

Regione Emilia-Romagna



AgendaDigitale
AD ER

DATAVALLEY
DATA VALLEY

iFAB
INTERNATIONAL FOUNDATION
BIG DATA AND ANALYTICAL INTELLIGENCE
FOR HUMAN DEVELOPMENT

EURO²

cambiaclima
Cambiare il clima
per un futuro migliore

VERA

LA GEMELLA DIGITALE
DELL'EMILIA ROMAGNA

Esperienze internazionali a confronto



Green Twins pilot



Emilia-Romagna. Il futuro lo facciamo insieme.



Urban Digital Twin – problem definition

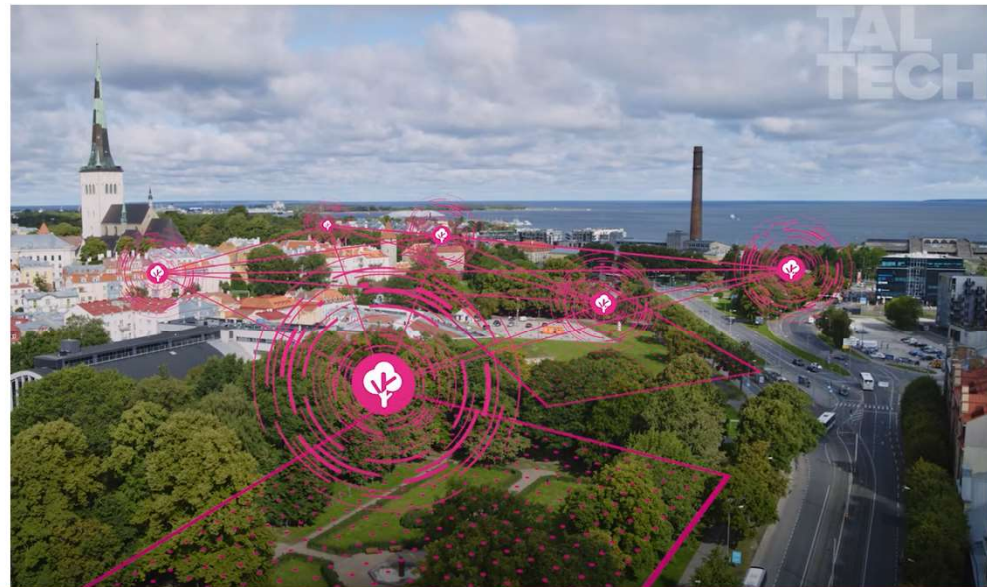
- Good representation of built environment, but...
- Vegetation - ?
- Interaction - ?



GreenTwins pilot and its goals

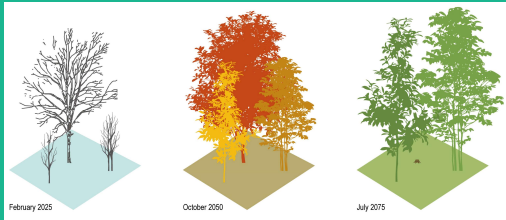
Green Twins is a research pilot on urban vegetation in the context of urban digital twins (UDT) and digitally-aided public participation in planning

- To foster smart and inclusive urban planning
- To add dynamic digital vegetation layer to UDT

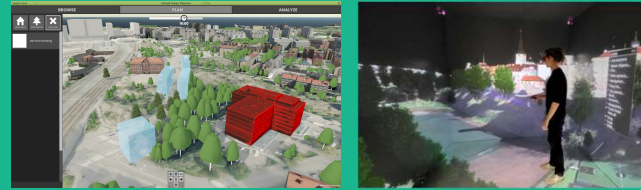


Green Twins pilot components

1
Dynamic digital plant layer
for Urban Digital Twin



2
3D digital user interfaces:
Urban Tempo / COVISE
Virtual Green Planner



Linnamudel
Tallinn Urban Digital Twin



3
AvaLinn space
for digitally aided
participation and collaboration





Green Twins dynamic digital vegetation layer



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Vegetation in Urban Digital Twins

