

CityGML Utility Network ADE

Test data and data model from AED-SICAD

Current status of implementation

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Resources provided by AED-SICAD

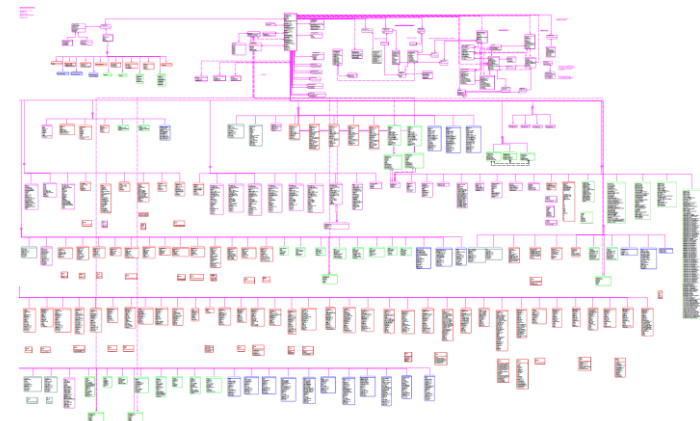
▶ Test data for utility networks

- Electricity
- Gas
- Freshwater → is currently mapped to the Utility Network ADE

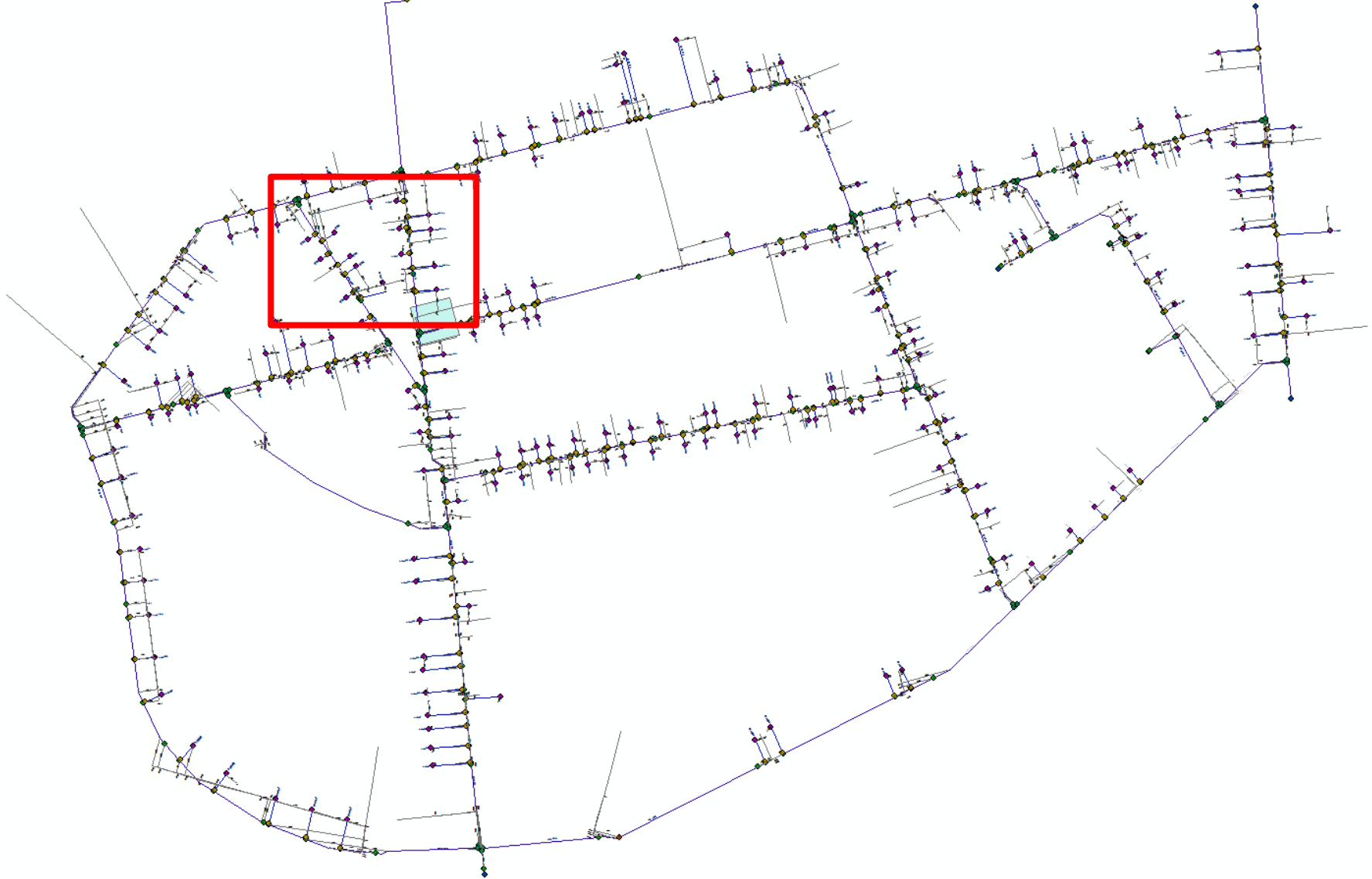
The data are provided as .mdb file

▶ Data model

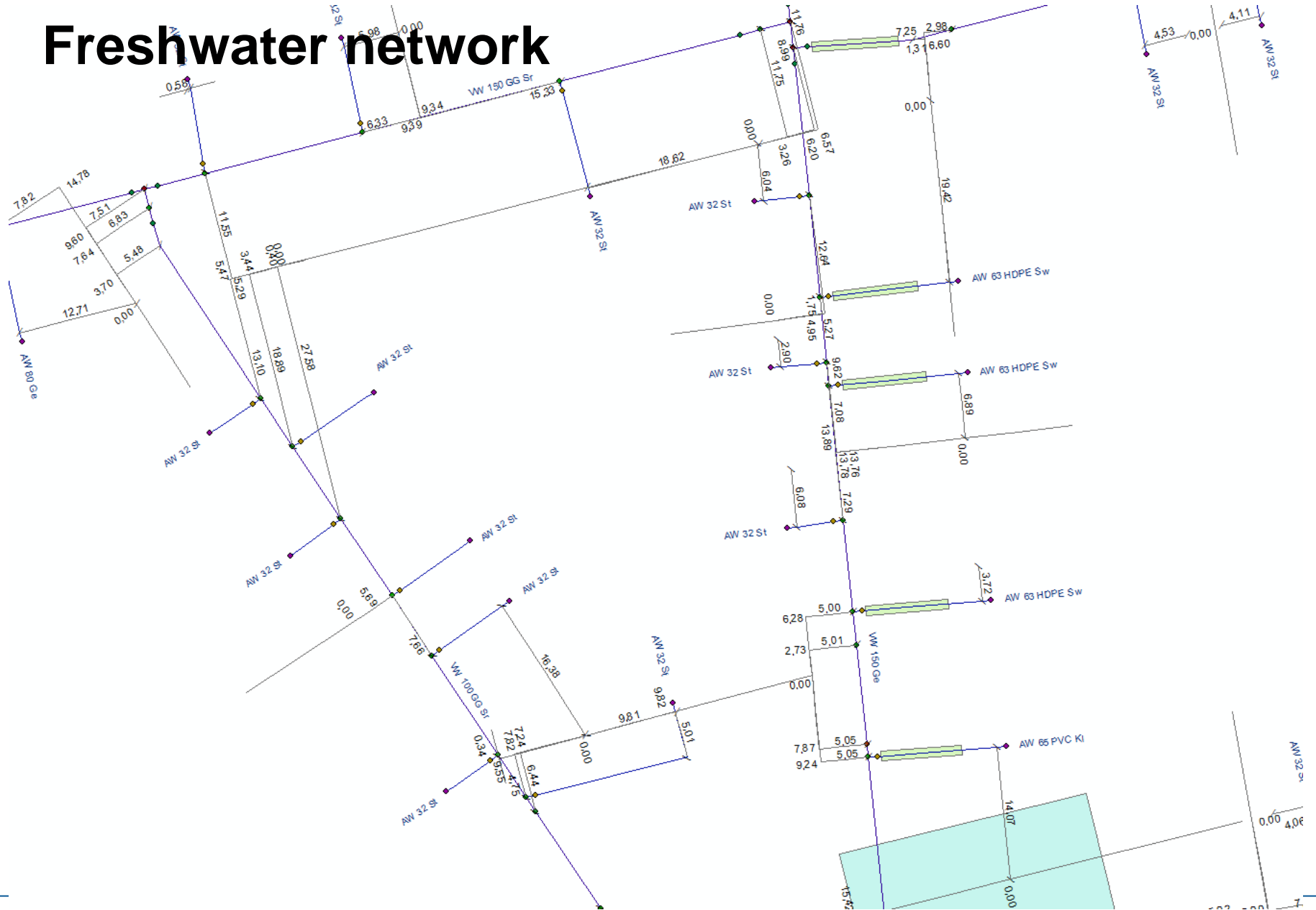
- „Electric Utility Object Model - UT for ArcGIS“ for modelling energy distribution networks in Europe



