

# xD Twin

Digital Twin for Built Environment

*“Built environment management  
using open standards”*



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# WDBE 2022 Awards winner

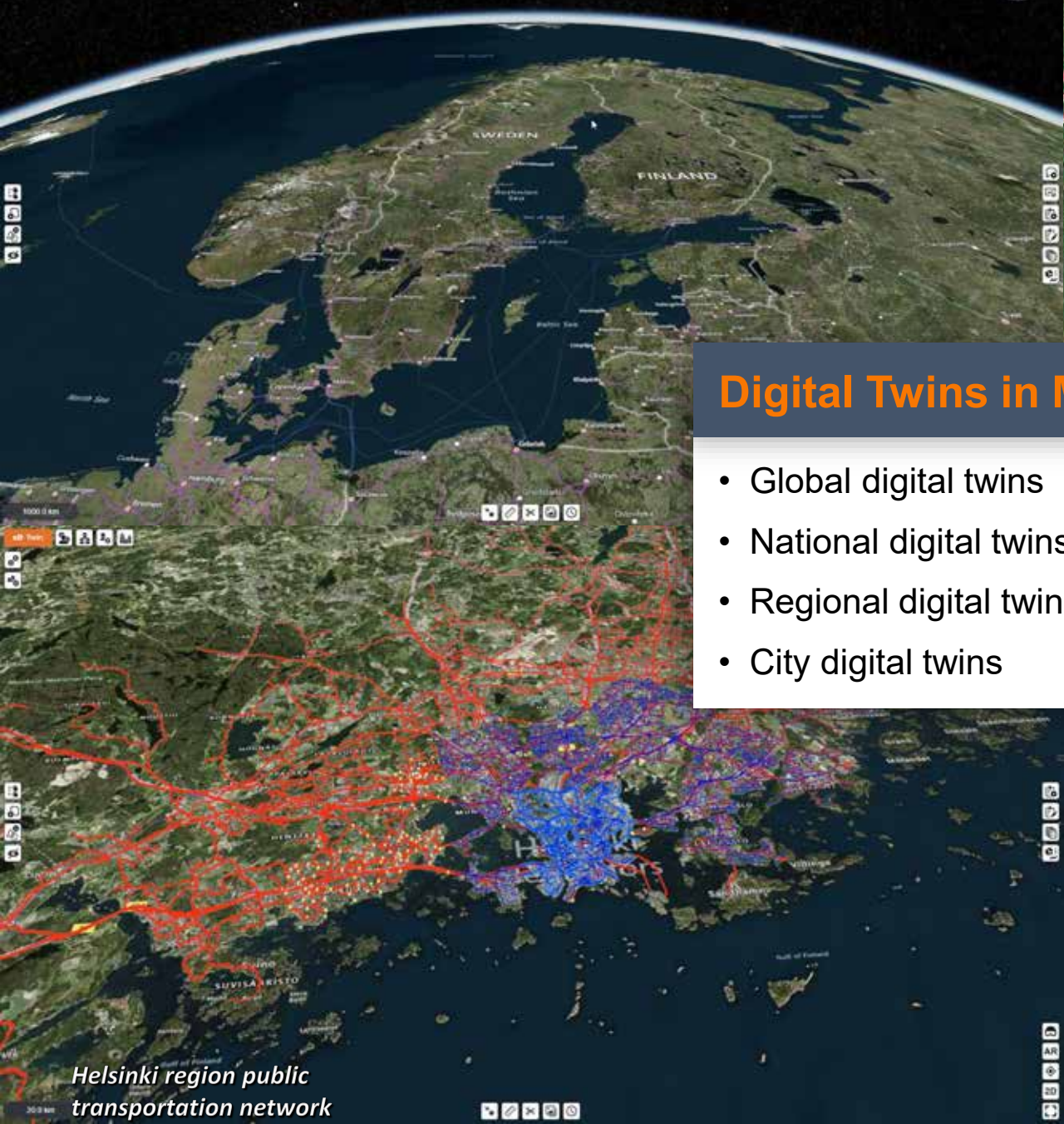
## The best use of open standards

The WDBE community includes over 2000 professionals from 54 countries. We are CDOs, CTOs, CIOs in real estate and construction, government and city officials, architects, engineers, other experts as well as researchers working with BIM, VDC, AR/VR, Big Data, analytics, IOT, virtual project delivery and more.



