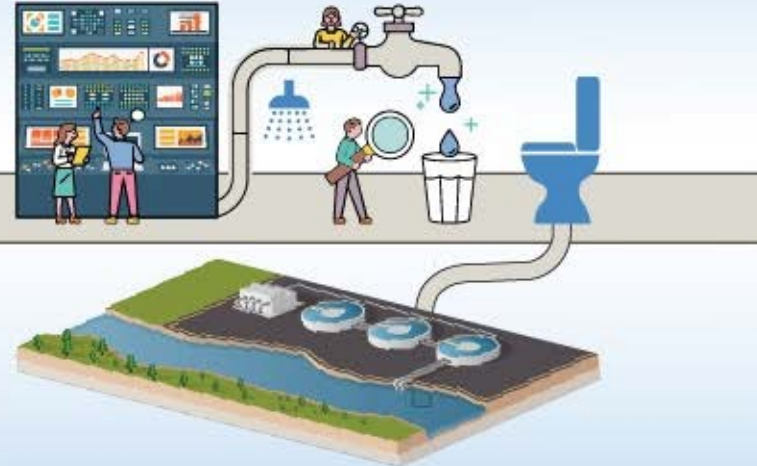


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*Towards Safe, Reliable
and Sustainable Services*



Efficient management planning for water supply system – the Korça case study

Thoma Koroveshi, Tamás Huzsvár
Ujësjetës Kanalizime Korçë & DHI Hungary Kft.
2023. 11. 08.



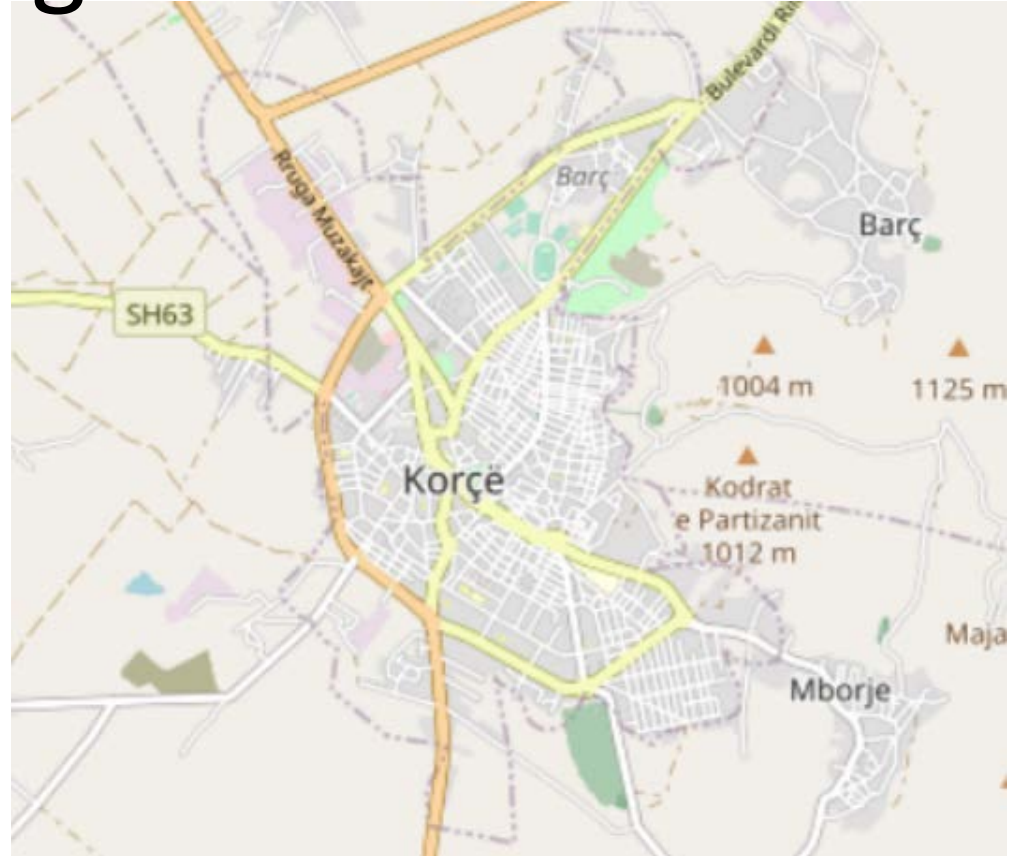
Background

The Water Distribution of Korçe:

- The service is continuous (24/24 h)
- Network length: ~120 km
- Billed daily cons. : ~80 l/s
- Number of inhabitants: ~75 000 PPL

Already applied:

