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# TO ADVANCE PLANET EARTH RESOURCE RESILIENCY THROUGH SAR ANALYTICS

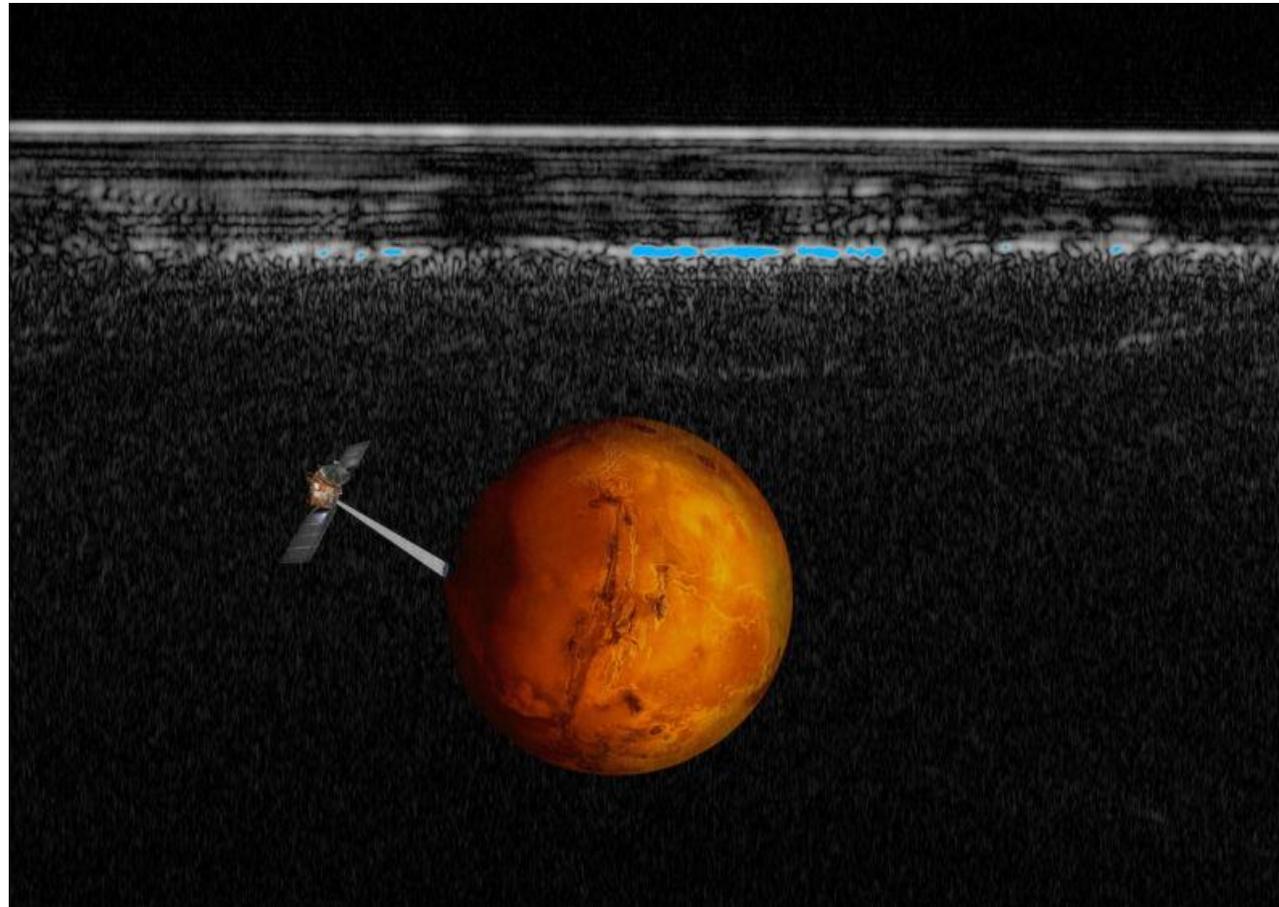
Elly Perets, CEO

Elly Perets

[elly@utiliscorp.com](mailto:elly@utiliscorp.com)

# “POSSIBLE LAKE SPOTTED UNDER A POLAR ICE CAP ON MARS” (JULY 2018)

Radar indicates that Mars may have analogs of Earth's subglacial lakes



ars TECHNICA

<https://arstechnica.com/science/2018/07/possible-lake-spotted-under-a-polar-ice-cap-on-mars/>

UTILIS<sup>2</sup>

# SYNTHETIC APERTURE RADAR

- RADAR – Radio Detection And Ranging
- SAR is an active sensor, hence transmit radio frequency.
- Developed in the 1950's as a military application for all weather and day/night imaging solution.