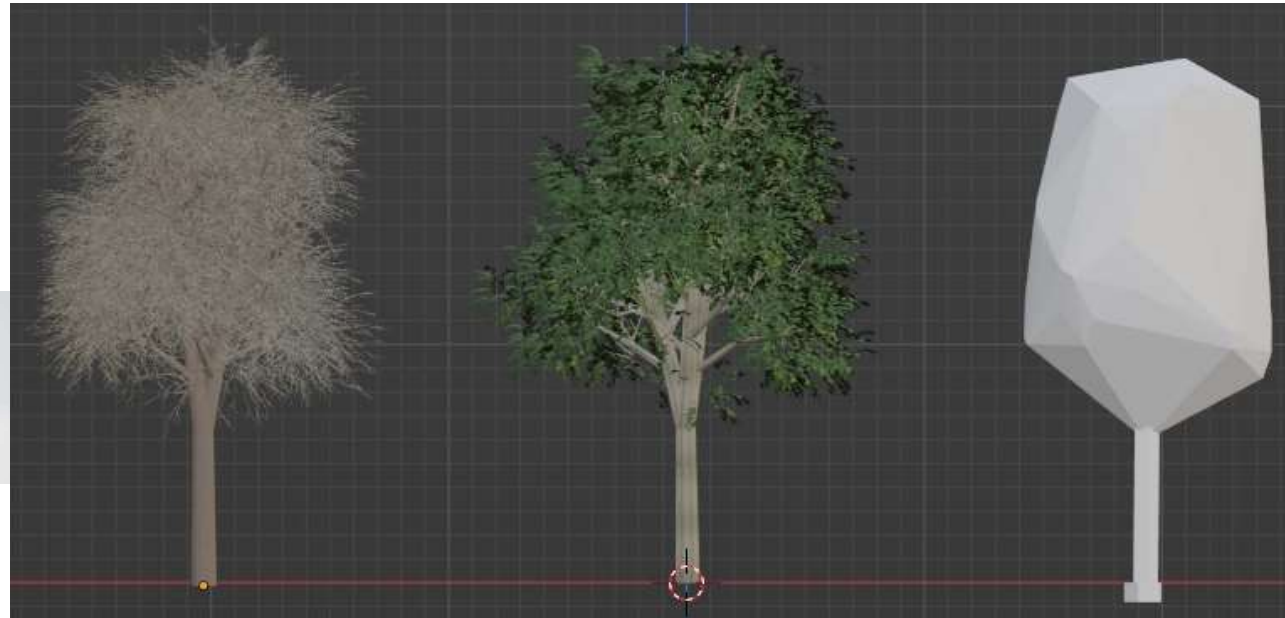
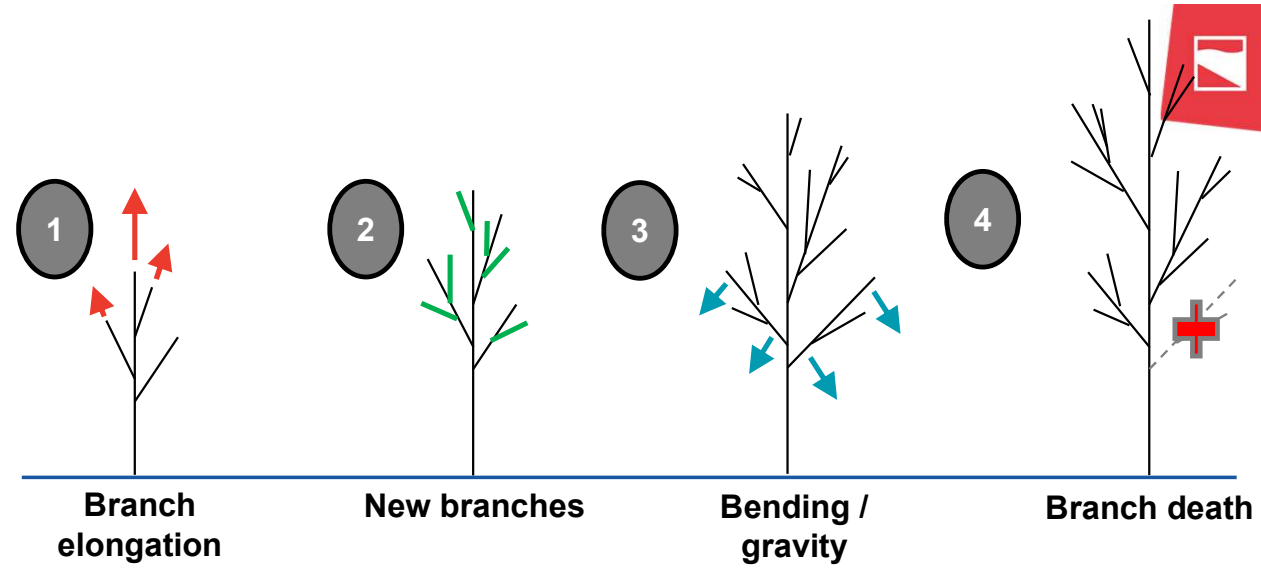
- **Helsinki UDT** – 3D mesh model – no semantic data or individual vegetation objects
- **Tallinn UDT** – 2D ortophoto - tree locations and shapes somewhat visible on the terrain texture