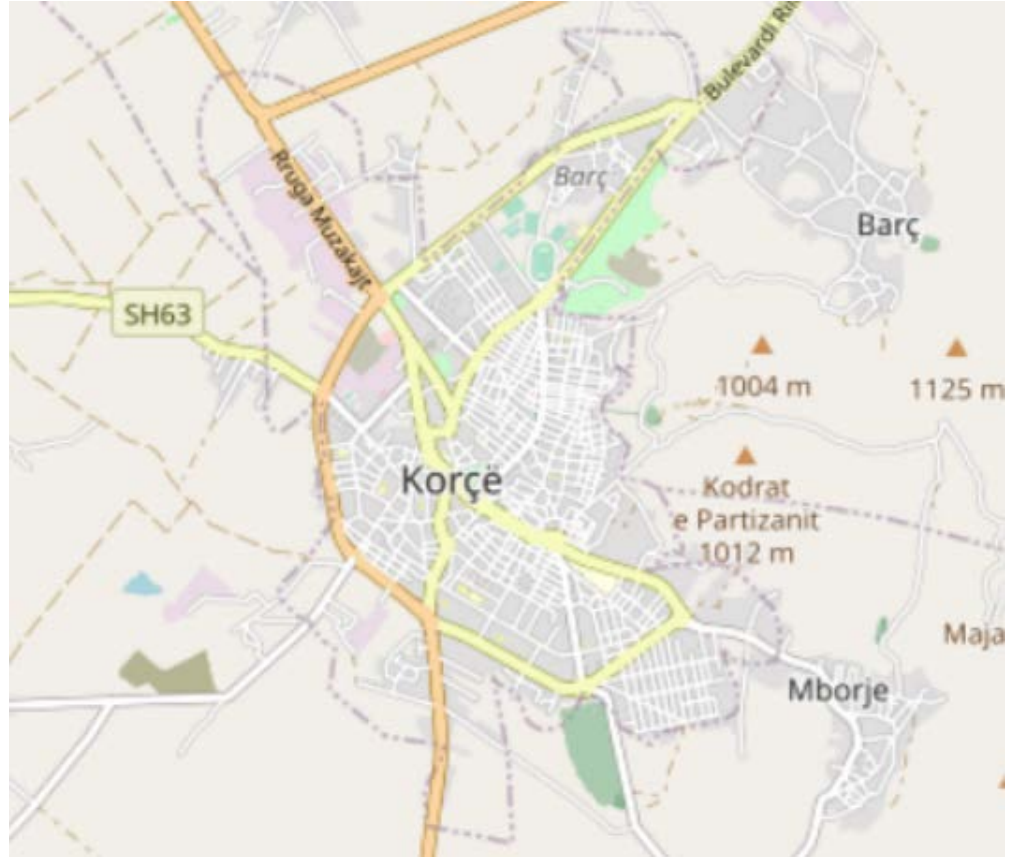
- Leakage reduction plans
- Pressure zones
- Manual leakage detectors



Motivation

The objective:

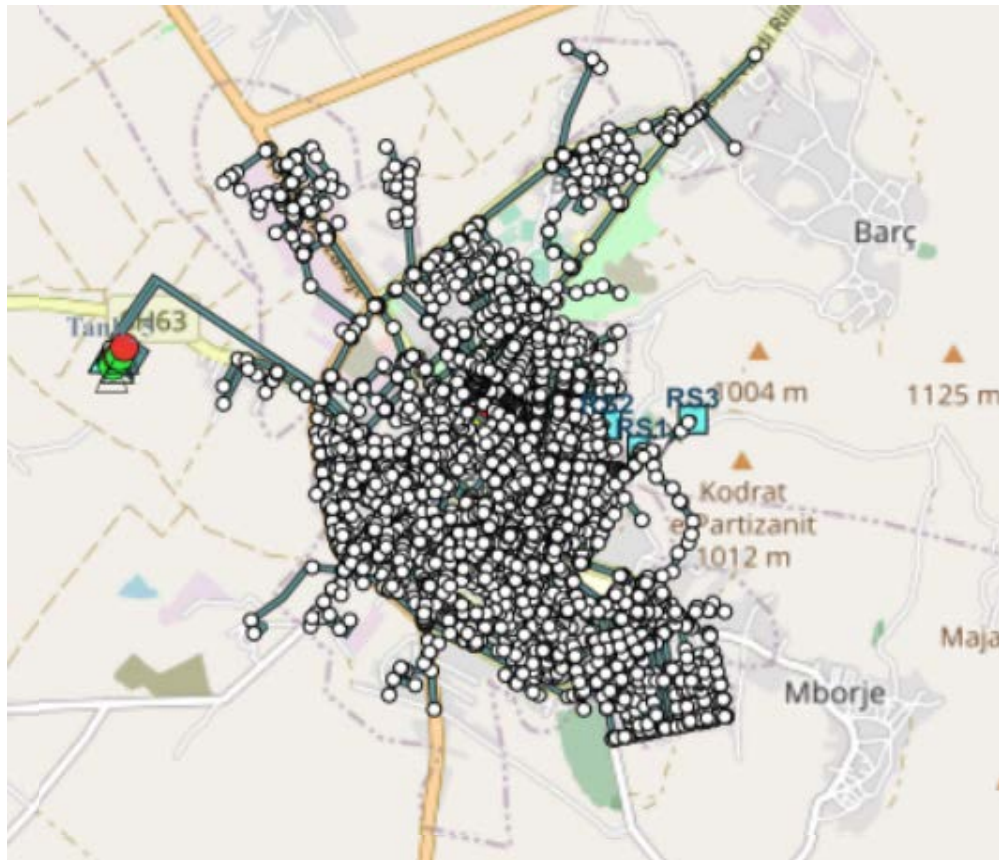
- Increase further the income of the utility.
- Increase the efficiency of the different leakage management techniques (integration).
- Optimise the daily workflow and decrease energy consumption.
- Optimise further the IWA waterloss parameters.



Motivation

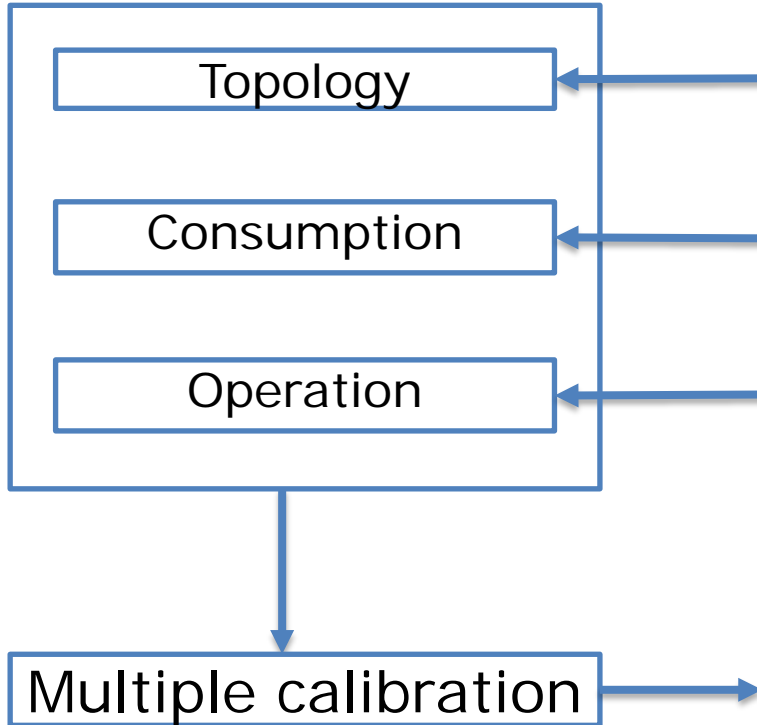
A hydraulic model, why?

