

# Digital operation and procedures for water loss reduction

**Webinar, February 11<sup>th</sup> 2021**

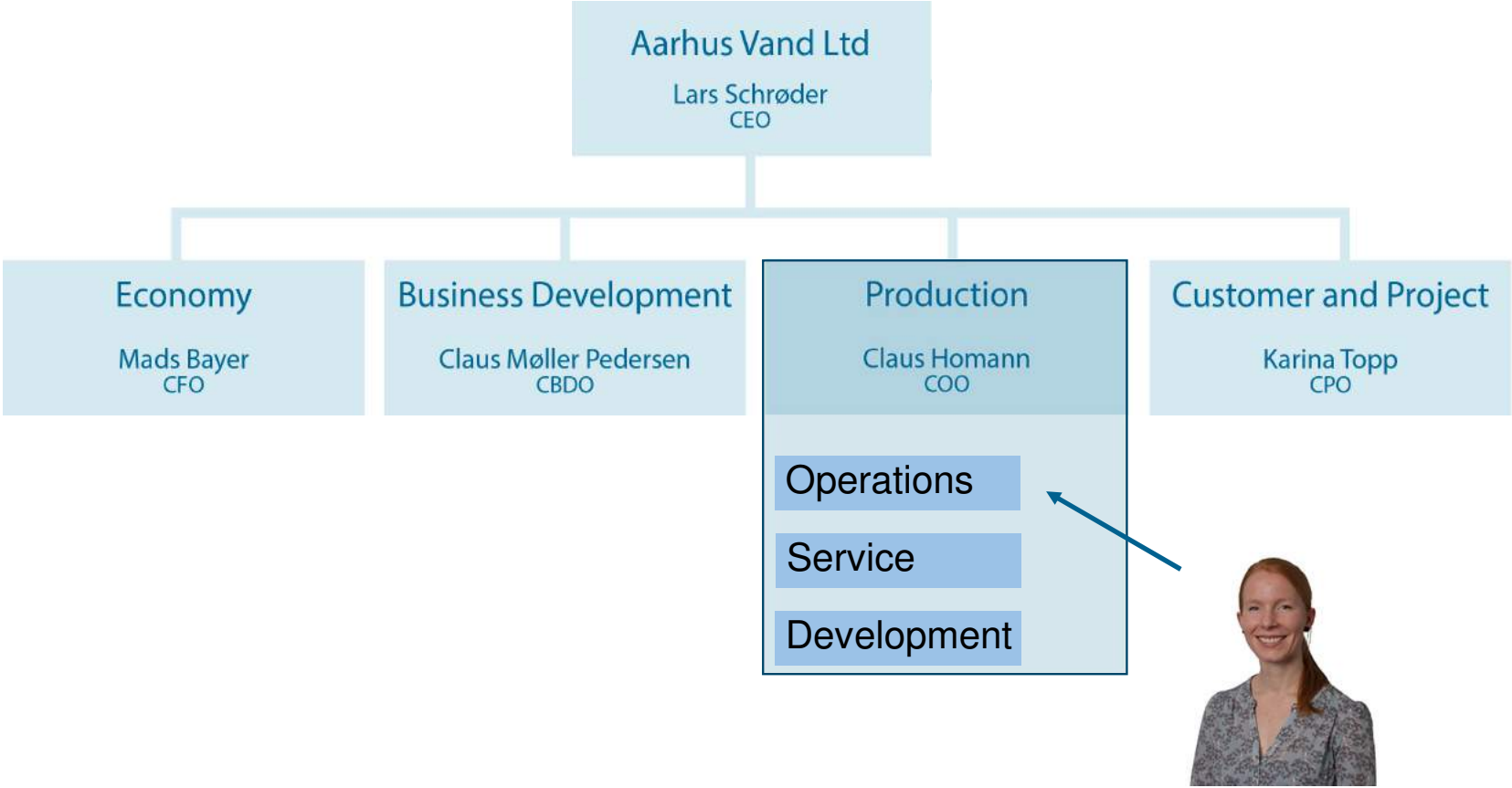
Marmara Union of Municipalities, Royal Danish Consulate General and Turkish Union of  
Municipalities

**Sally Nyberg Kornholt.**

NRW Operations Engineer, Aarhus Vand

aarhusvand

# Company structure in Aarhus Vand



# Non-Revenue Water reduction through a holistic approach

Several aspects need to be addressed to reach low NRW levels and ensure continuous success