Jan Saar, Head of Digital Construction, Ministry of Economic Affairs and Communications for Estonia, announcing the winner of WDBE 2022 Awards for category "The best use of open standards" (29.10.2022, <https://kirahub.org/en/wdbe/>)





Helsinki region public  
transportation network

## Digital Twins in Multiple Scales

- Global digital twins
- National digital twins
- Regional digital twins
- City digital twins



City digital twin  
Helsinki, Finland



Map and GIS based City Model, Stockholm, Sweden



Point cloud based City Model, Melbourne, Australia



## Digital Twins for Cities

- Map and GIS (GML, WMS, WFS)
- Point clouds (LAS, LAZ)
- Photogrammetry (3DTiles)
- Schematic City Models (CityGML)

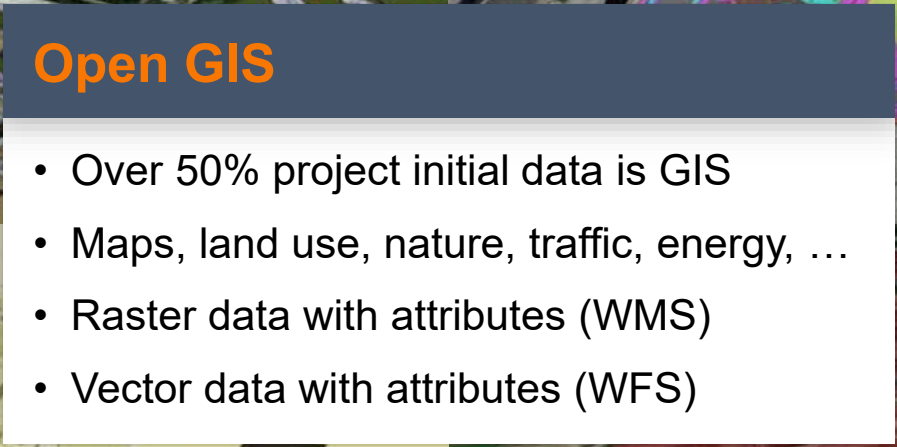


Photogrammetry based City Model,  
Helsinki, Finland



CityGML based City Model,  
Helsinki, Finland









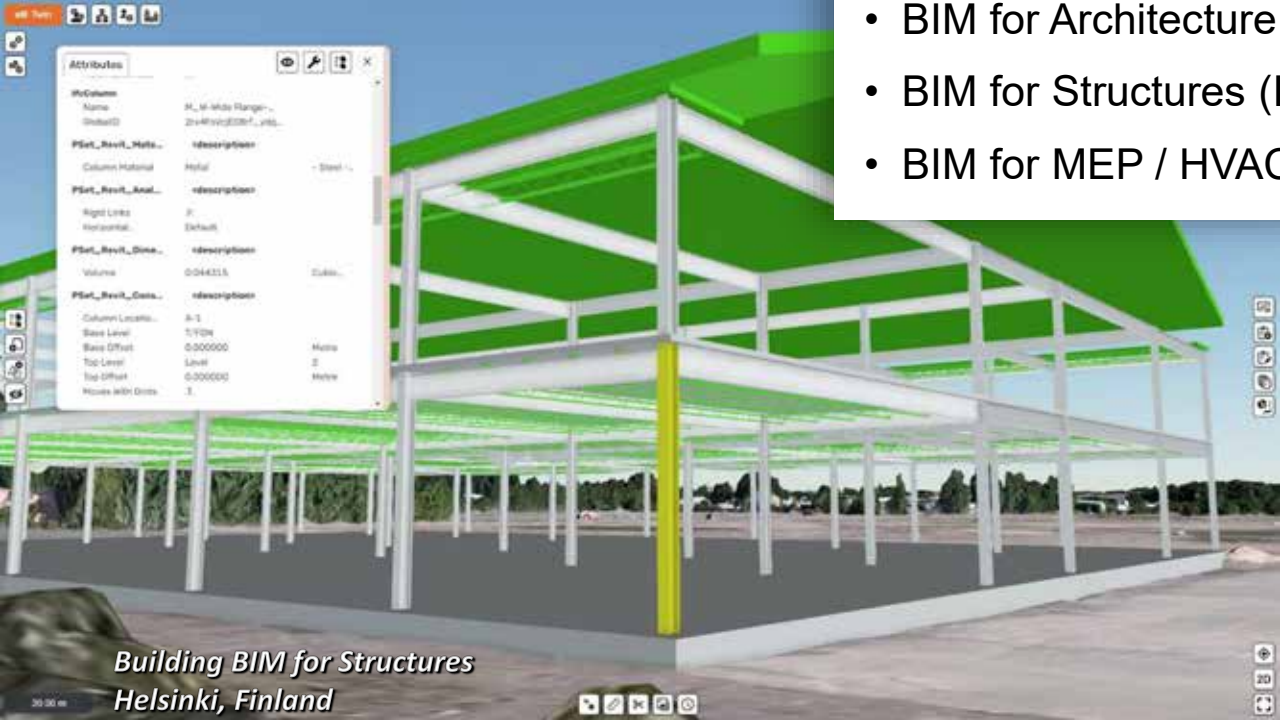
*Triagon towers, winner of architectural competition, Helsinki, Finland*



*Building BIM for Architecture Helsinki, Finland*

## Open BIM for Buildings

- 3D / CAD design models
- BIM for Architecture (IFC)
- BIM for Structures (IFC)
- BIM for MEP / HVAC (IFC)