First successful airborne SAR image, 1957.

# Utilis has identified 3 revenue streams for its data analytics

1

## Water Sector



**\$6.6M ARR**  
**205 Customers**  
**50 Countries**  
**\$80M ARR by 2023**

Potable Water leak detection

Wastewater leak detection

Reduce NRW

Prevent contamination and flooding

2

## Ground Engineering



**\$250K revenues**  
**\$25M by 2024**

Proactively identify ground movements, drainage problem areas, 3rd party impacts

3

## Agtech



**First paying customer identified, \$20M expected by 2024**

Ground saturation and salinity detection, precision irrigation, crop monitoring

Just to keep pace with anticipated global GDP growth, the world needs to spend \$57 trillion, or on average \$3.2 trillion a year, on infrastructure

# HOW BIG OF A PROBLEM IS WATER LOST BY LEAKS?



6 Billion Gallons

of treated water is **LOST**

due to leaking pipes in the USA daily  
*and an estimated*

240,000 water  
main **BREAKS**

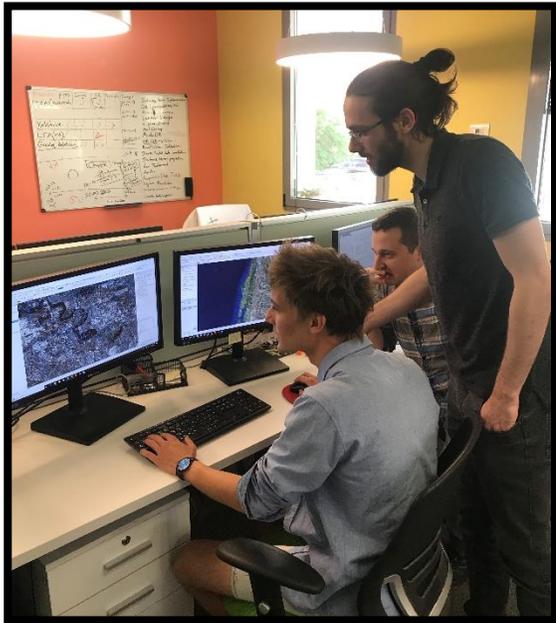
occur each year



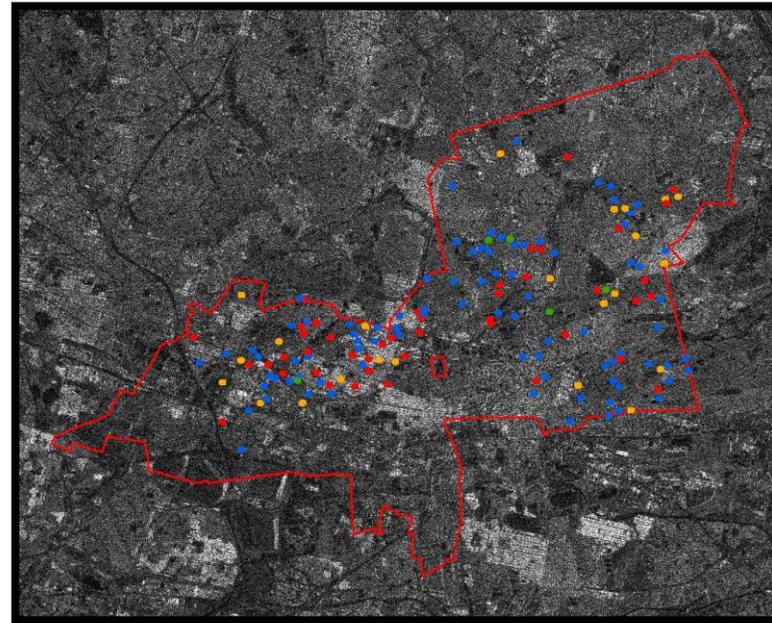
- 2017 Infrastructure Report Card, USA only