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
 - ◆ Rohrrückspülkasten
 - ◆ 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

Components of the freshwater network mapped to the ADE

RoundPipe

RoundShell

CityFurniture

- ▶ Hydrants

ControllerDevice

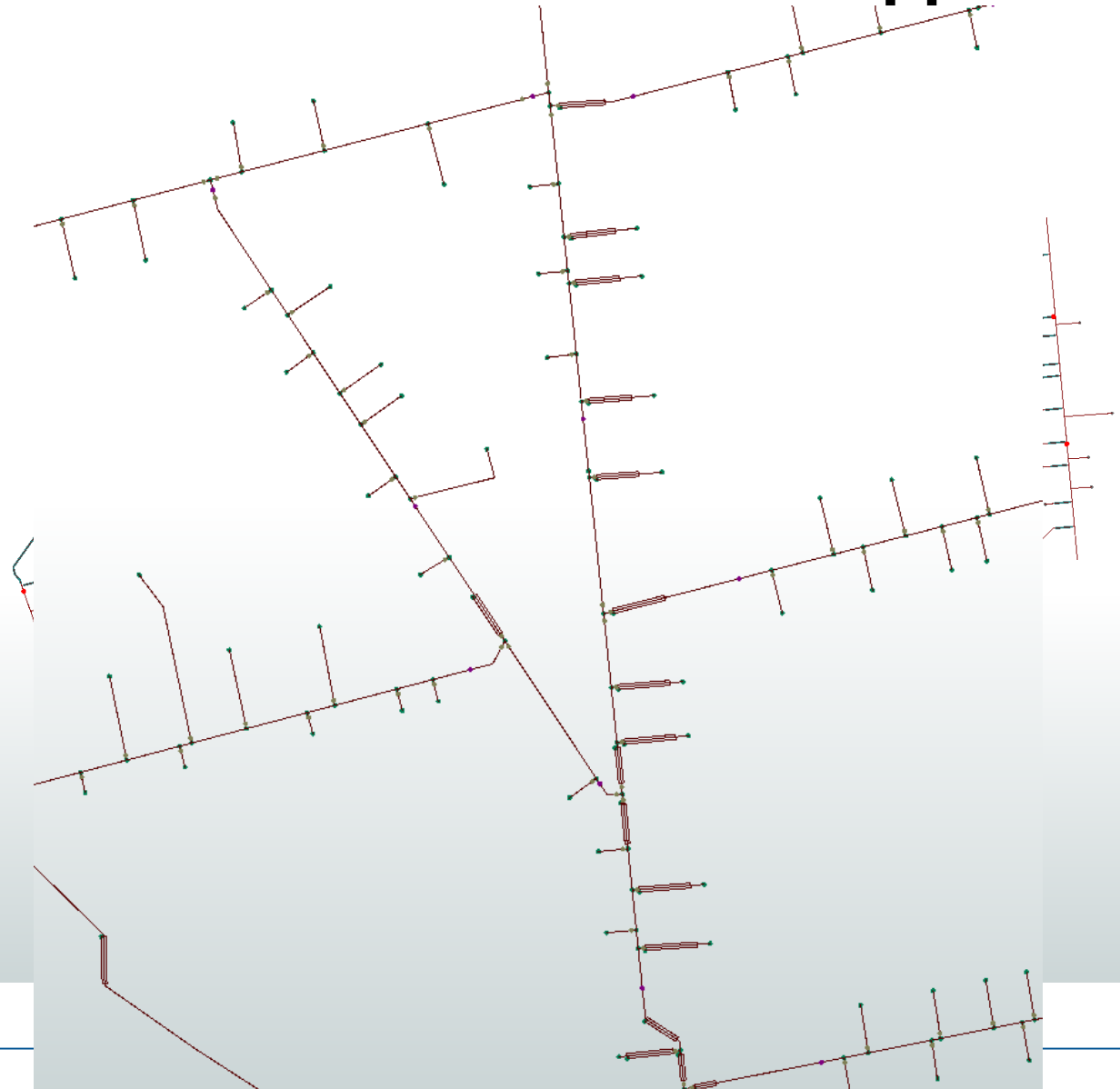
- ▶ Valves
- ▶ Switching Devices

SimpleFunctionalElement

- ▶ Components
- ▶ Wells
- ▶ Controller cabinets

Terminal element

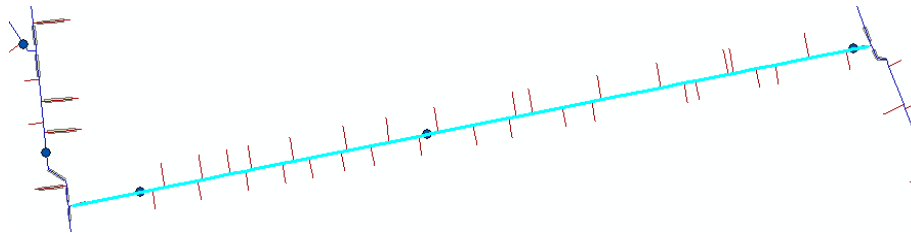
- ▶ Hydrant connection
- ▶ House connection



