

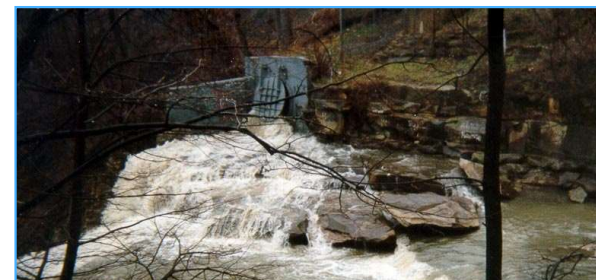
# New low cost sensors for CSO monitoring in sewer networks

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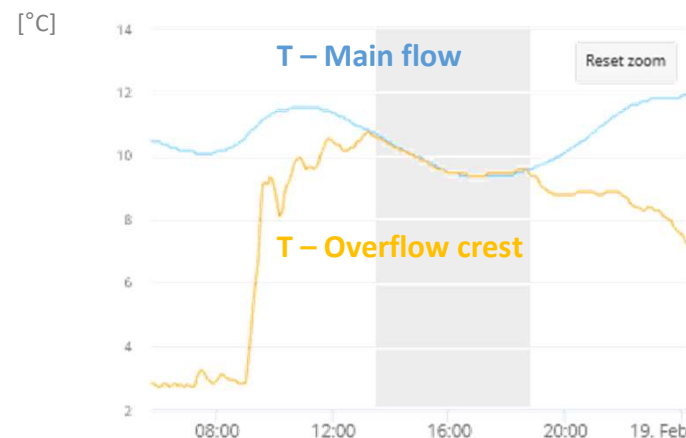
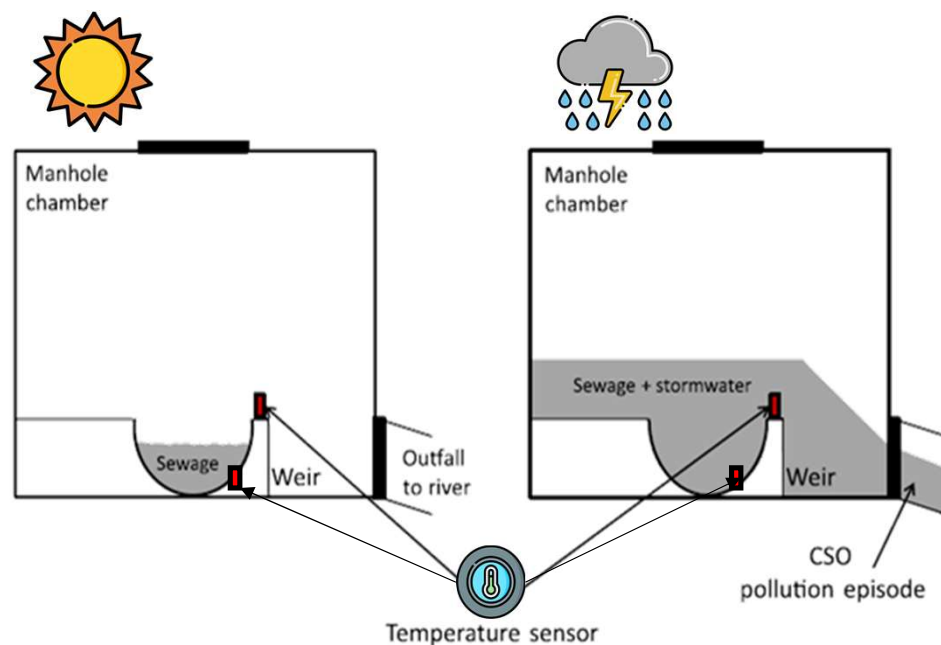
 KW/B

# COMBINED SEWER OVERFLOWS

- 3 billion litres/year untreated wastewater.
- 2.2% of total flow of WWTP.
- From > 650,000 overflow structures.



# CONCEPT OF TEMPERATURE SENSOR for CSO's



Where?



How often?



For how long?

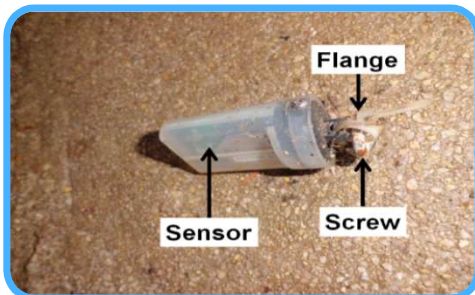


# Sensors + data transmission + web platform interface

Online

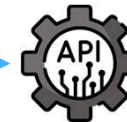
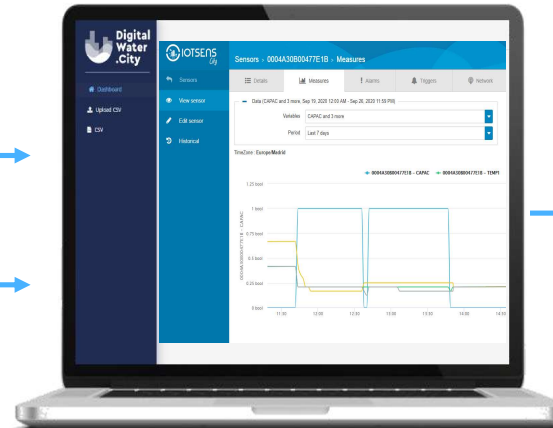


