A digital water company

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Singapore International Water Week 2022

Vitens

A digital water company

Why?

-Old working force (30 % will leave the company within 5 years);

-New working force will not stay for 40 years at a company;

-Energy and water transition requires quick responses;

-Customers demand more information;

-Digitalisation is extremely increasing;

-Technology for treatment is becoming more and more complicated.

Solution:

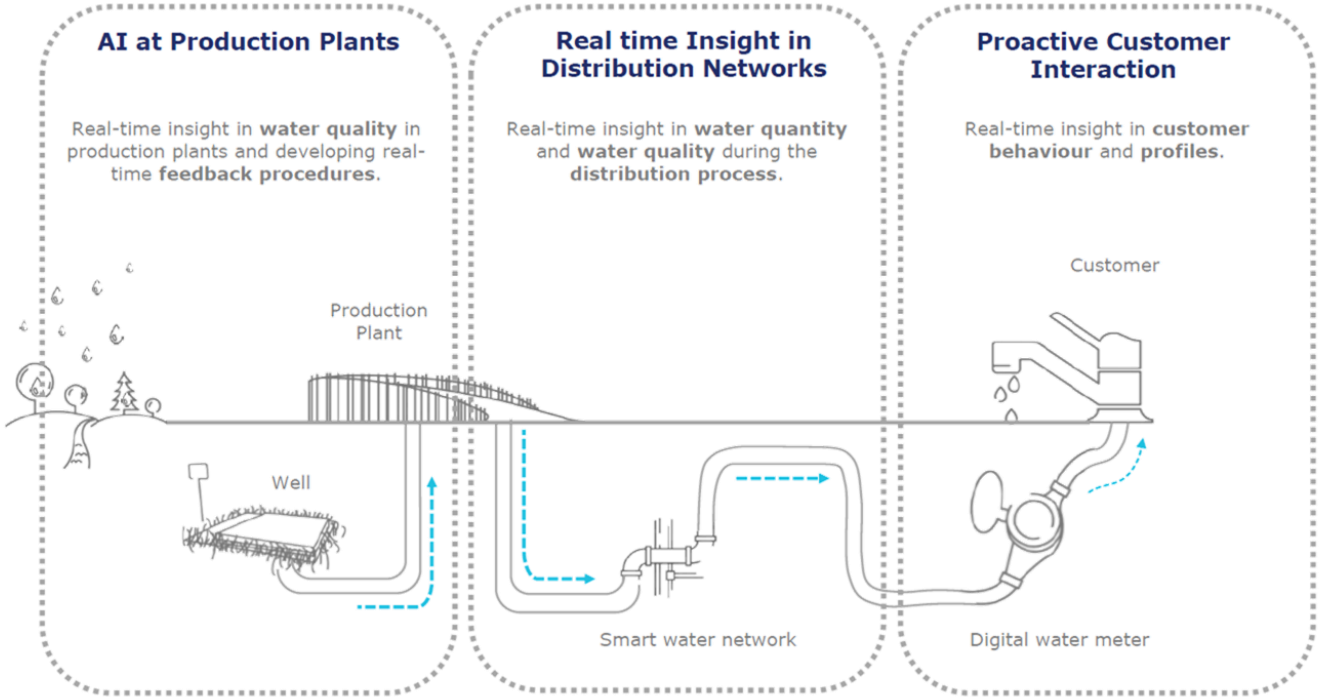
Bringing knowledge from the ‘heads’ of the working force into digital systems.

