

# K-LeakRedux

Opzetten Real-time leksupervisie systeem voor Knokke-Heist



# Partners

✓ HydrosScan : Productontwikkelaar LeakRedux



✓ AGSO : Drinkwaterleverancier



✓ Nelson : Onderbouwing Value-proposition LeakRedux

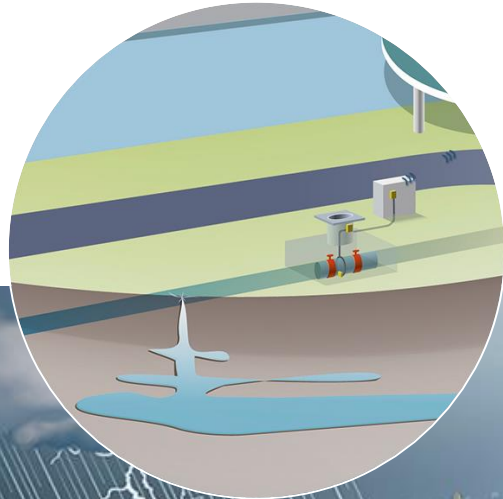


✓ Inarti : IT-implementatie



# LeakRedux concept

Real time flow data



Cloud algorithm



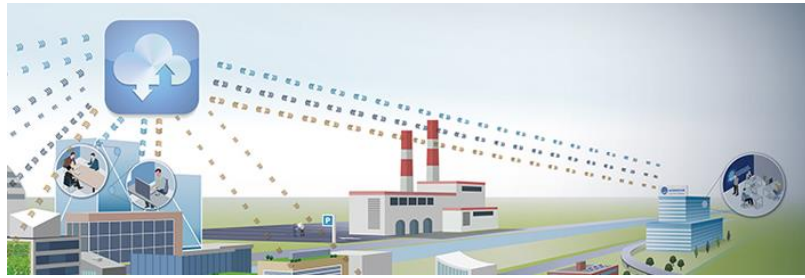
DMA fingerprint



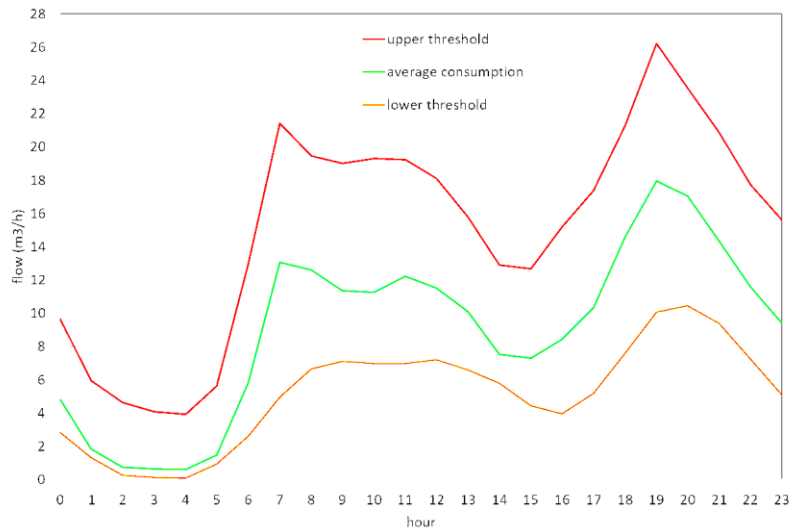
# Doelstelling project

- ✓ Demonstratie werking LeakRedux voor 6 DMA's (volledig werkingsgebied AGSO)
- ✓ Validatie systeem in zone's met hoge seizoensvariatie
- ✓ AGSO ondersteunen bij behoud lage NRW (<10%) door :
  - Automatische opvolging, alarmering en prioriteitstelling
  - Verhoging efficiëntie terreinwerk door indeling in subDMA's
- ✓ Evaluatie meerwaarde LeakRedux voor operatoren