- Integrates and summarise the knowledge of the utility into one platform
- We **understand the system behaviour** and thus optimisation workflow is possible
- **Calculates waterloss related parameters**
- It shows the real-life flows and pressures.
- It helps to identify areas, where should we apply sensors to detect leakages.

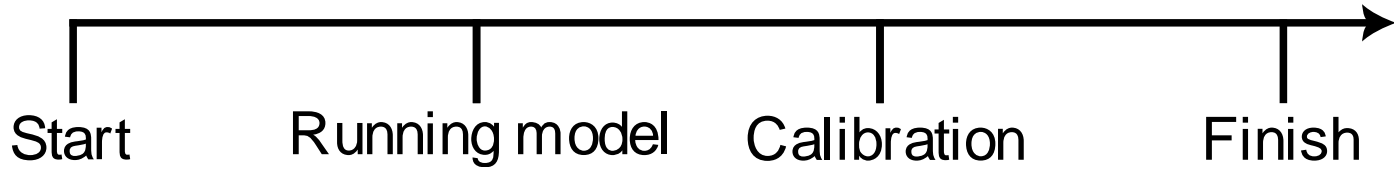


Born of a hydraulic model

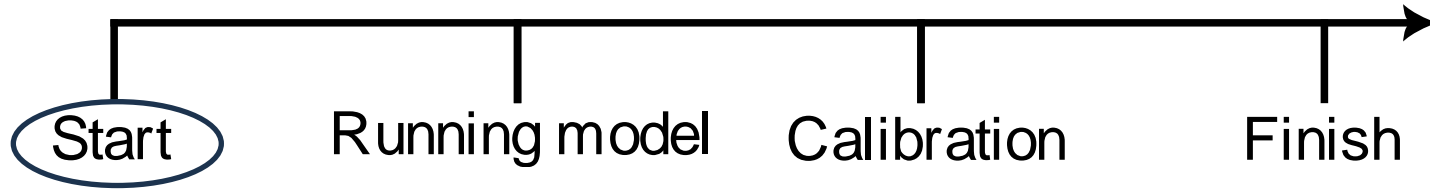
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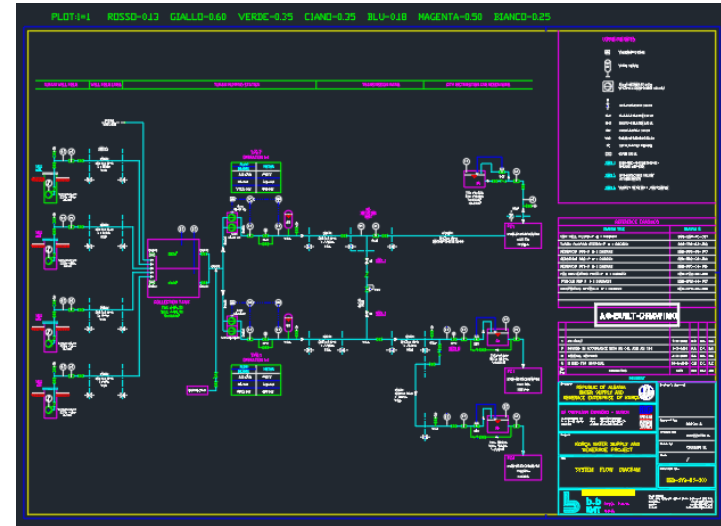
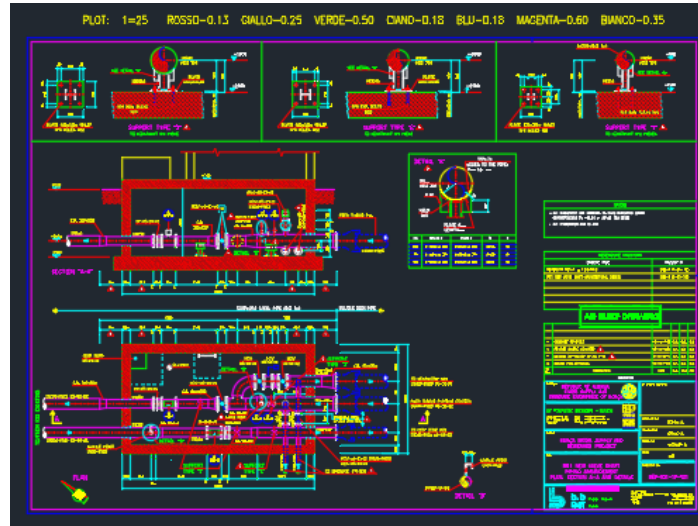
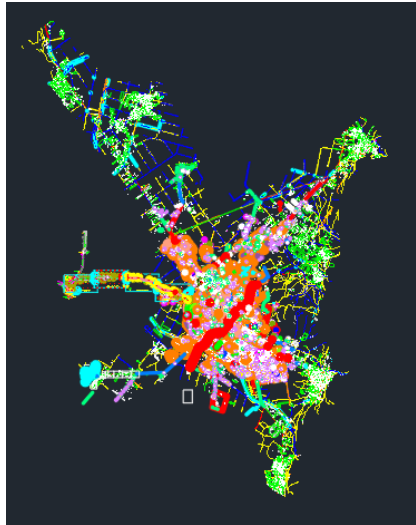
The complete journey



