Design, visualize and share in City Infrastructure Projects

Håkan Engman
Director, Business Development

OpenCities Planner

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What challenges do cities face?

- Urban development
- Resilience and safety
- Improve services to citizens
- Openness and transparency

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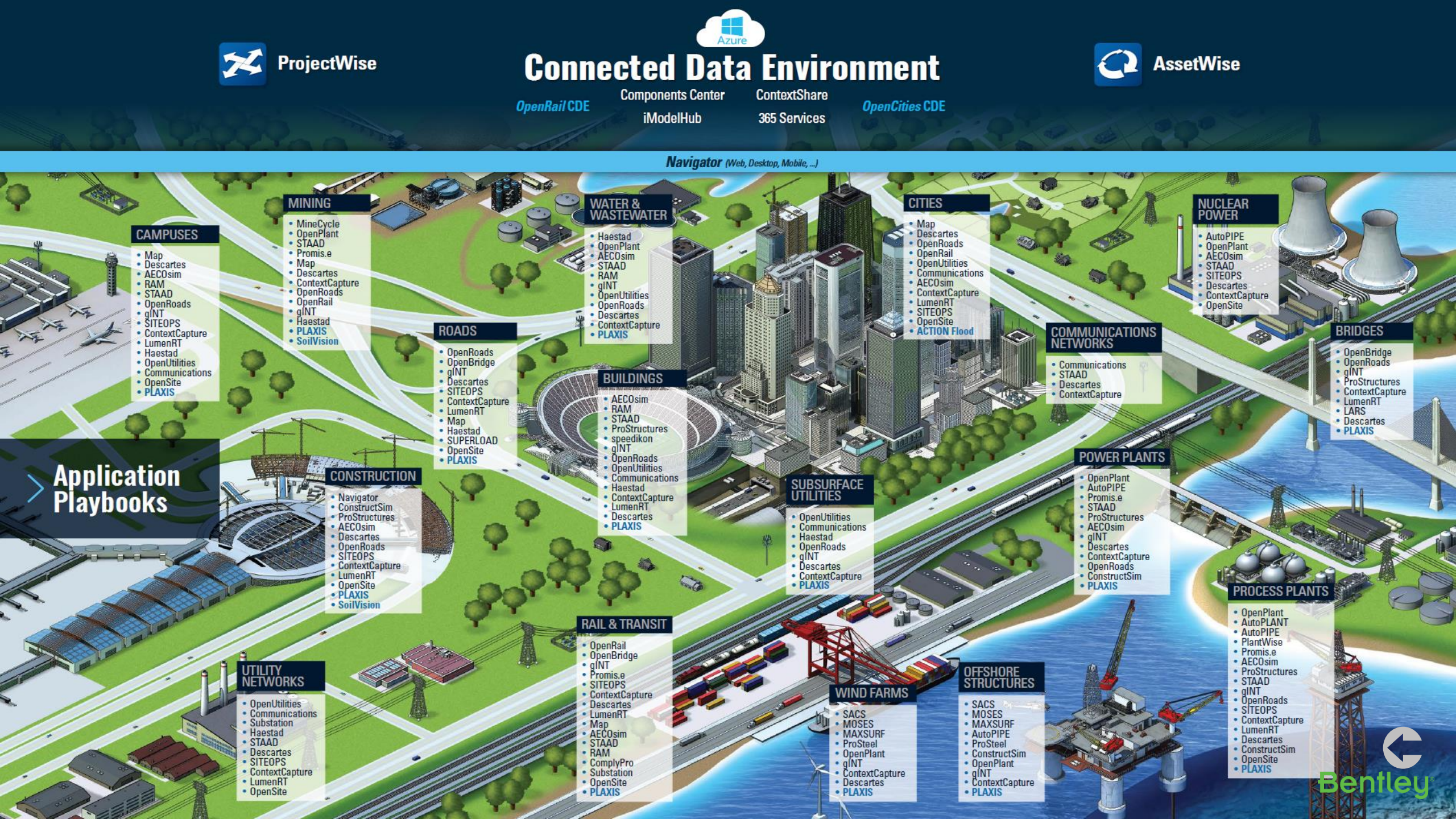
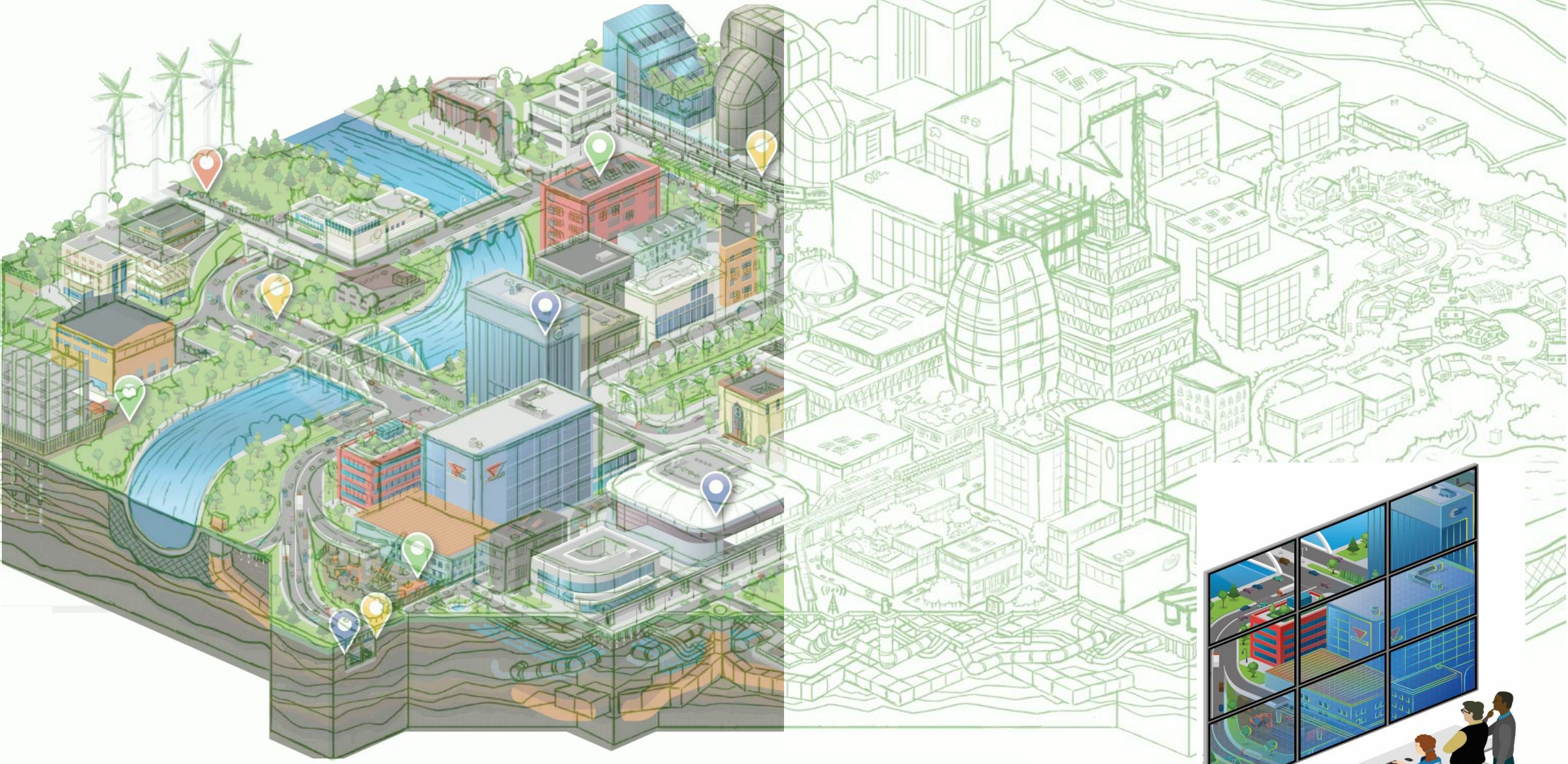

ProjectWise
Azure
Connected Data Environment
AssetWise
OpenRail CDE
Components Center
iModelHub
ContextShare
365 Services
OpenCities CDE
Navigator (Web, Desktop, Mobile, ...)
CAMPUSES
• Map
• Descartes
• AECOsim
• RAM
• STAAD
• OpenRoads
• gINT
• SITEOPS
• ContextCapture
• LumenRT
• Haestad
• OpenUtilities
• Communications
• OpenSite
• PLAXIS
MINING
• MineCycle
• OpenPlant
• STAAD
• Promis.e
• Map
• Descartes
• ContextCapture
• OpenRoads
• OpenRail
• gINT
• Haestad
• PLAXIS
• SoilVision
WATER & WASTEWATER
• Haestad
• OpenPlant
• AECOsim
• STAAD
• RAM
• gINT
• OpenUtilities
• OpenRoads
• Descartes
• ContextCapture
• PLAXIS
CITIES
• Map
• Descartes
• OpenRoads
• OpenRail
• OpenUtilities
• Communications
• AECOsim
• ContextCapture
• LumenRT
• SITEOPS
• OpenSite
• ACTION Flood
NUCLEAR POWER
• AutoPIPE
• OpenPlant
• AECOsim
• STAAD
• SITEOPS
• Descartes
• ContextCapture
• OpenSite
ROADS
• OpenRoads
• OpenBridge
• gINT
• Descartes
• SITEOPS
• ContextCapture
• LumenRT
• Map
• Haestad
• SUPERLOAD
• OpenSite
• PLAXIS
BUILDINGS
• AECOsim
• RAM
• STAAD
• ProStructures
• speedikon
• gINT
• OpenRoads
• OpenUtilities
• Communications
• Haestad
• ContextCapture
• LumenRT
• Descartes
• PLAXIS
COMMUNICATIONS NETWORKS
• Communications
• STAAD
• Descartes
• ContextCapture
BRIDGES
• OpenBridge
• OpenRoads
• gINT
• ProStructures
• ContextCapture
• LumenRT
• LARS
• Descartes
• PLAXIS
Application Playbooks
CONSTRUCTION
• Navigator
• ConstructSim
• ProStructures
• AECOsim
• Descartes
• OpenRoads
• SITEOPS
• ContextCapture
• LumenRT
• OpenSite
• PLAXIS
• SoilVision
SUBSURFACE UTILITIES
• OpenUtilities
• Communications
• Haestad
• OpenRoads
• gINT
• Descartes
• ContextCapture
• PLAXIS
POWER PLANTS
• OpenPlant
• AutoPIPE
• Promis.e
• STAAD
• ProStructures
• AECOsim
• gINT
• Descartes
• ContextCapture
• OpenRoads
• ConstructSim
• PLAXIS
PROCESS PLANTS
• OpenPlant
• AutoPLANT
• AutoPIPE
• PlantWise
• Promis.e
• AECOsim
• ProStructures
• STAAD
• gINT
• OpenRoads
• SITEOPS
• ContextCapture
• LumenRT
• Descartes
• ConstructSim
• OpenSite
• PLAXIS
RAIL & TRANSIT
• OpenRail
• OpenBridge
• gINT
• Promis.e
• SITEOPS
• ContextCapture
• Descartes
• LumenRT
• Map
• AECOsim
• STAAD
• RAM
• ComplyPro
• Substation
• OpenSite
• PLAXIS
UTILITY NETWORKS
• OpenUtilities
• Communications
• Substation
• Haestad
• STAAD
• Descartes
• SITEOPS
• ContextCapture
• LumenRT
• OpenSite
WIND FARMS
• SACS
• MOSES
• MAXSURF
• ProSteel
• OpenPlant
• gINT
• ContextCapture
• Descartes
• PLAXIS
OFFSHORE STRUCTURES
• SACS
• MOSES
• MAXSURF
• AutoPIPE
• ProSteel
• ConstructSim
• OpenPlant
• gINT
• ContextCapture
• PLAXIS
Bentley



