CityGML Utility Network ADE

Test data and data model from AED-SICAD

Current status of implementation

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3rd Joint SIG 3D and OGC Workshop on the CityGML UtilityNetworkADE
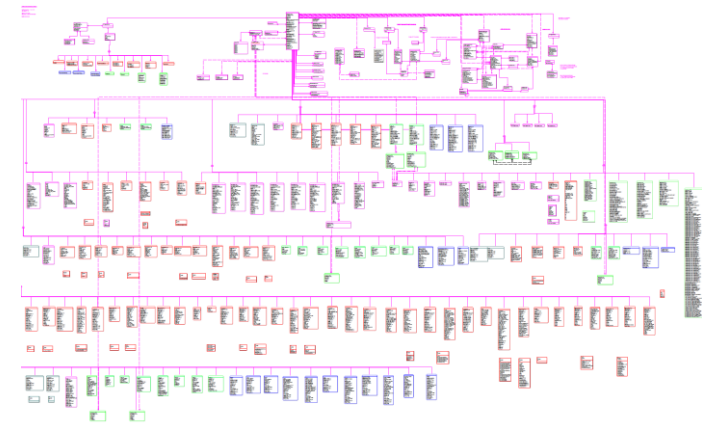Vienna, June 30, 2017

Resources provided by AED-SICAD

► Test data for utility networks
- Electricity
- Gas
- Freshwater

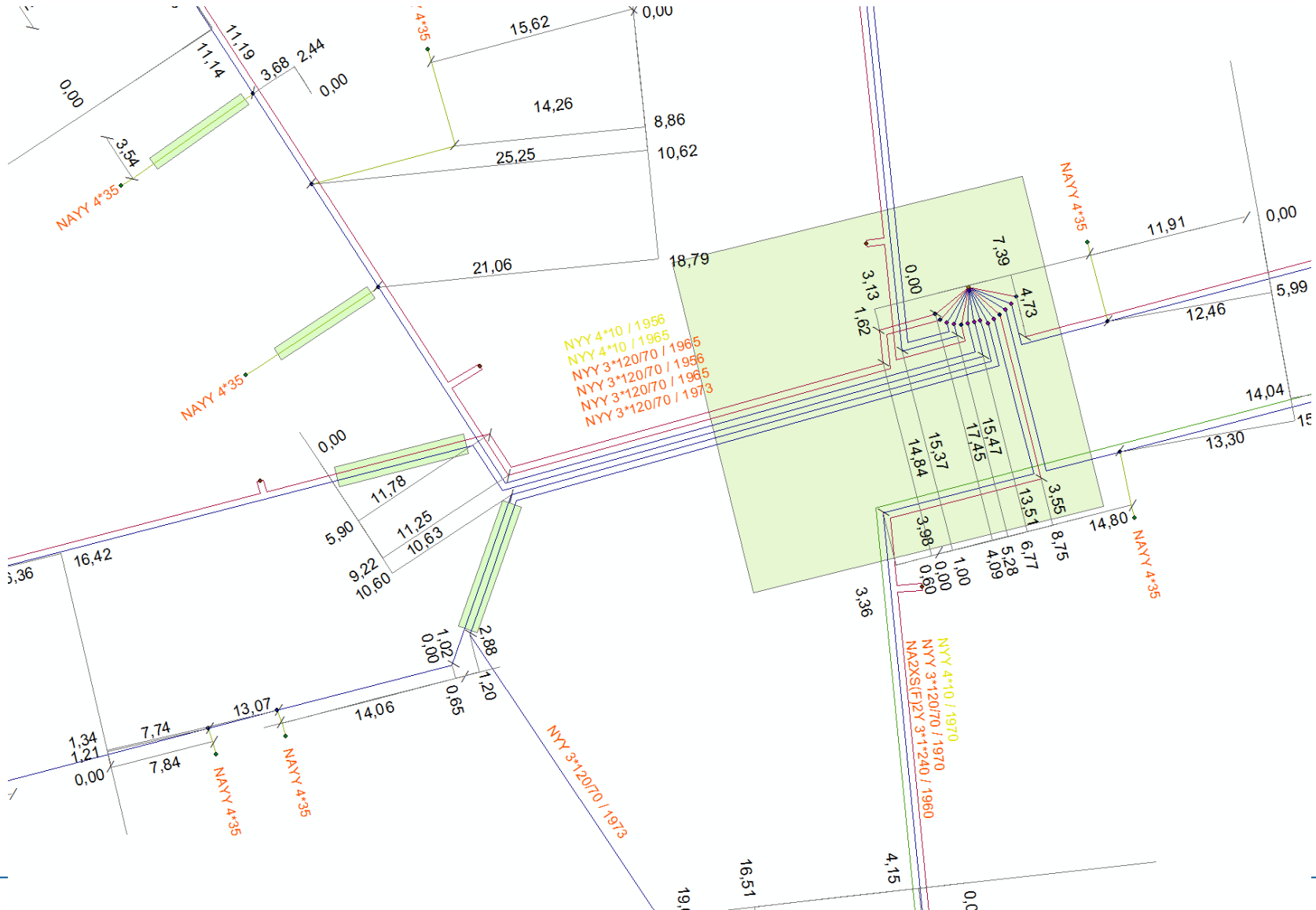The data are provided as .mdb file