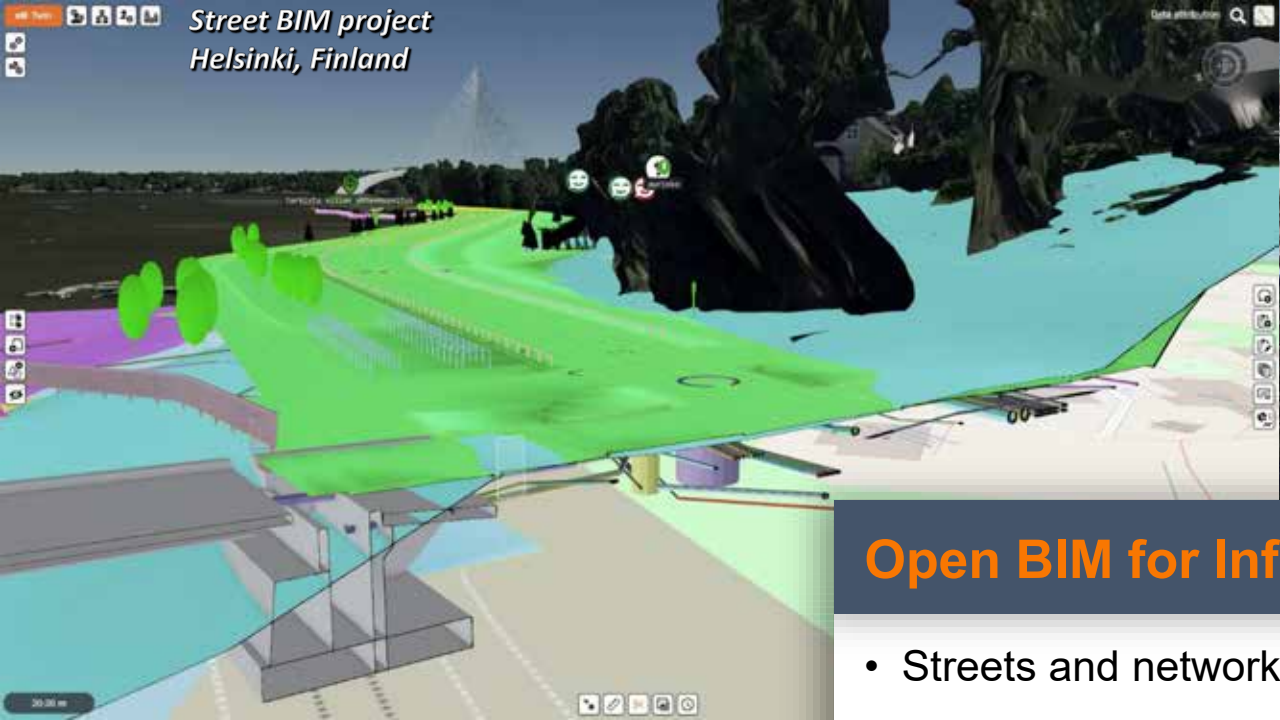


*Building BIM for Structures Helsinki, Finland*



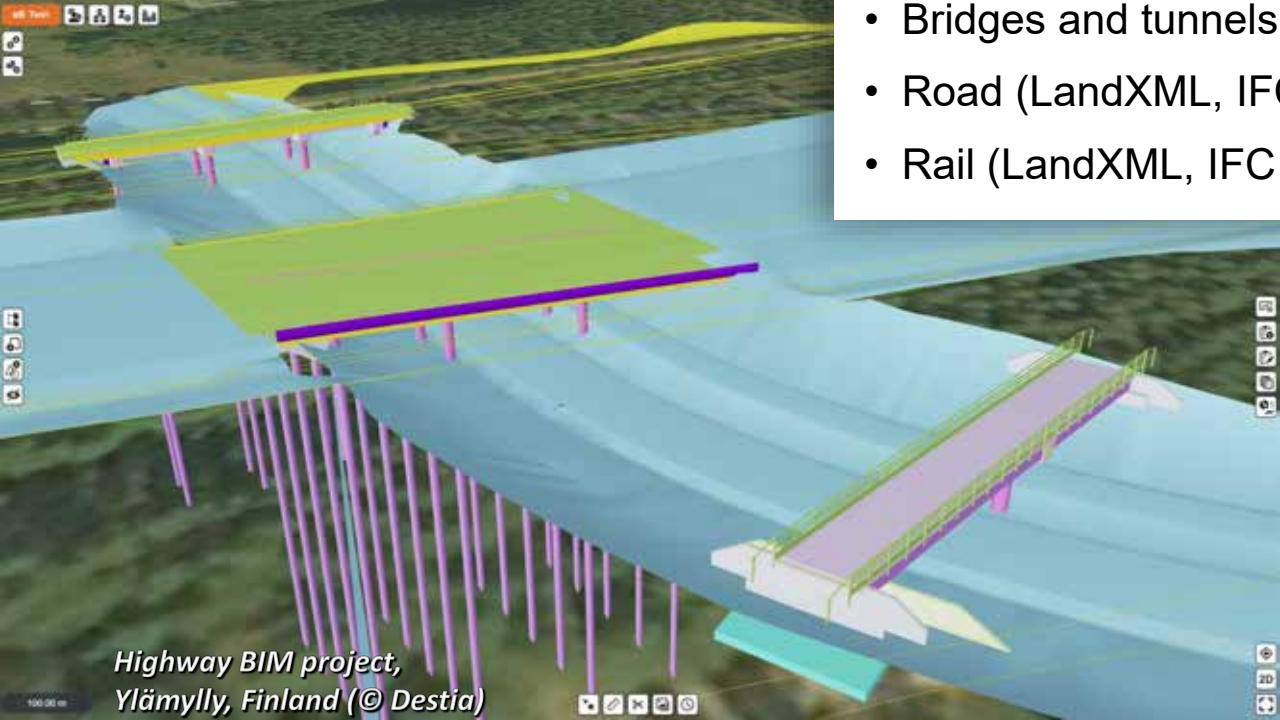
*Building BIM for MEP / HVAC Helsinki, Finland*





## Open BIM for Infrastructure

- Streets and networks (LandXML, IFC)
- Bridges and tunnels (IFC)
- Road (LandXML, IFC 4.3)
- Rail (LandXML, IFC 4.3)