Operations/IoT Data

Engineering Data

Surveying and Mapping Data

3rd Party Infrastructure Data

3rd Party Developer Data

Emergency Services Data

Other Data

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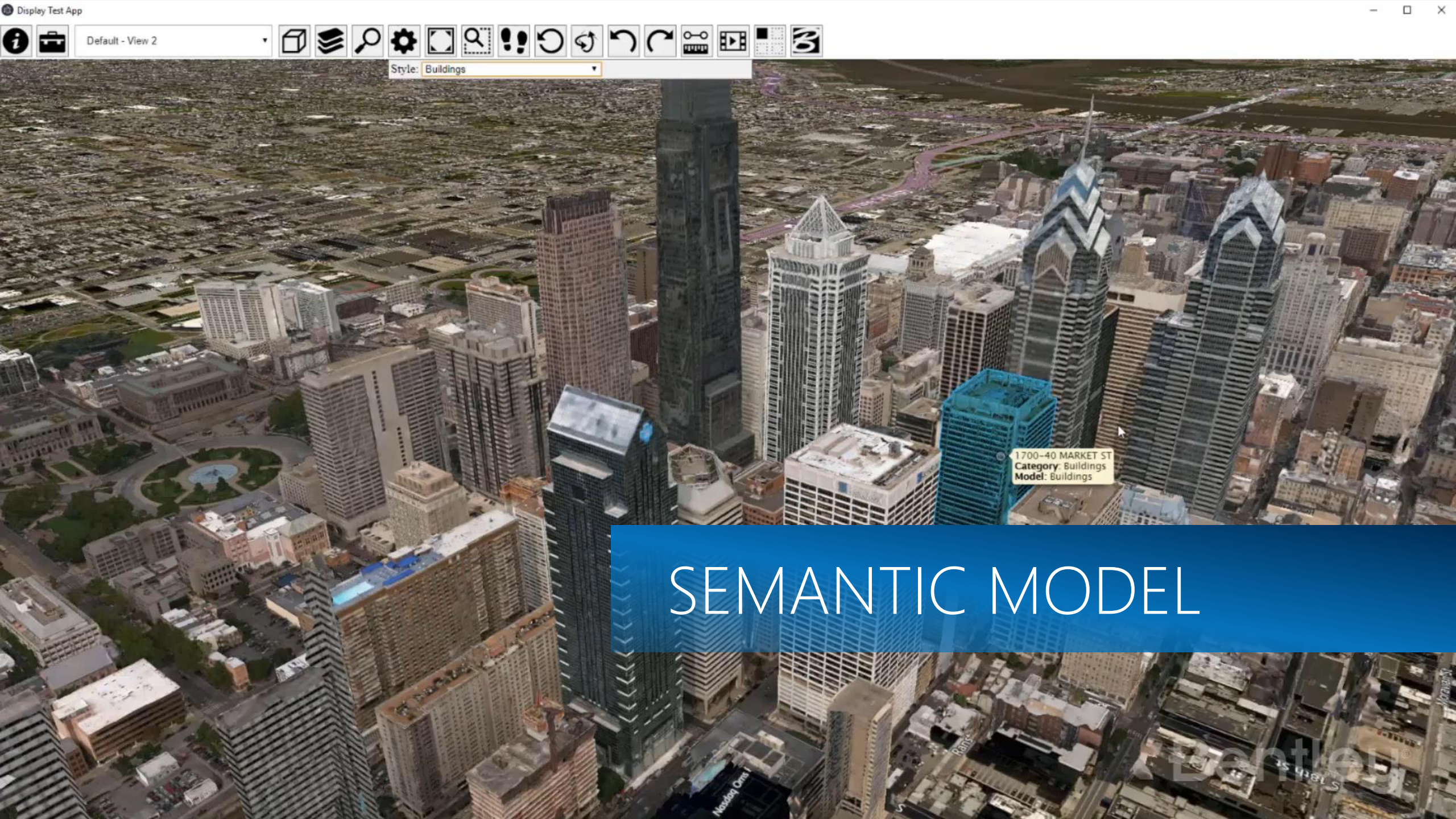
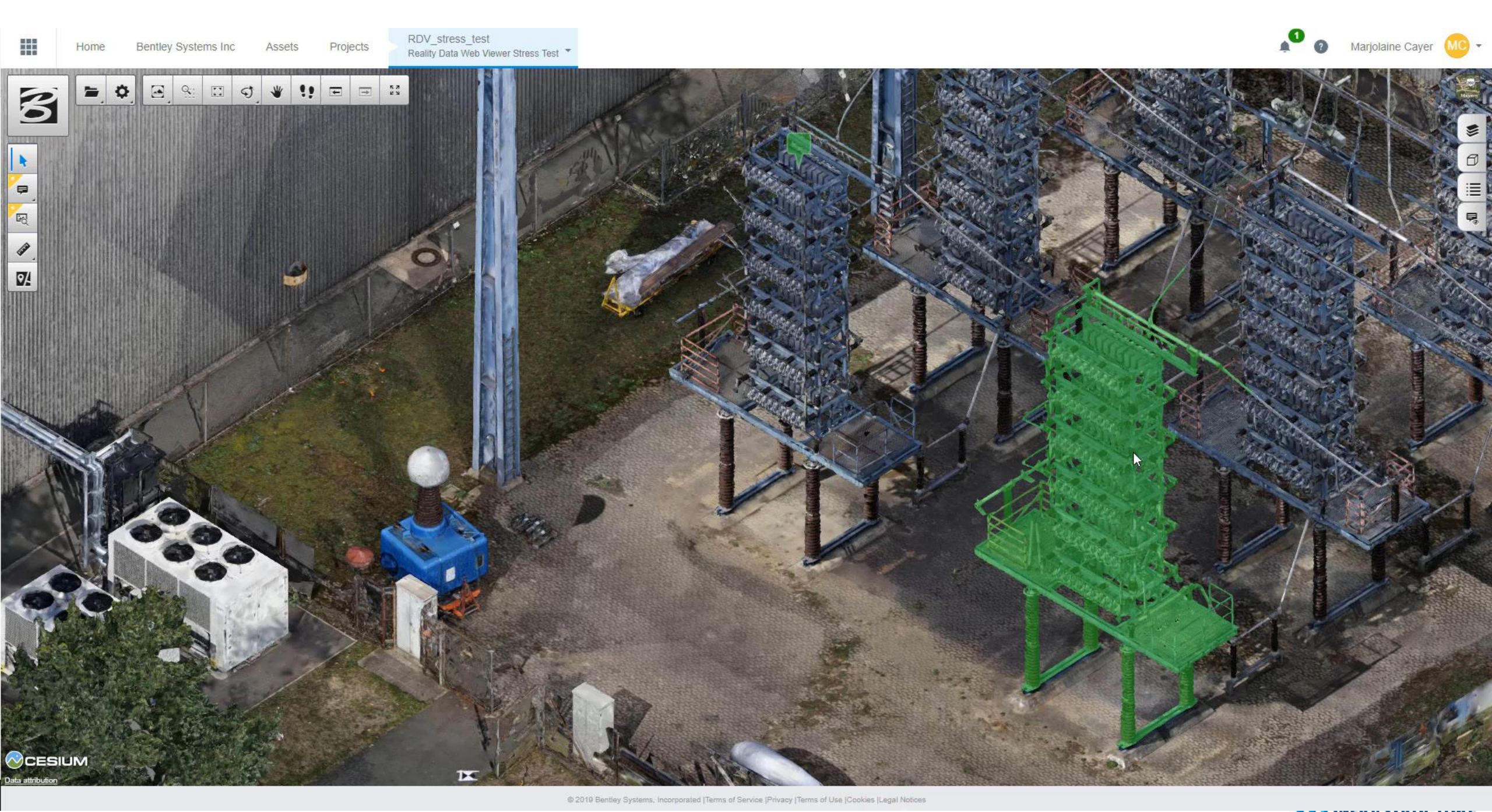
CAPTURED REALITY


Display Test App
Default - View 2
Style: Buildings
1700-40 MARKET ST
Category: Buildings
Model: Buildings
SEMANTIC MODEL



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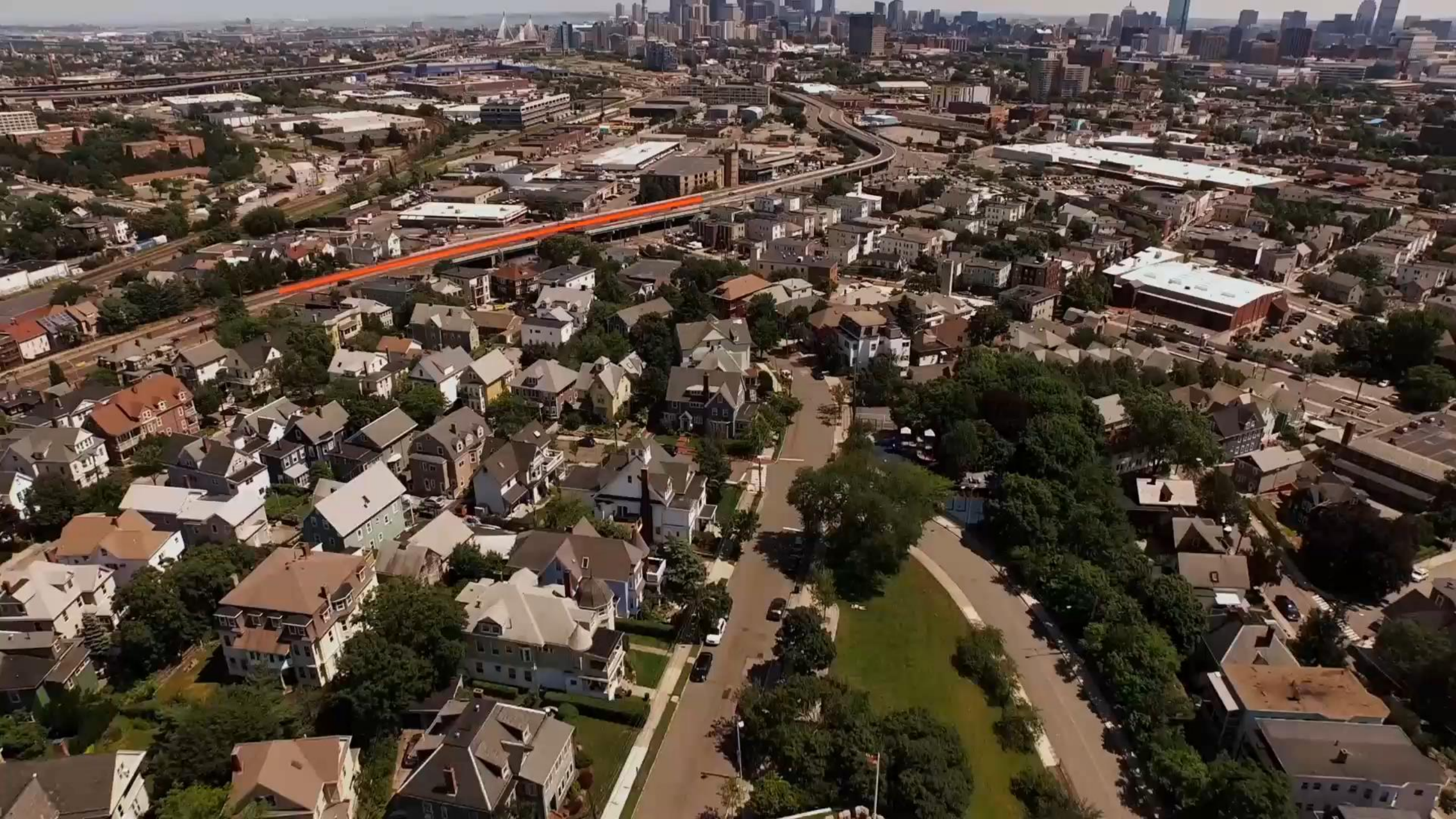