# ANALYSIS

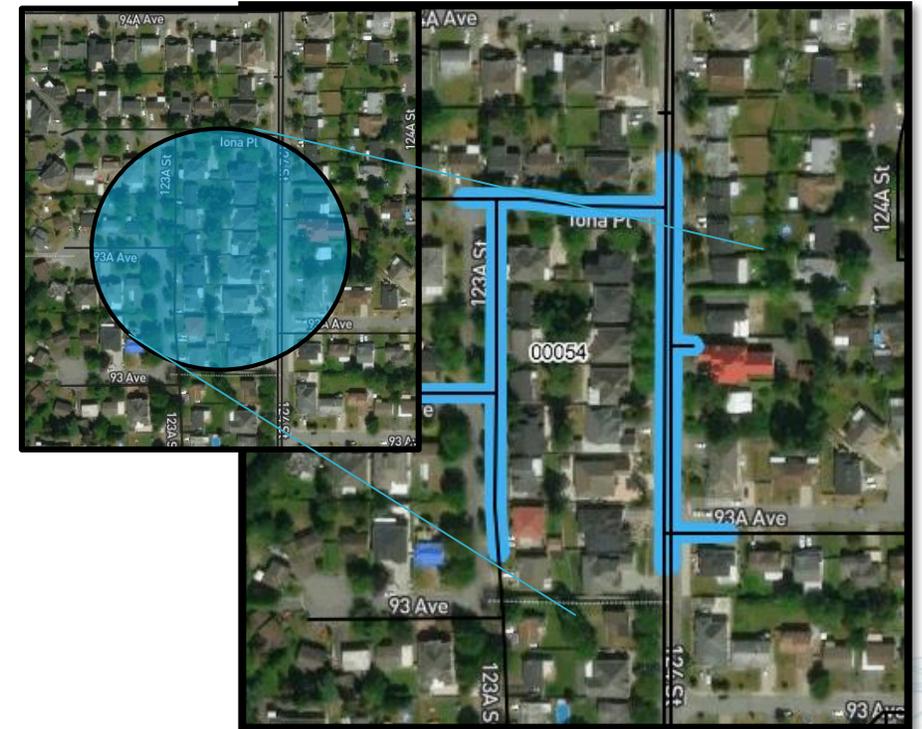
## Algorithm & Georeferencing



## Analysis and Quality Control

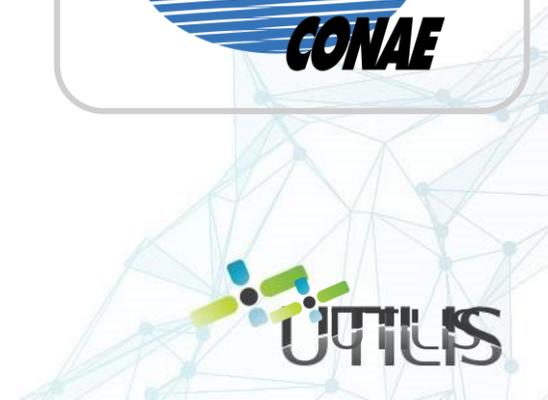


## Translate to pipes area for survey



# SDG Impact – Buenos Aires Case

- AySA prepared for prompt repair of each leak detected
- IDB financing support
- In 2 months:
  - 28% of work completed
  - 417 leaks detected, 404 repaired
- Daily volume recovered after 2 months 4080 m<sup>3</sup>/d  
→ daily supply for 9,000 people!
- Moving forward → AySA & IDB plans 3 years Utilis' service to reduce leakage in Buenos Aires using the SAOCOM