# K-LeakRedux



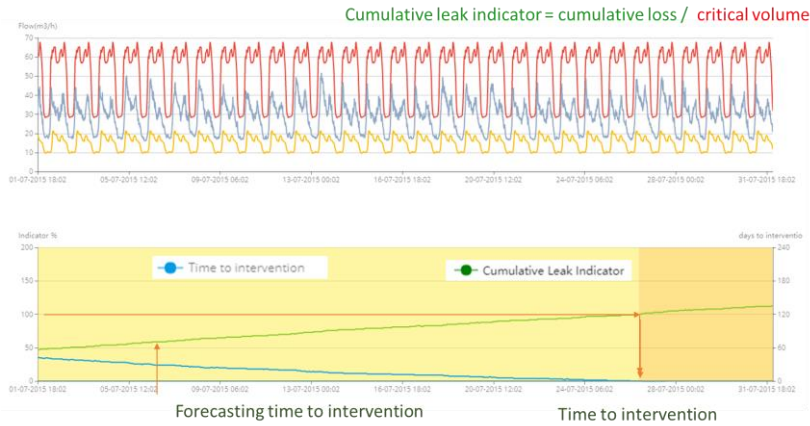
WP1



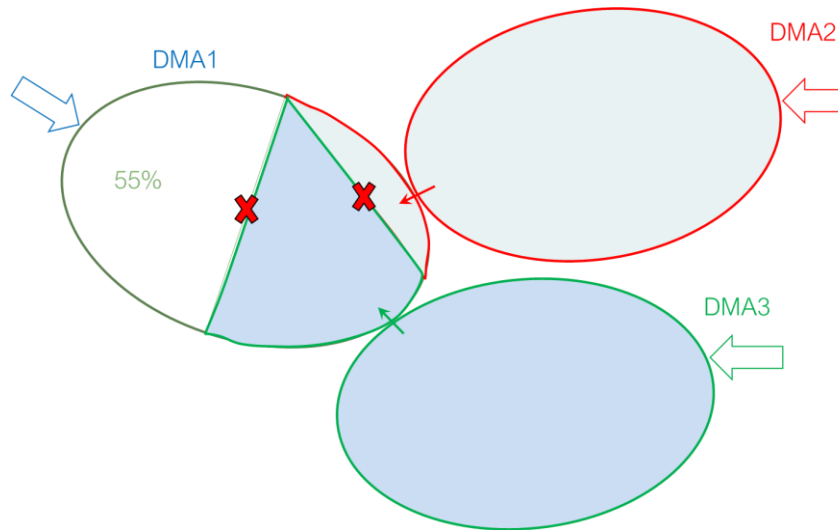
WP2



Opbouw



WP3



WP4

Demonstratie

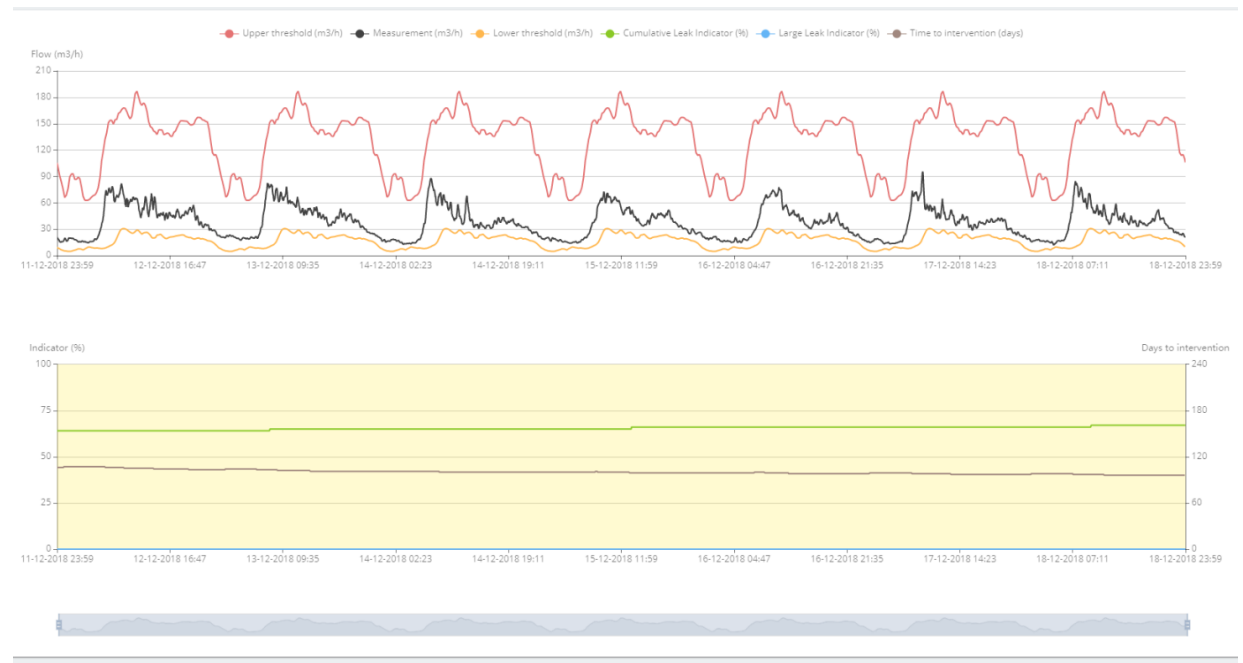
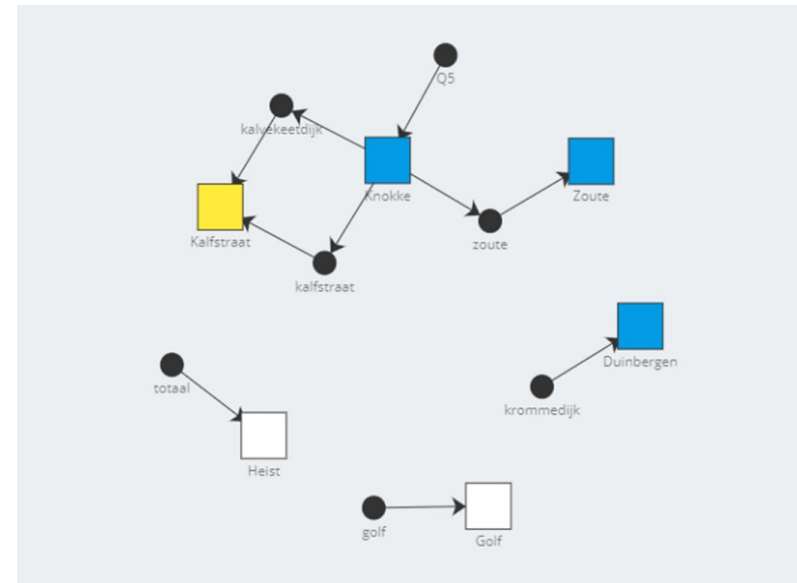
Impact	Description of effect	Way for quantification	Data readily available?	Priority	Aspect
Reduction of water loss	Timely repair of leakages will reduce overall water loss	m <sup>3</sup> of water multiplied with marginal production costs	Yes, direct calculation possible after pilot project	1	Economic Reputation Environment
Increased efficiency leak detection	Leak Redux support planning of leak detection activities. Only leak detection in zones with high likelihood of leakages.	Estimation of reduced man hours for leak detection	No, long term experience with leak redux required. Drinking water companies not always keen on sharing information.	1	Economic
Avoid indirect damage to infrastructure & surroundings	Early detection of large leaks may prevent damage to roads/foundation/houses/parked cars/... (sink holes) Growth of leaks from small to larger is detected by LeakRedux, which is an indicator for possible large leaks	Reduced number of sink holes multiplied with repair costs, including the cost of the hindrance, clean-up in the surroundings	Difficult to quantify. Drinking water companies do not share information about damage costs of sink holes. Frequency of occurrence is low.	1	Economic Reputation Social/Resilience
Increased overall water efficiency and gains on investments in larger transport capacities	Drinking water companies need to invest in buffer capacity to secure water supply during drought periods and distribution capacity for peak consumption. Less water losses result in reduction of required buffer and transport capacity	Only case specific estimations possible. Extensions of water storage capacity is difficult in Flanders.	No, drinking water companies do not share information about risks on water shortage	2	Economic
