



DIGITAL TWIN

CAT experience

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CONSORCI D'AIGÜES DE TARRAGONA



Siloed technologies

- Watergems hydraulic model – System planning
- Citect SCADA – Operator control
- CAT Automatic Operation and Energy Optimization System (SAOOEC) – Based on SUEZ Aquadvanced Energy
- Real-time Water Quality Monitoring – Based on S::CAN multiparameter sensors
- Leakage detection campaigns – Smart ball based

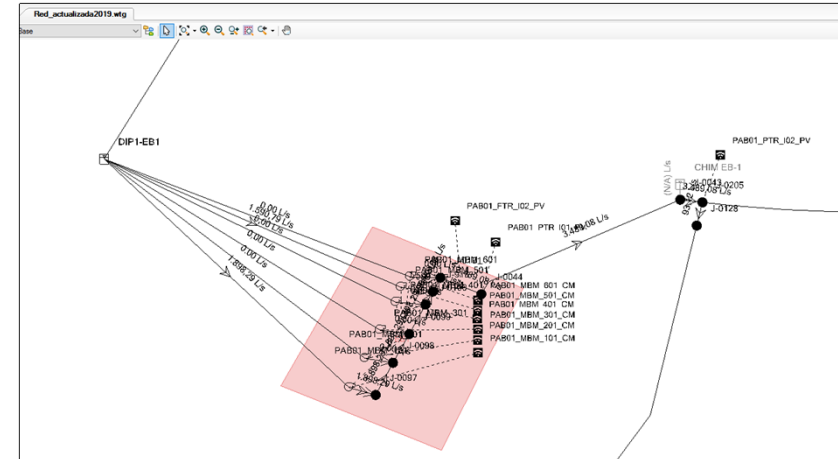
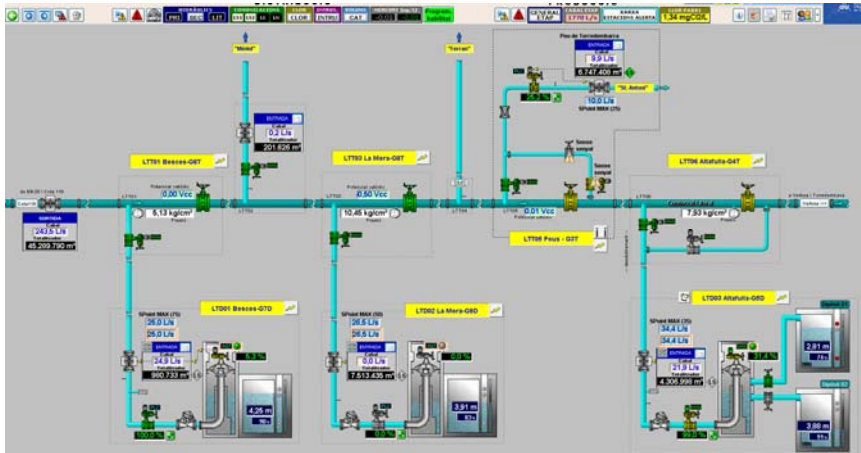


Why a DT for CAT?

- Hydraulic model cannot reproduce real operation
- SAOOEC optimization not correct for model discrepancies
- Operators cannot take correct decisions on incorrect planning
- Water quality variations must take into account water distribution
- Leakage prediction no real time nowadays



DT Pilot



- Connection between SCADA (Citect) and Hydraulic model (Watergems) Done
- Historical events simulation Done
- Real time simulation and SCADA linked Under test
- SCADA-based calibration Under test

Define key aspects for DT

Main future steps

- Data validation and normalization
- Hydraulic model correction for DT
- Sensor verification and placement definition
- Expected outcomes definition

DT is a long journey





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Tarragona Water Consortium - Quick facts



- Born in 1989. Public-private consortium
- Main transport water utility
- Distributed water: 72 Hm³ / year
- Treatment plants: 1 plant - 4 m³/s
- Pumping stations: 23 (56 GWh / year)
- Pipe length: 405 km (DN1600-DN100)
- Client tanks: 97
- Regularly served population: 700.000
- Peak served population: 1.500.000 (Summer season)
- 42 Regulation tanks. Total amount of controlled water:

Pre-treated water: **180.000 m³**

Treated water: **400.000 m³**