*Virtual Reality (VR) allows users view data from inside*

*Augmented Reality (AR) allows users view data around them on-site*



## Built Environment Metaverse

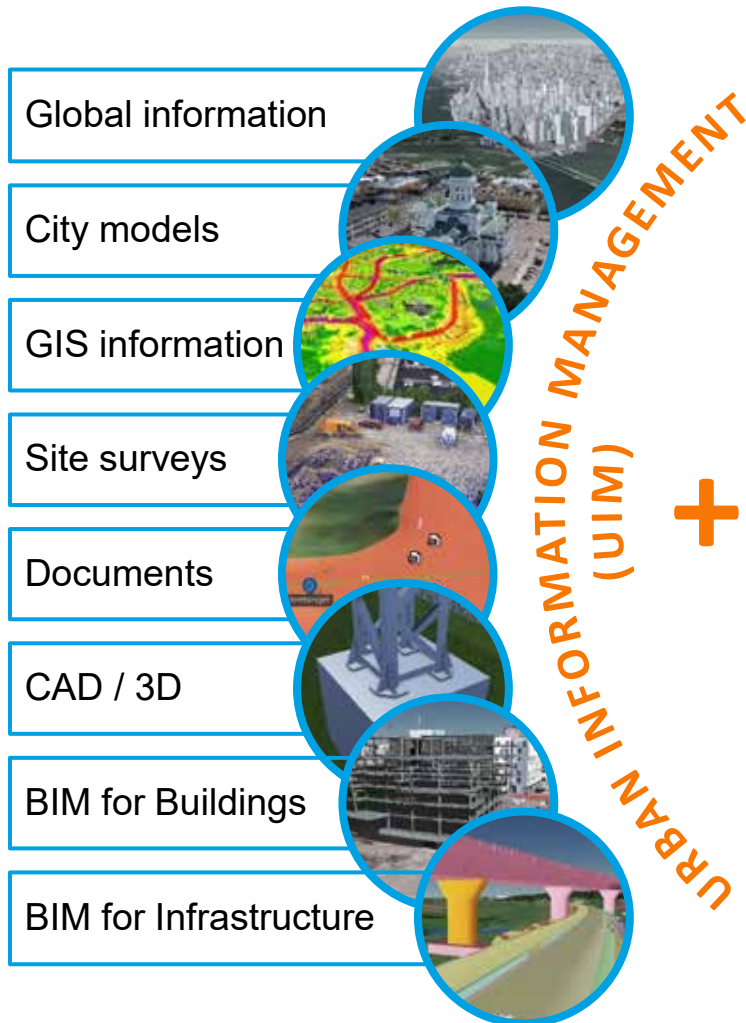
- Data is already georeferenced around us
- VR takes you inside the data
- AR shows the data around you
- Game engines opens new possibilities



*Helsinki city model inside Unreal Engine 5  
© City of Helsinki, xD Visuals Oy*



# xD Twin – Digital Twin for Built Environment



*Information + Processes = Productivity*



## Collaboration

*to co-develop and optimize project solutions*

*Combined “one source of truth” project model with all disciplines and life cycle phases*



## Coordination

*to maximize productivity and quality*

*Integrated issue, task, approval and QA workflows with 4D schedules, 5D costs, 6D sustainability, ... xD*



