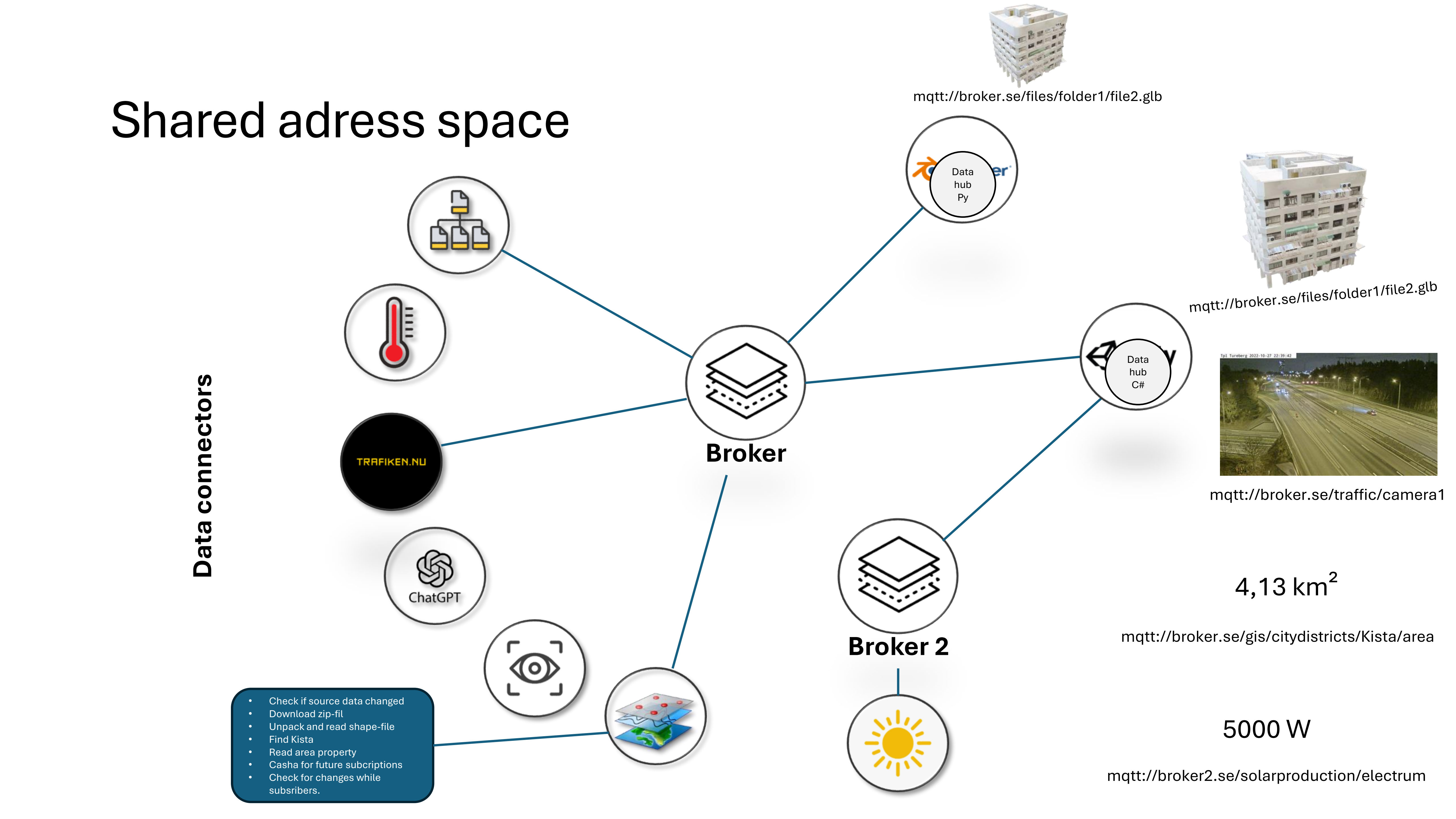
Meter 2
mqtt://iot.digivis.se/datadirectory/TestSites/RISE/Electrum/Namespaces/MAC-addresses/content/C45BBE6B1A24/total/meterevent[power]
942,18