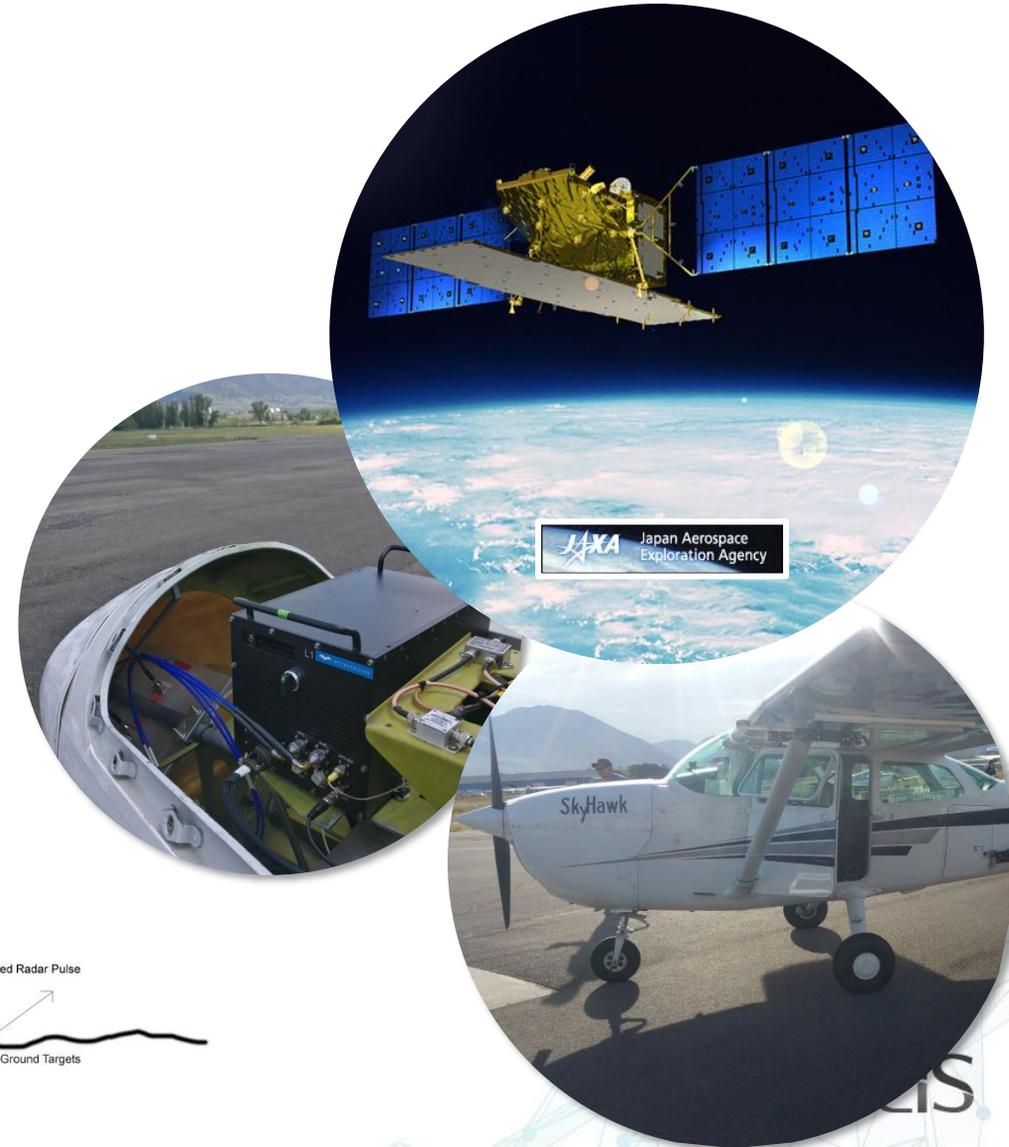
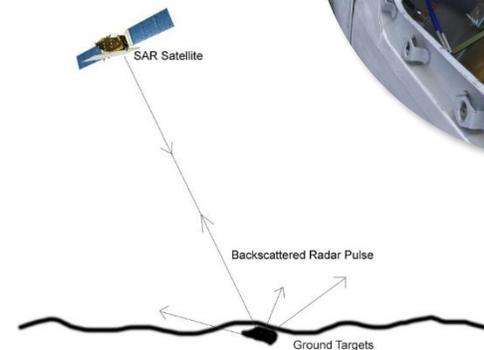
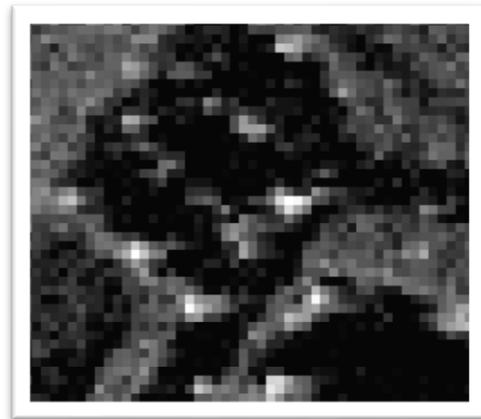