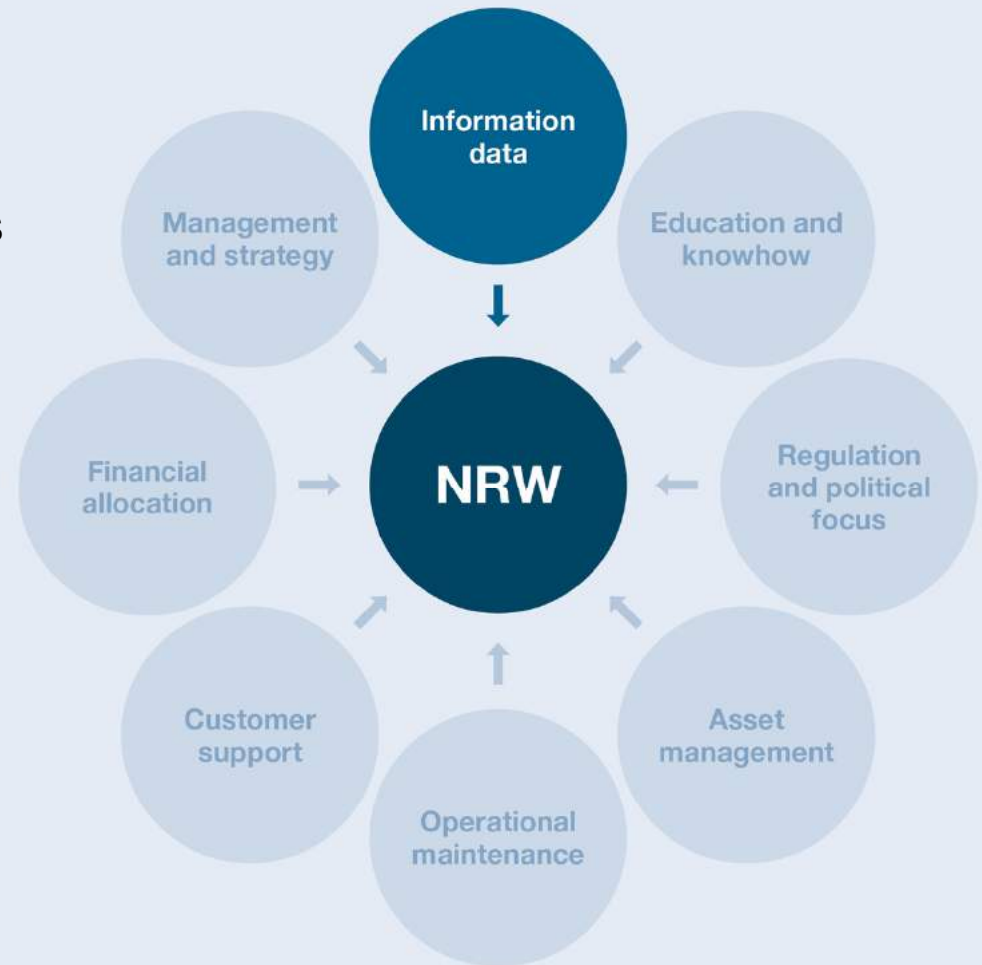
## My agenda today:

- Data
- Operation & maintenance

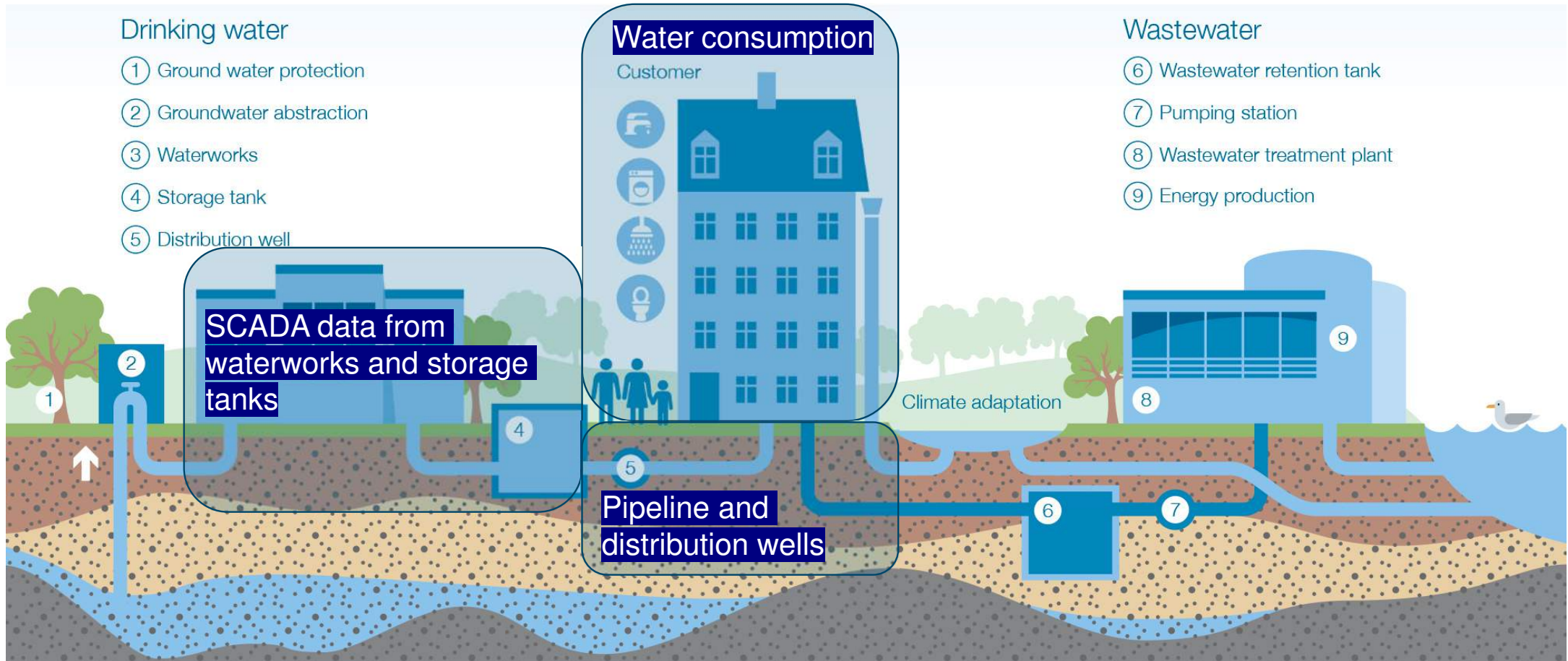


# Information data

- Water consumption metered at all consumers
- SCADA data from waterworks and District Meter Areas (DMA's)
- Pipeline registration
- Data platform – visualized and dataflow
- Etc.