Vitens: drinking water company

Complex networks and production points

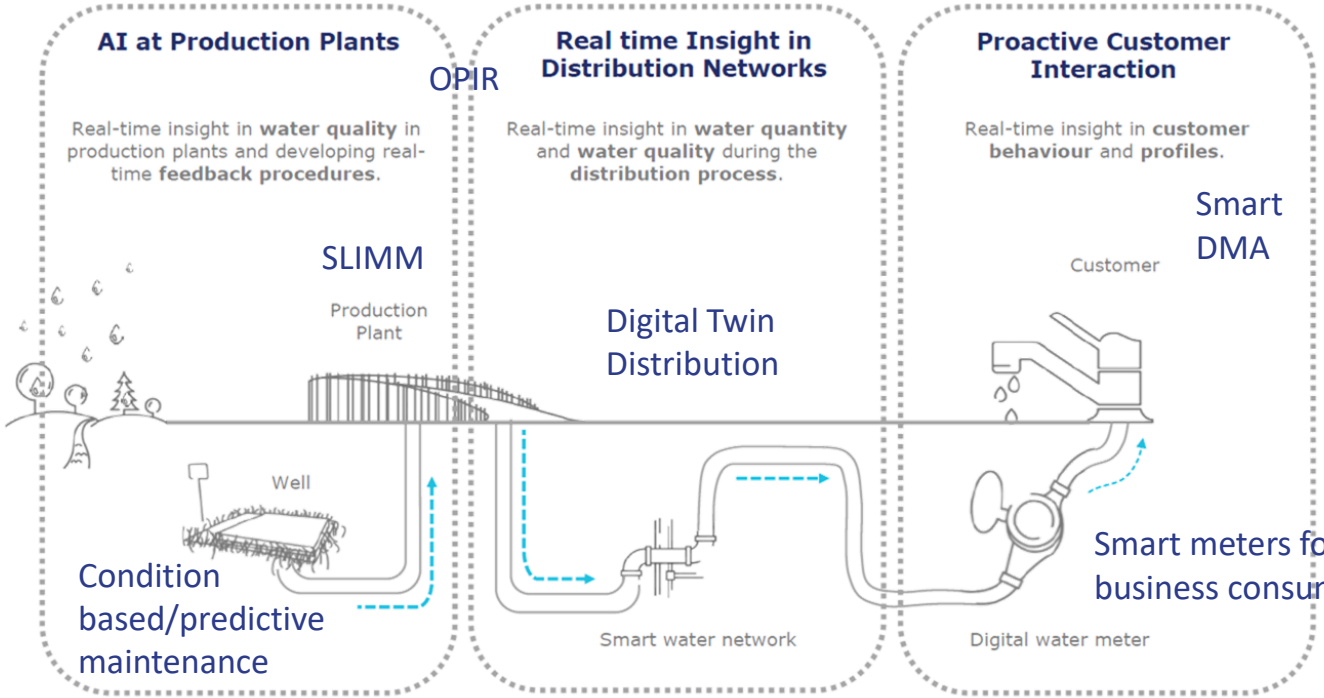
Multiple sources with resilient ‘ring’ water supply network