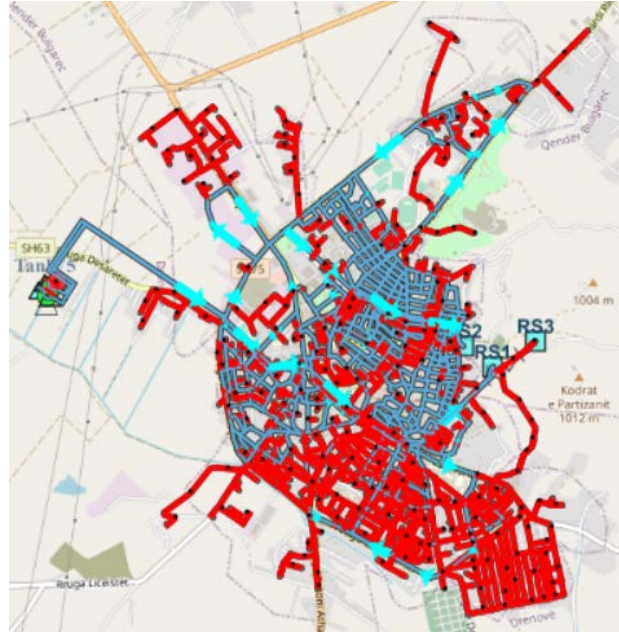
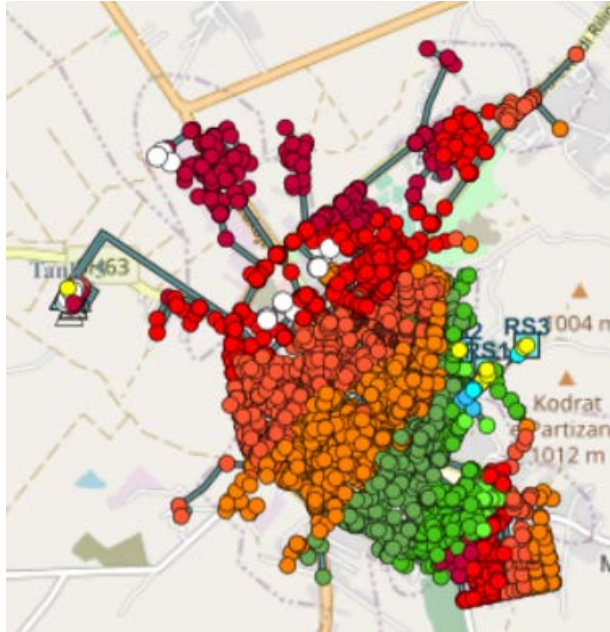
The complete journey



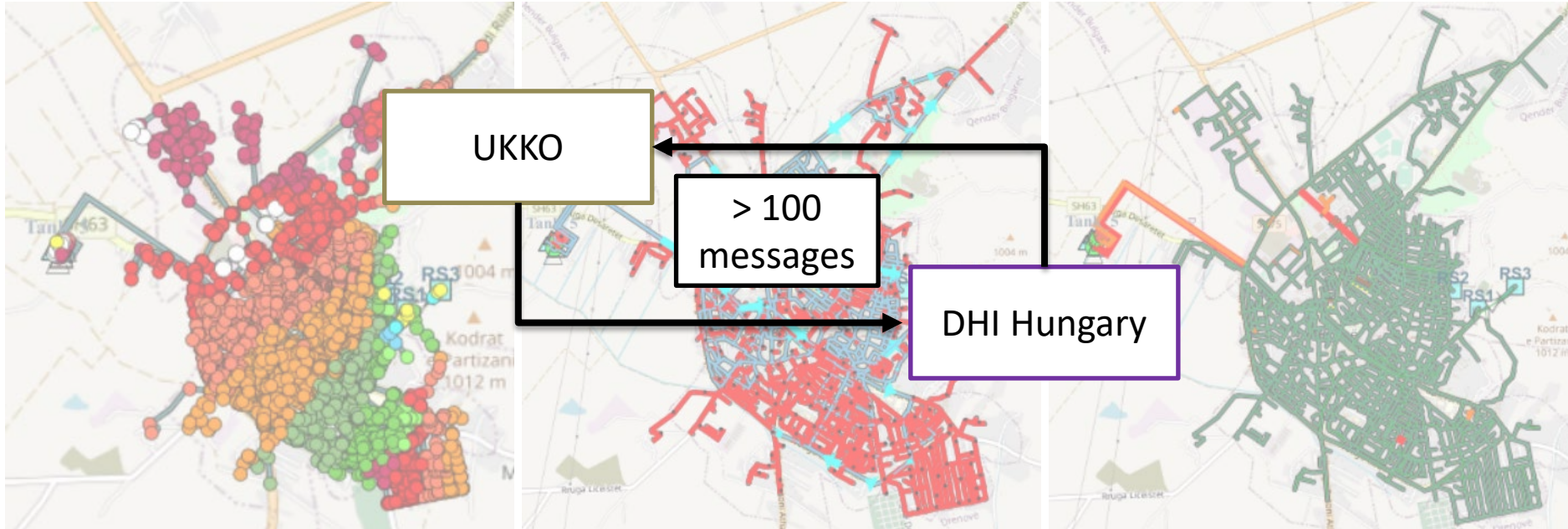
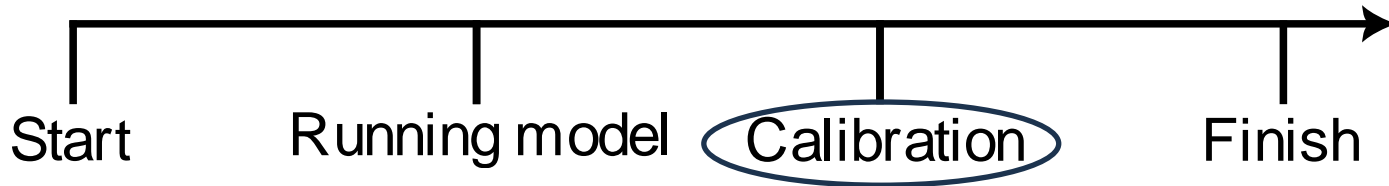
From plans to a model: 2 months



