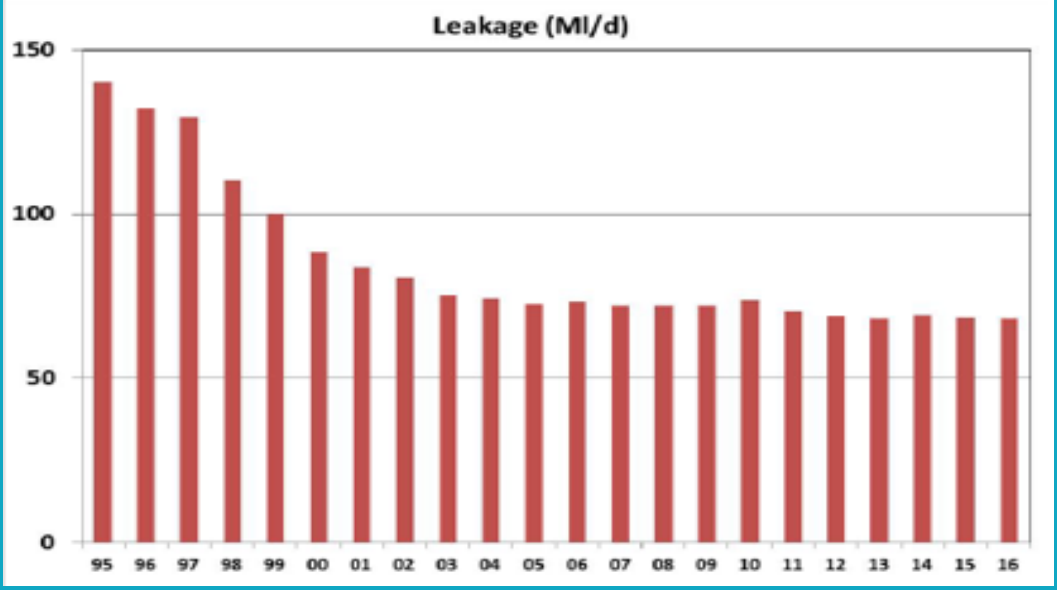
WATER VISION
TECHNOLOGY

To advance the Earth’s resource resiliency through SAR analytics

The View is Better From Space

After two decades of water loss management progress, why are leakage levels still so high?