Reduced Water footprint	Reduced leakage will reduce the amount of water uptake from groundwater/surface water for drinking water production. Reduced pressure on water system	m <sup>3</sup> per year extracted per capita	yes	2	environment
Avoid penalties from authorities	In some countries (UK, Luxembourg, Vietnam) penalties are due if water loss is above specific number	amount	Yes public information	2	Economic Reputation
No unnecessary cost for leak search	LeakRedux predicts the optimal time for leak searching. As compared with standard leak search on fixed intervals you will save resources	Used resources and equipment cost relative to leak reduction volumes	No, long term experience with LeakRedux required. Drinking water companies not always keen on sharing information.	2	Economic
Reduced leak search cost	LeakRedux contains a tool to subdivide DMA's in subDMA's to decrease the leak search zone	Used resources and equipment cost relative to leak reduction volumes	No, long term experience with LeakRedux required.	2	Economic
Detection of water theft	Large usage that are not found back in invoicing can be detected using LeakRedux and the volume can be estimated	m <sup>3</sup> of water multiplied with marginal production costs	No, requires operational cooperation with different departments of the water companies	2	Economic
More optimal use of resources	LeakRedux controls 24/24 7/7 automatically the DMA's to detect leaks; this means that operators can better use their resources	Time spent in leak control per prevented leak	No, long term experience with LeakRedux required. Drinking water companies not always	2	Economic Social