# SAR imagery intelligence exceeds standard earth observation

L-band, 1.3 GHz

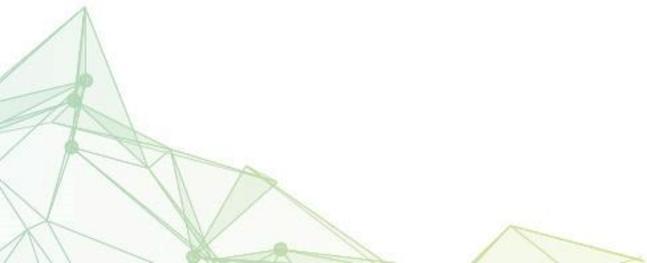
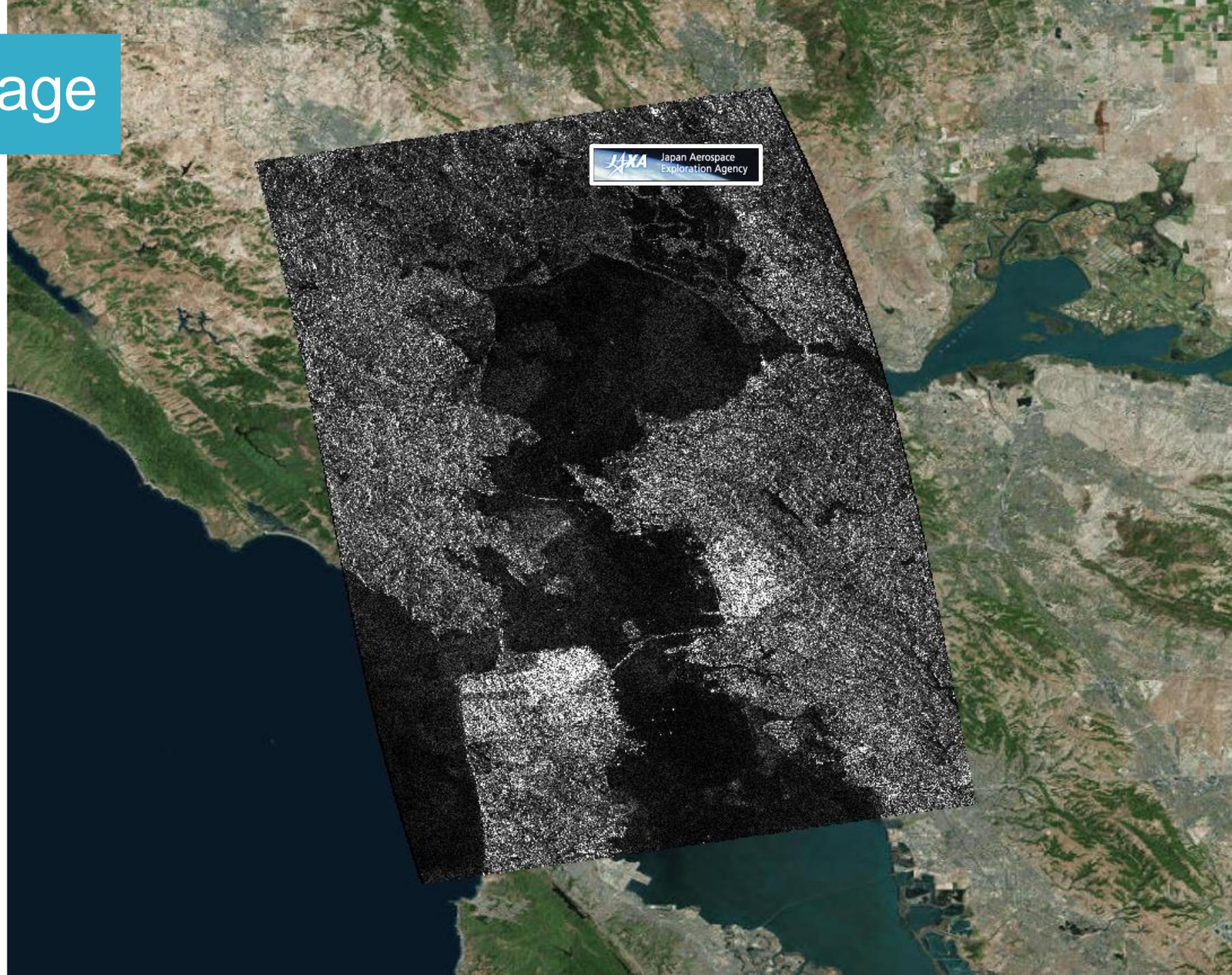
## The power of SAR