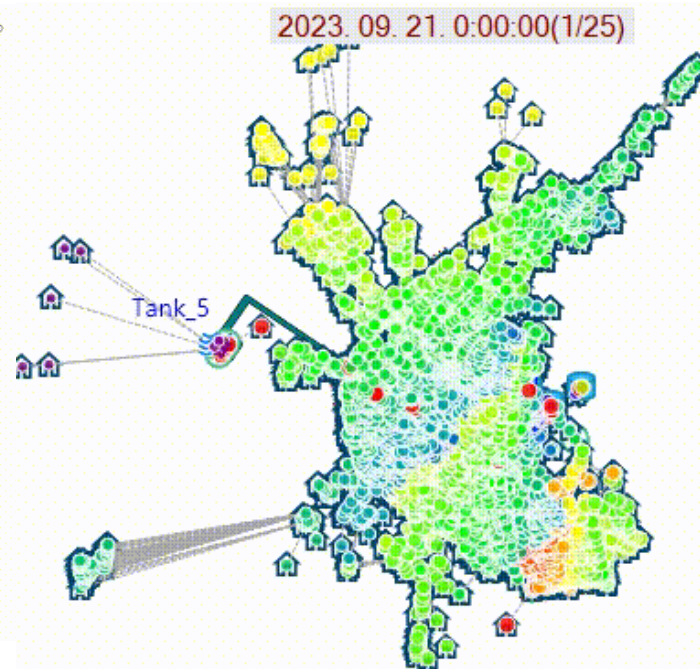
The complete journey



The complete journey



The complete journey



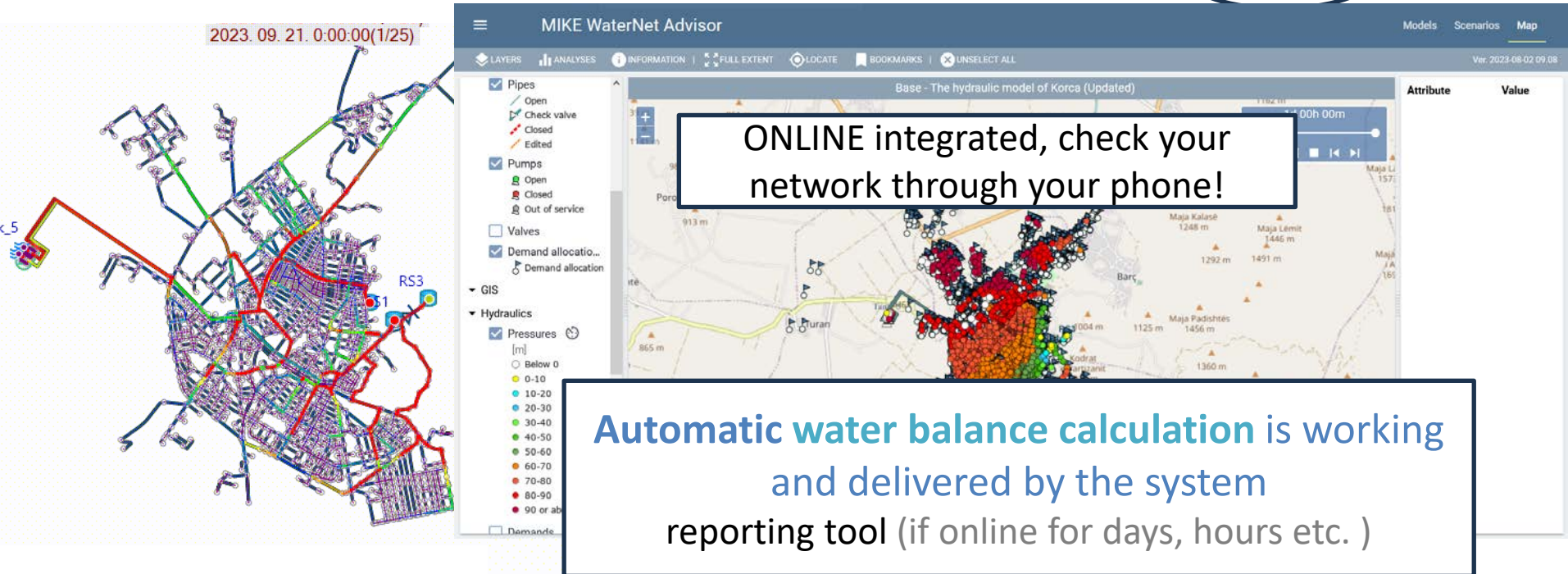
The complete journey

Start

Running model

Calibration

Finish



Outcomes

1. The main focus area and items for improvements are identified

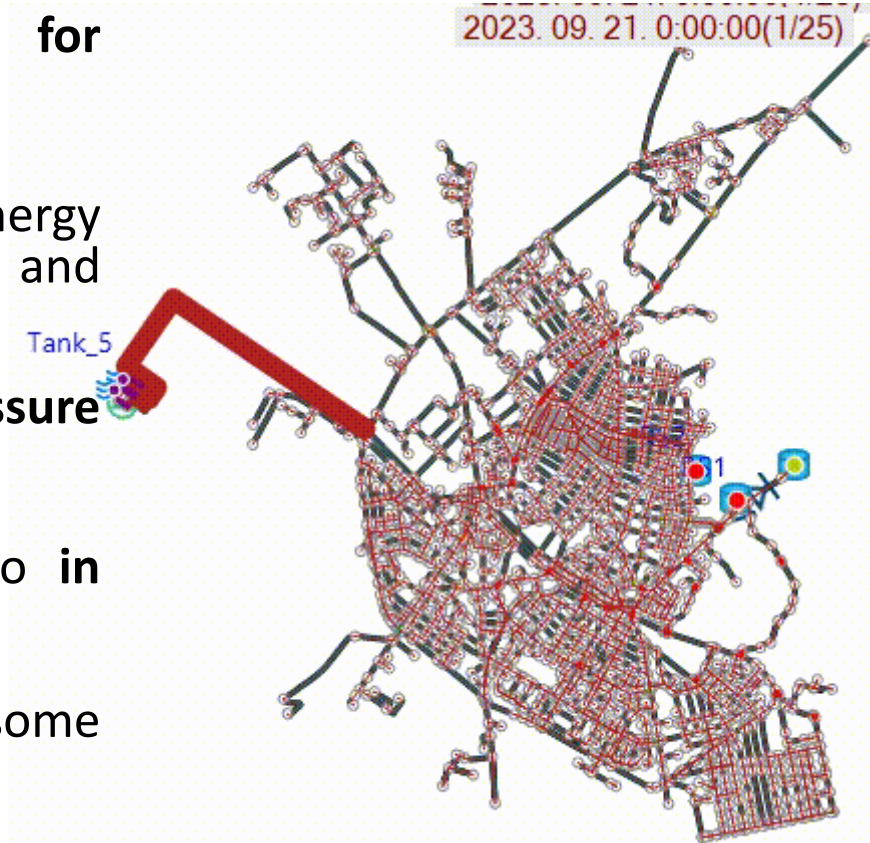
check the plans before any construction! €