Program Infra2025



Program Infra2025

6 projects



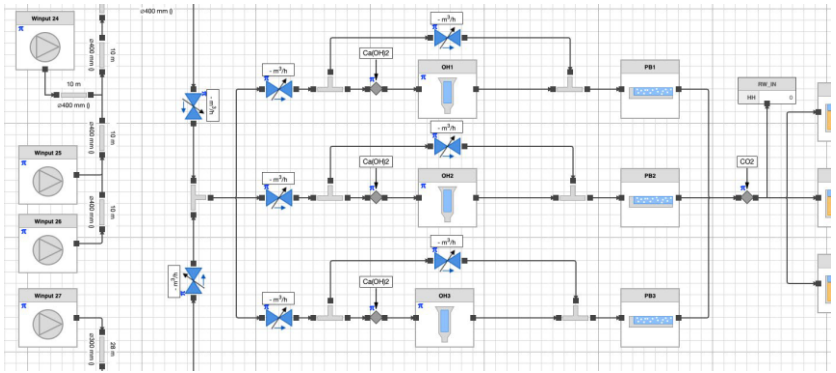
SLIMM

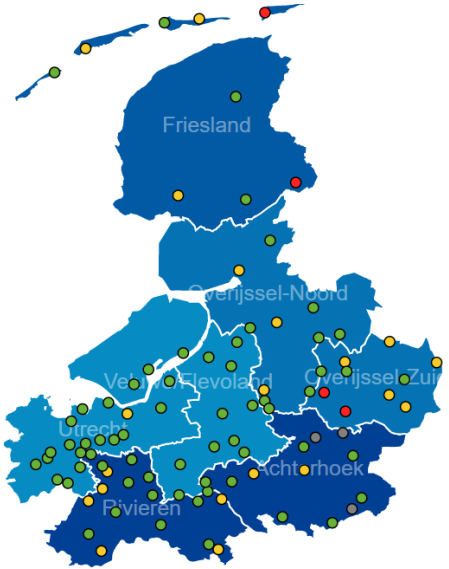
Self Learning Integrated Model based Management

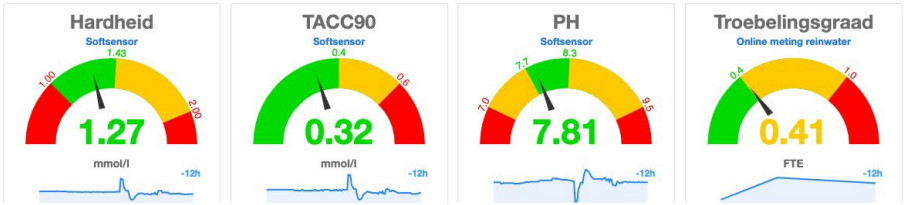
Digital Twin Production

-All data laboratory;
-Online sensors;
-Soft sensors;
-Energy;
-Production losses;

→ 24/7 control on water quality!







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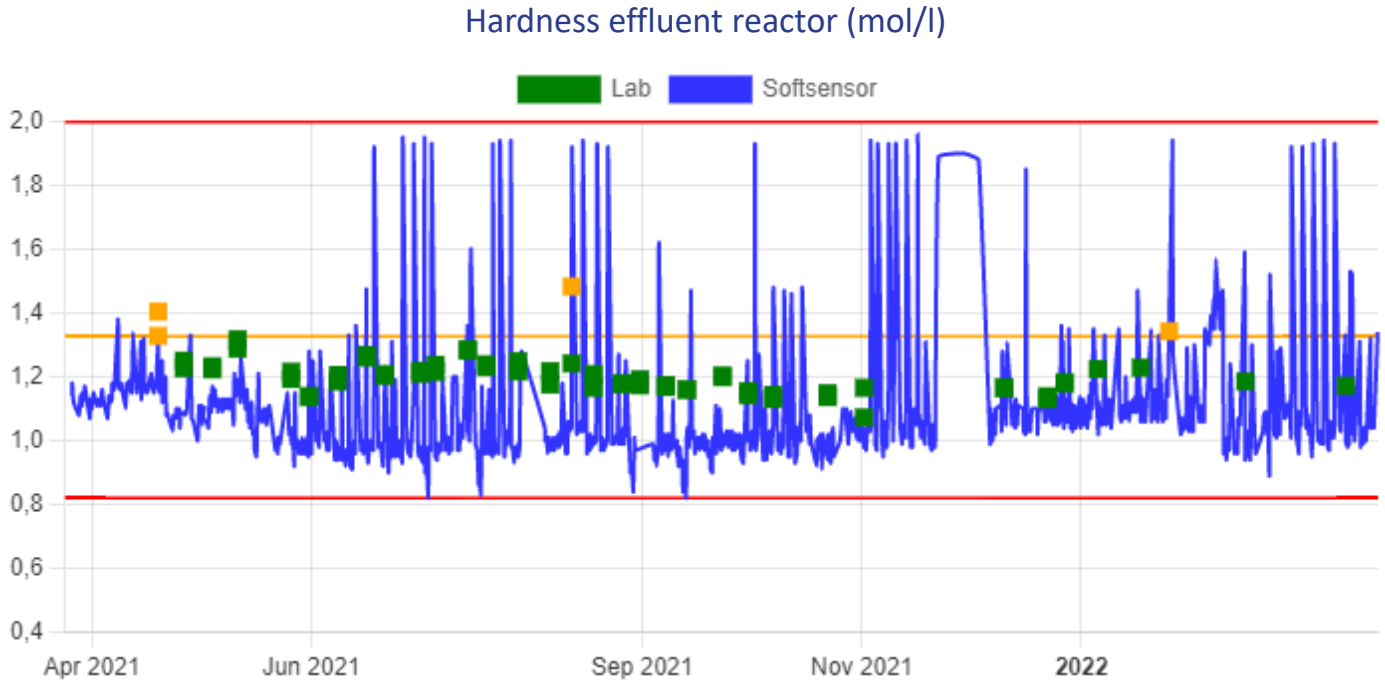
SLIMM