Vegetation in Green Twins

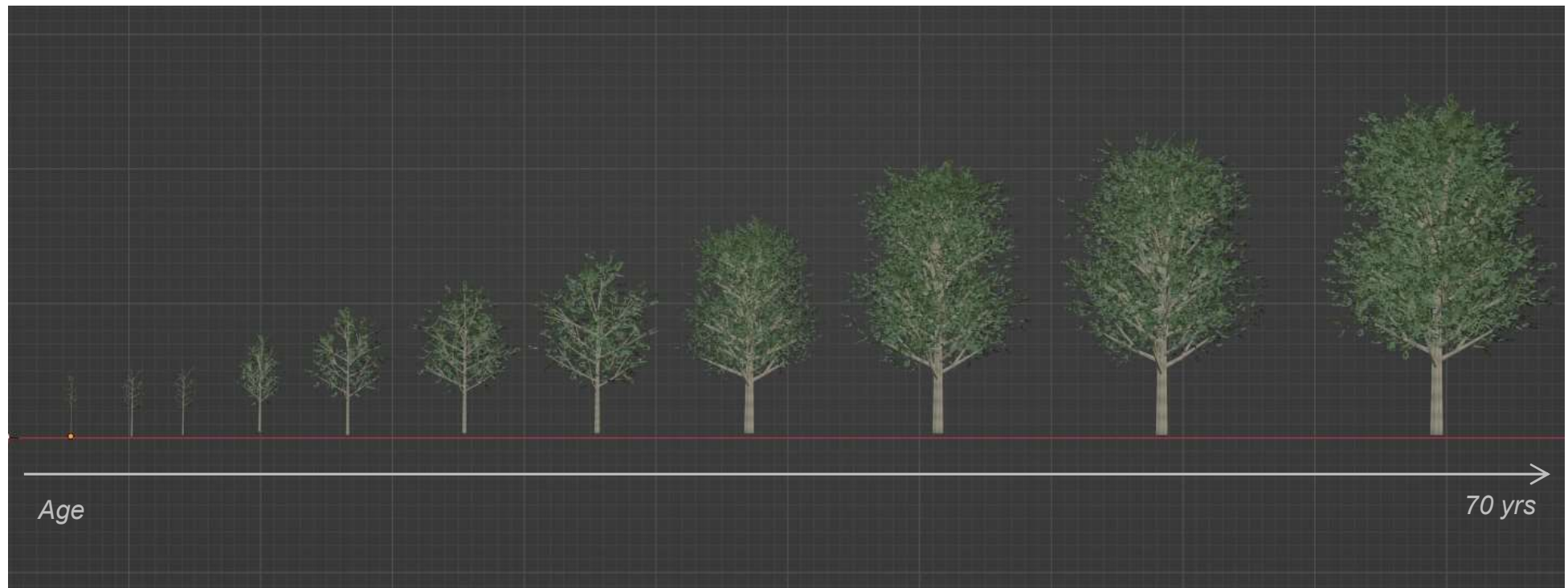
- How is our vegetation different?
 - Yearly growth
 - Seasonal change
 - Models with various Levels of Detail (LOD)



Examples of Green Twins tree 3D models



Examples of tree 3D model growth series







Green Twins interfaces between UDT and users



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AvaLinn Smart City Planning Hub

- Space in the city centre of Tallin for digitally aided participatory events
- Target audience: citizens and representatives of public agencies
- Key functionality: bringing people together
- Purpose: collaborative decision-making





Virtual Green Planner

- Software application for participatory workshops AND for home use (runs on a laptop)
- Target audience: citizen-activists
- Key functionality: interaction
- Purpose: quick 3D sketching of development proposals