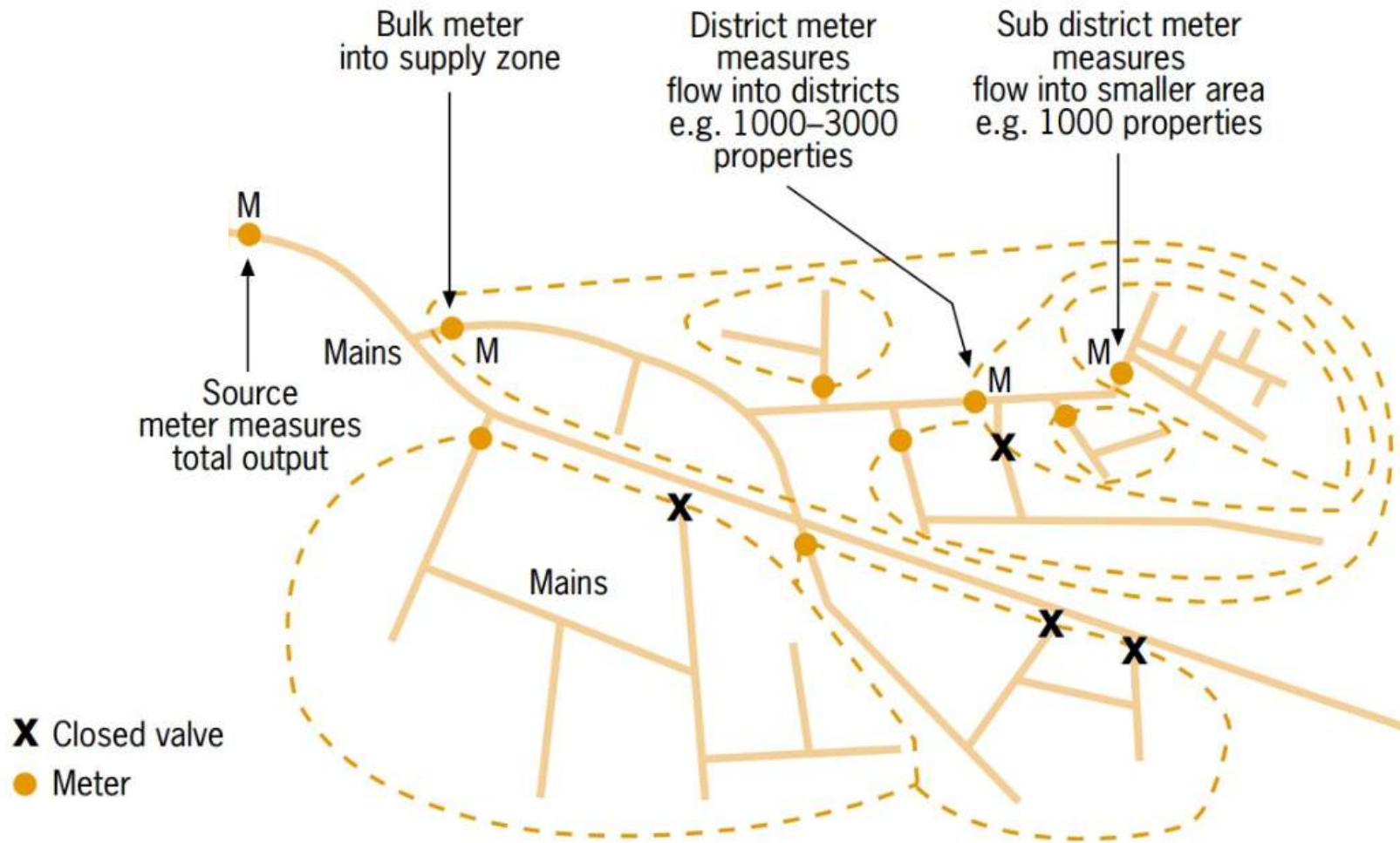


# NRW data in the water cycle



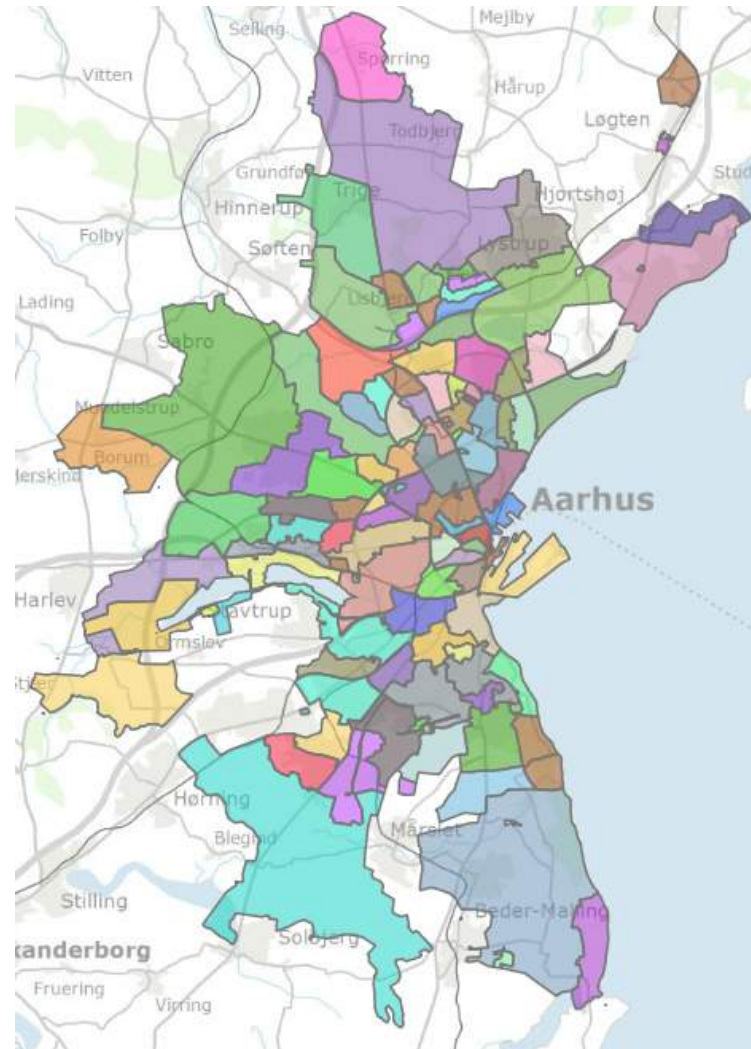
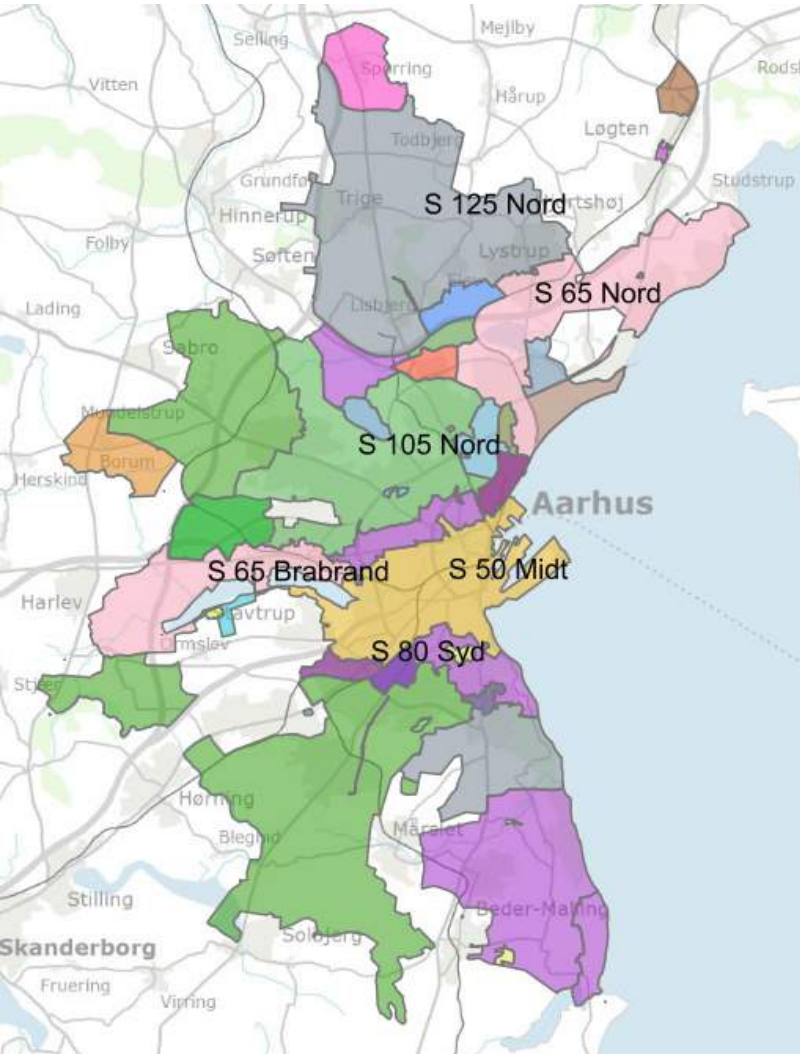
# SCADA data from DMA's