2. Gate valve impact for the system energy efficiency and reliability is recognized and assessed.

3. Identified the relations between pressure zones in details

4. Identified that there is a potential also in passive leakage reduction

5. Gaining € 😊 energy from operation with some smart investment is possible



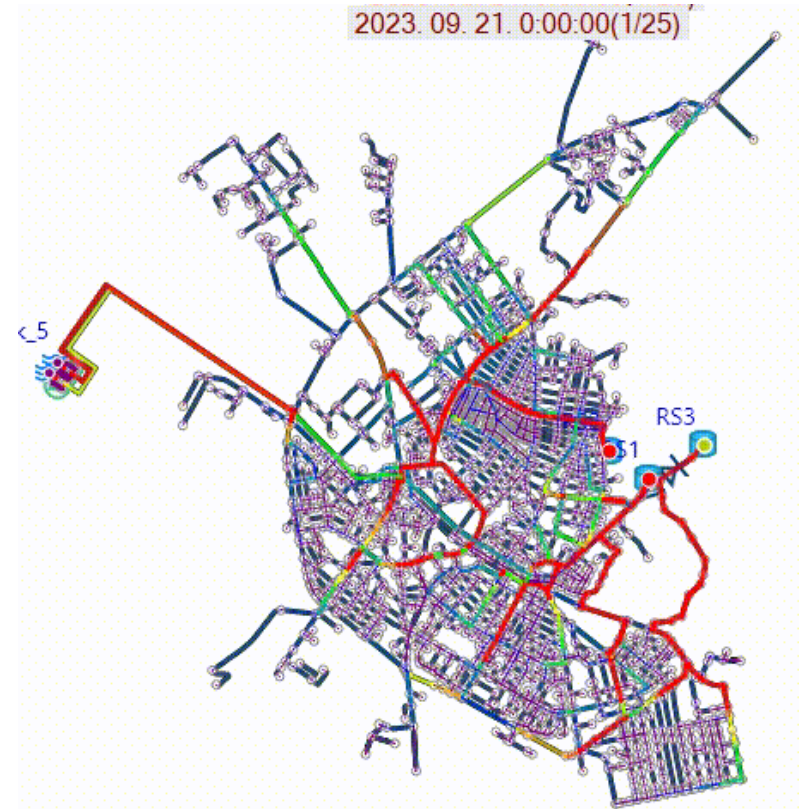
Result

UKKO recieved

- calibrated model for Korca network, online access
- documents of recommendations