## Communication

*to increase acceptance, transparency and trust*

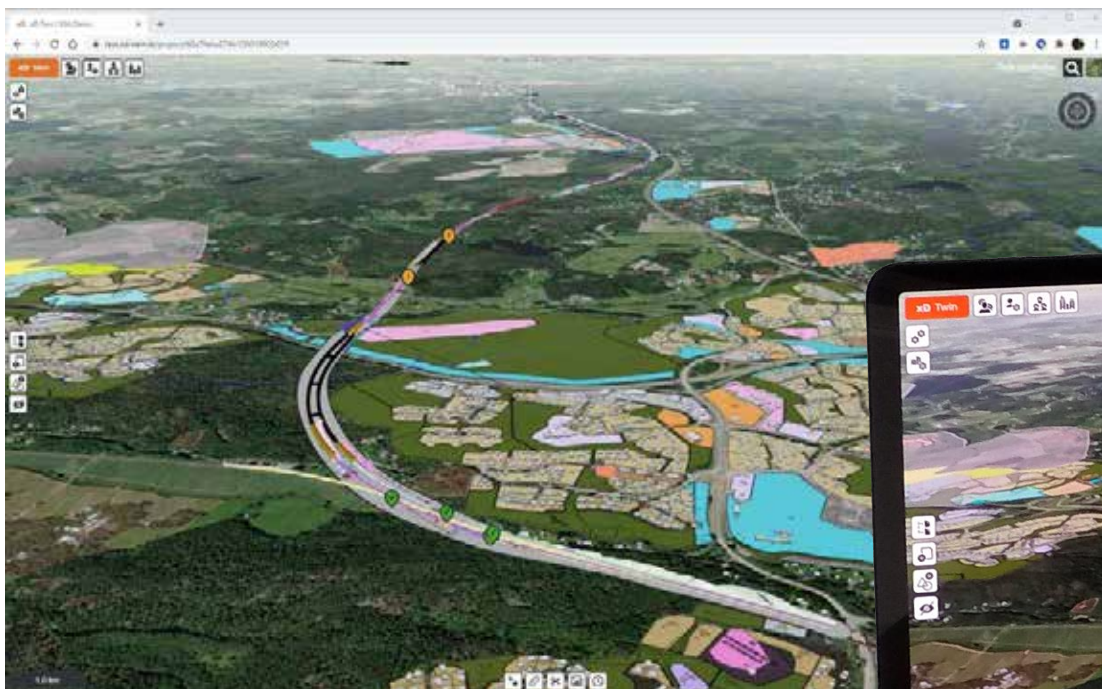
*Visual and interactive project presentations with citizen and stakeholder participation workflows*



# Modern cloud solution

*"Completely cloud-based SaaS solution and flexible licensing ensures that everyone can participate and benefit from the same commonly shared and always up-to-date information and workflows."*