Value
4245,3

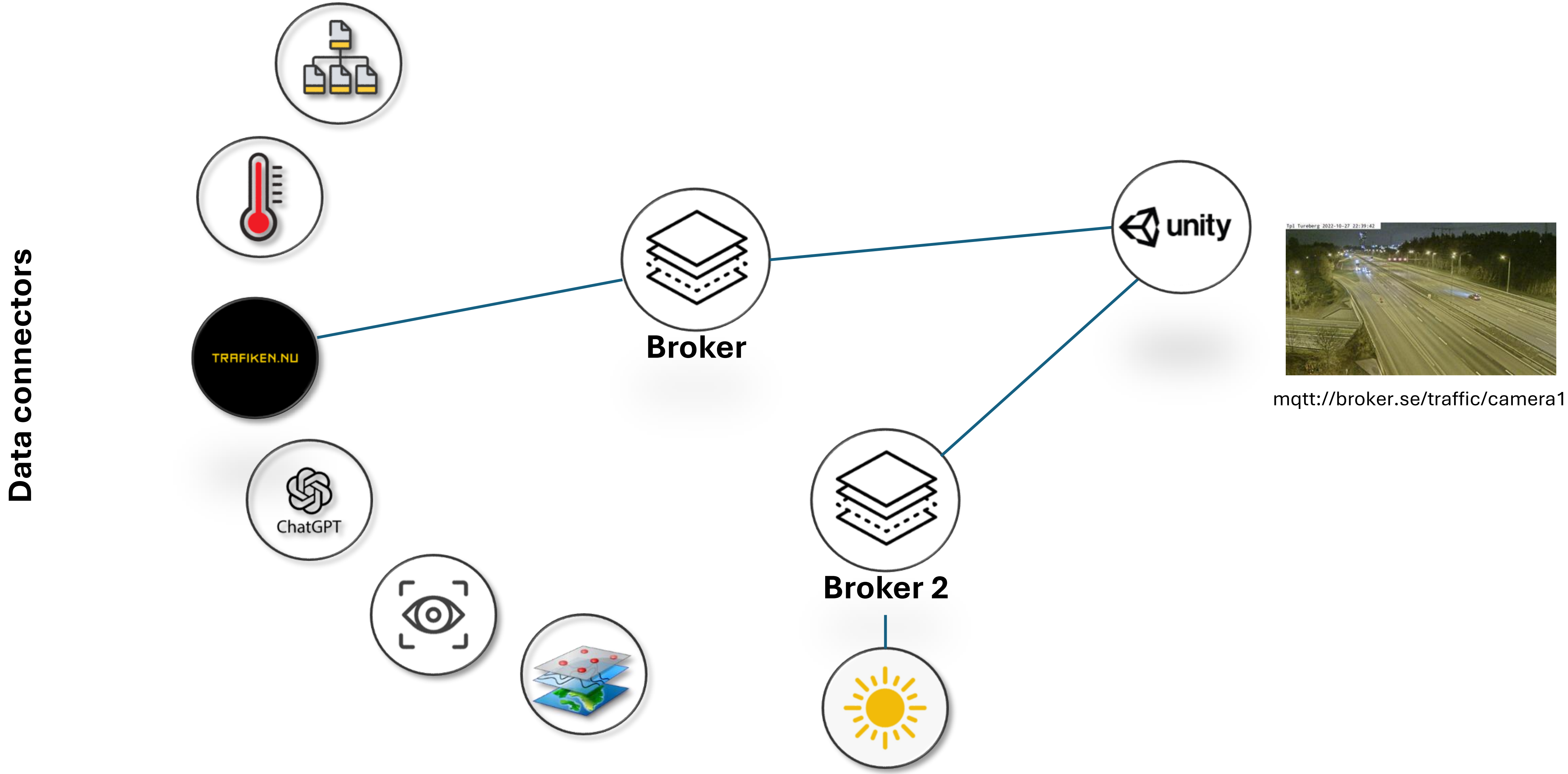
mqtt://op-en.se/test/signalA

1
3
5
7
9


Tvillingen
eLibrary/Kista/relations/layers/Google3DTilesLayer
VÄLJ DATAKÄLLA
VERKTYG
Johan Belking
TEAM
Grupp
Digital Vision Kista
Alex Jonsson
Anders Broberg
Jenny Carlstedt
Uwe Stephan
Åke Lindström
Anton Gustafsson
Fredrik Johansson
Johan Thomsson
Senthamiz Selvi
SCEN
Kista
Layers
Google3DTilesLay
Innovation compan
Kista Limitless
People
Realestates
2027-07-21 11:17:17
TIDSLINJEN
2020
2030
BOKMÄRKEN
Sök
8°C
Lätt regn
12:11
2025-10-30