Topological connection between pipes and hydrants (I)

- ▶ One problem when mapping the data was:
How to represent pipes and their connection to hydrants topologically?

Problem:



- The blue pipe is represented as one single line in the data set
 - The line crosses three hydrants (dark blue points)
- Is the pipe to be split or not when connecting it to the hydrants topologically?

Topological connection between pipes and hydrants (II)

- ▶ Based on the discussion in the last workshop we came up with two solutions how the connection can be realized:
 - Connection without splitting the pipe



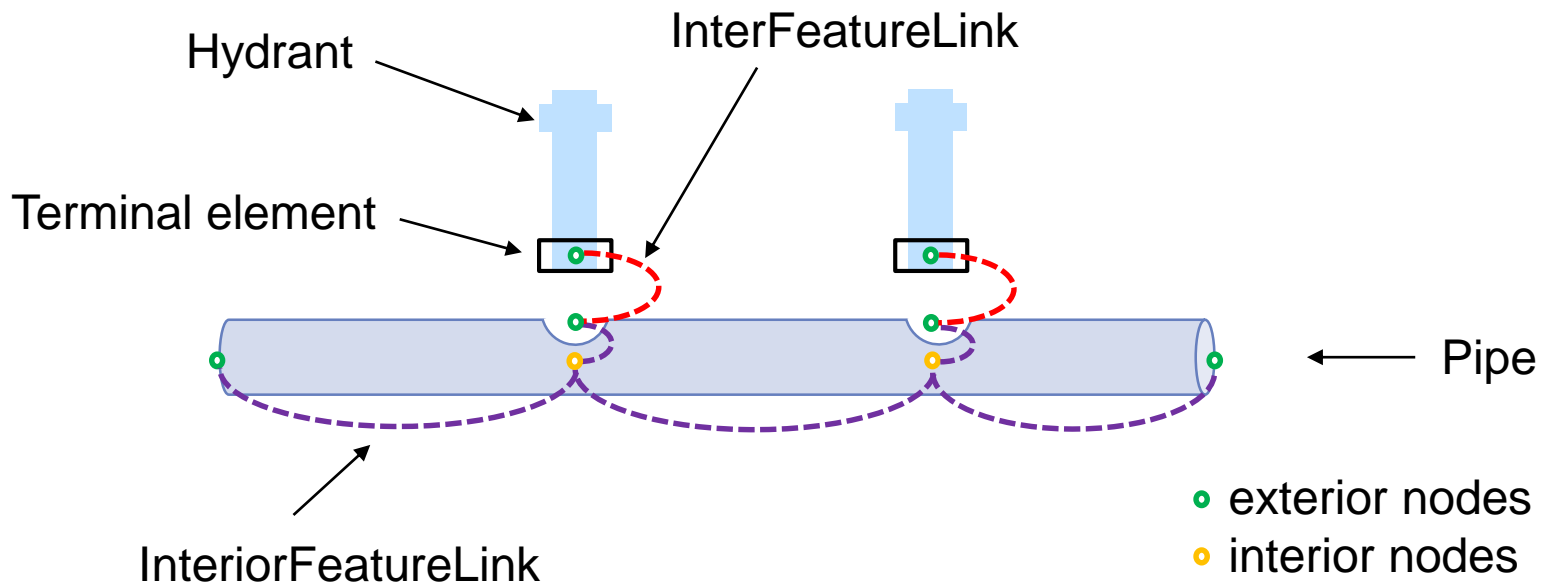
- Connection with splitting the pipe



Topological connection between pipes and hydrants (III)

► In our FME workspace we implemented the solution without splitting the pipe to preserve the semantics of the source data set:

- Every hydrant has a terminal element
- **Exterior nodes** are connected via **InterFeatureLinks**
- **Interior nodes** are connected via **InteriorFeatureLinks**



Further work

▶ Finalising the FME workspace

- Some nodes and links are not yet at their intended position in the data set

▶ Verifying that all information has been mapped

▶ Providing documentation on how the connection between pipes and hydrants was implemented in FME