*Localized in your local language*



Computer browser

*Easily, anywhere,  
anytime*

Tablet browser



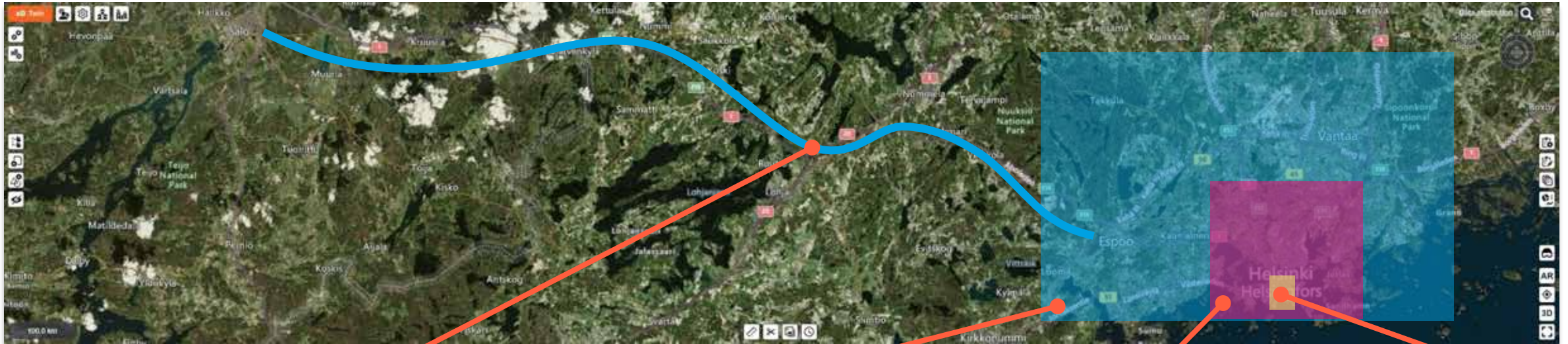
Smartphone browser



*With any smart device*



# Projects in All Scales



**National**  
(transportation, energy,  
natural resources, ...)

**Regional**  
(traffic, water, waste,  
circular economy, ...)

**City**  
(city planning, traffic,  
environment, ...)

**Area**  
(buildings, infrastructure,  
landscaping, ...)



# Projects in all Life Cycle Phases

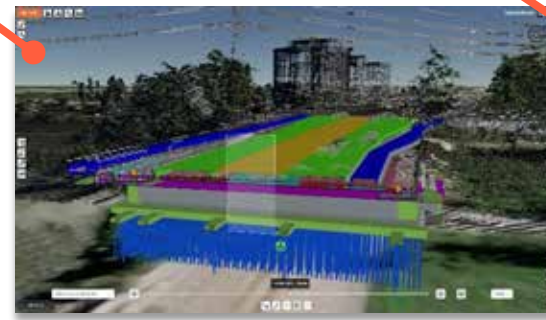
*Hiedanranta Area Plan, Tampere*



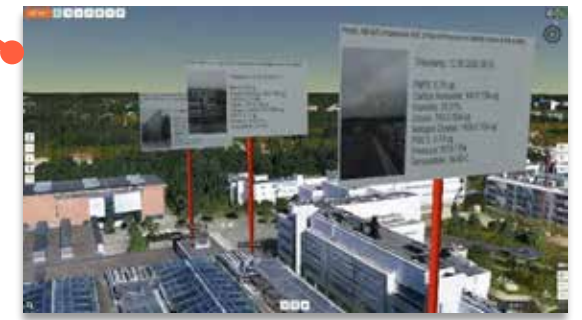
**Planning**  
(ideas, sketch, volumes,  
requirements, ...)



**Design**  
(coordination, collaboration,  
communication, ...)



**Construction**  
(survey, as-built comparing, scheduling,  
tasks, BIM on-site, ...)



**Maintenance & Operation**  
(service manuals, digital twin,  
start city, ...)



# Projects of any Type



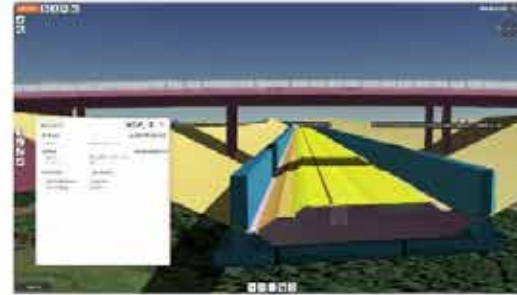
## City Planning

Manage and collaborate city plans with citizens with a 4D digital twin of a city and feedback tools



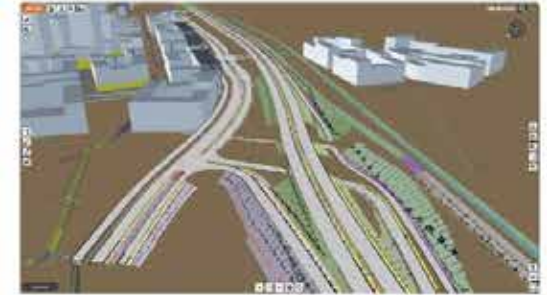
## Architecture

Manage architecture in their real world location and integrate into city models. Compare architecture competition alternatives with VR and AR.



## Infrastructure

Manage even large scale infrastructure projects and combine designs with survey, drone and as-built data.



## Transportation

Manage harbor, airport and logistics center projects by combining infrastructure, buildings, and city models.



## Environment

Bring landscaping and environmental planning live with AR and VR. Manage environmental effects analysis in large scales.



## Energy

Manage geographically large distribution networks, windmill parks and power plants in their real world surroundings.



## Industry

Combine buildings, machines, processing plants and infrastructure into one digital twin of the facility.



## Real estate

Show apartments and housing virtually in their real location and surroundings with city model integration.



# Thank You!

[www.xd-twin.io](http://www.xd-twin.io)

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