Global Leakage Summit, London, Sep. 2016

Challenges

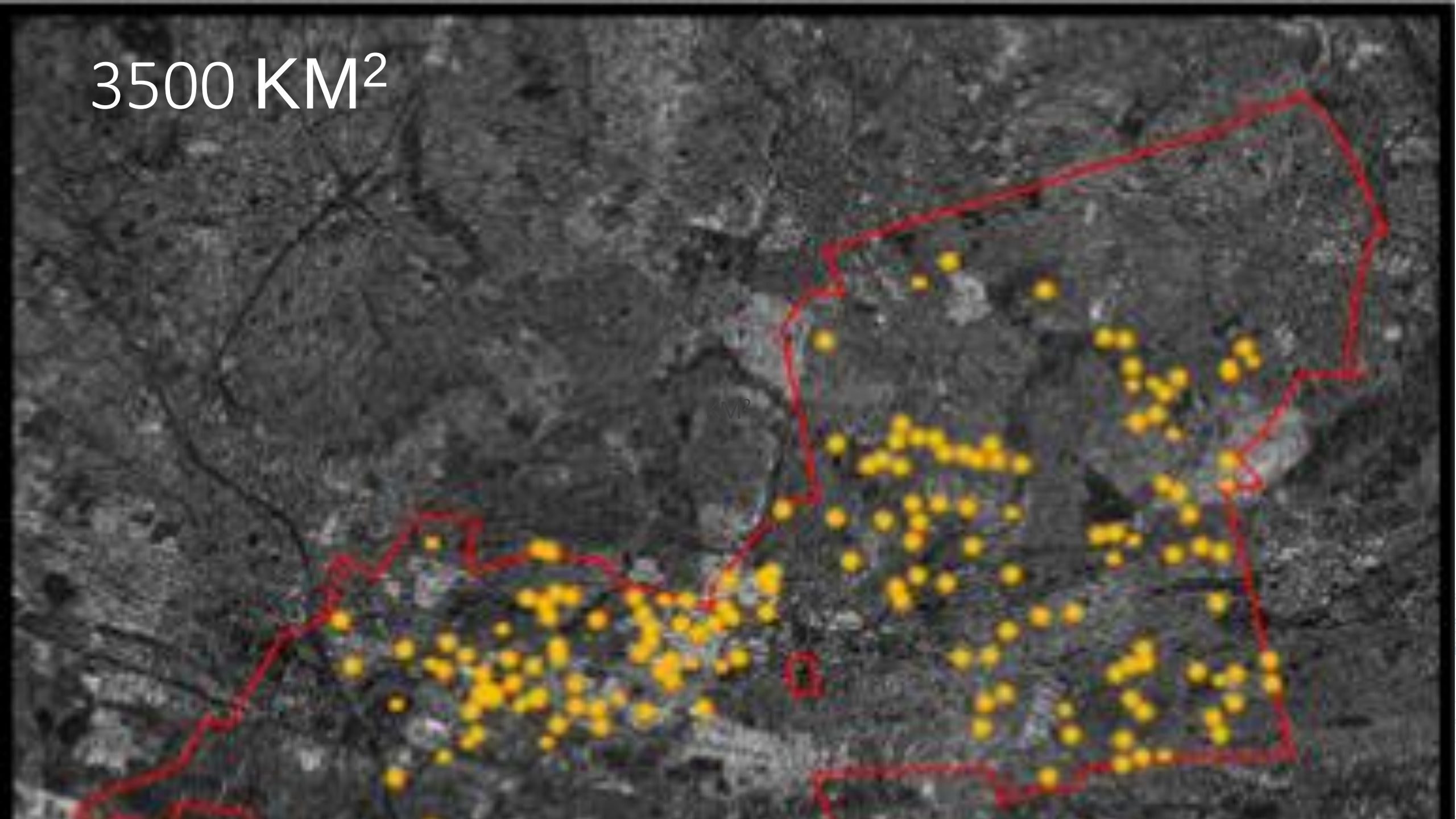
- Big and crumbling pipe networks
- Reactive approach is time consuming
- Inaccuracy of data