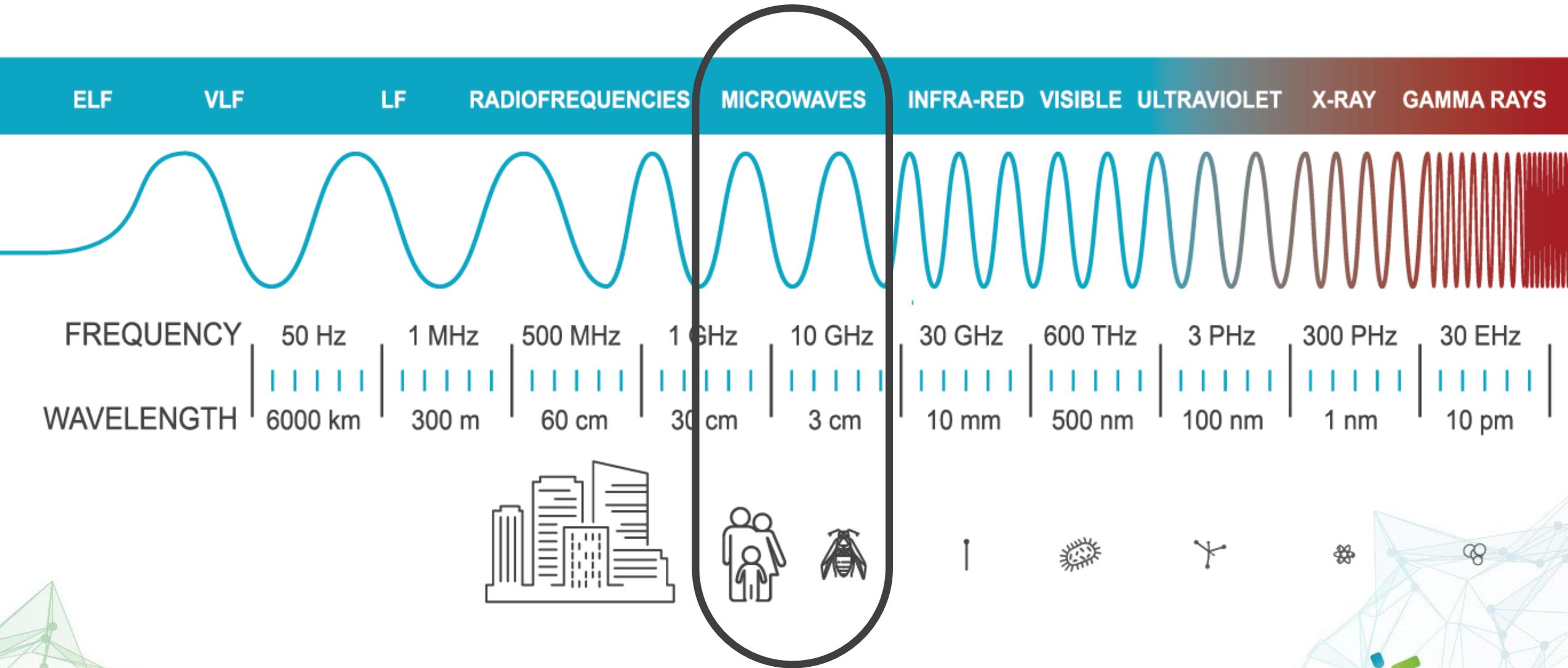
- Day and night 24/7 imaging
- Independent of weather / clouds
- Penetrates earth's surface
- Detects materials and objects
- Can be automatically analyzed with algorithms



# Satellite Coverage

Efficient and accurate survey of very large areas –  
3.500km<sup>2</sup>





# Utilis' core IP creates strong barriers to entry

- **Noise filtering**, particularly in urban areas
- **Geo-referencing** to detect topographic-related distortions, shadowing, layovers etc.
- Using the right band and incidence angle for **optimal penetration depth**
- **Airborne SAR** to cope with low radiometric, spatial and temporal resolution



APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/666,648	03/15/2016	9285475	P-78777-US	8317

49443 7590 02/24/2016  
Pearl Cohen Zedek Latzer Baratz LLP  
1500 Broadway  
12th Floor  
New York, NY 10036

**ISSUE NOTIFICATION**

The projected patent number and issue date are specified above.

**Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)**  
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

US patent (US9285475B1) & US1 patent (US9945942) "System and Method of Underground Water Detection"



# Leak Detection 2.0 leverages SAR data analytics

**Leak detection 1.0 = primitive, inefficient analog methods**

## Boots On the Ground

- Point-to-point acoustic inspection
- Inspect whole pipeline linearly, although most not leaking



**HASN'T CHANGED OVER THE PAST 70 YEARS!**

**Leak detection 2.0 = is 5-15X more efficient!**

# THE RESULTS DON'T LIE

PRINCE WILLIAM COUNTY SERVICE AUTHORITY (PWCSA)

## Traditional

18 leaks in  
27 days

### Deployments:

+Nov 27, 2017 –  
Feb 1, 2018

	Traditional	Satellite-Directed
Area of Interest (miles)	200	200
Miles Inspected	200	30
Crew-Days	27	10.4
Leaks Found	18	72
Leaks Found per Mile Inspected	0.09	2.4
Leaks Found per Crew-Day	0.67	6.9