Stockholm Legion Demo — City

https://cityplanneronline.com/agency9/stockholmlegiondemo

SIMULATION & MOBILITY

Subway entrence

Pedestrian path

Pedestrians & traffic

START

WEST-VIEW

TOP-VIEW

INFO

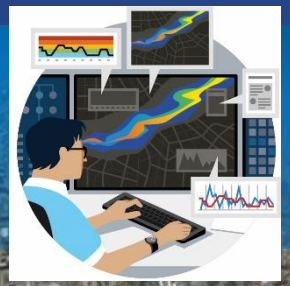
A. CUMULATIVE MEAN DENSITY

Pedestrian path

Stage

CONTENT

INFRASTRUCTURE IMPROVEMENTS



https://h2porto.aguasdoporto.pt/Dashboards/h2porto/drenagem_urbana/modelacao/

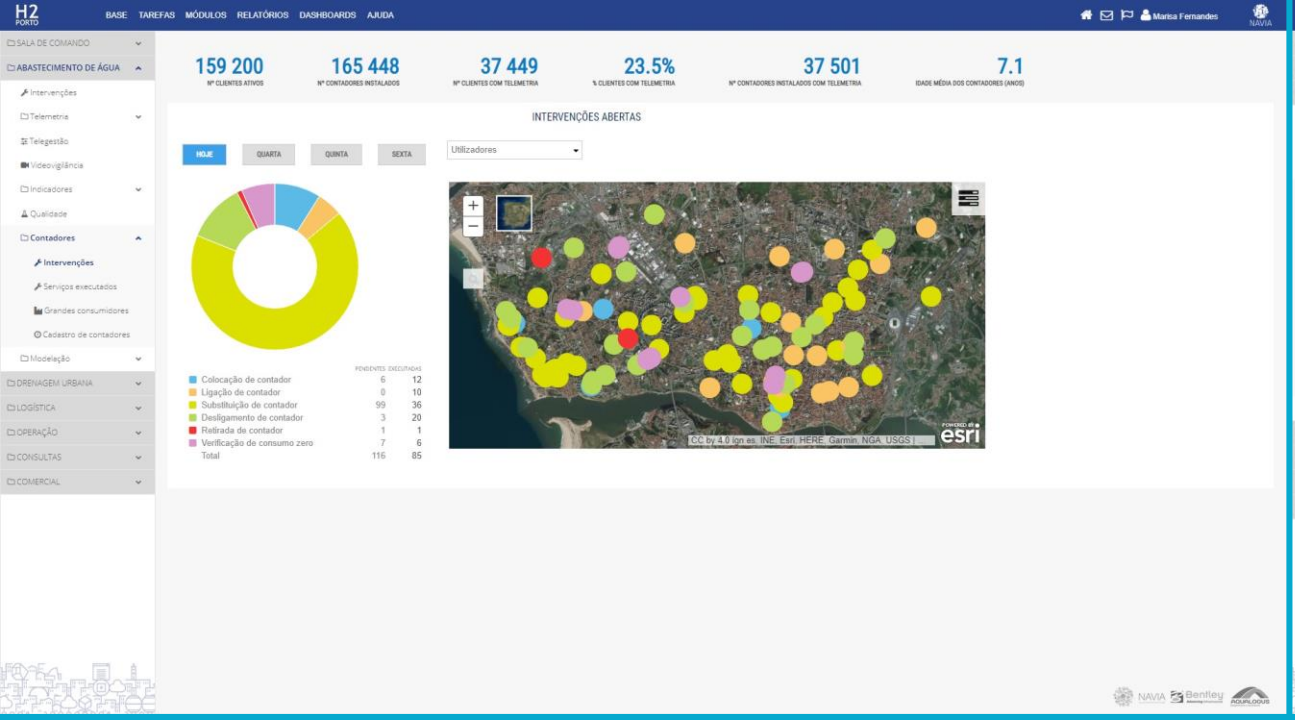
H2 PORTO | BASE | TAREFAS | MÓDULOS | RELATÓRIOS | DASHBOARDS | AJUDA | Aqualogus | NAVIA

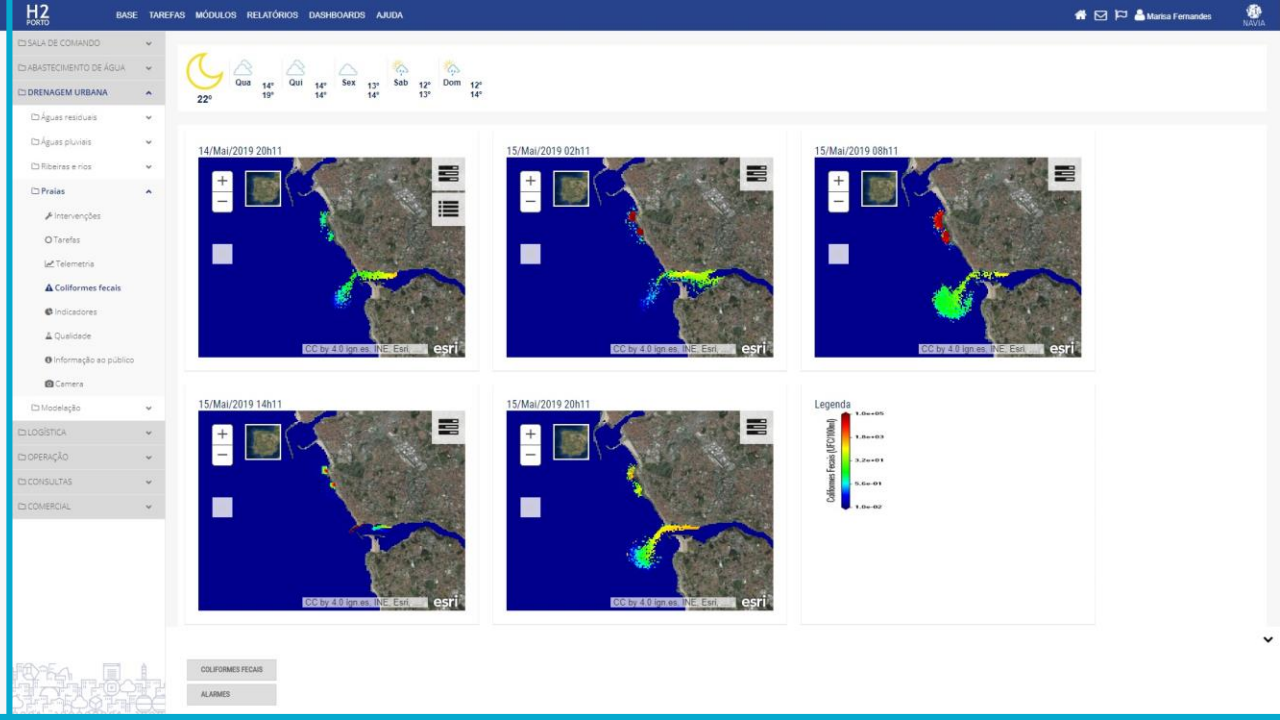
- SALA DE COMANDO
- ABASTECIMENTO DE ÁGUA
- DRENAGEM URBANA
  - Águas residuais
  - Águas pluviais
  - Ribeiras e rios
  - Praias
  - Modelação
    - x³ Redes
    - x³ Simulações offline
    - Previsão de ocorrências
- OPERAÇÃO
- LOGÍSTICA

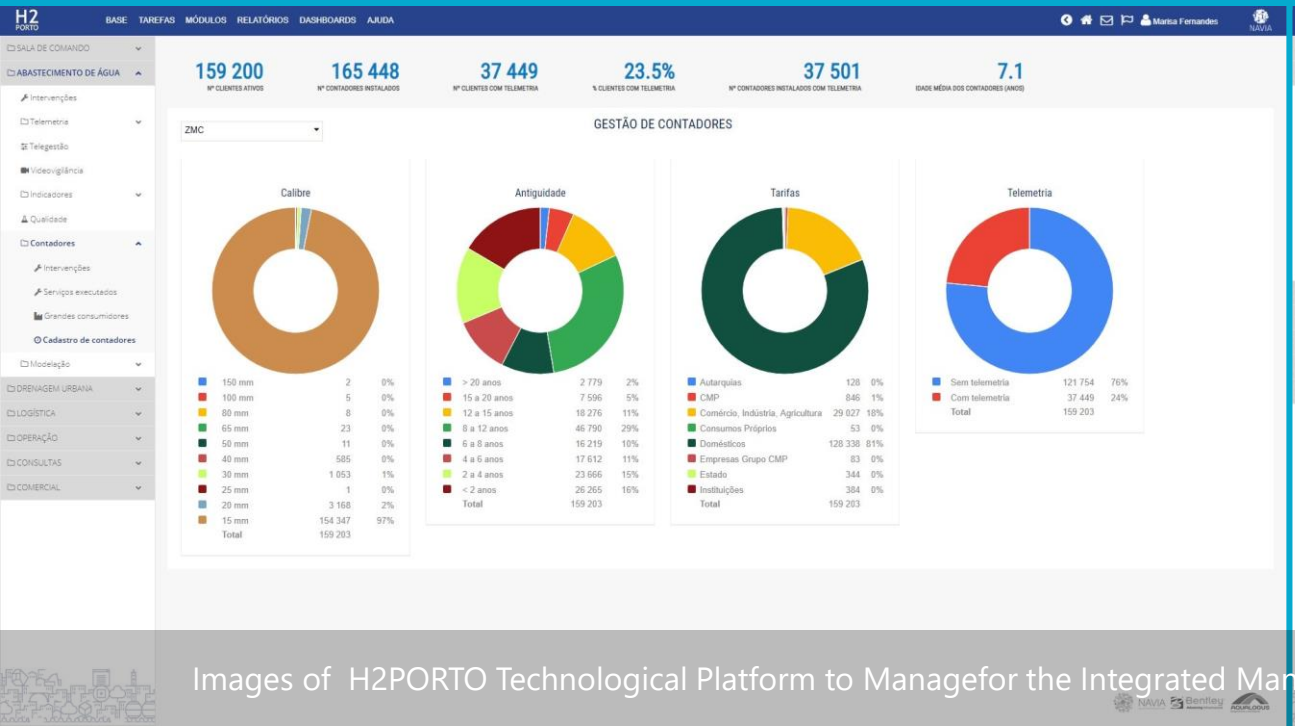
Correntes [modulo]
Correntes [vectores]
Douro Level Animated

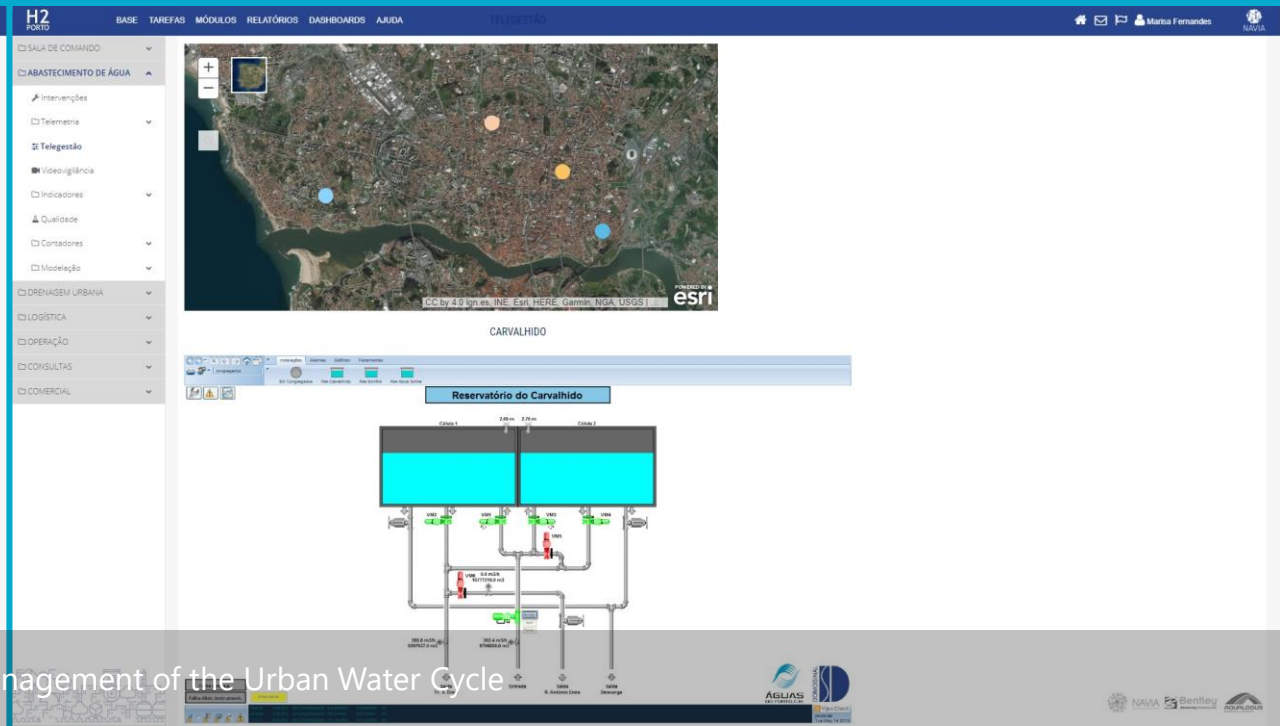
esri

NAVIA | Bentley









Images of H2PORTO Technological Platform to Managefor the Integrated Management of the Urban Water Cycle