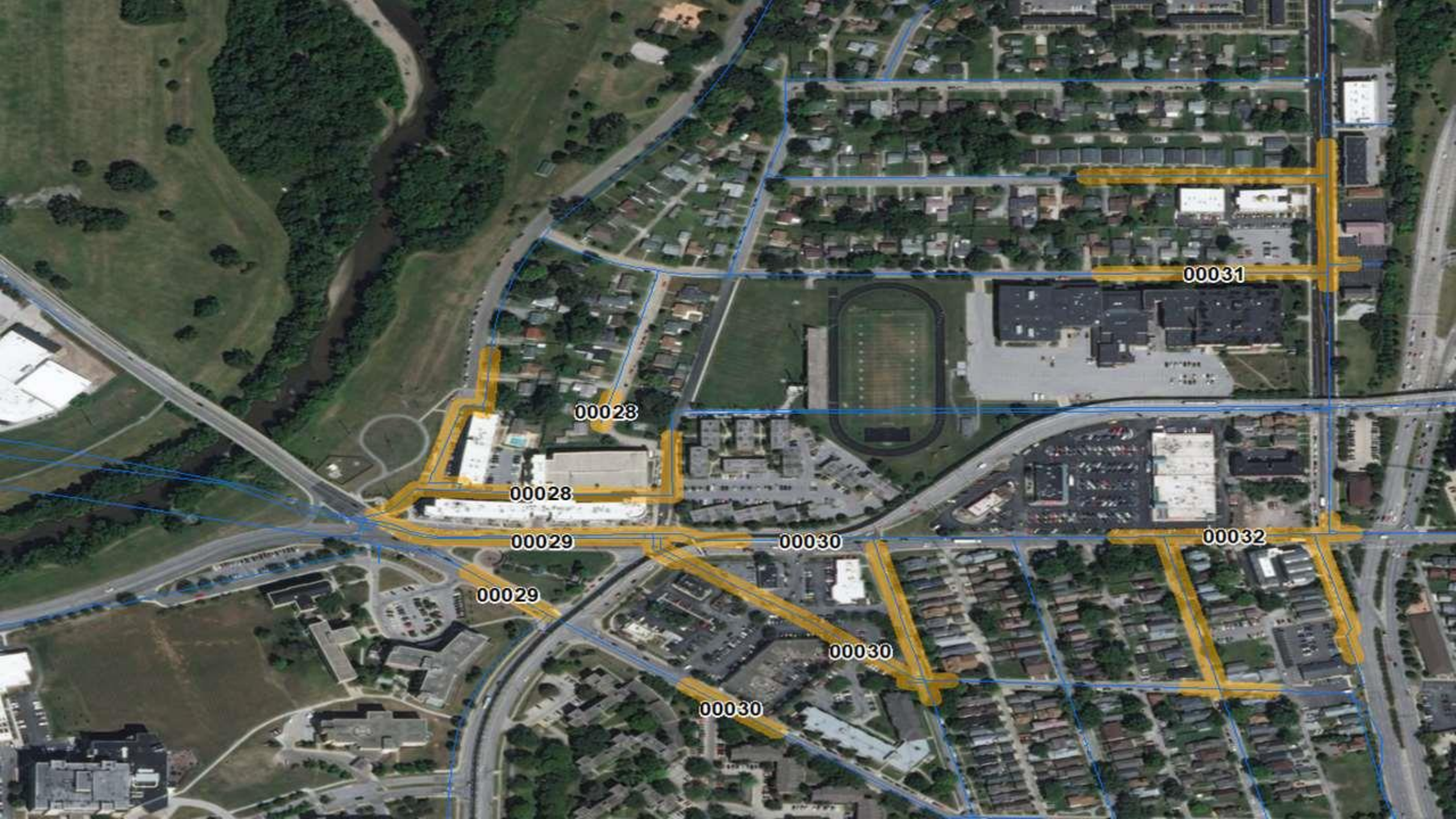
Start-up company
established in 2013

Product introduction
October 2015

In 2018


Satellite in polar orbit,
630 Km altitude,
carrying a microwave
SAR sensor.


3500 KM²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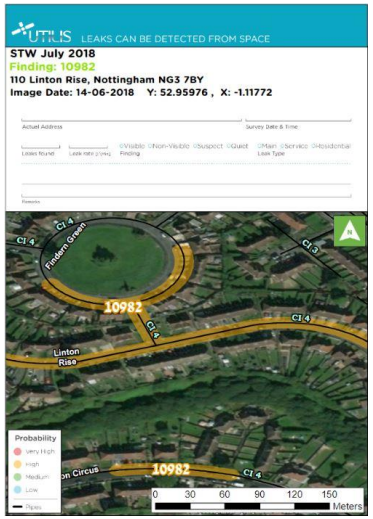
Delivery and deliverables