# District Metering Areas (DMA)



INFORMATION DATA

# District Metering Areas (DMAs) in Aarhus



## Data collected

- Flow
- Pressure
- Temperature



# Pipeline registration



# Pipeline registration

- All the important informations are registered
- Data is available to all in the company

Info

Se detaljer: Vand Ledning : id 1032698

**Vand Ledning**

Id	1032698
Kategori	Distributionsledning
Fabrikantbetegn	110pe100-10
Sektion	S 65 Nord
Trykzone	T 65 Nord
Forsyningszone	Z 65 Nord
Fabrikant firmanavn	UPONOR
Fabrikant firmanavnkort	UPONOR

# Data platform – visualized and dataflow

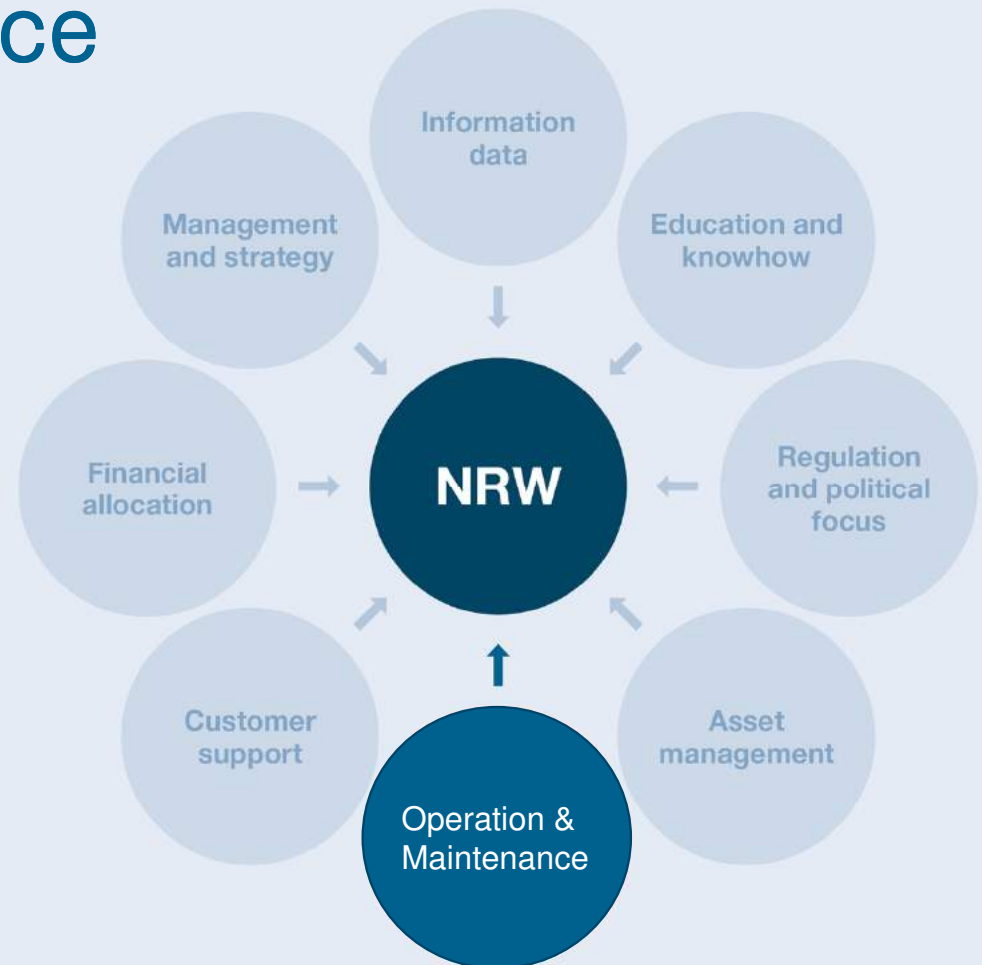
INFORMATION DATA

# Data platform – visualization and operational dataflows

The screenshot displays a GIS application interface. On the left, a map shows a street layout with a red polygon highlighting a specific property at Helsingforsgade 6A, 8200 Aarhus N. The map includes a scale bar (20 m / 100 ft) and a coordinate display (574100, 14203, 6225759, 04771). On the right, a sidebar titled 'DriftsSager' contains tabs for 'Oversigt' and 'Analyse'. Below these, there are sections for 'Driftsopgaver vand' and 'Specifikation'. The 'Specifikation' section shows the address 'Helsingforsgade 6A, 8200 Aarhus N', ID '590133', and options for 'Sms' and 'Mail'. Below this, there are fields for 'Referencer' (with 'Udvælg i kort' button) and 'Typenavn' (with 'Beskrivelse' field). The bottom section of the interface features a search area with fields for 'Dato start:', 'Dato slut:', 'Fritekst:', and 'Søg:', along with an 'Anvend Filtrering' button. To the right of the search area, there are two photo thumbnails: 'Drift (4)' showing a trench with a ladder and 'Spildevand (4)' showing a red van parked on a street. A 'Bruger-filtrering aktiv.' button is also visible in the bottom right corner.