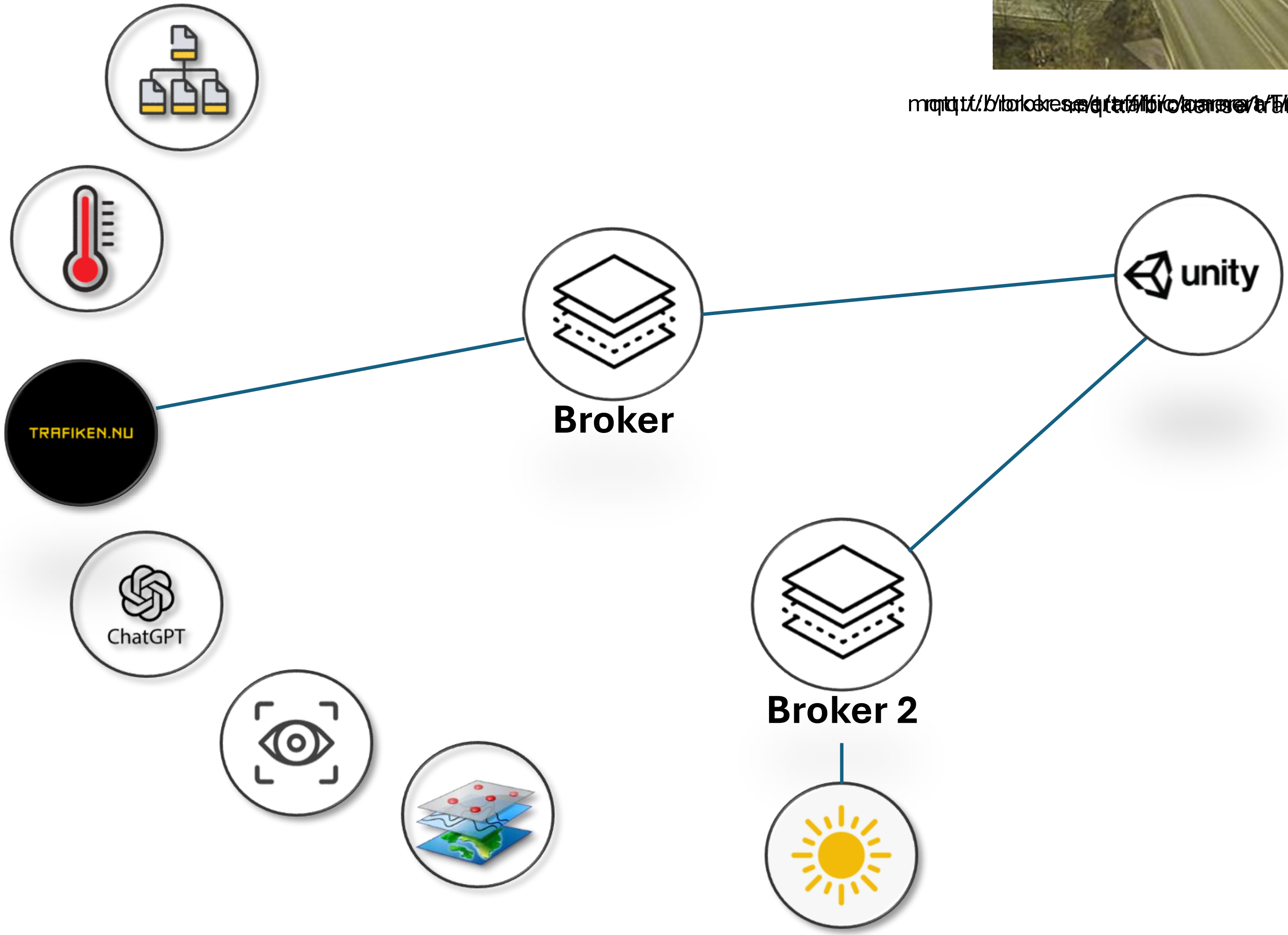

Shared adress space
Data connectors
TRAFIKEN.NU
ChatGPT
Check if source data changed
Download zip-fil
Unpack and read shape-file
Find Kista
Read area property
Casha for future subcriptions
Check for changes while subsribers.
Broker
Broker 2
Data hub Py
Data hub C#
mqtt://broker.se/files/folder1/file2.glb
mqtt://broker.se/files/folder1/file2.glb
mqtt://broker.se/traffic/camera1
4,13 km2
mqtt://broker.se/gis/citydistricts/Kista/area
5000 W
mqtt://broker2.se/solarproduction/electrum

4D


Data connectors
TRAFIKEN.NU
ChatGPT
Broker
unity
Broker 2
mqtt://broker.se/traffic/camera1