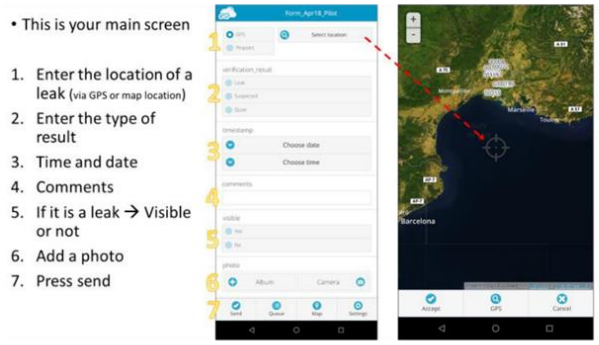
GIS files

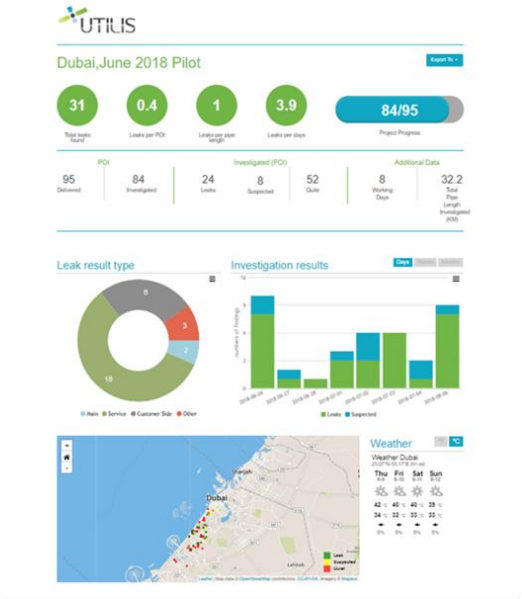
SHP and KML for the utility mapping

Leak sheets

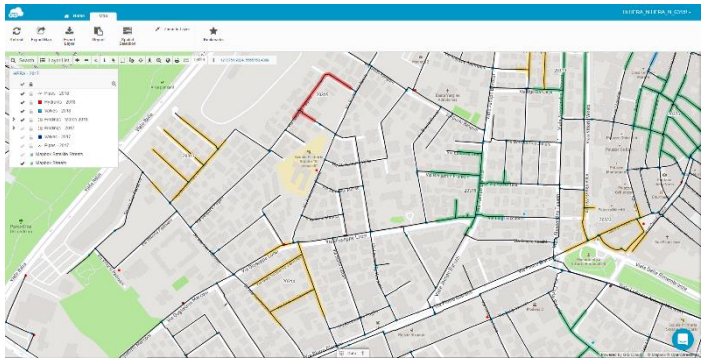


Data collector





Web application link



For general use and for field navigation (orientation)

Example step-by-step

UTILIS LEAKS CAN BE DETECTED FROM SPACE

STW July 2018

Finding: 10982

110 Linton Rise, Nottingham NG3 7BY

Image Date: 14-06-2018 Y: 52.95976 , X: -1.11772

Actual Address | Survey Date & Time

Leaks found | Leak rate (l/min) | ○Visible ○Non-Visible ○Suspect ○Quiet Finding | ○Main ○Service ○Residential Leak Type

Remarks

Water Vision Technology value proposition

Increase the efficiency of active leak detection programs

Reduce background leakage

Increase the scope of active leak detection programs

We found 10 leaks today!!

Increase the efficiency of active leak detection programs

Statistically finding 4 leaks per day is 300% more efficient than the industry's average…