Bentley®
OpenCities™ Planner
3D Visualization Software
for Urban Planning
Bentley
Advancing Infrastructure

OpenCities Planner is ideal for smart cities

Access

Share

Engage

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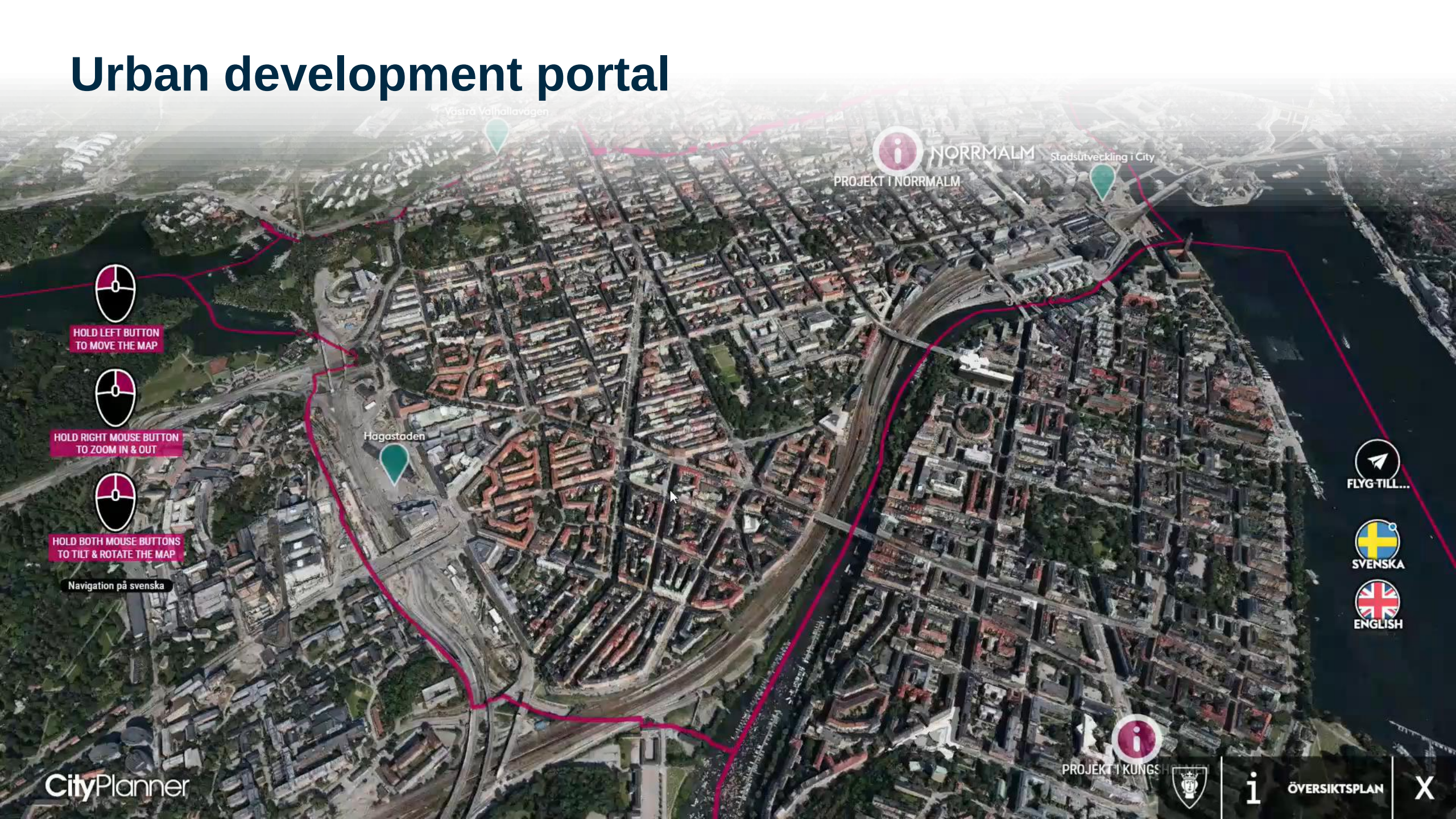
Urban development portal



Promotion and advancements

Visualization of city infrastructure

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Consultation and dialogue

Velkommen til Områderegulering for E39 Mandal-Lyngdal øst på offentlig ettersyn

For optimal funksjonalitet MÅ Google Chrome eller Firefox benyttes på grunn av store datamengder (link til nettleserne finner du på våre nettsider). Ved innlogging MÅ noe nedlastingstid beregnes i oppstarten. Nedlastningstid er avhengig av internetthastighet og datamaskin.

I henhold til plan- og bygningsloven § 12-10 legges forslag til områderegulering med konsekvensutredning for fremtidig E39 mellom Mandalskrysset og Herdal i Lyngdal ut til høring og offentlig ettersyn etter 1. gangs behandling i planutvalget i Mandal den 10.04.19, i teknisk utvalg den 08.04.19 og kommunestyret den 25.04.19 i Lindesnes, og i hovedutvalg for miljø, plan og drift i Lyngdal den 10.04.19.

Høringsperioden er 03.05.2019-14.06.2019.

I høringsperioden kan DU komme med innspill på Nye Veiers planforslag. Merk at alle innspill må leveres skriftlig (per post eller e-mail) til prosjektets mailkonto (E39ML@sweco.no, Nye Veier, eller denne kartløsningen.

Denne digitale kartløsningen gir en god oversikt over planforslaget «*Områderegulering for E39 Mandal – Lyngdal Øst*» oversendt til førstegangsbehandling 6.mars 2019 av Nye Veier. Her vil du se en 3D-visualisering av Nye Veiers anbefalte korridor for ny E39 mellom Mandal og Lyngdal Øst. 3D-visualiseringen viser forslag til planlagt vei innenfor områdereguleringens plangrense. Merk at veilinjen som ligger inne vil kunne optimaliseres og justeres innenfor plangrensen. Først i etterfølgende planfase vil tiltaket detaljeres ut.

I kartløsningen kan du skru av, og på, ulike kartlag. Dette gjør at du har mulighet til å se

Engagement and dialogue

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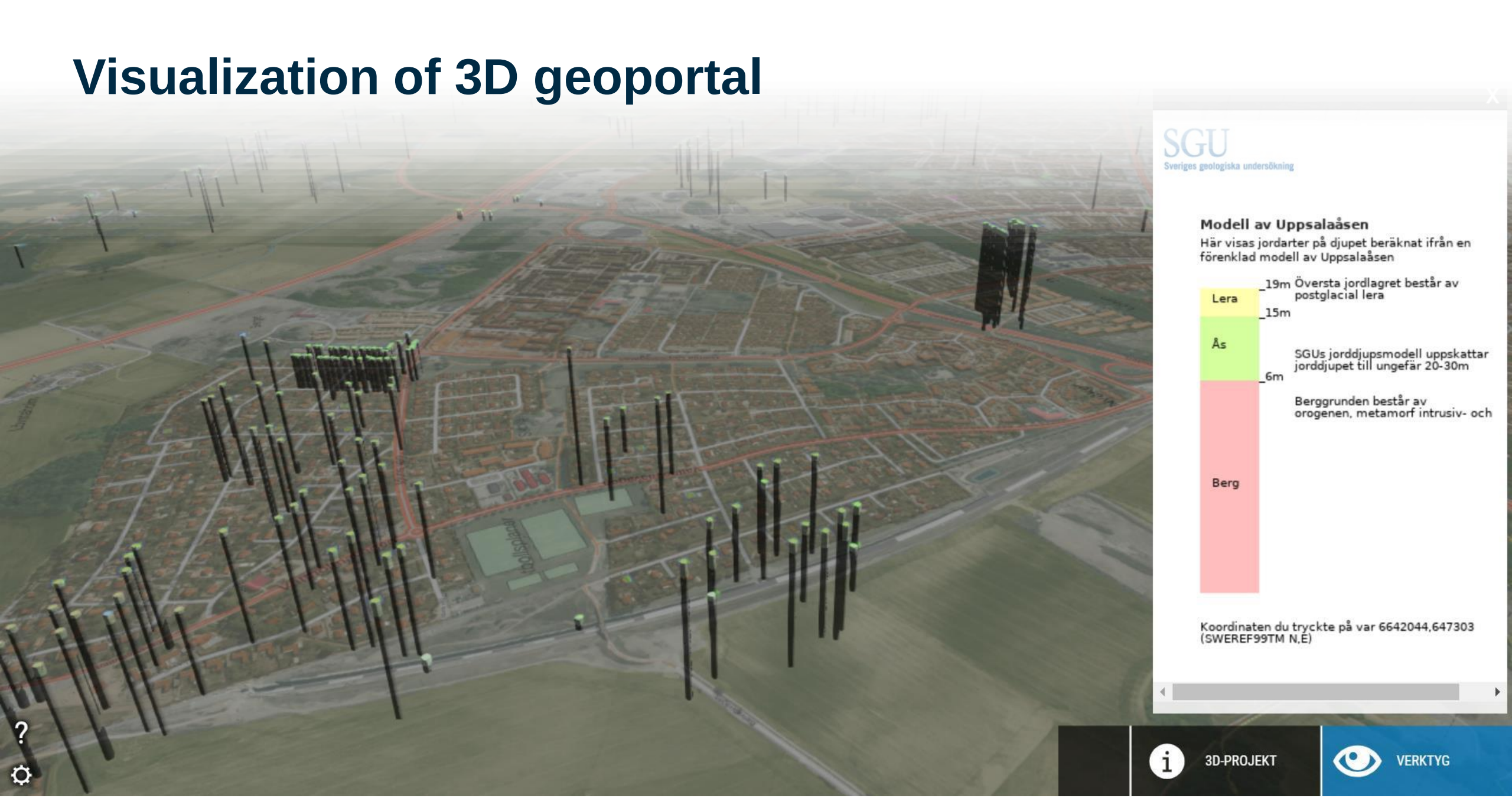
Visualization of 3D geoportal



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« Bienvenue à Marseille » — City

https://editortest.cityplanneronline.com/bentleytest/marseille

Paused

« BIENVENUE À MARSEILLE »