4D

Data connectors

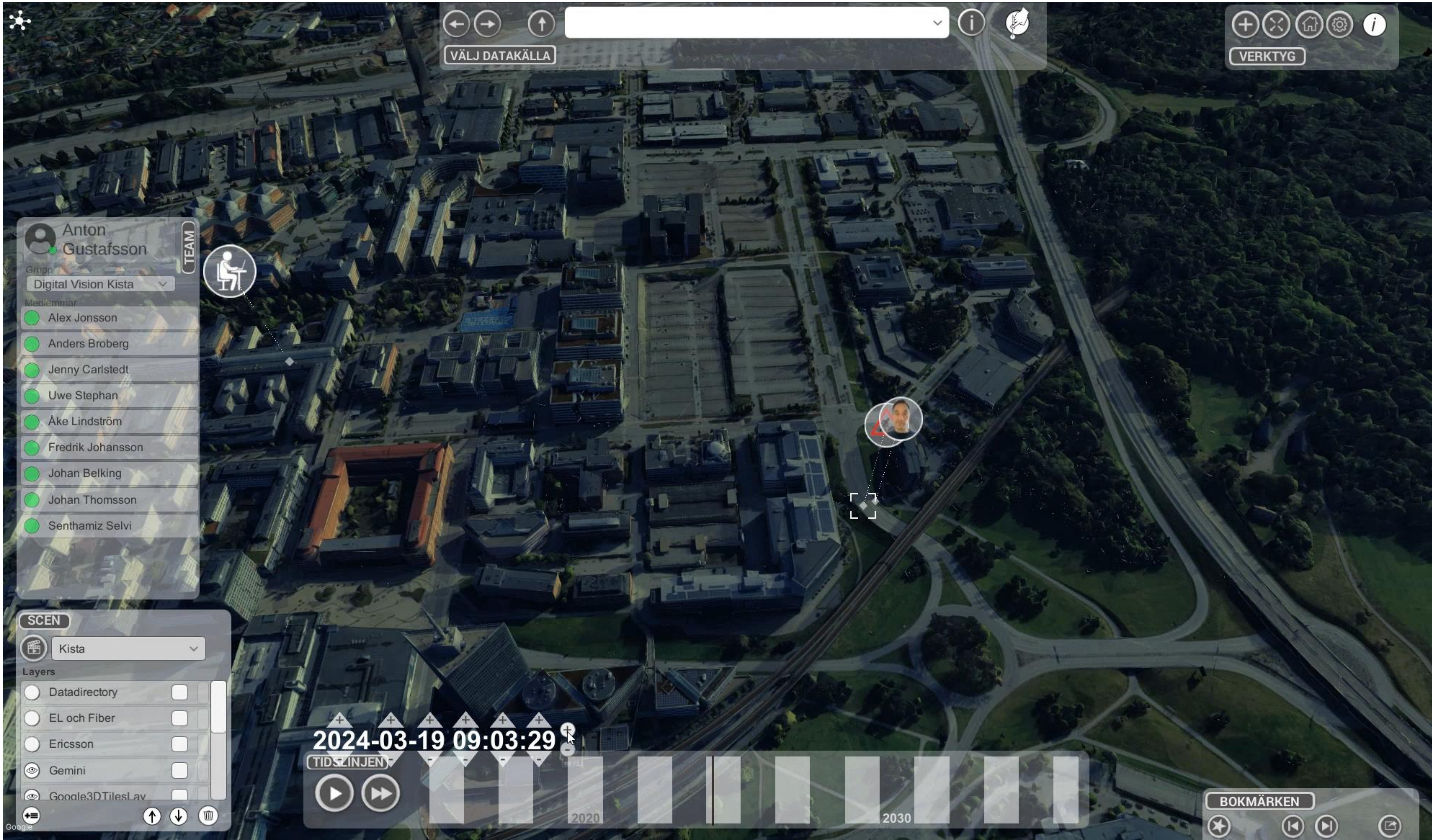


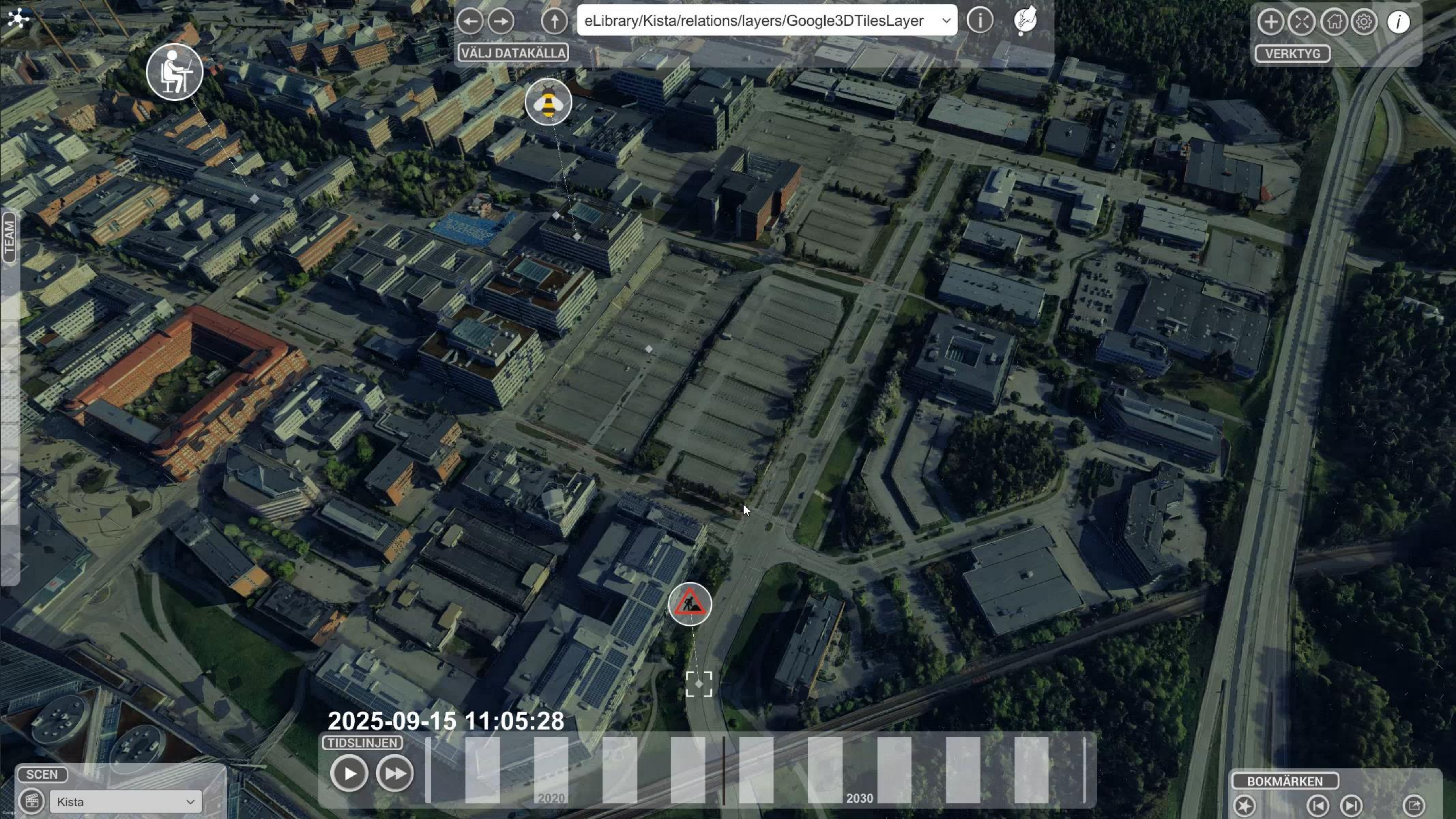
- johans_test
- kaffebacken
- link.md
- linktest
- my_car
- my_folder
- my_signal
- mydlink
- myjson.json
- new.json
- selvi
- signalA
- simulationfromKTH
- simulationfromKTH2
- simulationfromKTH3
- simulationfromKTH4_base_scenario
- simulationfromKTH4_parking_reduction_scenario
- targetfile.json
- test.json
- theeye1
- theeye1_left
- theeye1_right
- theeye2/ -> /datadirectory/Namespaces/Providers/RISE/Cameras/theeye2
- theeye2left
- theeye2right
- timeseries
- tmp
- tutorial
- yta
- åäö-filen.txt
- öäå-katalog
- TestSites
- Tools
- TypeLibrary
- Users