Bojan Ristovski, Director of leak detection department (former), Vodovod Skopje

420 KMs of pipes
in 80 working days (4 months)


420 KMs of pipes
in 10 working days
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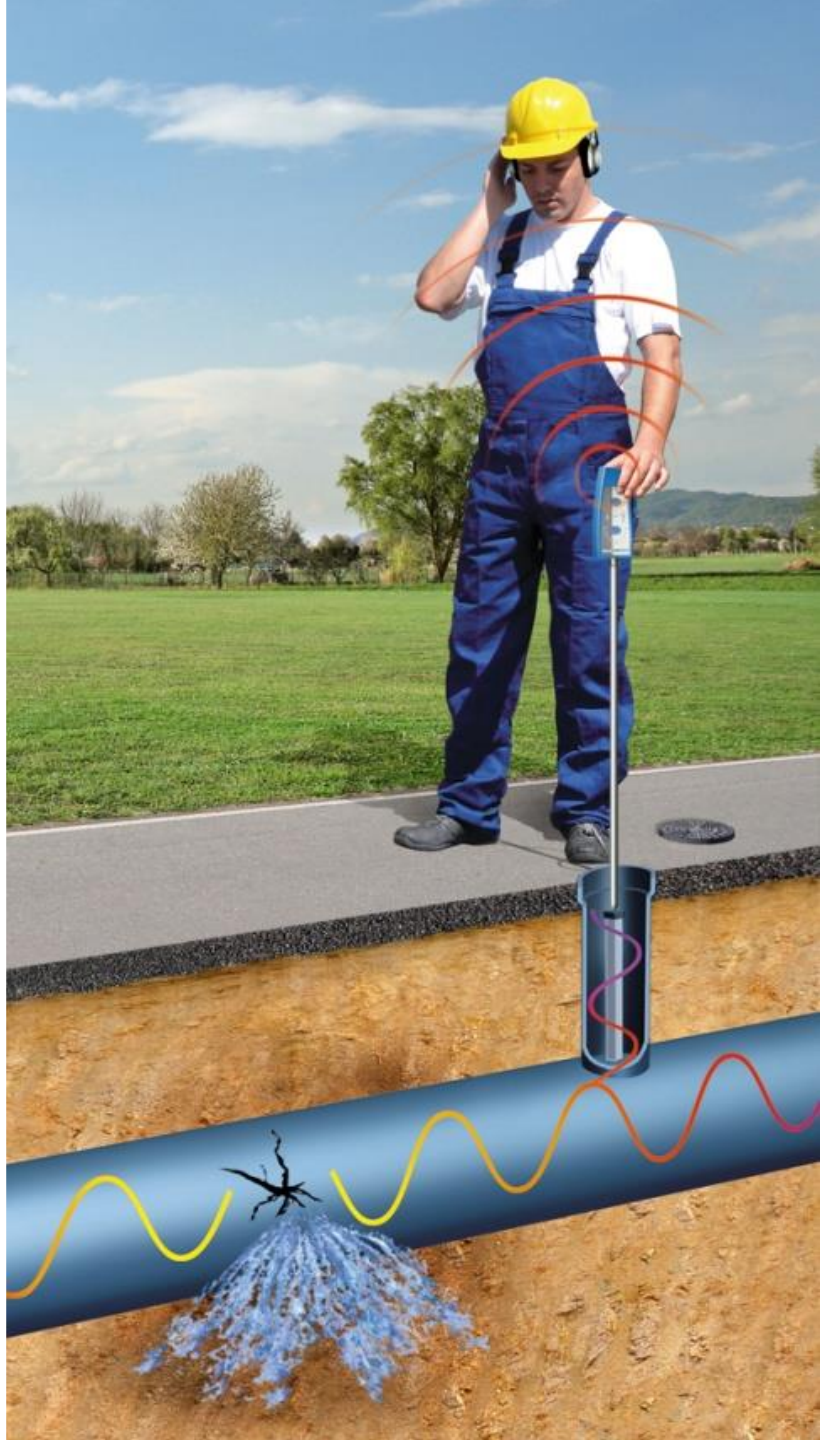



80 working days (4 months)
3,200 KMs of pipes
can be repeated 2-6 times per year

Find and fix leaks faster than they reappear

How many leaks do you find per year?

European average failure frequencies range 20-35 failures / 100 Km / year

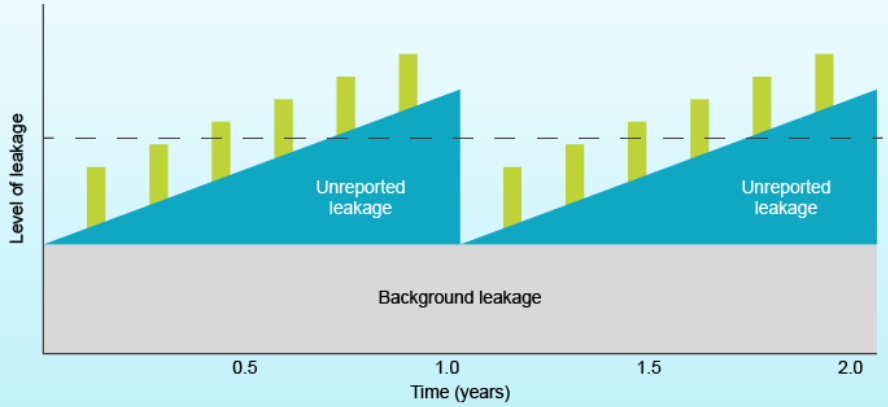
(MacKellar 2006)