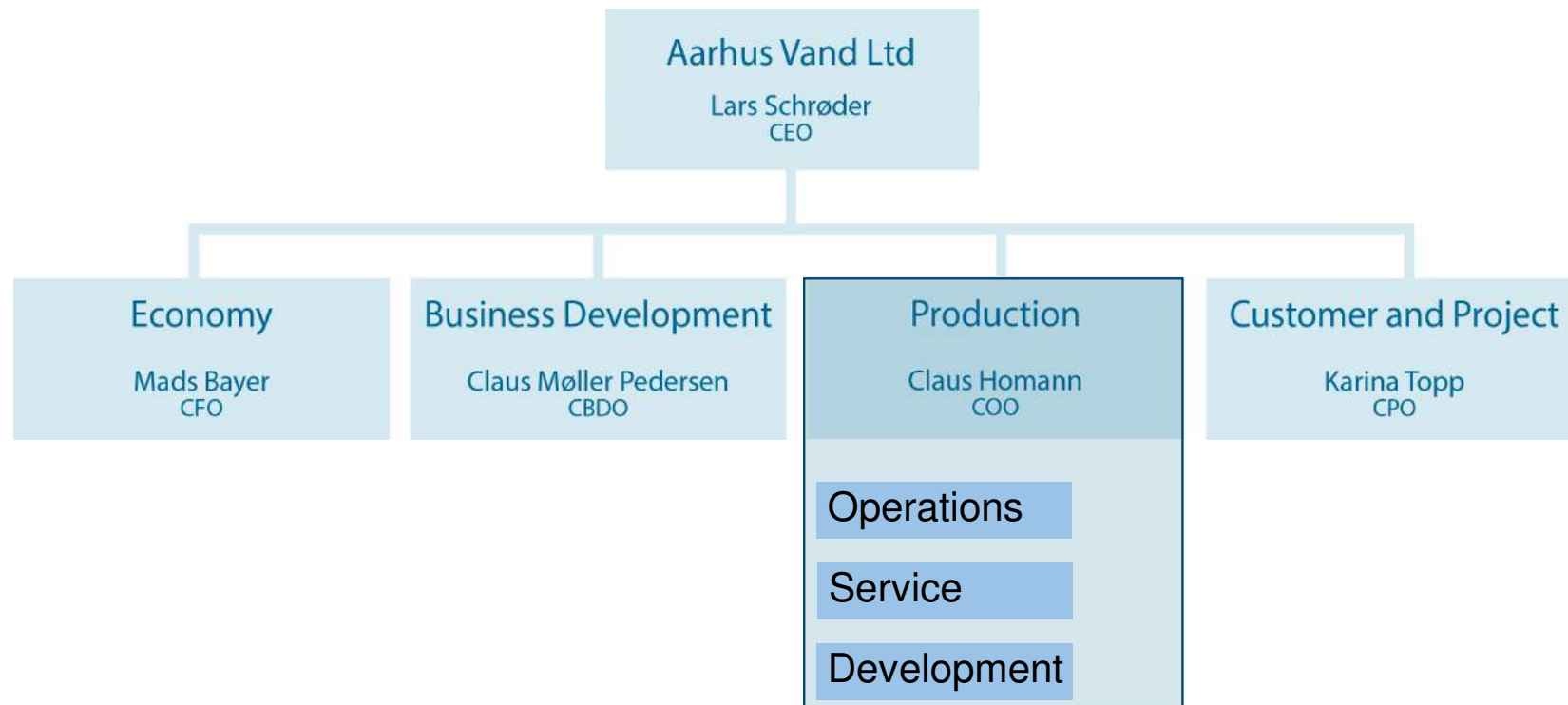
# Operation & maintenance

- Organization and response time in leakage incidents
- Structured water loss monitoring
- Leakage detection
- Pressure management