WP5

Vastleggen impact

# Actuele status

- ✓ LeakRedux geïmplementeerd in 4 DMA's
- ✓ Fingerprints opgemaakt rekening houdend met seizoensvariatie en vakantiedagen

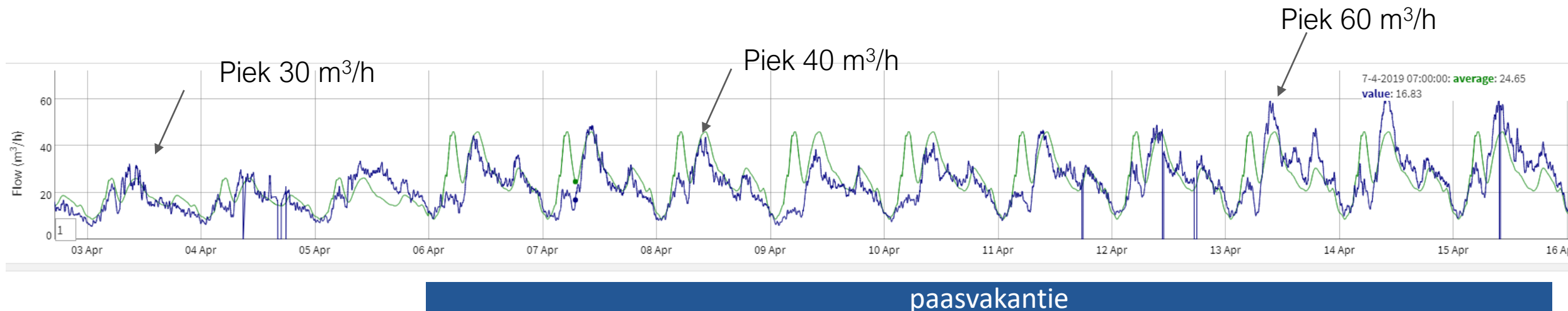


# Tussentijdse conclusies 1/3

1. NRW bij AGSO zeer laag : Gemiddeld NRW < 10%

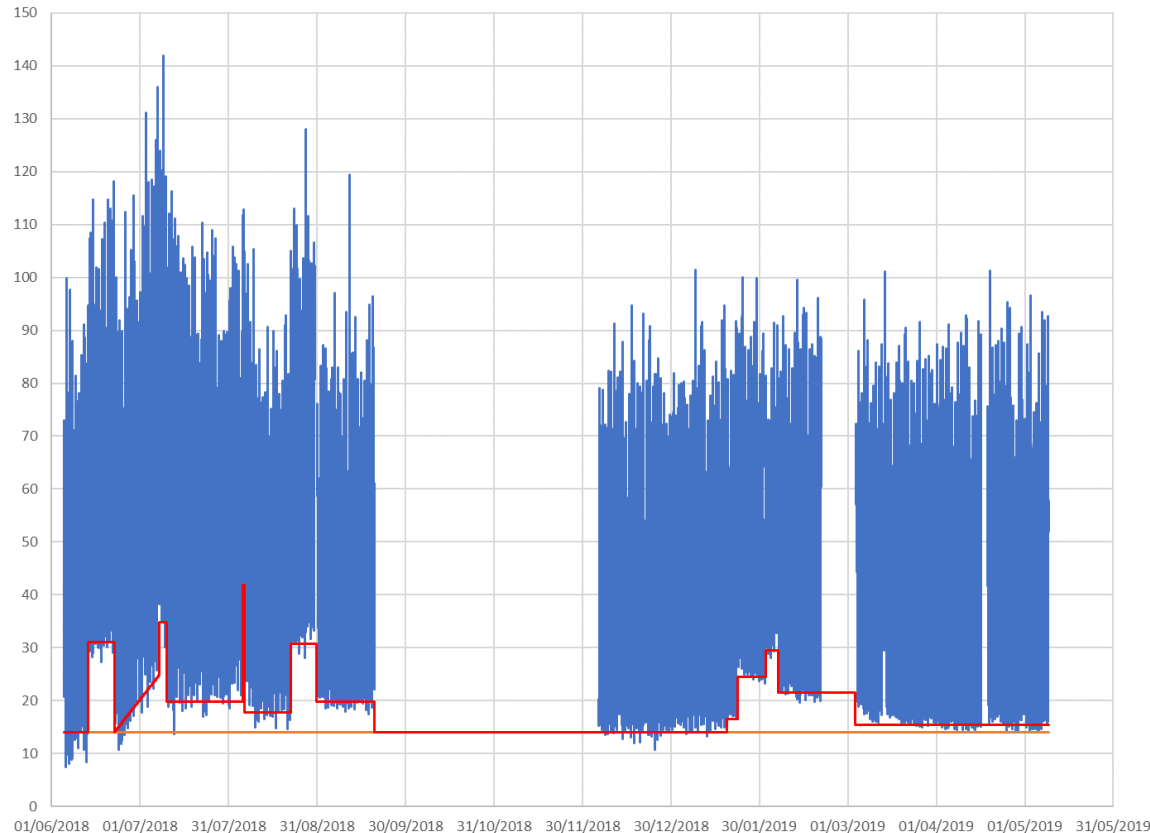
→ Gemiddeld in Vlaanderen NRW +/- 20%

2. Effect “vakantie” zeer uitgesproken



# Tussentijdse conclusies 2/3

## ✓ Lekgroei hoogste in DMA “Kalfstraat”



— Verloop lekken/reparaties

— Inschatting minimum debiet bij lekvrije werking

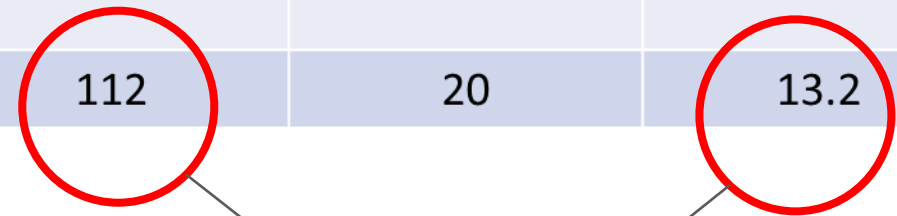
- Operationeel beheer lekken zeer goed. Meestal korte periode tussen ontstaan lek en reparatie.
- Hoge frequentie ontstaan lekken in deze zone → Asset Management



# Tussentijdse conclusies 3/3

## Analyse DMA kalfstraat

periode	Totale input (m <sup>3</sup> /day)	Consumptie (m <sup>3</sup> /day)	Vermijdbare lekken (m <sup>3</sup> /day)	Onvermijdbare lekken (2%) (m <sup>3</sup> /day)	NRW (%)
2018 (138 dagen)	1158	1003	136	20	15.5
2019 (129 dagen)	1108	1000	88	20	10.8
gemiddeld	1130	997	112	20	13.2



Verder te verlagen door combinatie Lek management en asset management

# Verder verloop project

- ✓ Live opvolging van lekken via LeakRedux
- ✓ Ondersteunen AGSO bij lekmanagement
- ✓ Validatie seizoensvariatie
- ✓ Verkleinen lekzoek-gebieden door indeling DMA's in sub-DMA's.