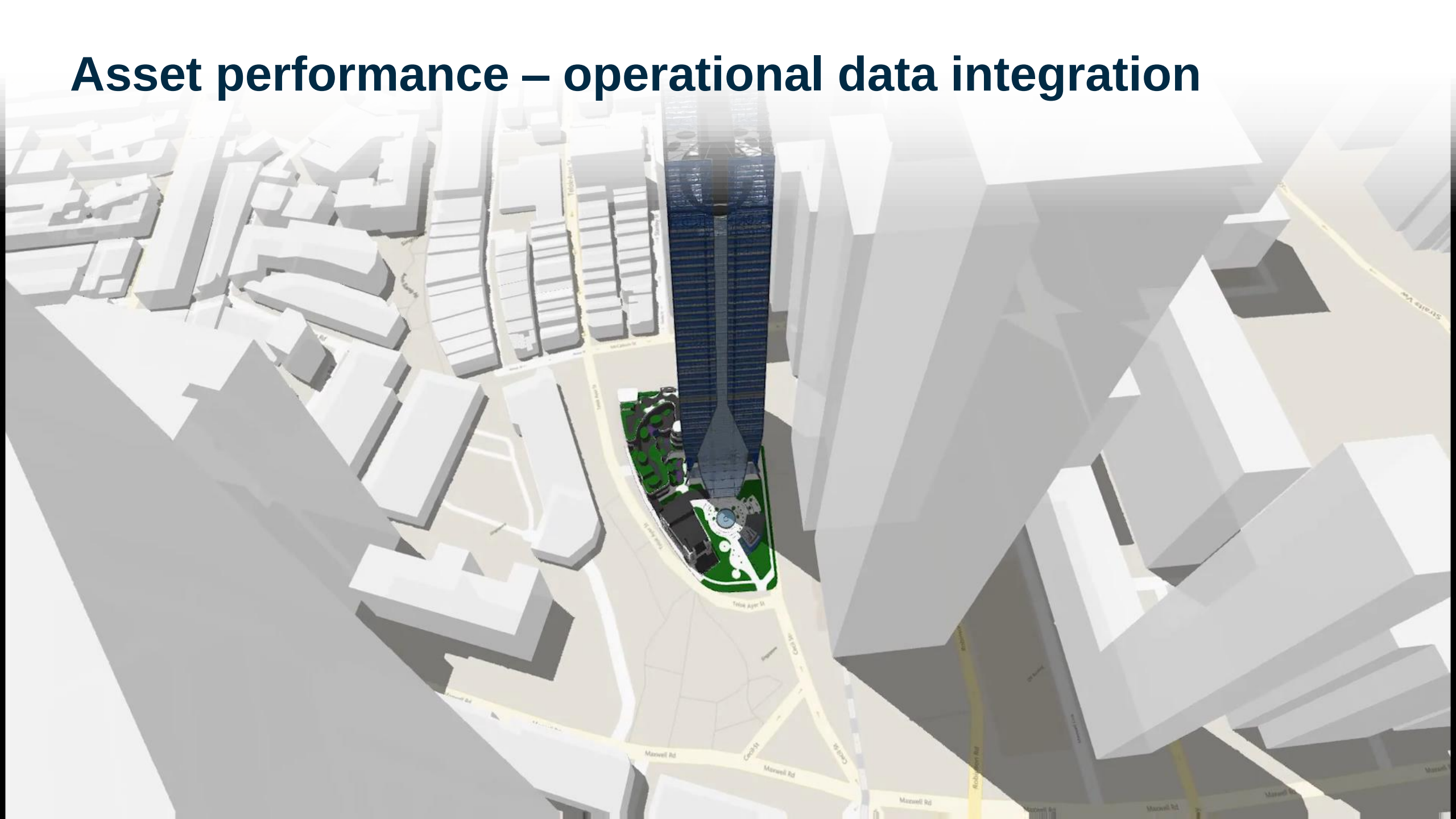
This demo shows integration of a reality model with a digital terrain model, ortho imagery, and vector data from a spatial database.

Here's what you can do:

- Click a building to see the associated database attributes
- Toggle different layers to overlay geo-data
- Use the search feature to look up locations from a connected spatial database

Database driven application

Asset performance – operational data integration



Supports massive datasets

- Streaming technology
- Visualize entire cities and countries
- Visualize terrain models, reality meshes, semantic models such as CityGML

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Files

- 3D-models, such as a 3D city set
- DSM/DTM
- Ortho Images
- Reality Models
- Vector

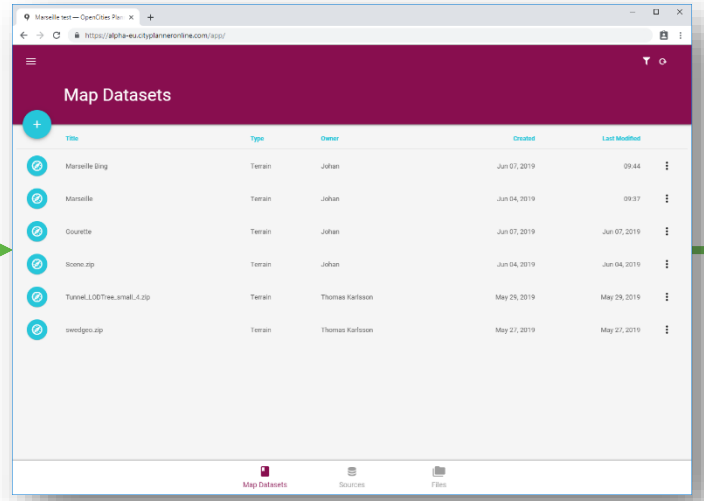
Services

- WCS
- WMS

Databases

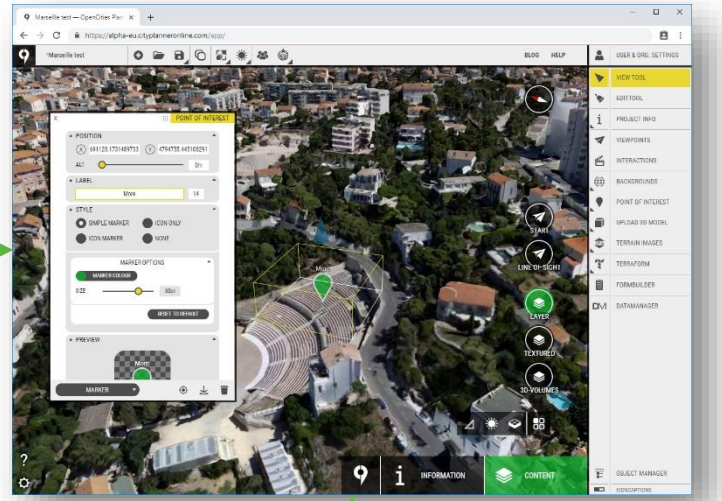
- Spatial databases such as Oracle Spatial, PostGreSQL
- Geometry and attributes
- 3DCityDB (CityGML) or custom database layout

DataManager



OCP streaming format

Project Editor



Project content

- WMS, Geo Images, Shape
- 3D CAD models
- Points of interest
- Questionnaire form
- Editor Tools: Sketching, Shadows, Videos

OpenCities™ Planner

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Live visualization from spatial database

Semantic 3D city models, zoning, assets, points of interests, vector geometry

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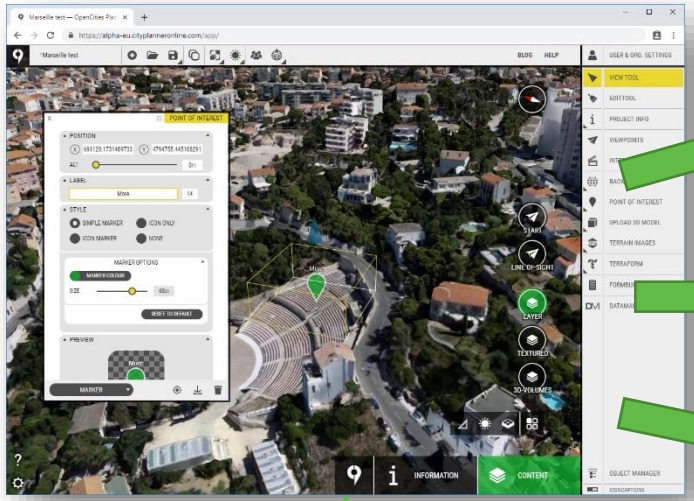
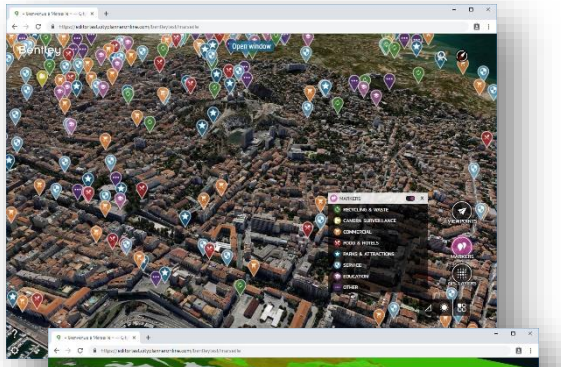
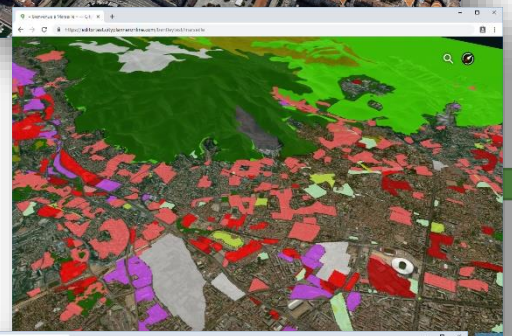
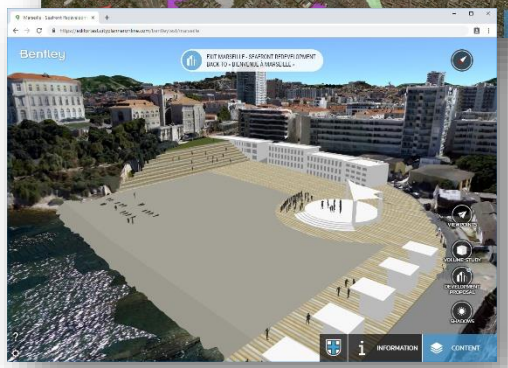
Project Editor









Team, Stakeholders, Citizens

Project content

- WMS, Geo Images, Shape
- 3D CAD models
- Points of interest
- Questionnaire form
- Editor Tools: Sketching, Shadows, Videos