► Data model

- „Electric Utility Object Model - UT for ArcGIS" for modelling energy distribution networks in Europe
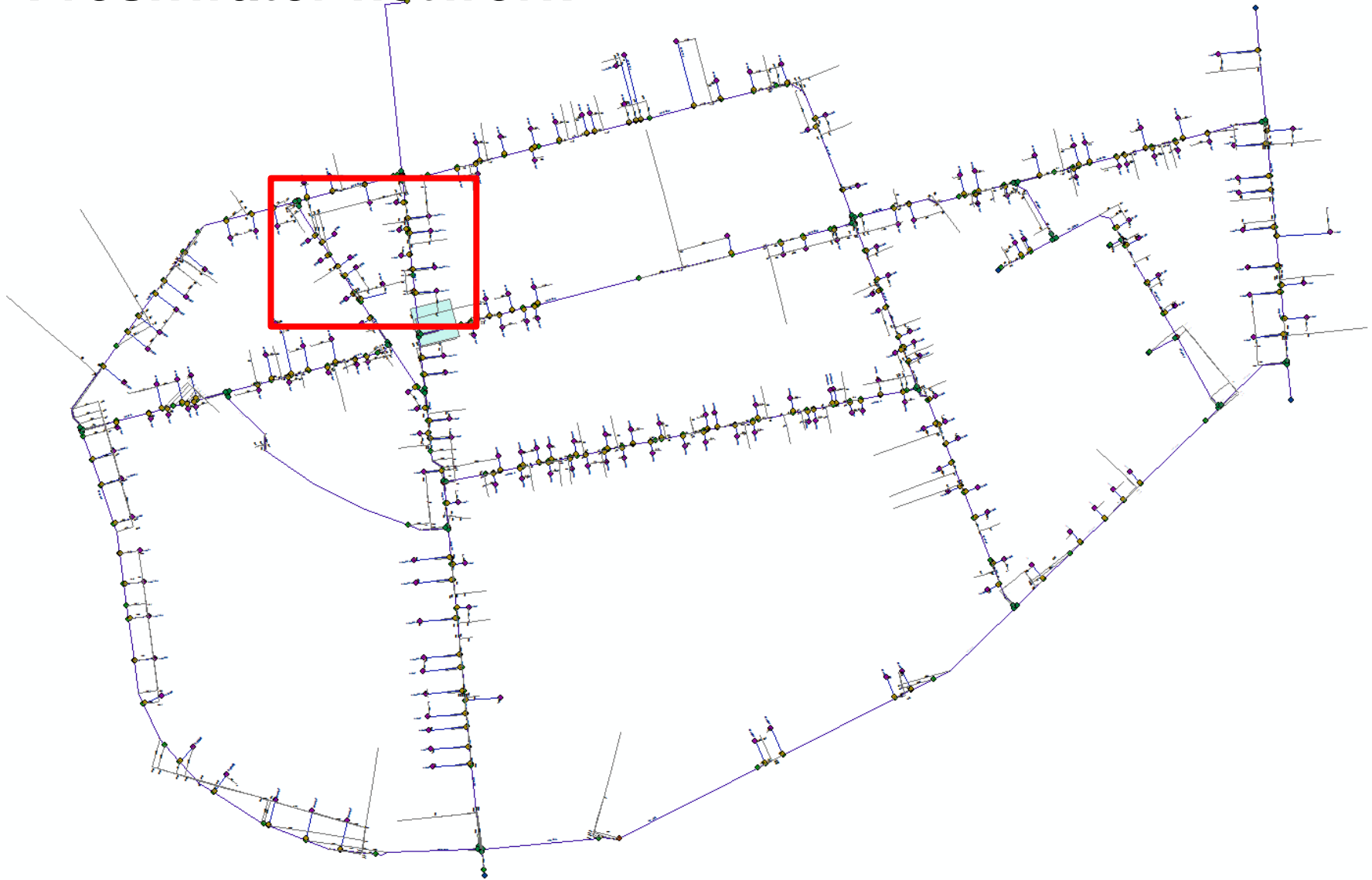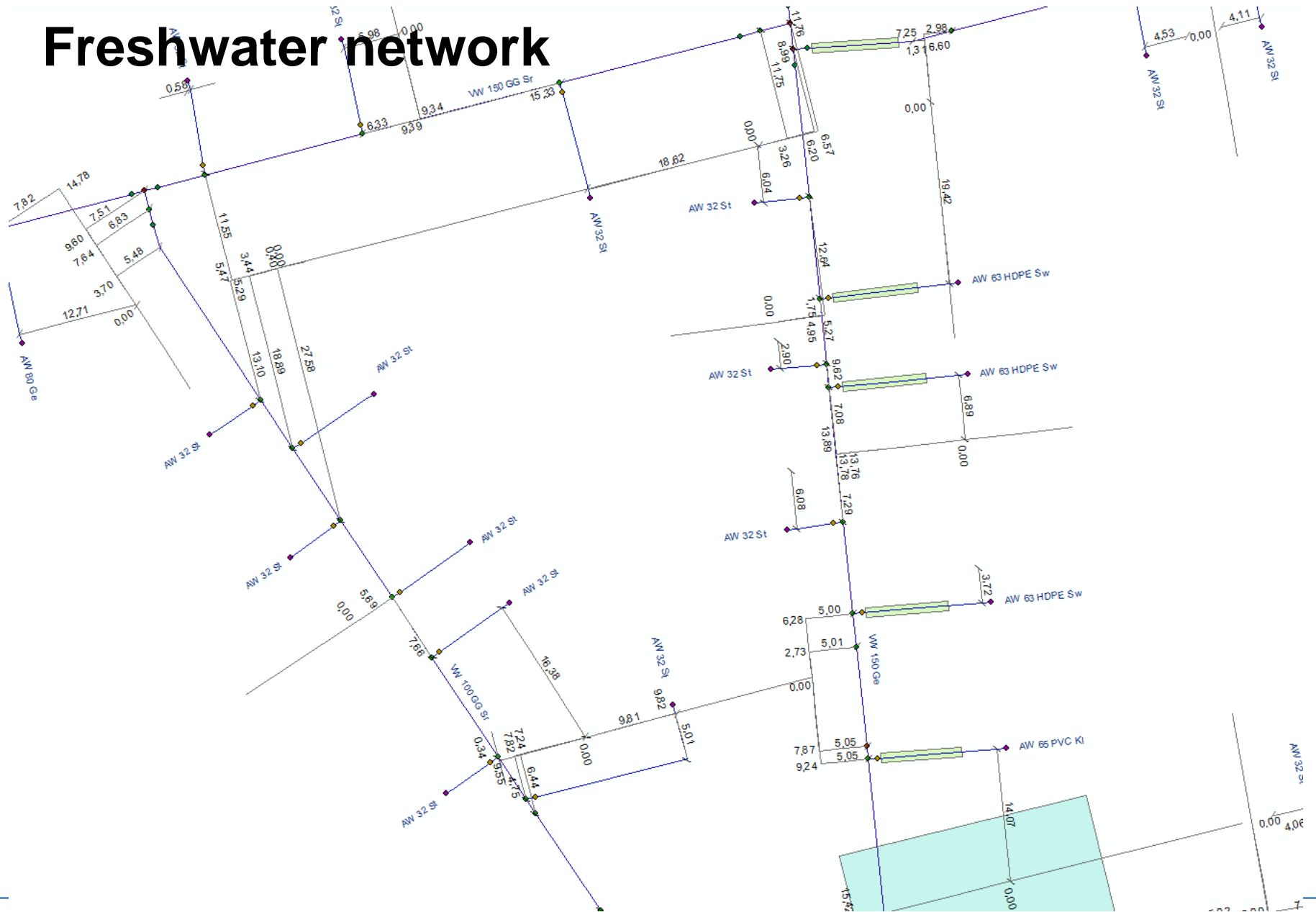
Electricity network