Urban Tempo

- Software application for participatory workshops (runs on very powerful laptop)
- Target audience: citizens and representatives of public agencies
- Key functionality: visualisation
- Purpose: shared understanding and discussion of development proposals

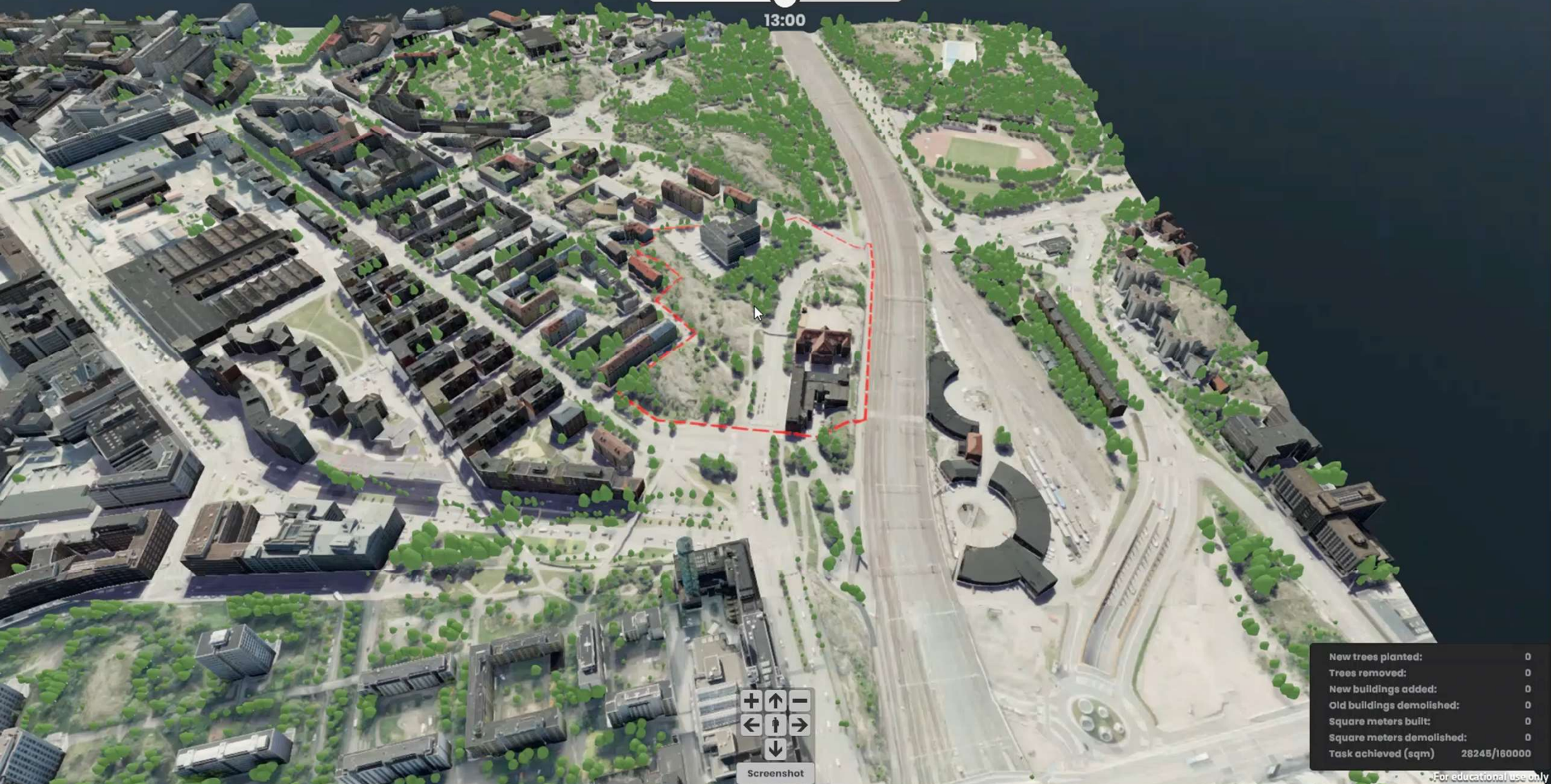


Urban Tempo COVISE module

- Software application for participatory workshops (technology and facilitator needed)
- Target audience: citizens and representatives of public agencies
- Key functionality: visualisation
- Purpose: shared understanding and discussion of development proposals