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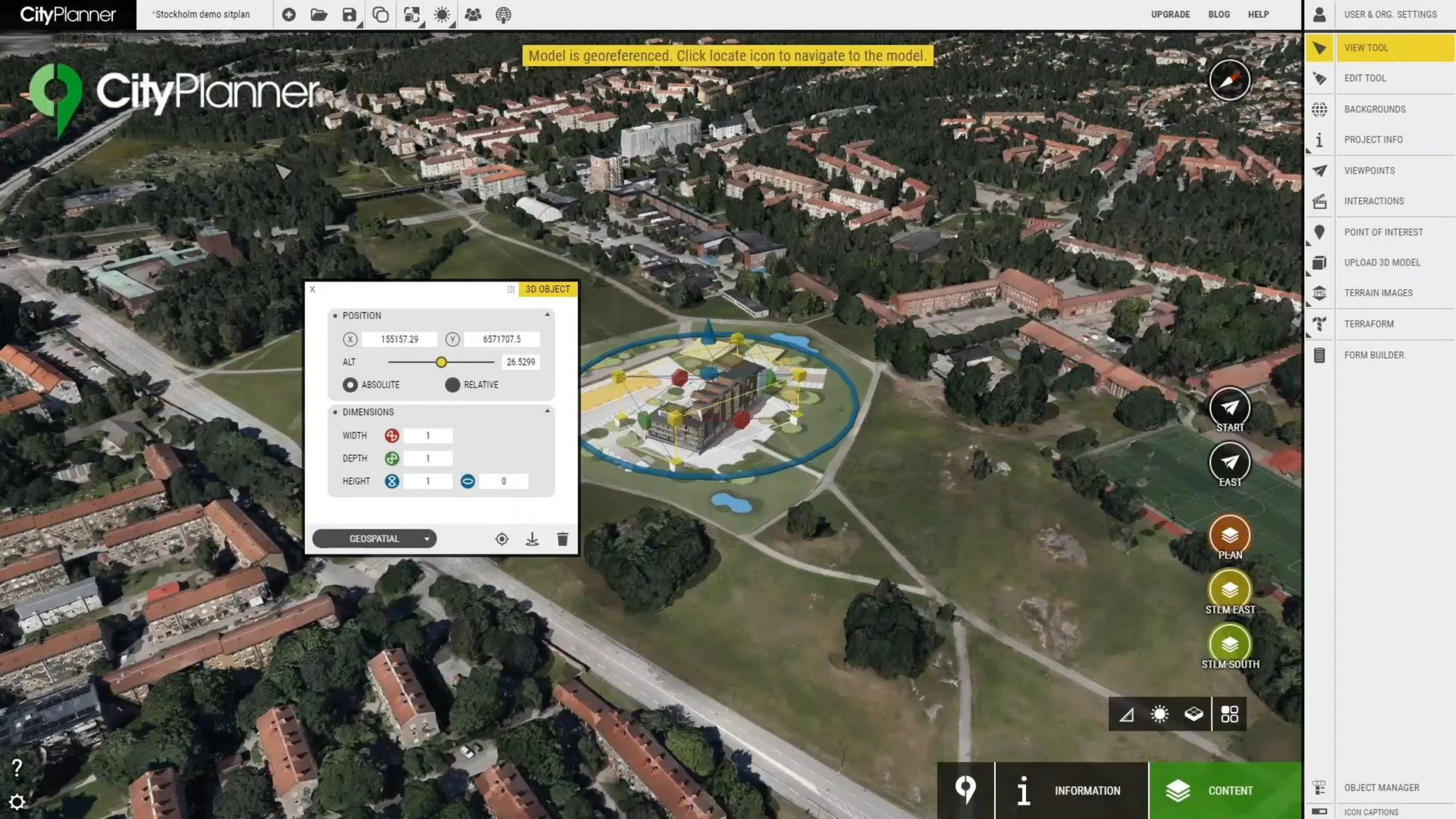
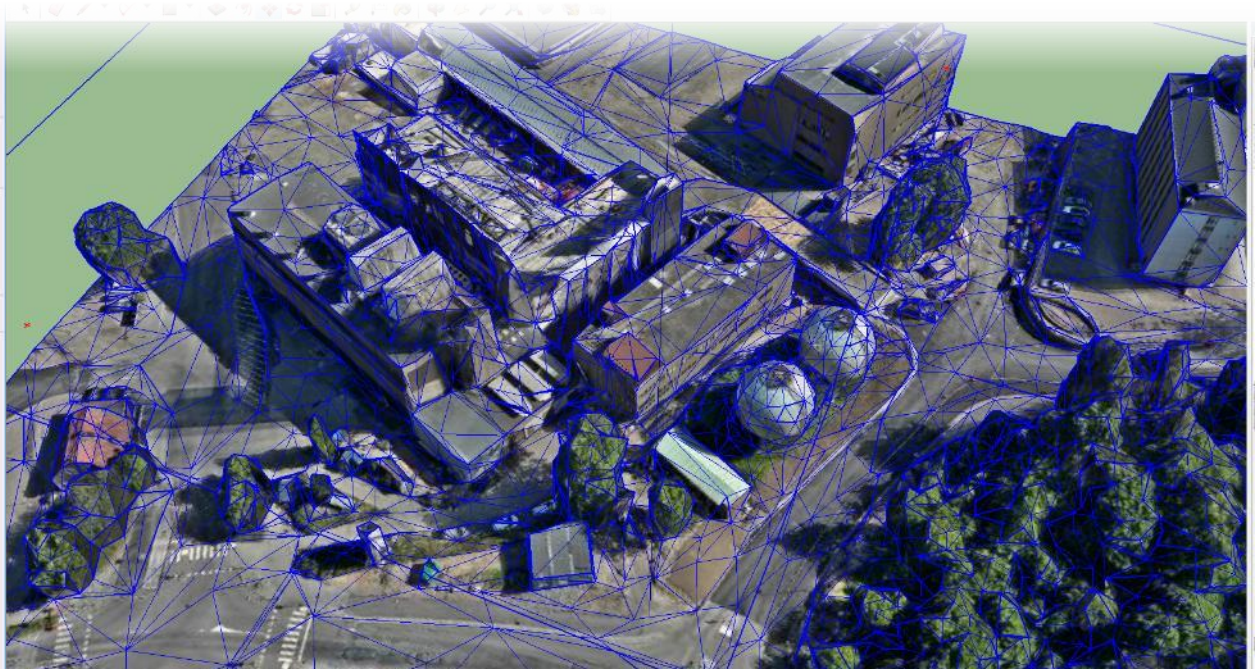

CityPlanner
*Stockholm demo sitplan
UPGRADE
BLOG
HELP
USER & ORG. SETTINGS
Model is georeferenced. Click locate icon to navigate to the model.
CityPlanner
VIEW TOOL
EDIT TOOL
BACKGROUNDS
PROJECT INFO
VIEWPOINTS
INTERACTIONS
POINT OF INTEREST
UPLOAD 3D MODEL
TERRAIN IMAGES
TERRAFORM
FORM BUILDER
3D OBJECT
POSITION
X 155157.29
Y 6571707.5
ALT 26.5299
ABSOLUTE
RELATIVE
DIMENSIONS
WIDTH 1
DEPTH 1
HEIGHT 1
0
GEOSPATIAL
START
EAST
PLAN
STLM EAST
STLM SOUTH
INFORMATION
CONTENT
OBJECT MANAGER
ICON CAPTIONS

Export 3D

- KMZ/Collada exports from the entire 3D city model
- Separate files or combine to one
- Quality setting



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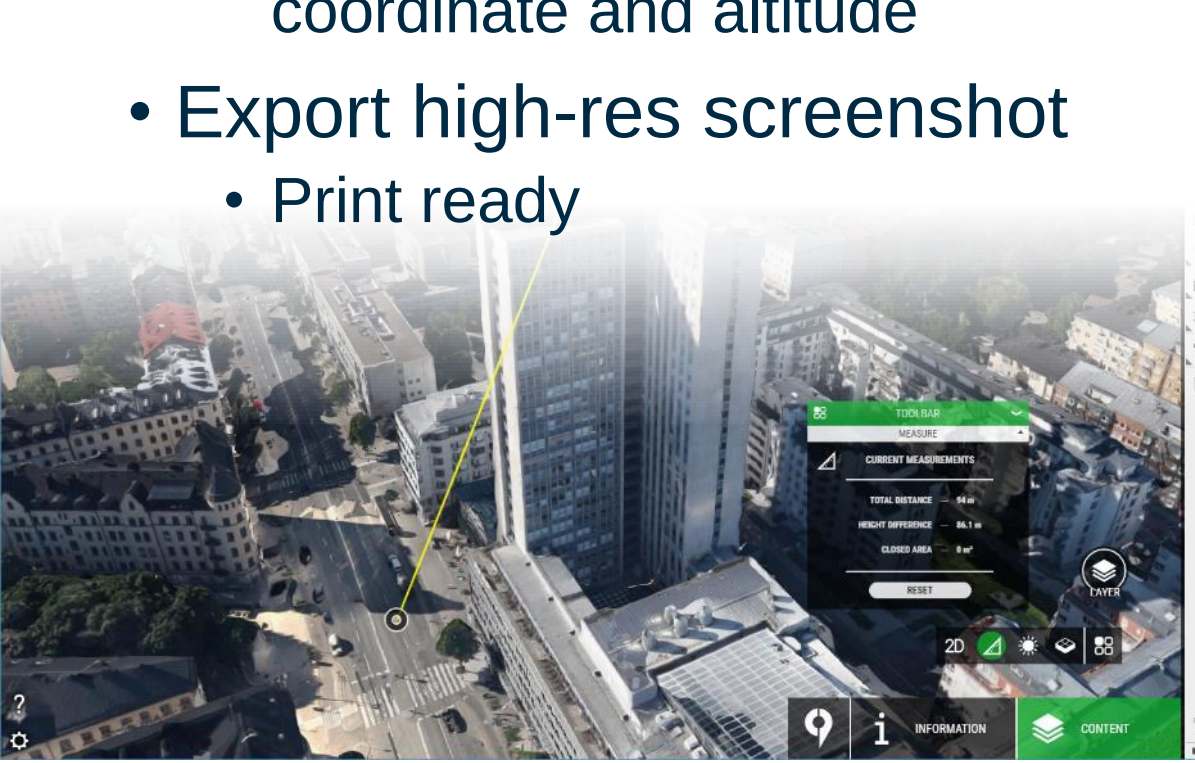
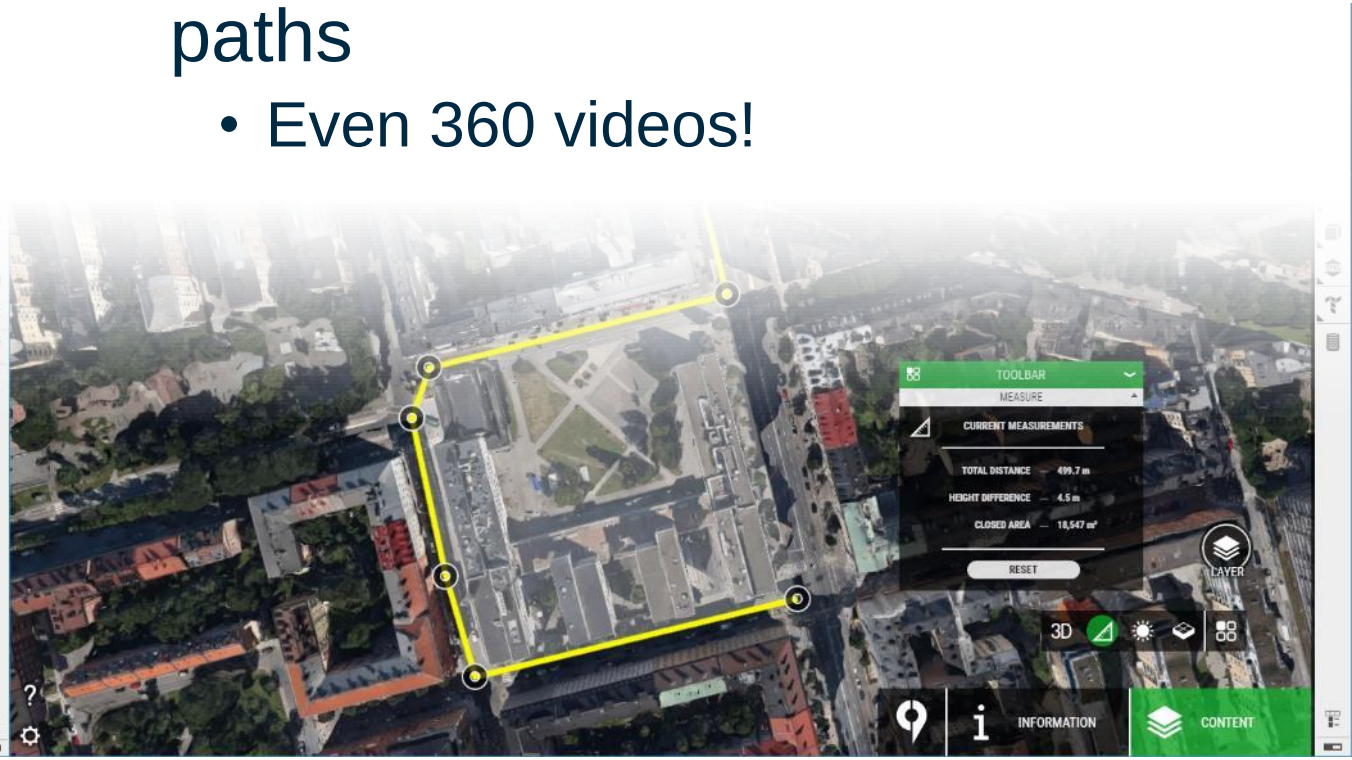
More editor tools

- Measure
  - Distance, height, area
  - Also, shows cursor current coordinate and altitude
- Export high-res screenshot
  - Print ready
- Export 360 panorama image tours
- Export videos from camera paths
  - Even 360 videos!