Example hardness



Inform

↓

Advise

↓

Control

Session 2.7 – Digitalization Of Water Treatment Plants, 20th of April 2022 from 13:30-15:00 h.
Real-Time Digital Twin Based Process Monitoring Of Drinking Water Treatment Plants; Abel Heinsbroek, Nico Wolthek, Rein Wuestman, Christiaan Slippens. Vitens NV (Netherlands)

Vitens

Demand Forecast (OPIR)

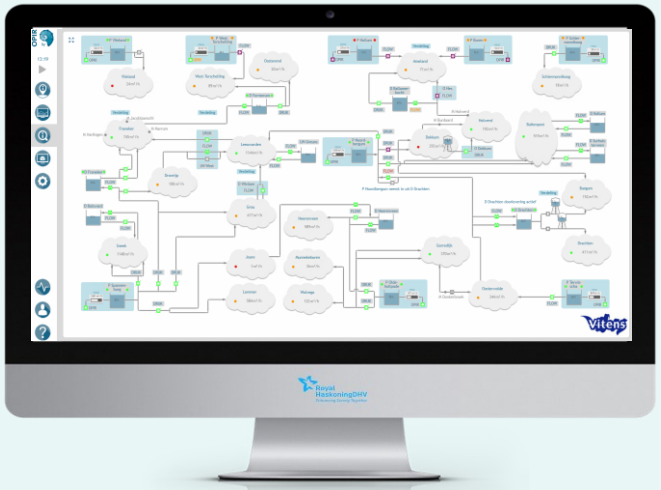
Forecast of demand is at the heart of the production strategy. Aquasuite (OPIR) helps Vitens with this by:

- Importing data from Vitens SCADA, PLCs and devices to central point
- Using local calendars, imported data and machine learning to learn trends
- Predicting demand for all supply zones for the next 72 hours

Optimised Supply (OPIR)

Using the forecasted demand Vitens, with Aquasuite, are able to:

- Schedule abstraction pumping to meet demand
- Optimise network pumping stations to feed supply zones demand
- Ensure customer demand is met as efficiently & effectively as possible



Digital Twin Distribution (DTD)

Three goals for the DTD:

- Provide insight: pressure and flow everywhere
- Calculate scenarios:
  - Opening or closing valves
  - Additional demand
- Train new colleagues much faster:

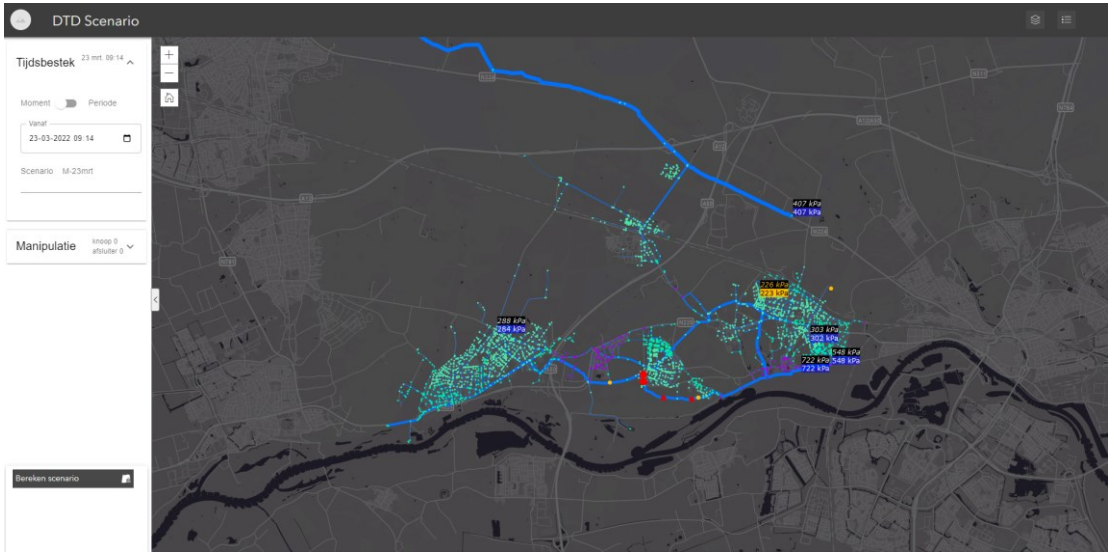
"flight simulator"

Vitens

Digital Twin Distribution (DTD)

Ready for one of the 83 balance areas. The next steps3 are to:

- roll out the other areas
- work with multiple users
- add extra features.



Smart DMA

Small part of the city of Leeuwarden

-2 production sites delivering water to this district;

-90 % of the households have smart meter;

-extra flow meters in the DMA;

-on distance controlled valve in het distribution system;

-data every 5 minutes from the consumers;

-extra checks on valves.

Smart DMA

-During 0-consumption leakages behind the water meter being found;

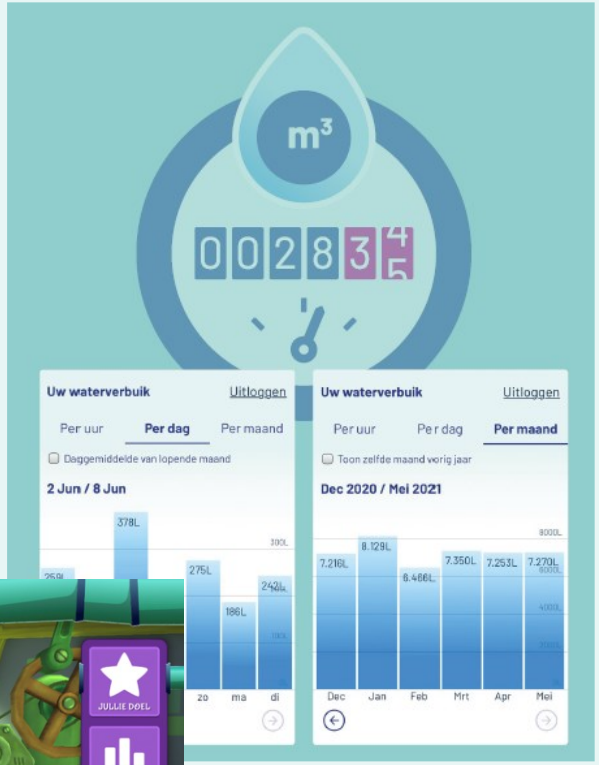
-2 % of all consumers had a leakage behind the meter of more than 5 l/h; after contact 50 % of the consumers directly solve the problem;

-Consumption of consumers in relation to water delivered into the DMA;

-Consumer behaviour;

-Serious game Water Battle (kids ‘raise’ adults);

-Pressure problems solved (pumps at reservoir).



2025

water

voor nu

en later

www.vitens.nl

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