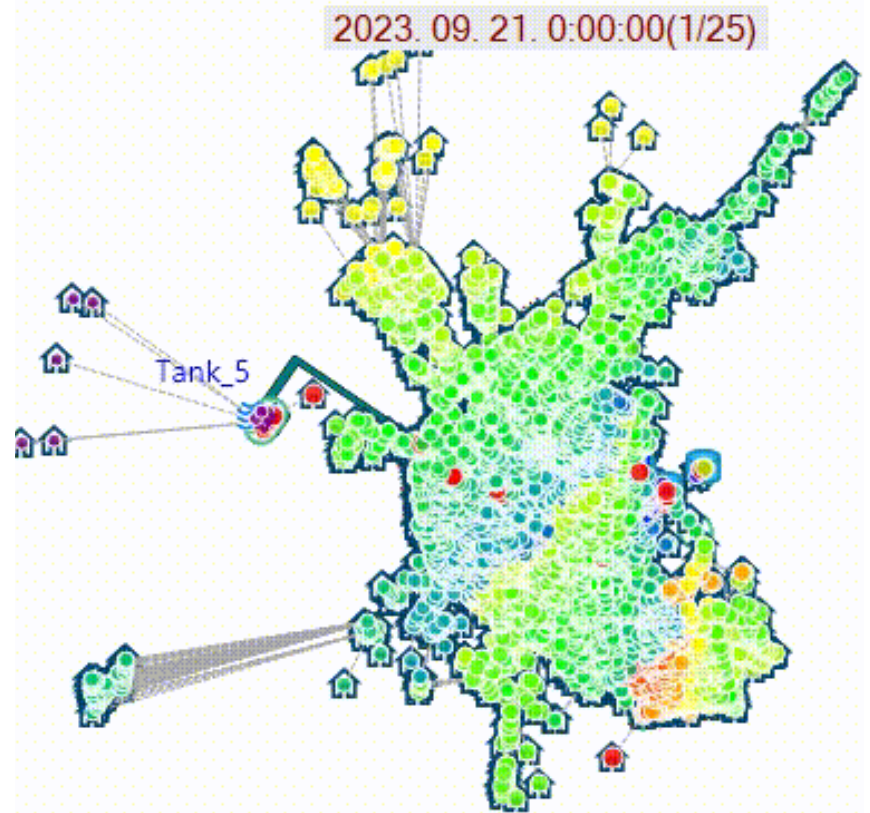
Suggested actions:

1. Start measuring in the network more to gain more reliable information to support design – to gain the most efficient version (*Measurement plan to support real-time operation*)
2. Pump schedules are to be further revised based on the changed consumption over the last 20 years since the SCADA system established
3. By gaining more data on the physical status of the defined valves shall help to optimize the network operation from NRW and energy efficiency perspective



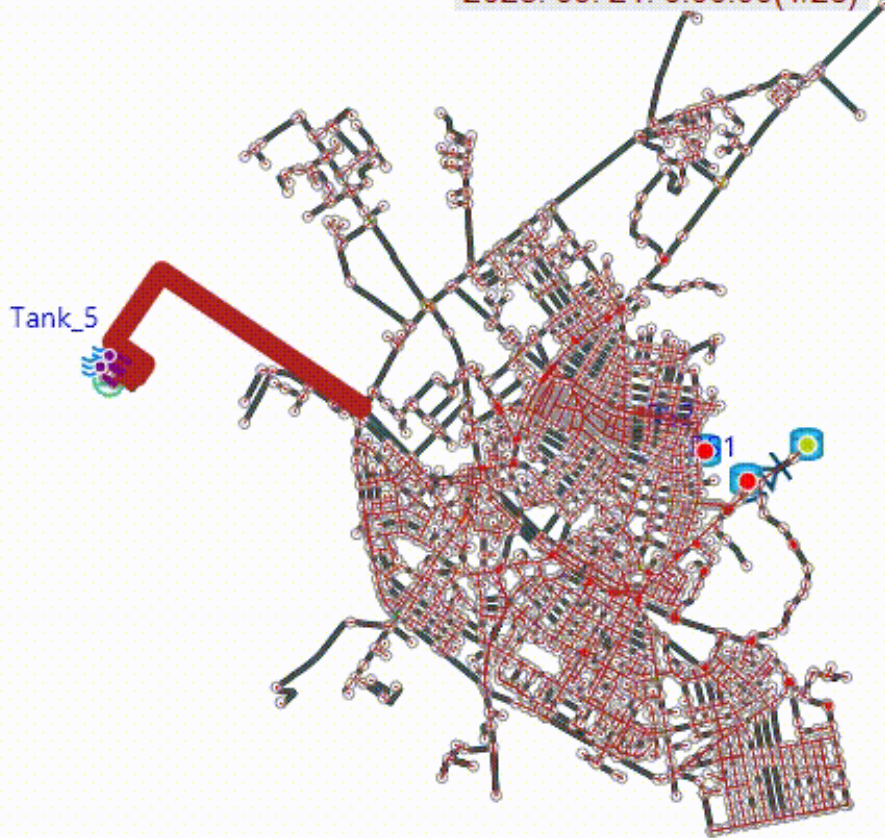
Where we are / where to go?

- Complete and revised dataset (consumers, pipes, etc)
- Overview of the system is gained
- Model is calibrated on available measured data
- A detailed waterloss analysis were completed and provided to UKKO.



Where we are / where to go?

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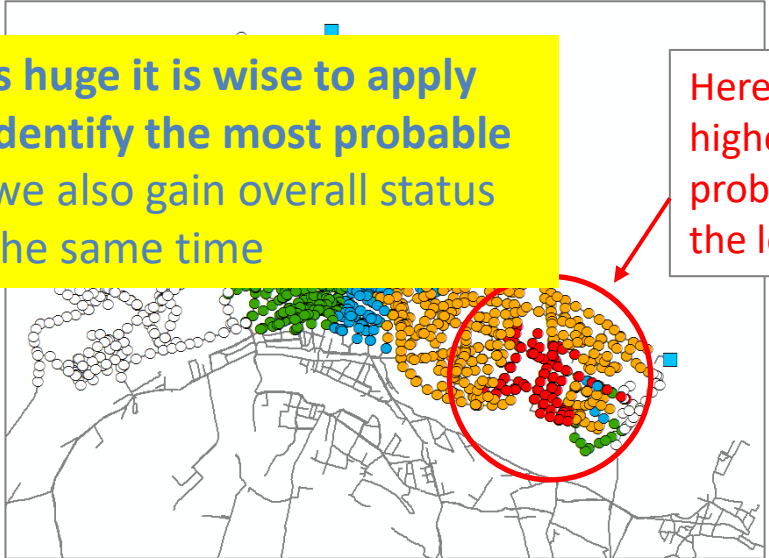
- Database /ready for asset management
- Ready for operational optimization (consumption based **Pump schedule plans** , etc.)
- Get **water balance calculation automatically** – get the model online
- **Investment prioritization planning** (cost and impact by objective viewpoints)
- Finding leakage on more effective way. Ready for **leak localizator** application if proper few devices are installed (see documentation)

The future of the matter

Based on the model, not just the investments could be checked, but if new sensors will be applied, the complete leakage reduction activities could be more focused, thus become more effective!