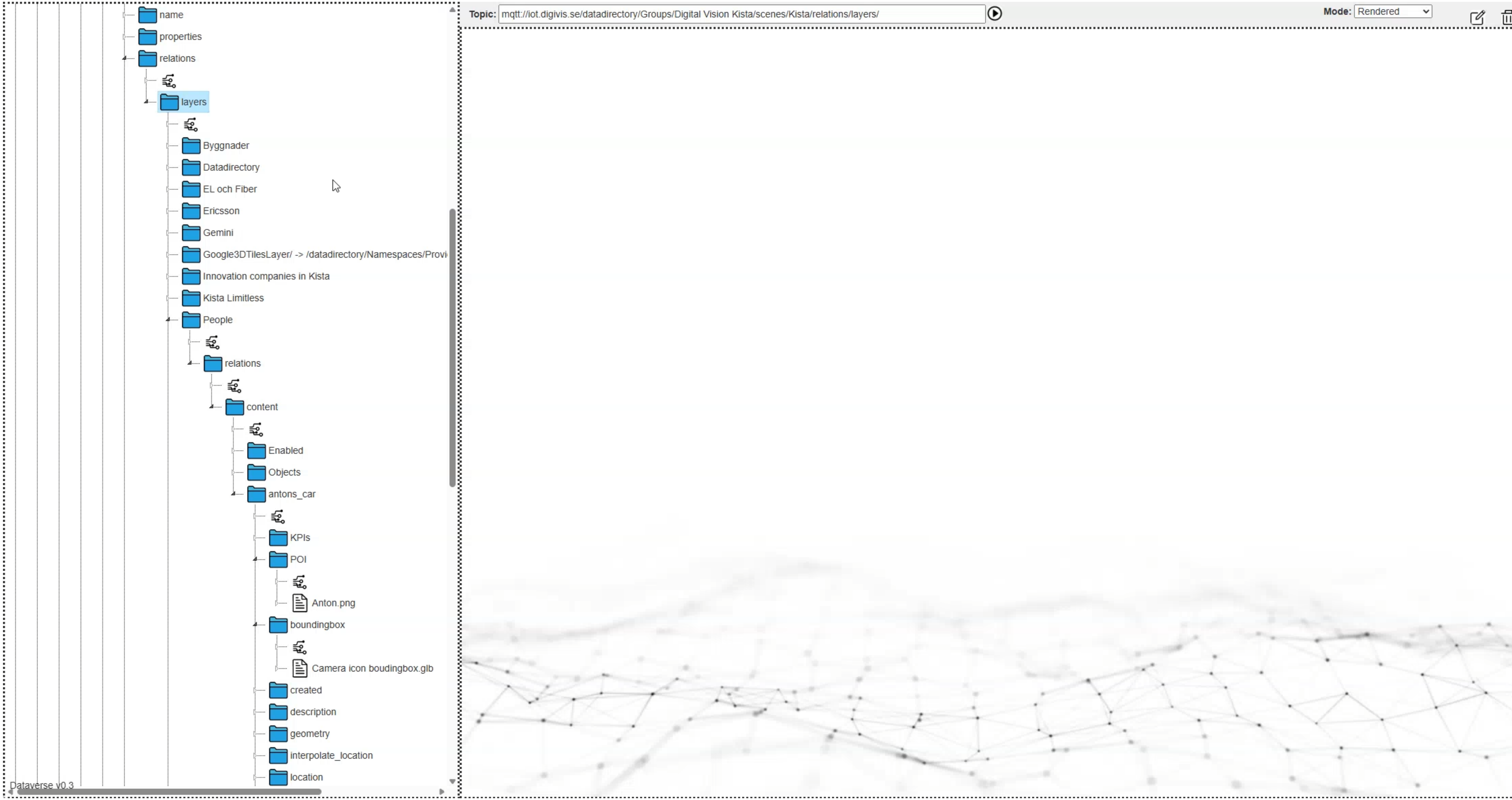
Add datasource

Topic: mqtt://iot.digivis.se/datadirectory/TestArea/signalA/

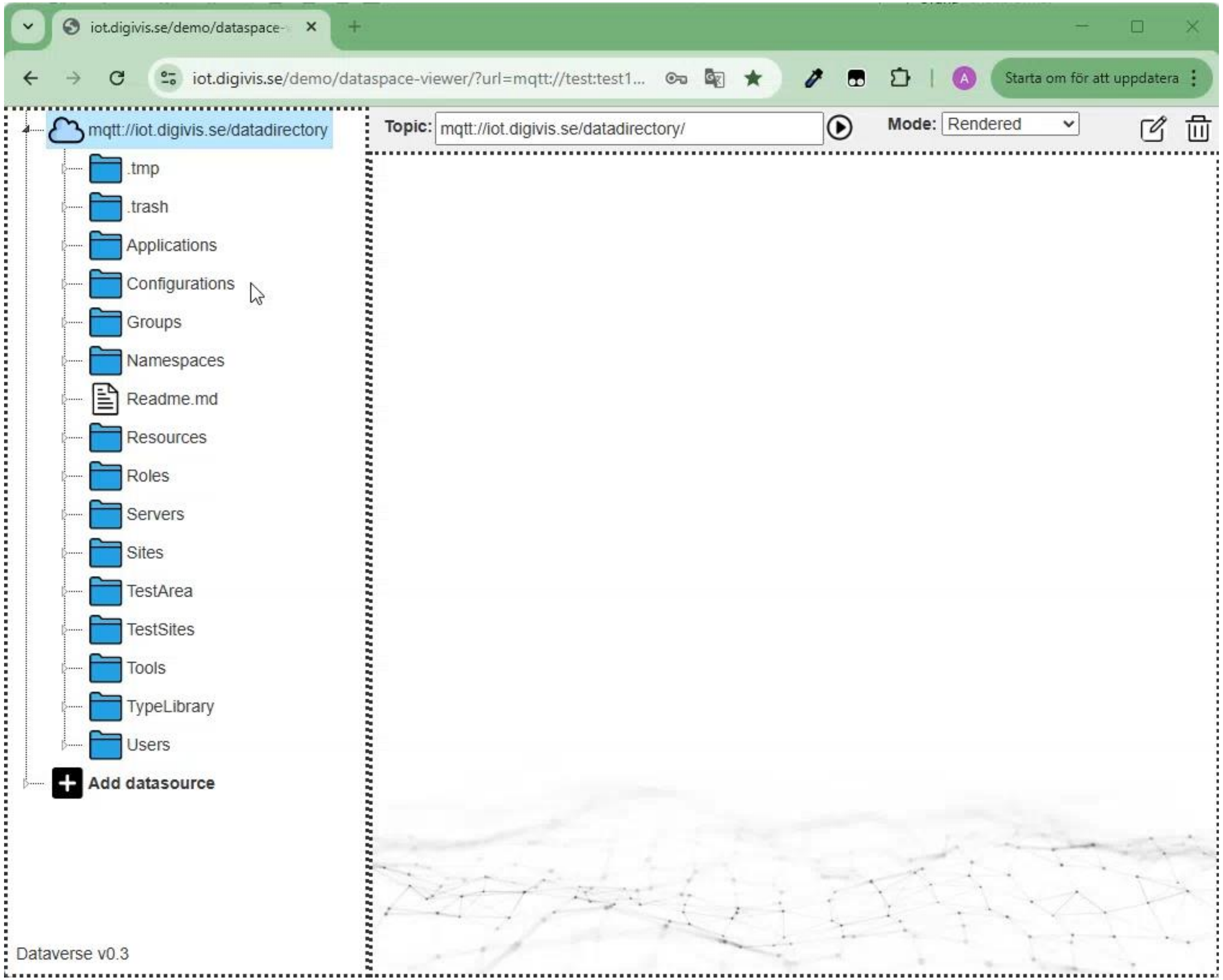
Mode: Rendered

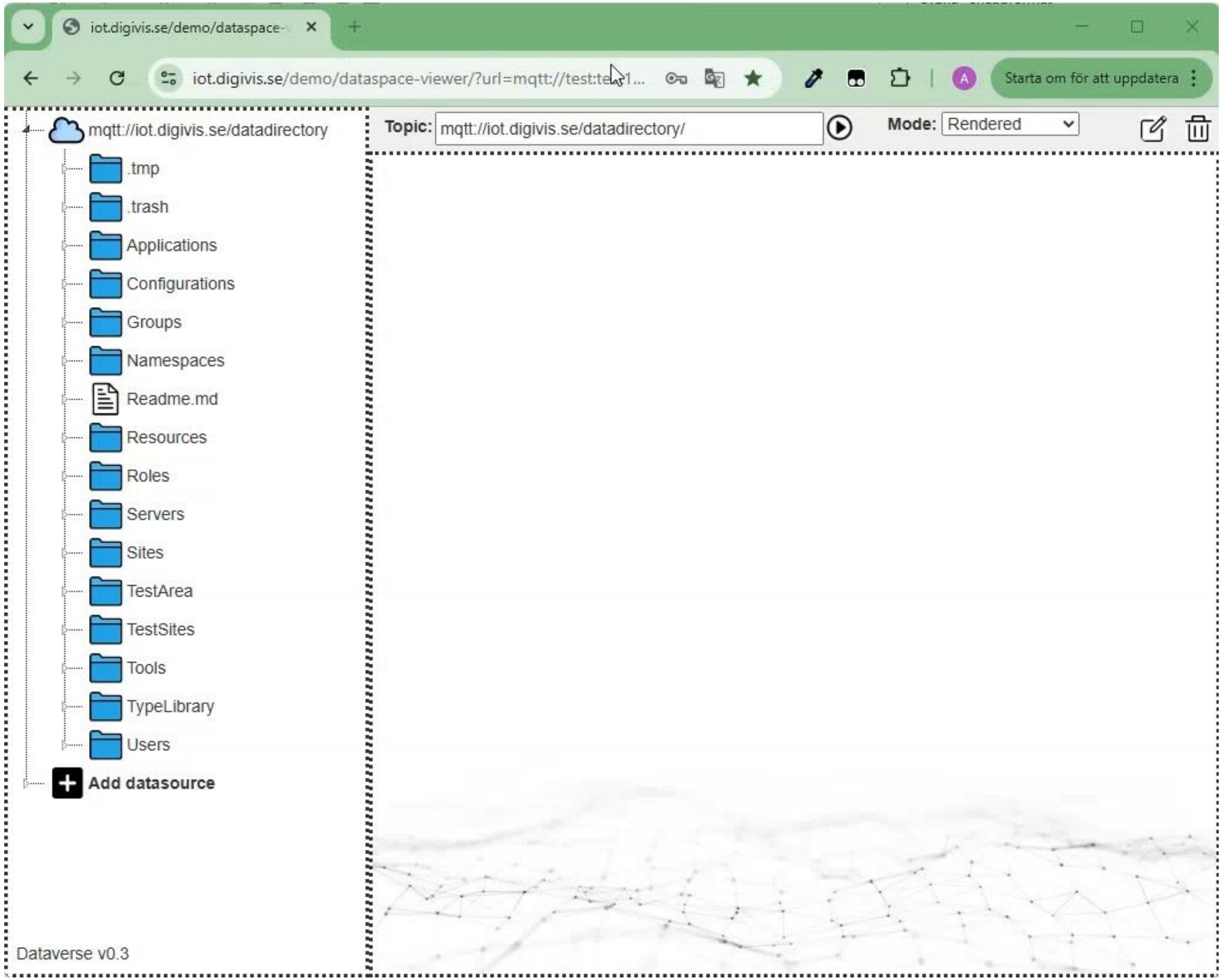

VÄLJ DATAKÄLLA
VERKTYG
Anton Gustafsson
TEAM
Grupp
Digital Vision Kista
Medlemmar
Alex Jonsson
Anders Broberg
Jenny Carlstedt
Uwe Stephan
Åke Lindström
Fredrik Johansson
Johan Belking
Johan Thomsson
Senthamiz Selvi
SCEN
Kista
Layers
Datadirectory
EL och Fiber
Ericsson
Gemini
Google3DTilesLay
2024-03-19 09:03:29
TIDSLINJEN
2020
2030
BOKMÄRKEN
Google


eLibrary/Kista/relations/layers/Google3DTilesLayer
VÄLJ DATAKÄLLA
VERKTYG
TEAM
2025-09-15 11:05:28
TIDSLINJEN
2020
2030
SCEN
Kista
BOKMÄRKEN


name
properties
relations
layers
Byggnader
Datadirectory
EL och Fiber
Ericsson
Gemini
Google3DTilesLayer/ -> /datadirectory/Namespaces/Provi
Innovation companies in Kista
Kista Limitless
People
relations
content
Enabled
Objects
antons_car
KPIs
POI
Anton.png
boundingbox
Camera icon boudingbox.glb
created
description
geometry
interpolate_location
location
Dataverse v0.3
Topic: mqtt://iot.digivis.se/datadirectory/Groups/Digital Vision Kista/scenes/Kista/relations/layers/
Mode: Rendered

elations/layers/Byggnader/relations/content/542726
VÄLJ DATAKÄLLA
VERKTYG
Byggnad
542726
Länkar
ADRESS
1 st
BYGGNADSID
1 st
FASTIGHETSBETECKNING
1 st
Egenskaper
ANTAL BOSTADSLÄGENHET
266
ANTAL VÅNINGAR
37
ENERGIKLASS
D
SOLCELLSINSTALLATION
Nej
NYBYGGNADSÅR
2015
PRIMÄRENERGIANVÄNDNIN
2677082
Statestik
Byggnad
542726
TEAM
2025-11-05 12:52:40
TIDSLINJEN
2020
2030
SCEN
Kista
OAA, U.S. Navy, NGA, GEBCO • Airbus
BOKMÄRKEN