Electricity network
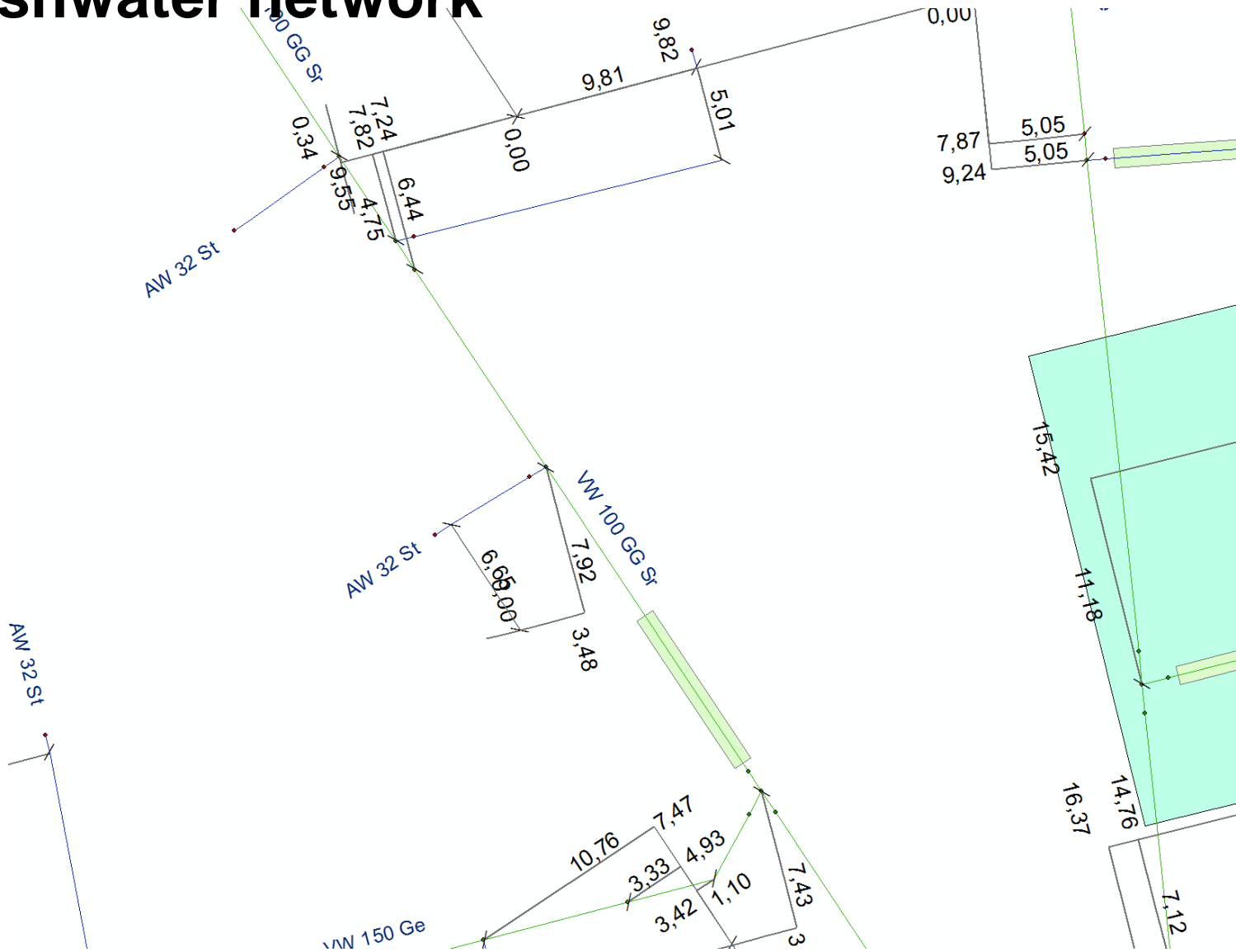
Freshwater network

Freshwater network

Freshwater network

Freshwater network

☐ 🗐 **Layers**
   ☐ 🗄 H:\Studium\6. Semester\z_Hiwijob\AS-Demodaten\UT.de\UT.de.mdb
      ☐ 🗗 FDS_WATER
         ☑ Wasser Bemassung
         ☑ Wasser Anschlussleitungen Beschriftung
         ☑ Wasser Transportleitungen Beschriftung
       ⊞ ☑ Water Plant Switching Devices
       ⊞ ☑ Plant Text Water
       ⊞ ☑ Wasser Armaturen
       ⊟ ☑ Wasser Hydranten
         ◆ <all other values>
            GTYPE_ID
         ◆ Schachthydrant
         ◆ Unterflurhydrant auf Rohr
         ◆ Unterflurhydrant neben Rohr
         ◆ Überflurhydrant auf Rohr
         ◆ Überflurhydrant neben Rohr
       ⊟ ☑ Wasser Bauteile
         ◆ <all other values>
            GTYPE_ID
         ◆ Abzweig (T-Stück)
         ◆ Anbohrschelle
         ◆ Entleerung
         ◆ Entlüftung
         ◆ Flansch
         ◆ Isolierstück