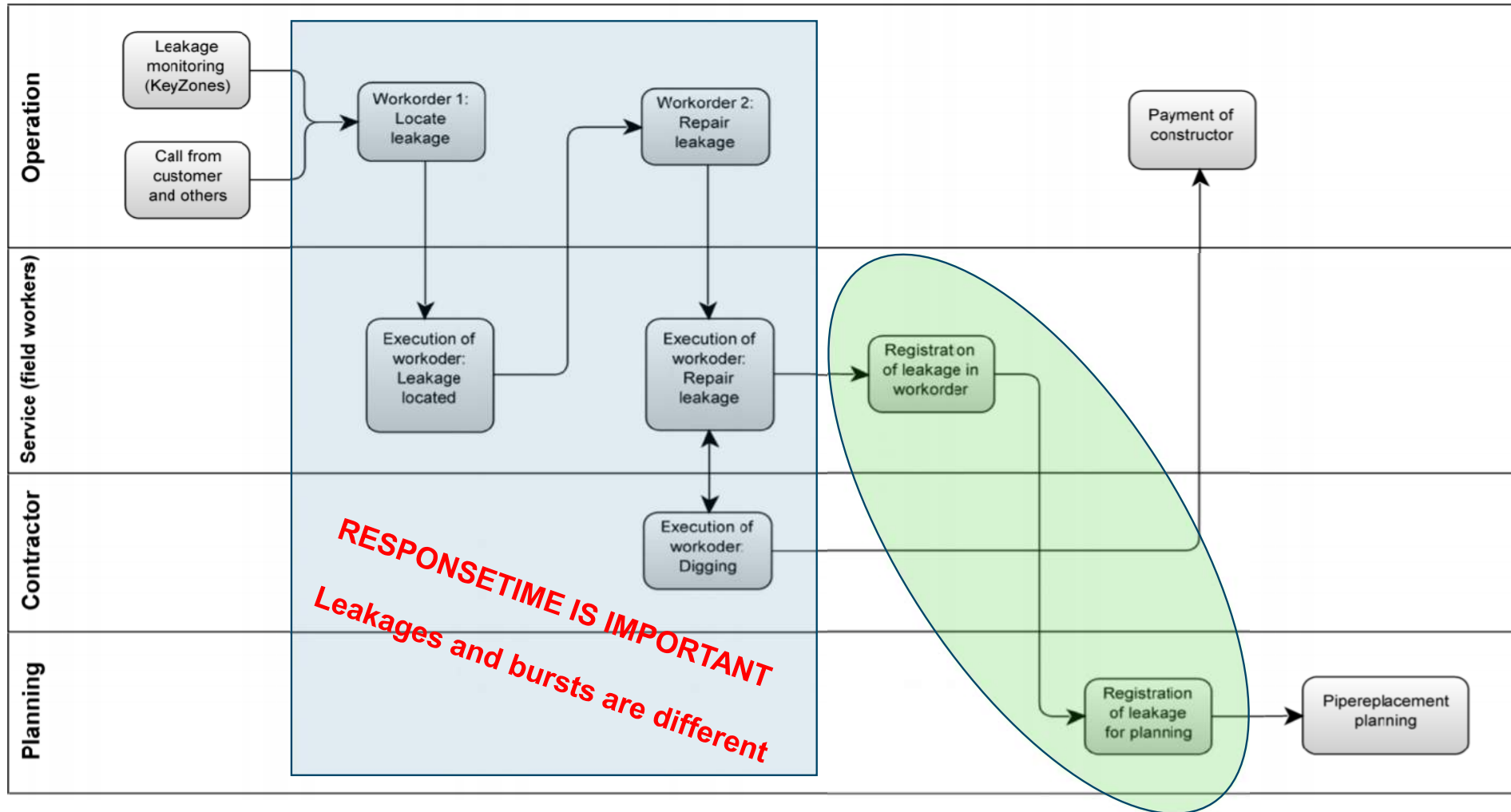


# Organization and response time in leakage incidents

# Repetition: Company structure Aarhus Vand



# Workflow Aarhus Vand- leakage (and burst)

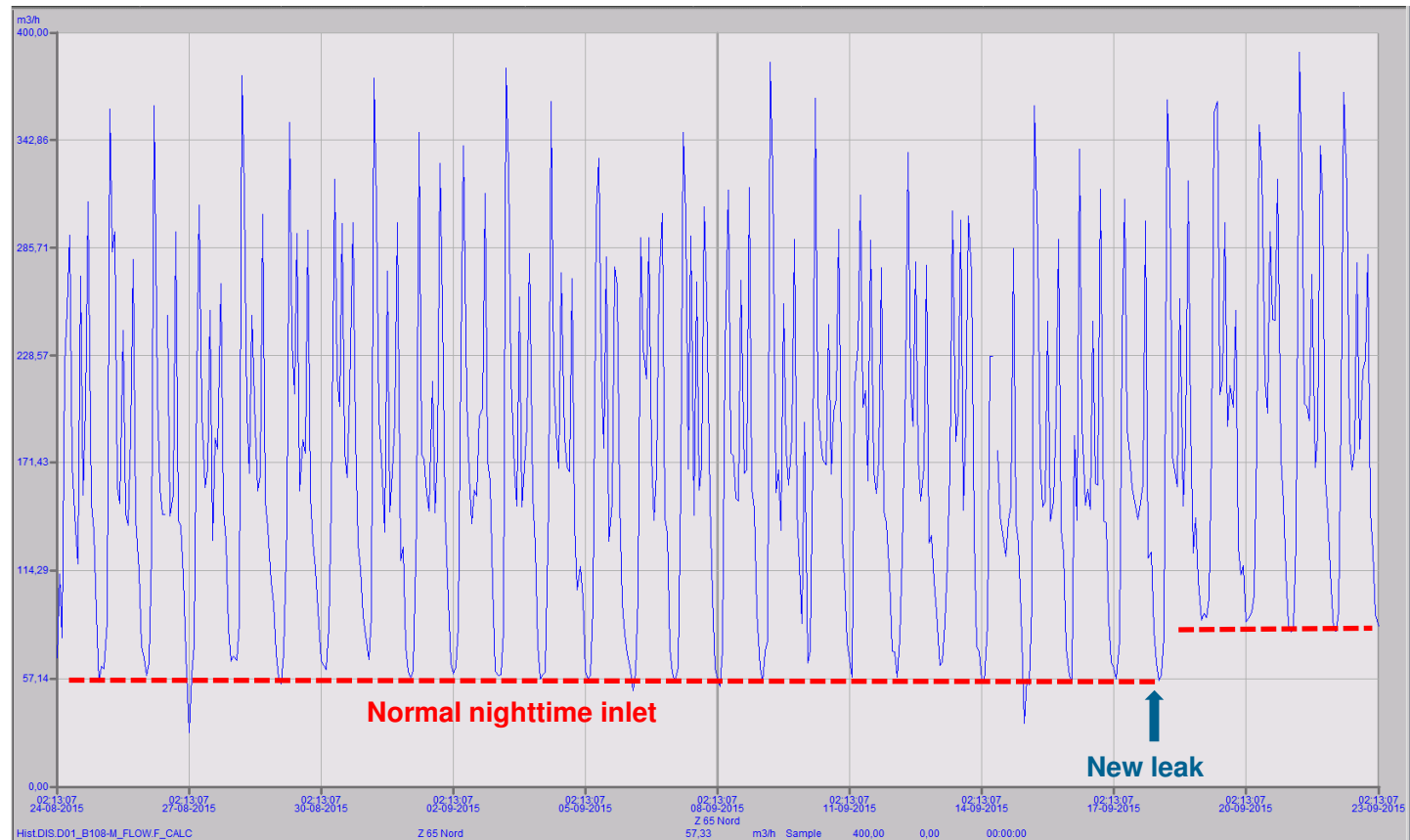




# Structured leakage monitoring

# Use of DMAs

- Look for change in nighttime water consumption
- Calculate an expected nighttime consumption to compare (at 2 – 4 AM)



# Leakage monitoring software

- Quick overview of all zones and sections
- Prioritizing areas for leakage detection
- Daily monitoring



■ Flow

■ Estimated consumption