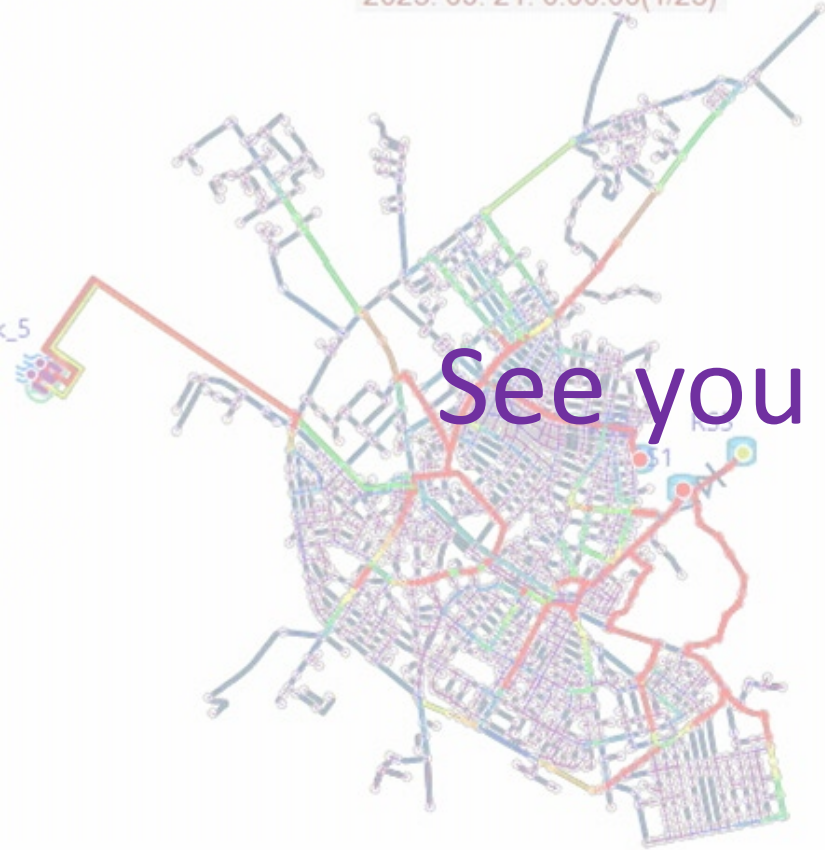
If there is no DMA or DMA is huge it is wise to apply several sensors to be able to identify the most probable location with leaks and thus we also gain overall status reporting tool in the same time



Here is the highest probability of the leak

Thank you for your attention!

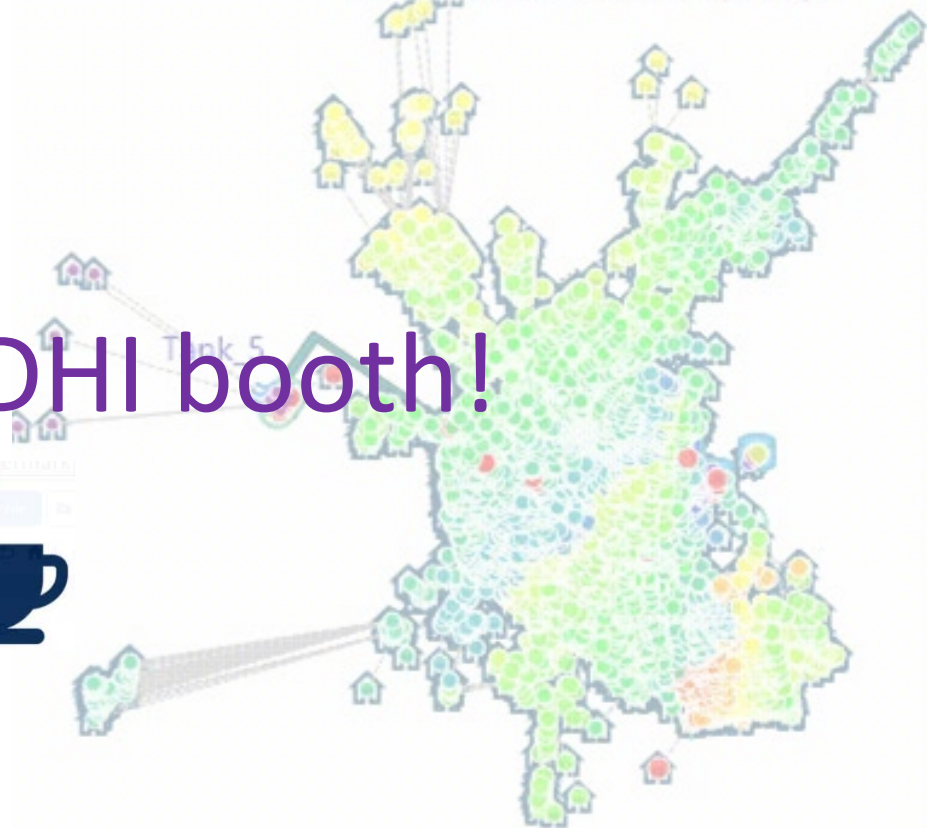
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See you at DHI booth!



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- Network investment optimization

- <https://www.youtube.com/watch?v=vnJYyyABs9A>