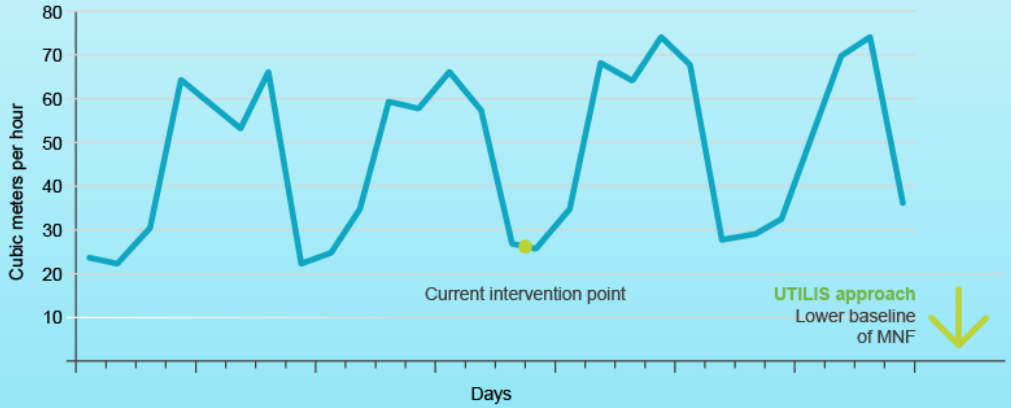


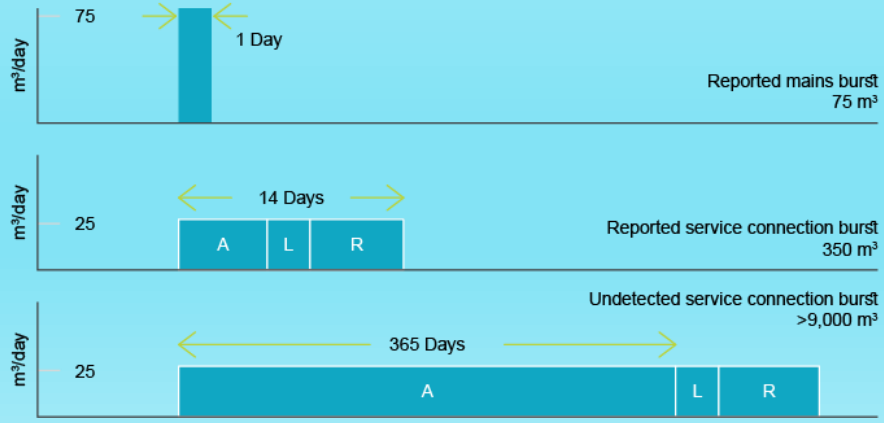
Reduce background leakage

“Utilis allowed us to find leaks that would have been hard to find otherwise…”

Valentin Zaharia, Director of water supply and sewage system optimization, Apa Nova Bucharest







Unavoidable background leakage, why?

Leak run time and leakage on service connections:

Analysis of components of annual leakage volume sometimes produces **counterintuitive** results. For example, long-running small leaks on service connections frequently lose greater volumes of water than mains bursts with high flow rates that are quickly repaired, but service connection leaks traditionally receive less attention than they should.

Recommendation:

Management of leakage from service connections should receive equal or, in some cases, greater attention than management of leakage from mains.

EU Reference document Good Practices on Leakage Management WFD CIS WG PoM

Main Report

Infrastructure Component	Background Leakage at ICF=1.0	Units
Mains	**9.6**	Liter per kilometer of mains per day per meter of pressure
Service Connection – Main to curb-stop	**0.6**	Liter per service connection per day per meter of pressure
Service Connection – Curb-stop to customer meter	**16**	Liter per kilometer of service connection per day per meter of pressure

Lambert et al, 1999

Increase the scope of active leak detection programs

“All the indications are that this 20 liter per second leak in the remote wooded area would have gone undetected for sometime without the technologies indication..”