13:00



Screenshot

New trees planted:	0
Trees removed:	0
New buildings added:	0
Old buildings demolished:	0
Square meters built:	0
Square meters demolished:	0
Task achieved (sqm)	28245/180000



Future plans

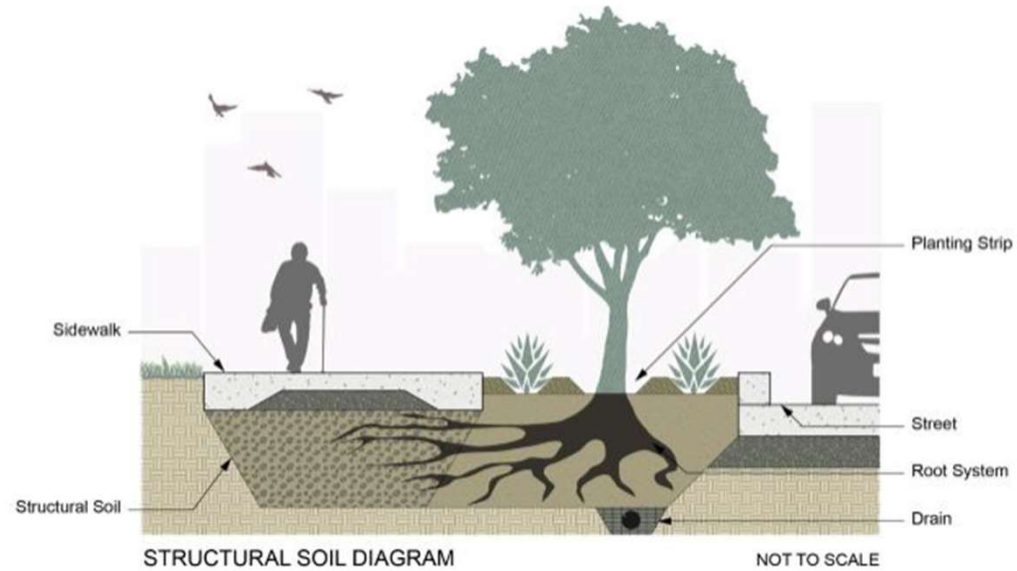


Image: Mary Gangso, Blueline

Urban Underground Digital Twins (UUDT)

- Utility infrastructure
- Transportation infrastructure
- Basements and underground parking lots
- Root systems

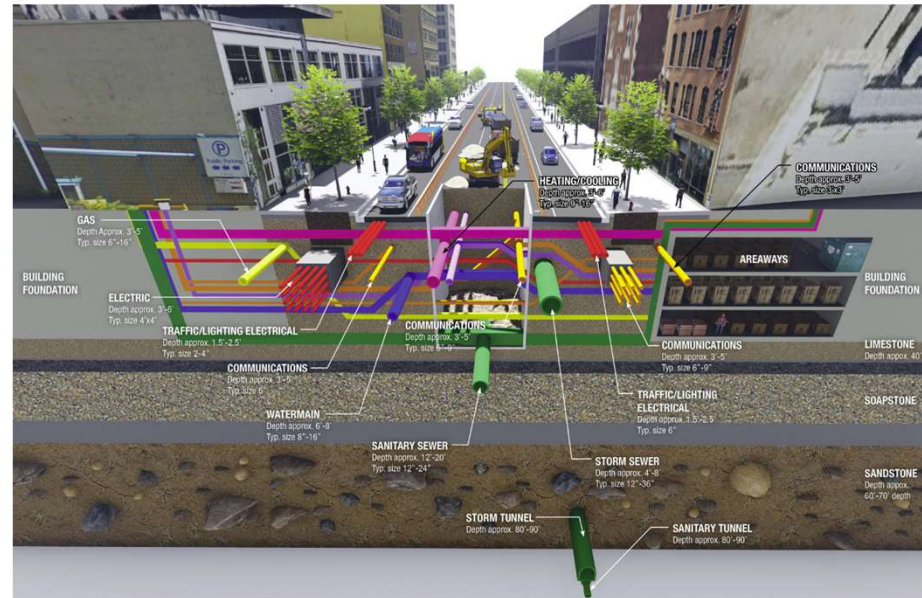


Image: City of Minneapolis



Grazie dell'attenzione

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Technology, Estonia



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Componentenets of GreenTwins Plant Library