Offline



2 x 60-80 €

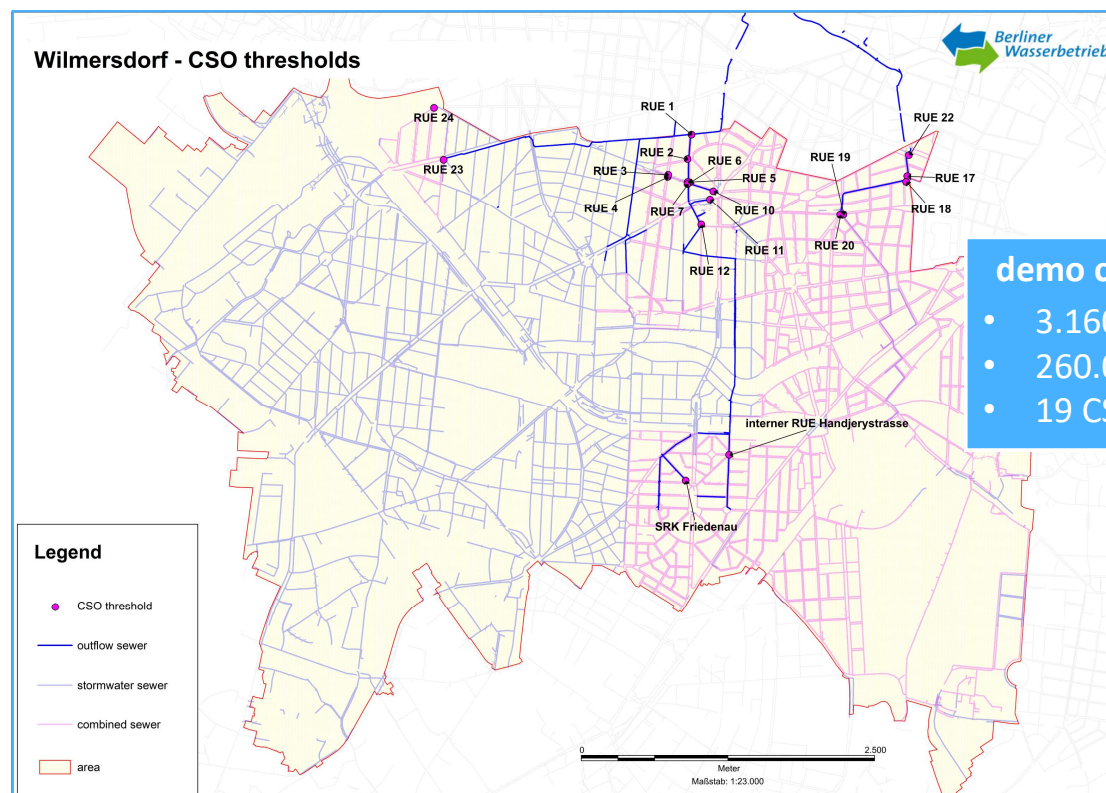
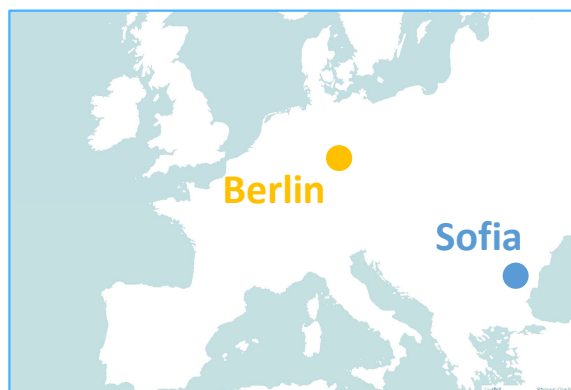
LoRa™





# A network of low-cost temperature sensors for real-time monitoring of combined sewer overflows

## Demo cities



Berlin: sensor network with 19 measuring sites (10 offline, 9 online)

# Sensor installation for CSO monitoring: offline and online



# Conclusion

## *Lessons learnt during the development and operation*



### UTILITES: BWB & SV

- Feedback overall positive.
- Easy installation, reliable; easy to change battery; easy to clean.
- Online platform: easy to access, usability high.



### DEVELOPERS: ICRA & IoTSens

- Good-valid concept-approach, flexible and tailor-made to fit Utilities needs.
- Improvement in its application (feedback. from utilities)
- Working on upgrades such as connections to rain data and flexibility in communication protocols.....

Results coming soon

- Limited usage so far due to covid delays.







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## Thank you for your attention



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