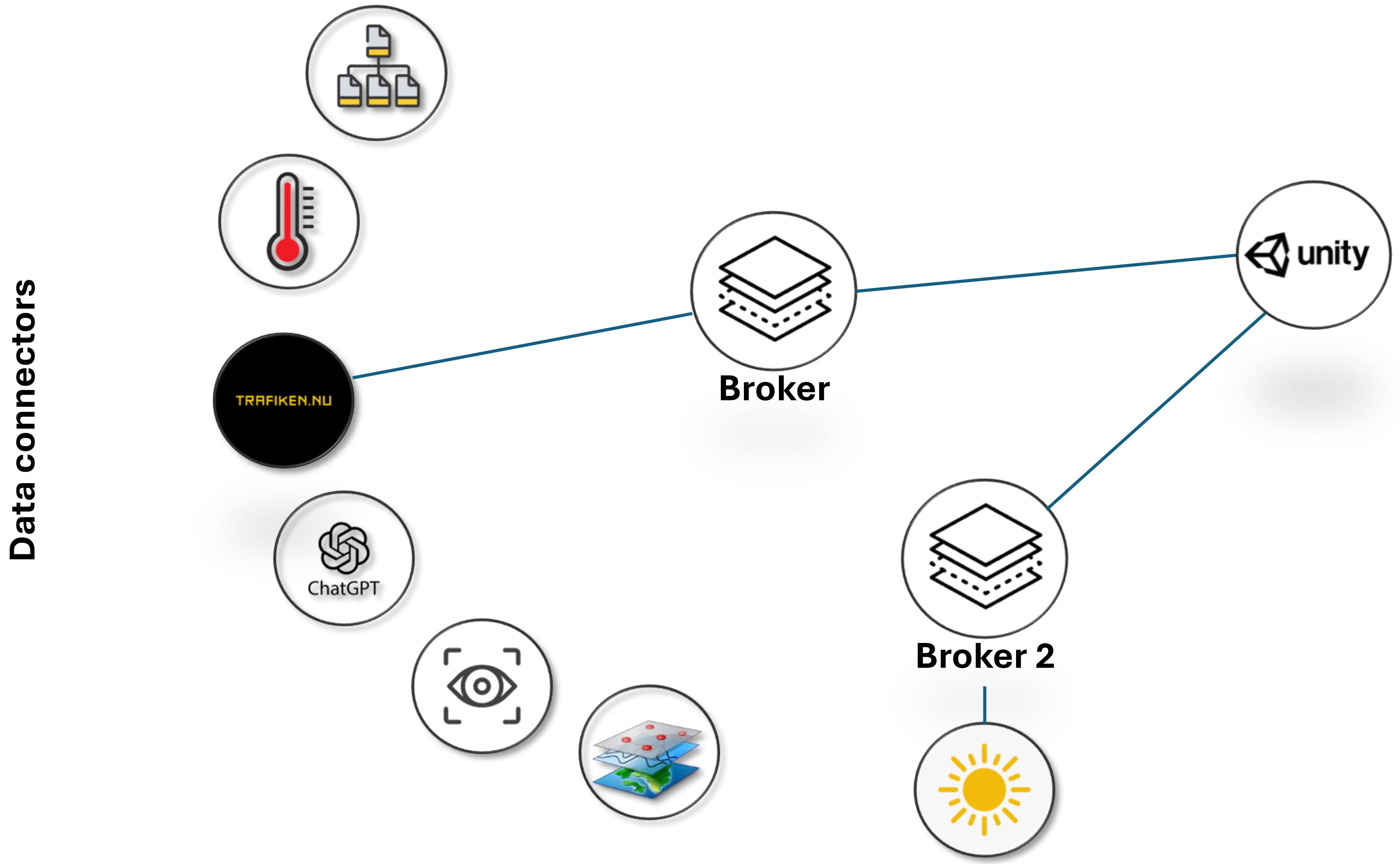

iot.digivis.se/demo/dataspace-
iot.digivis.se/demo/dataspace-viewer/?url=mqtt://test:test1...
Starta om för att uppdatera
mqtt://iot.digivis.se/datadirectory
.tmp
.trash
Applications
Configurations
Groups
Namespaces
Readme.md
Resources
Roles
Servers
Sites
TestArea
TestSites
Tools
TypeLibrary
Users
Add datasource
Dataverse v0.3
Topic:
mqtt://iot.digivis.se/datadirectory/
Mode:
Rendered


iot.digivis.se/demo/dataspace-
iot.digivis.se/demo/dataspace-viewer/?url=mqtt://test:te...1...
Starta om för att uppdatera
mqtt://iot.digivis.se/datadirectory
.tmp
.trash
Applications
Configurations
Groups
Namespaces
Readme.md
Resources
Roles
Servers
Sites
TestArea
TestSites
Tools
TypeLibrary
Users
Add datasource
Dataverse v0.3
Topic: mqtt://iot.digivis.se/datadirectory/
Mode: Rendered