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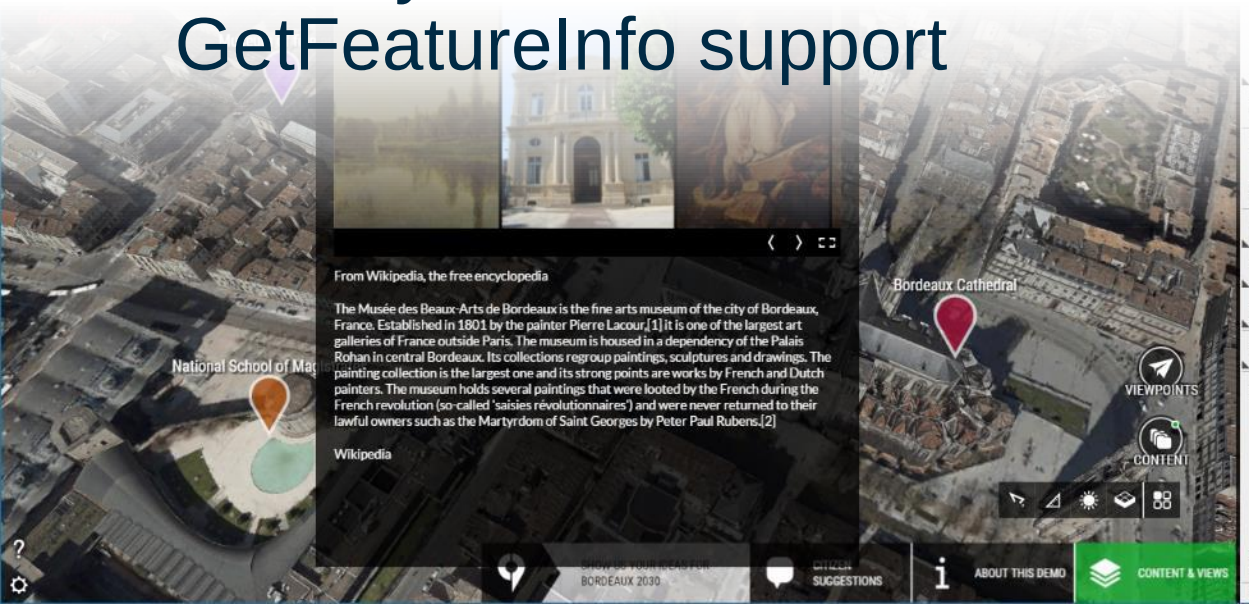
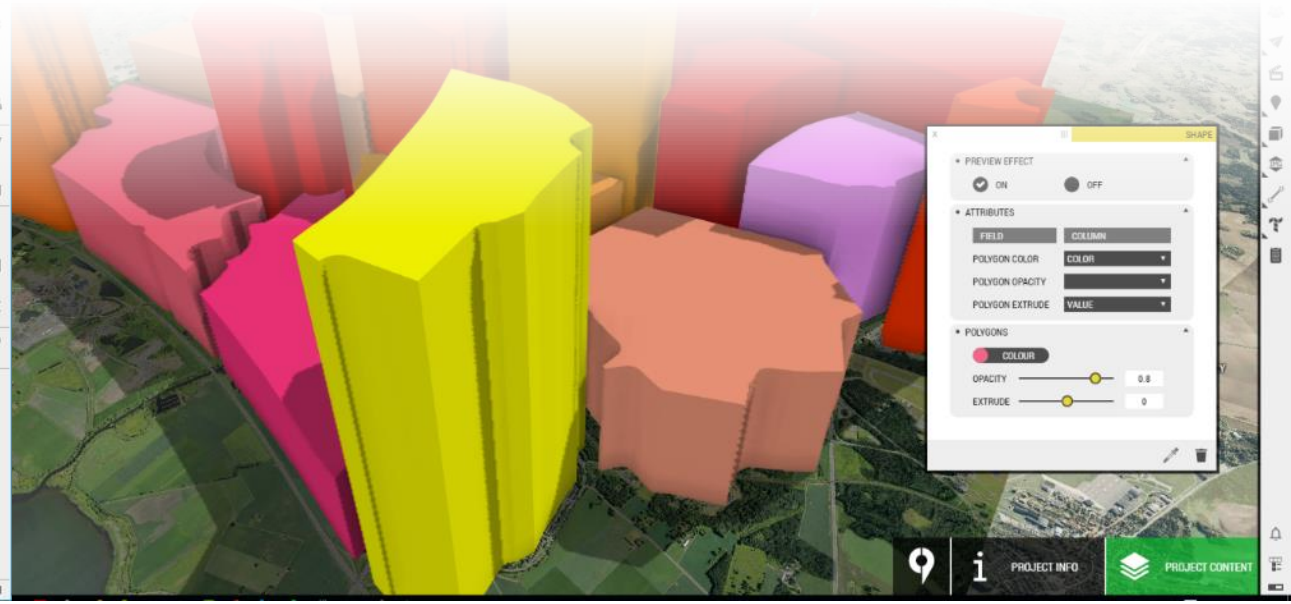
Adding point of interests, vector, and WMS

- Add point of interests with support for images, text, embedded content, attachments
- Overlay WMS with GetFeatureInfo support



- Shape files, texture on ground or extrude to 3D. Show attributes on click.



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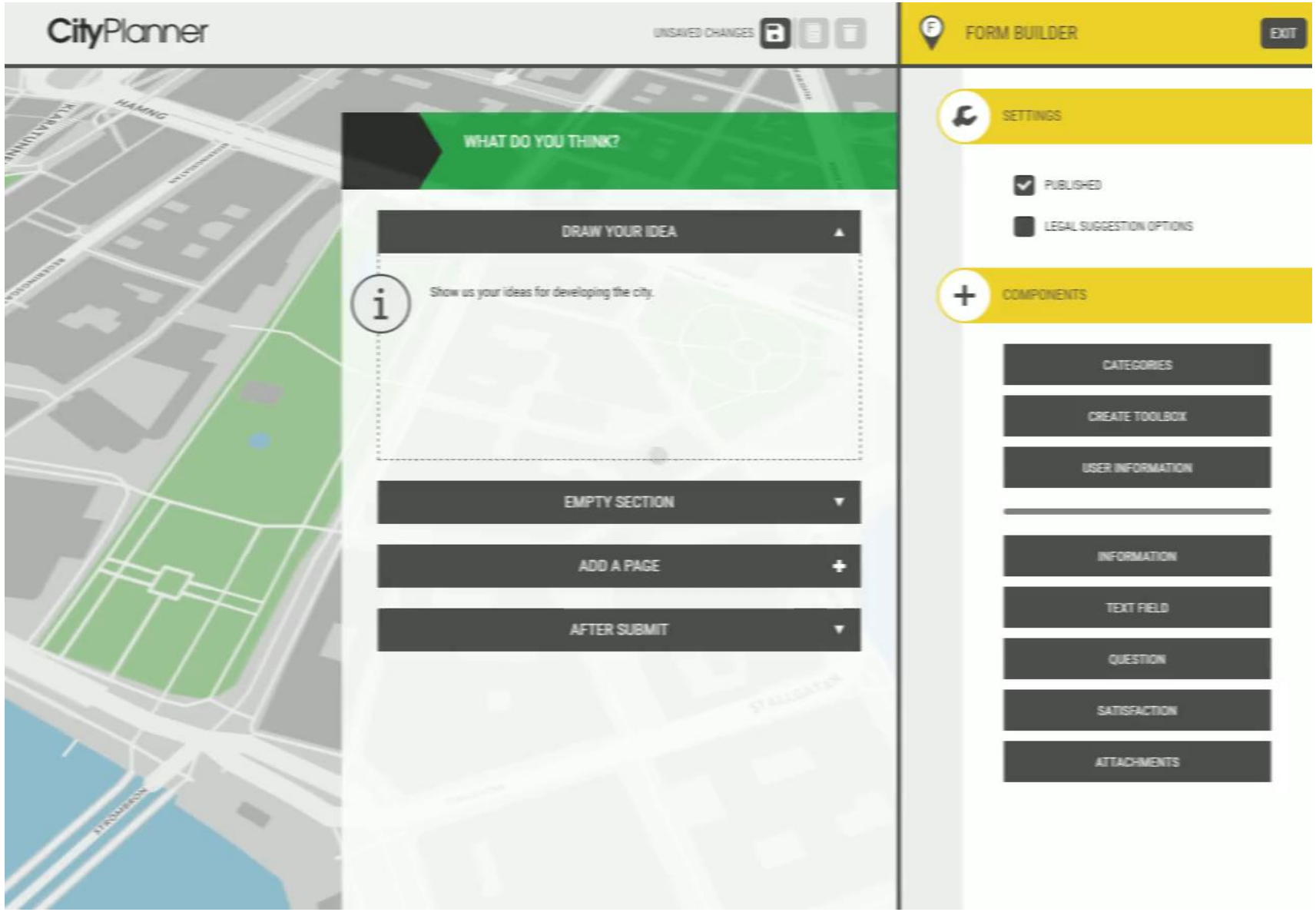
Creating a dialogue or user interaction



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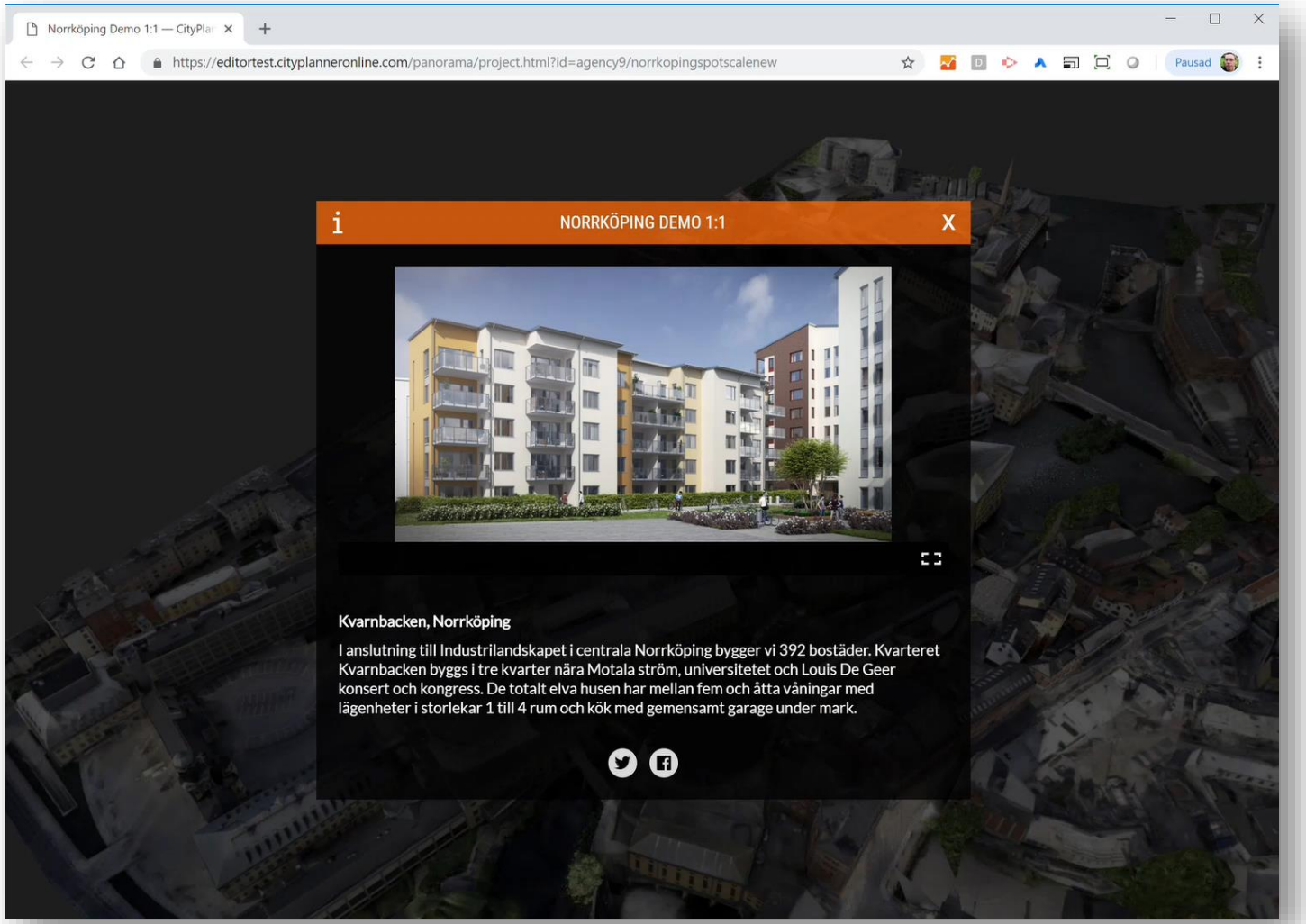
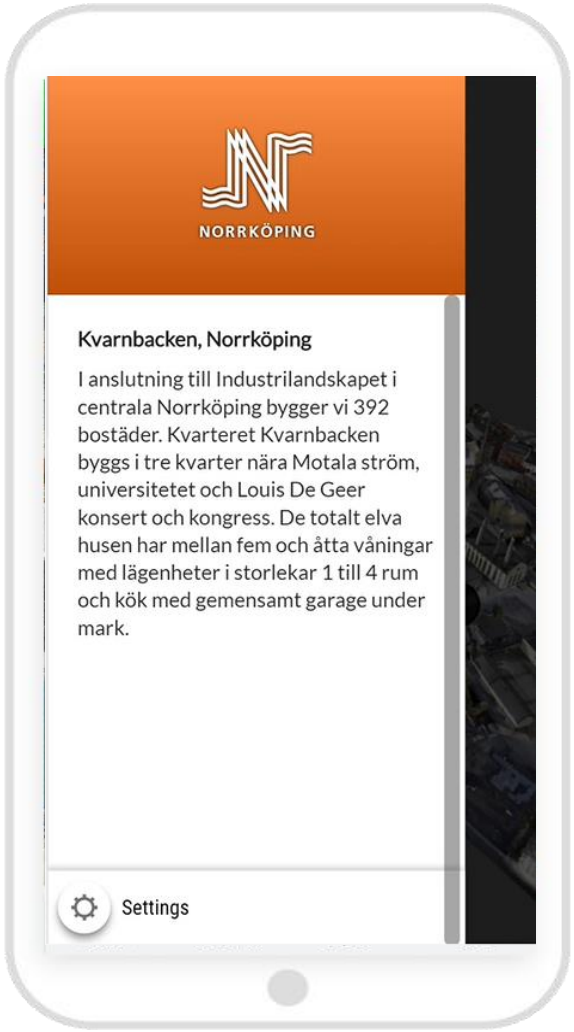
Desktop