# Leakage detection

# Leakage detection – methods in Aarhus Vand

- Trailer with a tank (Aarhus Vand method)
- Microphones
- Correlator
- Gas



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# Pressure management

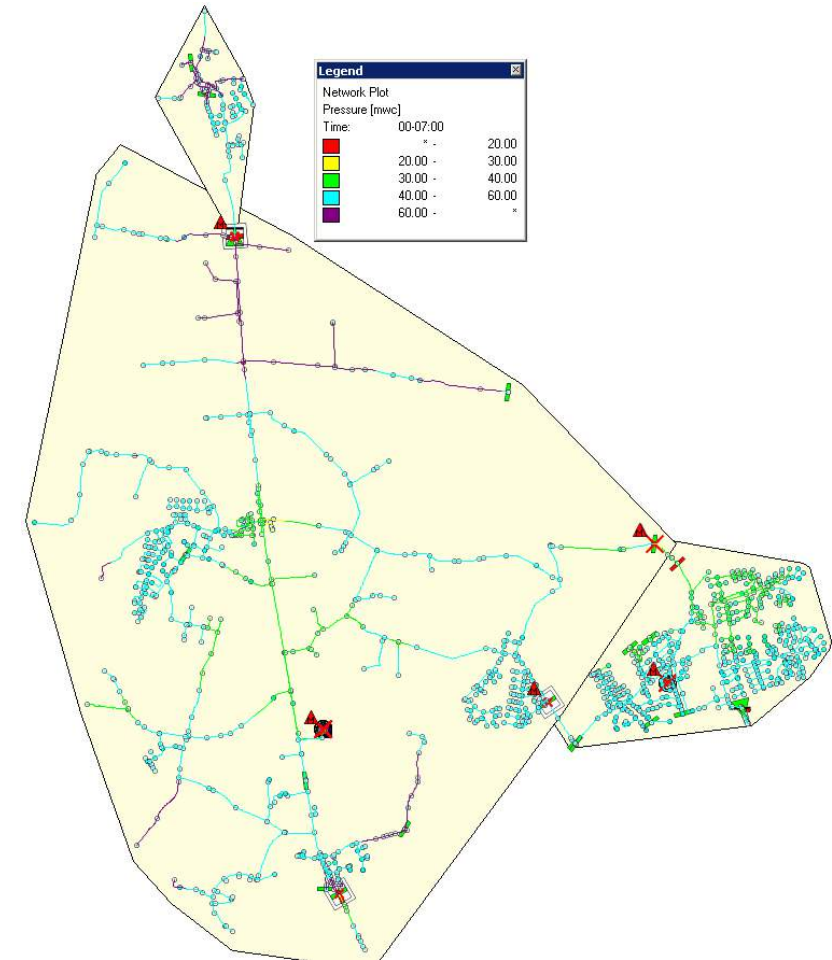
# Pressure management and leakage

Pressure and volume of water loss are related.

Pressure variation causes poor water quality and more bursts.

Aarhus Vand actions:

- Minimum pressure is 2,0 bar (1,7 bar)
- Reduce pressure variation
- Calculate and/or measure pressure in the water distribution network (AQUIS/EPANET) – advanced pressure management
- Build a model and simulate age of pipes



# Thank you!