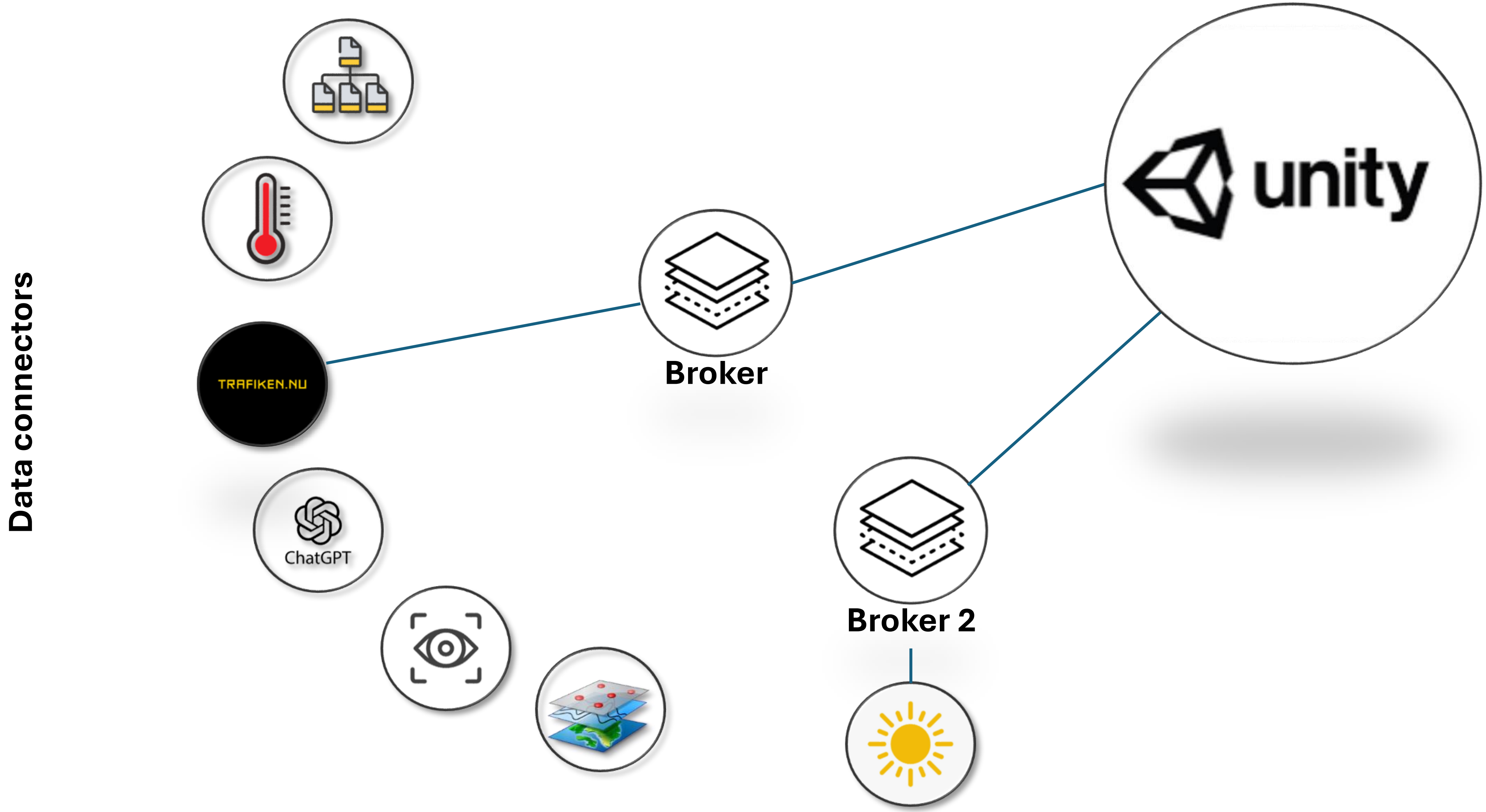
```
mqtt://server/mytopic
    myfile.gml
    └─CityModel
        └── Building
            ├── BuildingPart
            │   ├── WallSurface
            │   │   └── Window
            │   └── RoofSurface
            └── GroundSurface
```

mqtt://server/mytopic/myfile.gml/CityModel/Building

Shared adress space

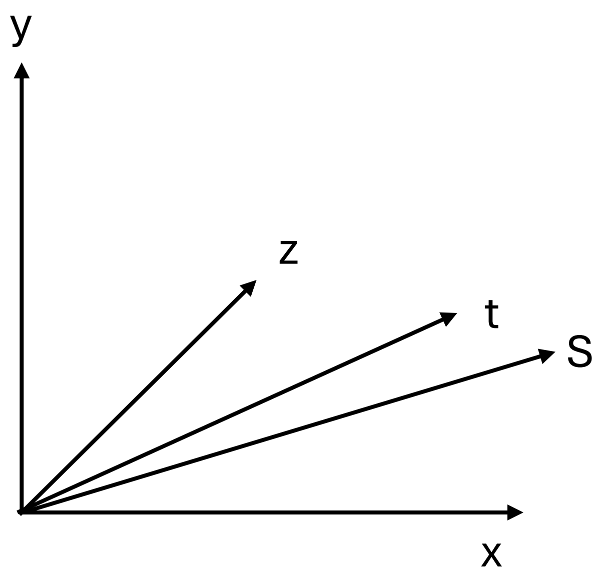


Shared adress space



Features SPACE

- Mellan lager för att minska integration mot olika system.
- Realtidsbaserat för att stödja sensorer samt samarbeten och kommunikation mellan användare och tjänster.
- Kopplar samman datakällor i ett gemensam adressrymd på egenskaps nivå.
- Hanterar all datat (bild, ljud,json,3D)
- Har en tjänst (datadirectory) som kan användas för att skapa 5D kunskapsgraf (4D).
- Stöder multiplattform användning.
    - Bindings.


y
z
t
S
x