Steve Green, Director water distribution, Kansas City BPU

UTILIS Leaks can be detected from space

Intensity (L/Min): 20 (5.19)

Finding: 10107

Image Date: 31-08-2016

2723 Fourteenth Street, Irymple
Postcode: 3498

N

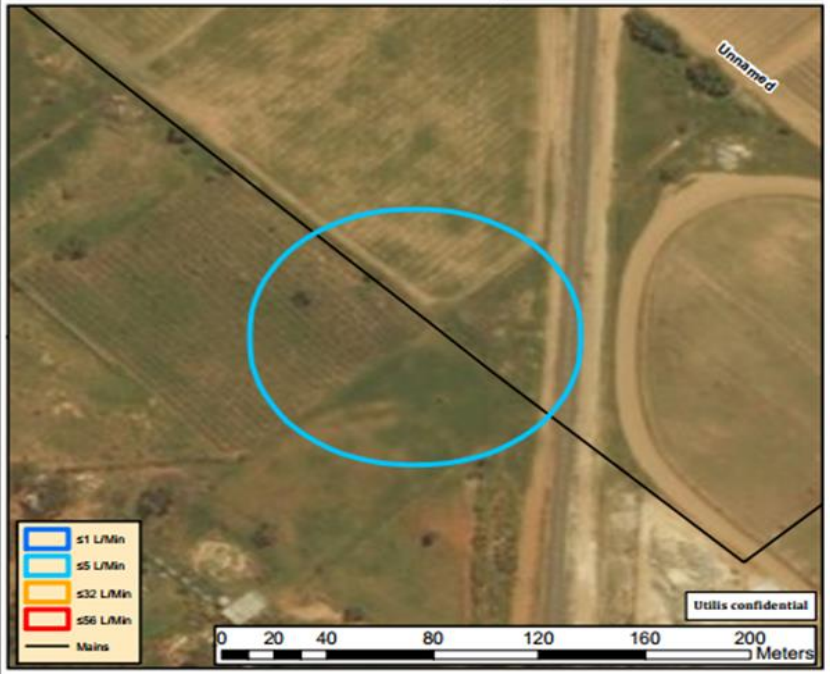
Pipe Material:	Leak Type:	Finding:
RCP	☐ Main	☐ Visible
	☐ Service	☐ Non-Visible
Pipe Diameter:	☐ Residential	☐ Suspect
525		☐ Quiet

Polarization: HV

Y: -34.214925 , X: 142.171097

Remarks:

IRR pipes



American Water – Duarte, CA

Project EPC-15-096, "Demonstrating Innovative Leakage Reduction Strategies: Correlating Continuous Acoustic Monitoring (CCAM), Satellite Imagery and Flow Sensitive Pressure Reducing Valve System"

Project Goals:

- Compare three technologies side-by-side
- Compare performance and value propositions
- Save energy used to pump water by fixing leaks

	Points of Interest	Verified on ground	Leaks confirmed
Satellite	504	114	79
CCAM	54	54	17

Conclusions:

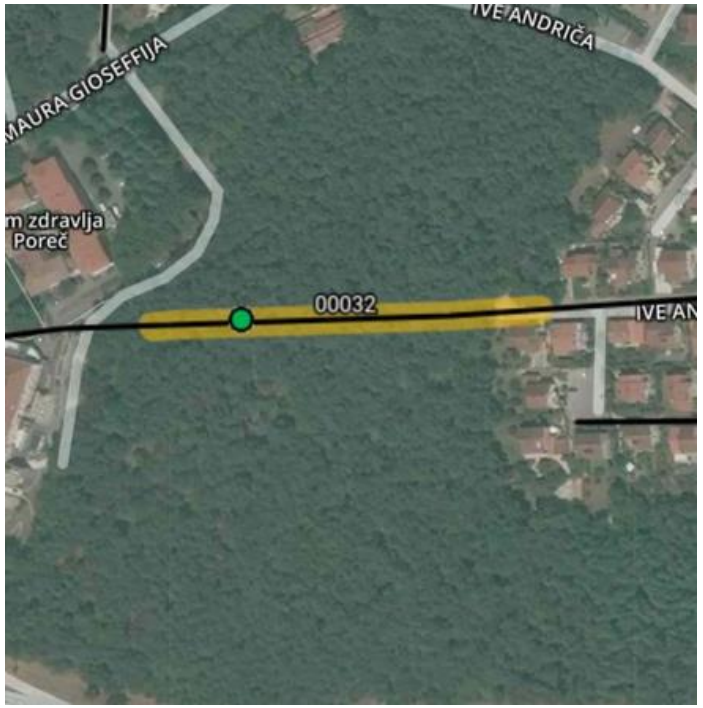
Satellite Imagery

1. found more leaks (by quantity and % correct)
2. was less expensive to employ
3. saved the most water
4. saved the most power

HAZEN AND SAWYER
Environmental Engineers & Scientists

ISTARSKI VODOVOD d.o.o

ZA PROIZVODNJU I DISTRIBUCIJU VODE, Buzet, Sv. Ivan 8



Supplying water to most of Istria, Croatia, the water utility has had to optimize their water network to withstand the high demand and regulations of tourism industry of the area. Many years of investment have brought ISV to be one of the leading water utilities in the region implementing among others AMRs, and DMAs. Looking to further lower their physical losses, ISV in the Balkans Kolektor Sisteh, ordered a double scan of their 2,700 KM network to see the long term impact of the technology.

"After investigating 18 POIs in about 3 days we estimated huge savings. Using this technology helps us especially in locating leaks in areas that are currently not surveyed. This massive leak would have been hard to find if it wasn't for the technology specifying where to look. We have more than 1000Kms of such pipes and satellite imagery seems to be a resourceful and effective solution."

Ing. Vjekoslav Poropat, Technical director, Istarski Vodovod, Croatia

KOLEKTOR

KOLEKTOR SISTEH d.o.o.

Prince William County, VA

Traditional Leak Detection vs. Satellite Leak Detection

Traditional system

- 207 miles of network
- 27 days of fieldwork
- 18 confirmed leaks
- 15 hydrant leaks (above ground)

Satellite

- 199 miles
- 10.5 days of fieldwork
- 85 POI investigated
- 72 confirmed leaks
- 57 non-residential leaks

Parameter	Traditional	Traditional (no hydrants)	Satellite (no residential)	Satellite
Cost	$38,500	$38,500	$71,400	$71,400
Leaks found	18	3	57	72
Days of field work	27	27	10.4	10.4
Crew members	2	2	3	3
Hours per day	7	7	9	9
Total Person Hours	630	630	472	472
Leaks per day of field work	0.7	0.1	5.5	6.9
Miles of pipe field Investigated	199	199	199	199
Leaks per mile investigated	0.09	0.02	0.29	0.36
Cost per leak detected	$2,139	$12,833	$1,253	$992

Parameter	Traditional Detection (with Hydrants)	Traditional Detection (without Hydrants)	Satellite* Detection
Leaks detected per Mile	0.09	0.02	0.29
Average Leak Size (gpm)	6	27	8
Annual Water Loss (gal)	56,765,000	42,574,000	239,674,000
Cost per 1000 gallon	$1.25	$1.25	$1.25
Annual Water Cost	$71,000	$53,200	$299,600

*Residential leaks removed

Possible to save $300K in water over one year

Middle East Water Authority

U-COLLECT Online Dashboard

February 2019 Service 1

Export To

654	1.3	3.4	5.7	509/763
Total leaks found	Leaks per POI	Leaks per km	Leaks per crew day	Project Progress

POI			Investigated (POI)			Additional Data	
763	486	23	348	31	107	74.2	183.1
Delivered	Investigated	Unverifiable	with Leaks	Suspected	Quiet	Working Days	Investigated Pipe (km)

IMAGINE H2O WINNER


WATER VISION
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