         ◆ KKS-Aufschweißpunkt
         ◆ Leitungsabschluss
         ◆ Leitungskreuz
         ◆ Längenausgleicher
         ◆ Rohrreinigungskasten
         ◆ Schilderpfahl
         ◆ Übergang / Reduzierung

⊞ ☑ Wasser Hausanschlüsse
⊞ ☑ Wasser gemessene Punkte
⊞ ☑ WATER_NETWORK_Junctions
⊟ ☑ Wasser Anlagen
   ◆ <all other values>
      GTYPE_ID
   ◆ Brunnen
   ◆ Druckregler Wasser
   ◆ Hochbehälter
   ◆ Reglerschrank
   ◆ Wasserspeicher
   ◆ Wasserwerk
   ◆ Wasserübernahmeschacht
⊟ ☑ Water Plant Component
   ◆ <all other values>
      GTYPE_ID
   ◆ Flansch
   ◆ Leitungskreuz
   ◆ Meter
   ◆ Pumpe
   ◆ Reduzierung
   ◆ T-Stück
   ◆ Tank/ Behälter
⊟ ☑ Plant Schemasection Water
   — <all other values>
      GTYPE_ID
   — Transportnetzleitung
   — Verteilnetzleitung
   — Virtuelle Leitung
⊞ ☑ Konstruktions-/Hilfslinien Wasser
⊞ ☑ Wasser Versorgungsleitungen
⊞ ☑ Wasser Anschlussleitungen
⊞ ☑ Wasser Schutzrohre
⊞ ☑ Wasser Detailvergrößerung
⊞ ☑ Water Plant Area