Mobile



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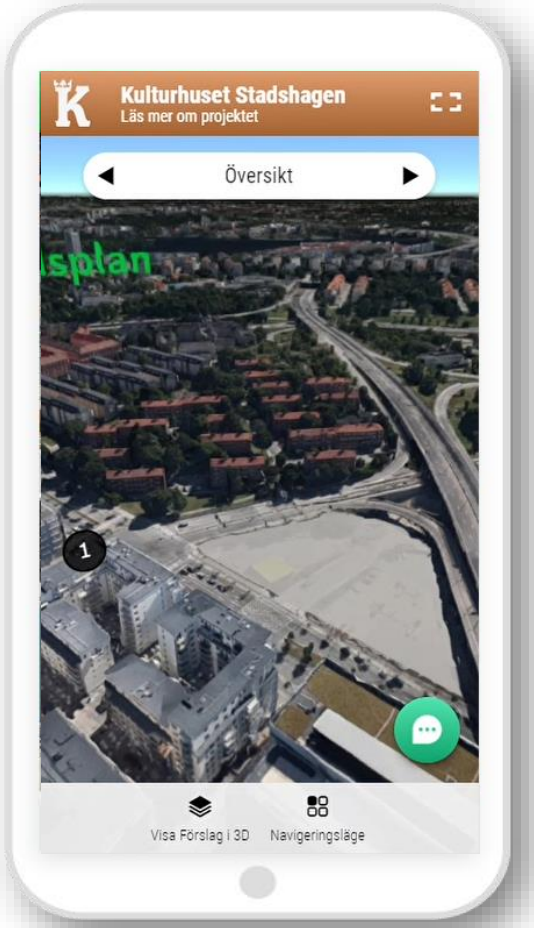
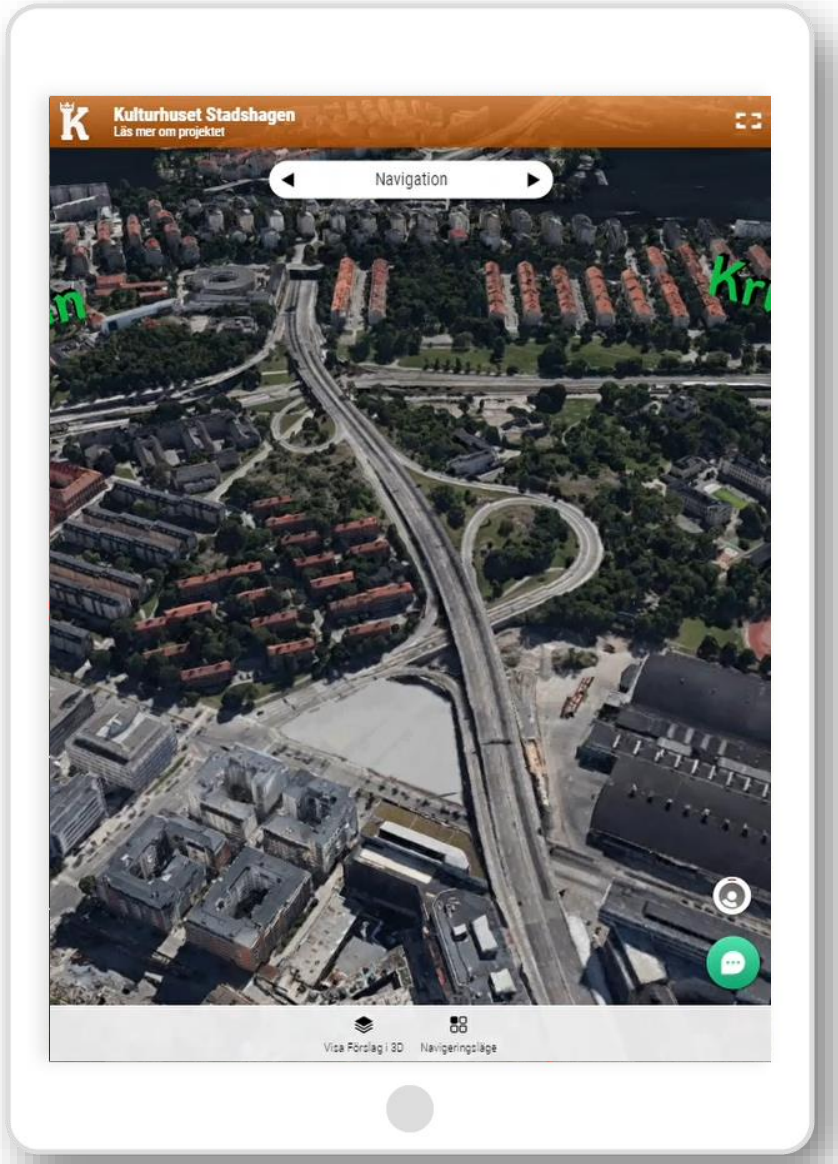
Panorama and interactive 3D





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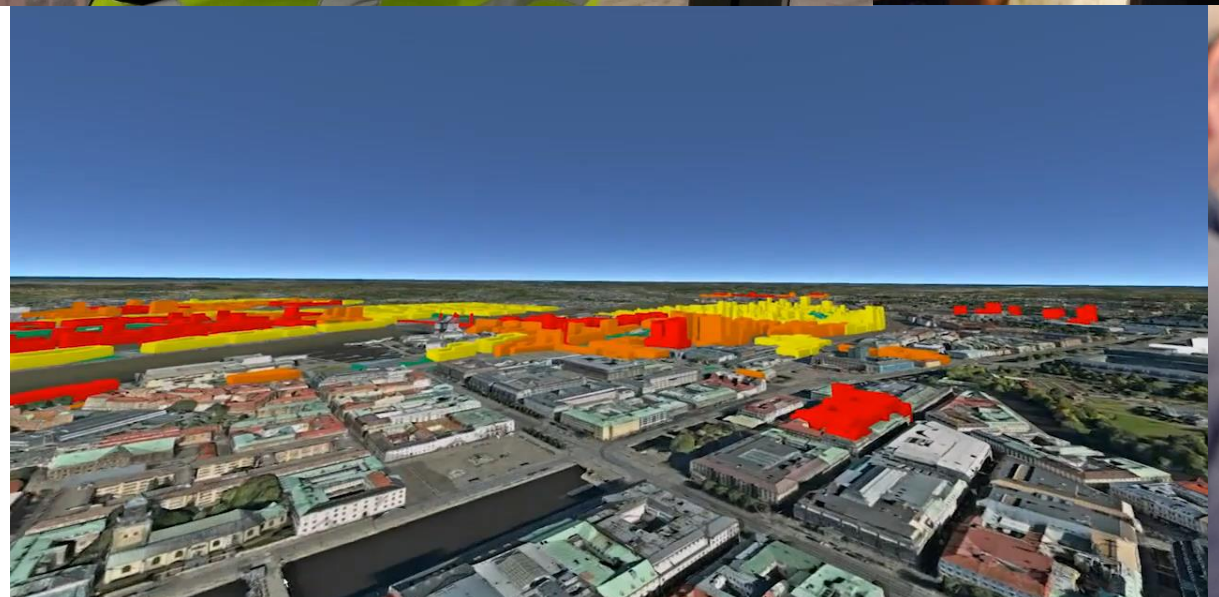
Showroom and project office display



Named Users

Team

View and interact

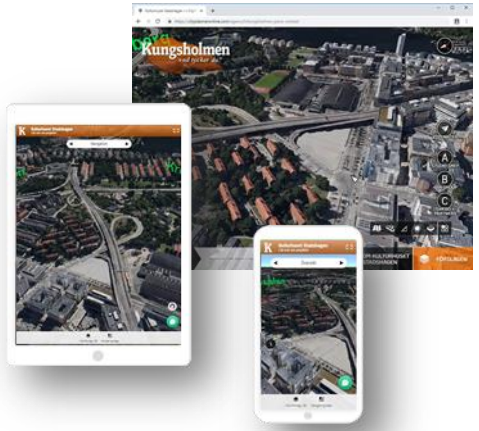
Creator

Create, share, manage

Exhibitor

Create, share, manage

URL



View and interact (No cost)

Showroom application

Teams, Stakeholders, Citizens

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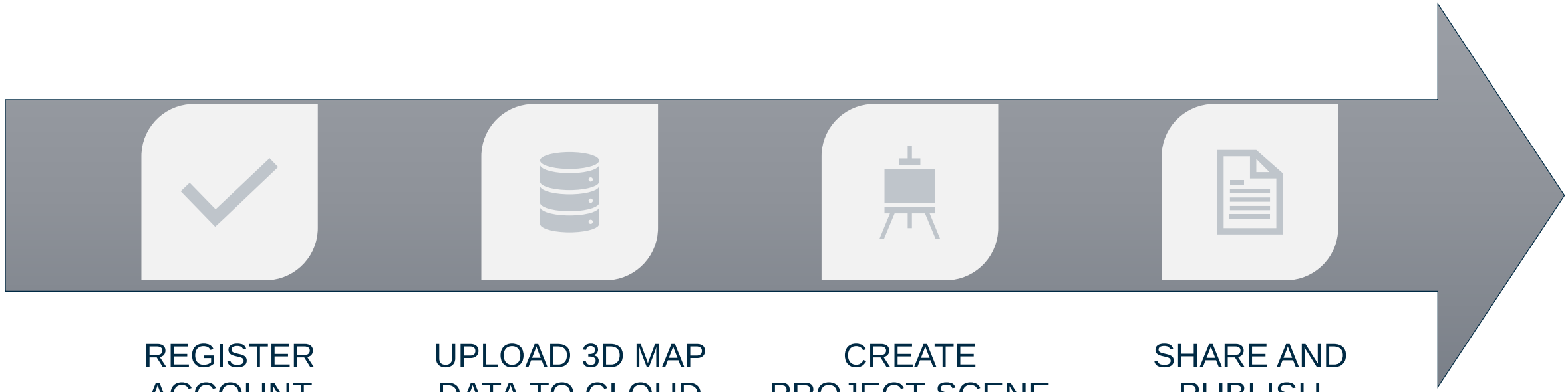
Easy deployment in the cloud



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Summary

More efficient projects

- Easily share project information
- Short review and feed-back lead time
- Improved decision material
- Tools for use throughout organization

Decreased costs

- Same solution for web, mobile and exhibition screens
- Reuse of city model and mapping data in several projects
- Easy to access information at home, office or in meetings

Engagement

- Powerful communication of project externally
- Less complaints and formal appeal
- Shorter planning process
- Dialogue with wider groups of citizens

Planning tools, Project communication, Transparency and dialogue, Promotion

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