Freshwater network as CityGML Utility Network data

View 1 (1314)
ProjektFME [CITYGML] (1314)
- CityFurniture (44)
- CityModel (1)
- ControllerDevice (262)
- LiquidMedium (1)
- Network (1)
- RoundPipe (505)
- RoundShell (62)
- SimpleFunctionalElement (235)
- TerminalElement (203)

CityFurniture
► Hydrants

ControllerDevice
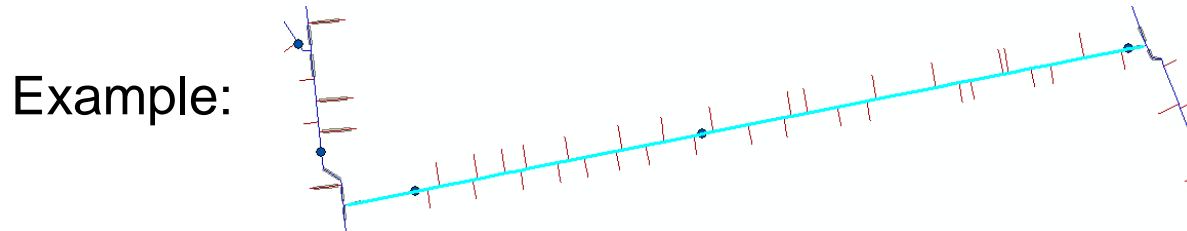► Valves
► Switching Devices

SimpleFunctionalElement
► Components
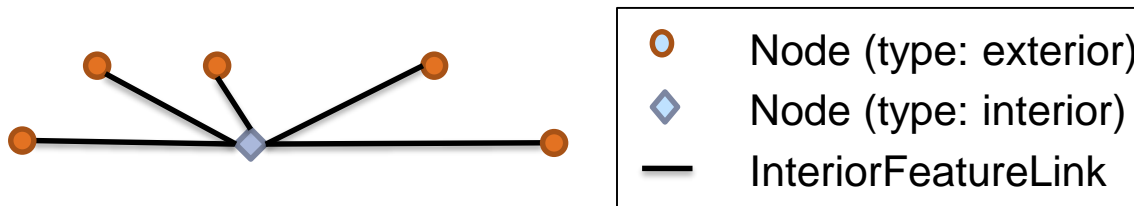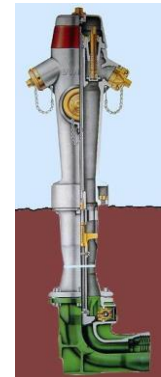► Wells
► Controller cabinets

Terminal element
► House connection

Freshwater network – Problems

How to represent pipes and their connection to hydrants topologically?

Example:

- The blue pipe is represented as one single line in the data set
- The line crosses three hydrants (dark blue points)

→ The pipe should probably not be split when connecting it to the hydrants topologically?

→ How are hydrants connected in reality?

→ Should the pipe be represented like this?

○	Node (type: exterior)
◇	Node (type: interior)
—	InteriorFeatureLink

Preliminary conclusions

► Difficulties in relating structure of model with structure of data sets

► Test data provides alphanumeric objects (tables) and graphical objects (objects with geometries)

 ● Tabular objects and geometrical objects cannot be related to each other as they seem to represent different objects

→ Thus, we decided to start with mapping the test data to the ADE without taking into account the source data model, but by concluding from the information provided in the source data how to map the source objects to corresponding objects in the ADE

→ Expected duration until test data (freshwater, electricity and gas) is ready: 3-4 months