## Utilis

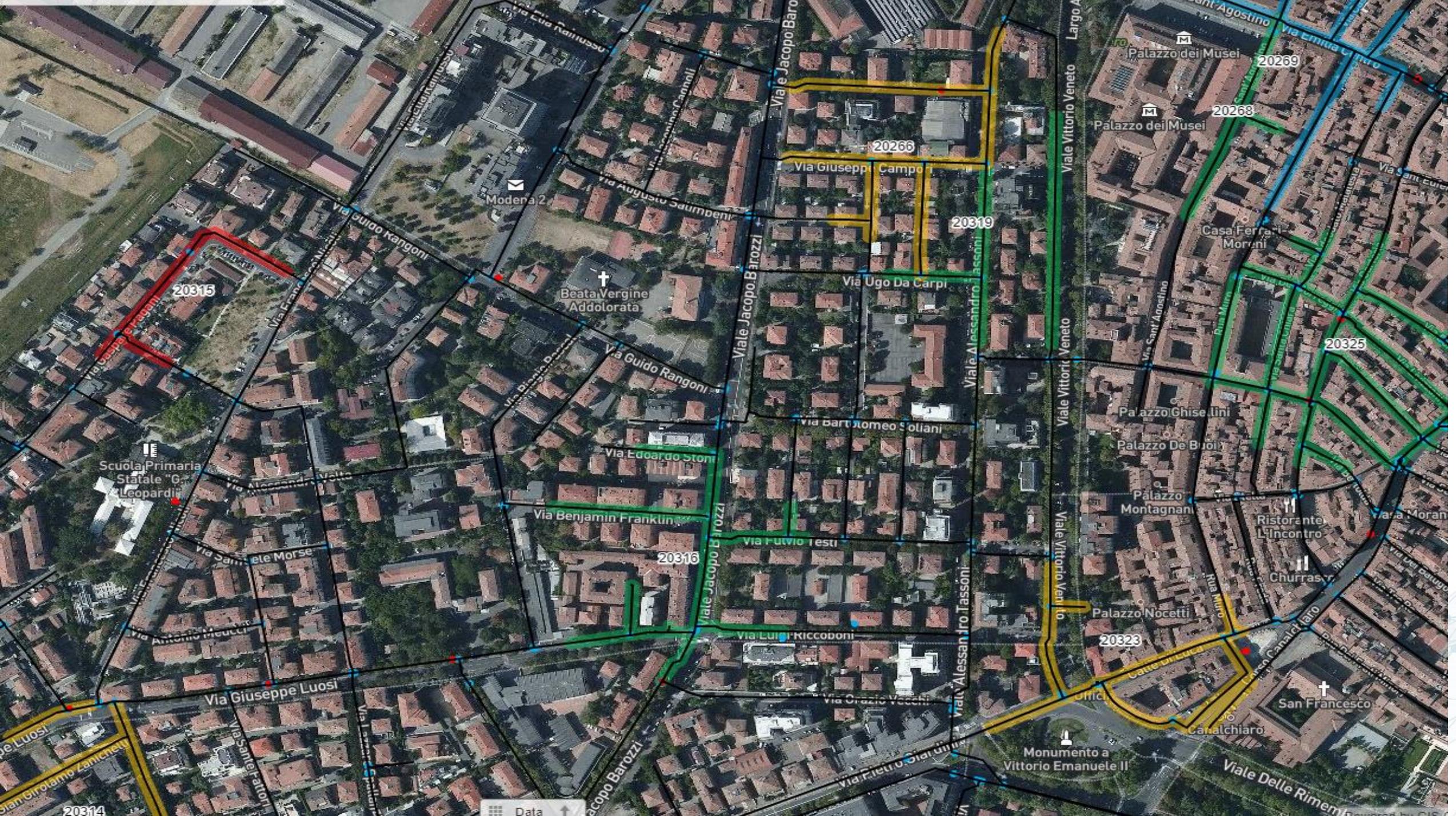
72 leaks in  
10.4 days

### Deployments:

+Nov 16-21, 2017  
+Jan 3-11, 2018  
+Feb 20-23, 2018

10 x  
More  
Effective





20315

20266

20319

20269

20268

20325

20316

20323

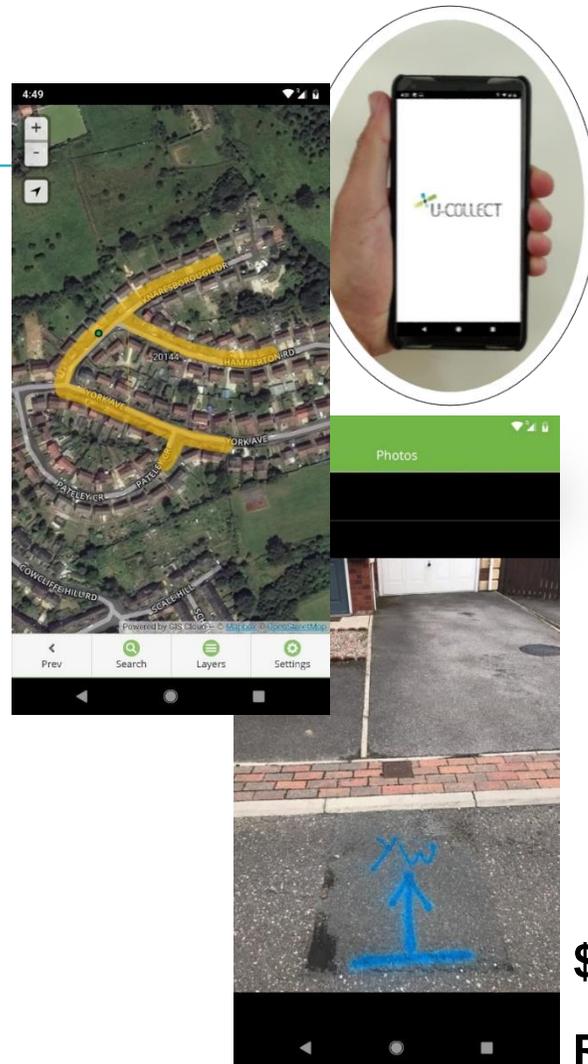
20314

Data

# TRANSFORMING SATELLITE DATA INTO ACTIONABLE INTELLIGENCE

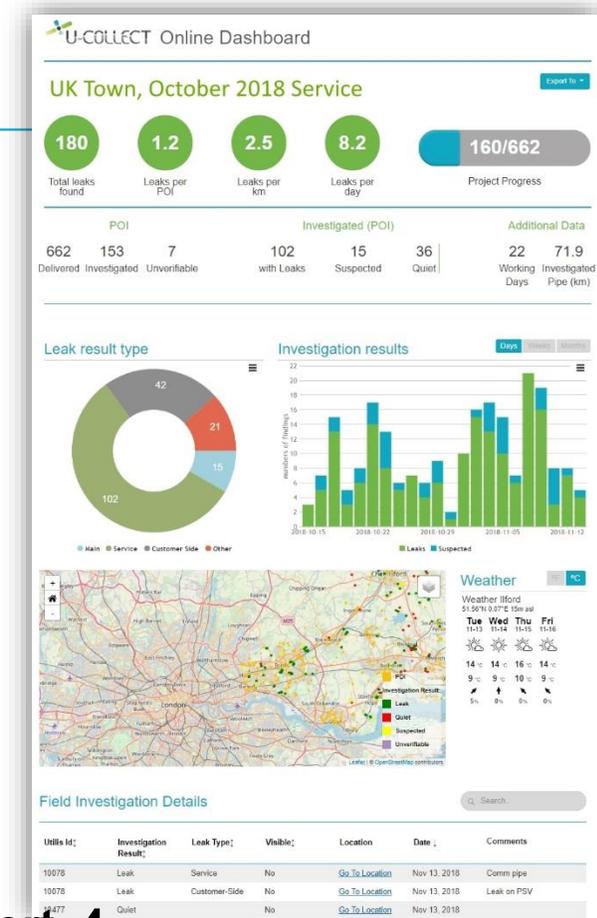
## U-View & U-Collect

Utilis analyzes unintelligible satellite data, finally enabling customers to extract commercial value



## Dashboard

- Actionable Insight
- See calculated metrics
- Allows a manager to review results from the office



**\$40-80K per intelligence report, 4 REPORTS/YEAR annual service**

# MAJOR CLIENTS

Name Country		Duration	
Piave & ATS, Italy		18 months	November 19
Zagreb, Croatia		15 months	November 19
Yorkshire Water, London UK		24 months	November 19
San Antonio Water, TX, USA		36 months	December 18
Aqua America NJ, TN, PA		24 months	April 19
Oman, Public Authority		24 months	November 18

# Leadership



## Lauren Guy - CTO and co-founder

- B.S.C in Geomorphology & Remote sensing. Microwave sensing in other planets (predominantly Venus and Mars)
- M.S.C in geophysics & hydrology (radiation, atmosphere and soil)



## Elly Perets - CEO

24 years of experience in Executive Management, Enterprise Software Sales, Marketing, Business Development and OEM, Entrepreneurship.



## Eddy Segal - VP Sales

15 year of experience as sales executive in international markets of which 8 years in the area of Leak Detection and efficiency improvement for Water Utilities worldwide.



## James Perry – VP Sales, NA

16+ years experience working in all functions within fortune 10 company, and 10+ years in mid to small businesses managing strategic planning, focused on new markets worldwide.

# Advisory



## Prof. Dan Blumberg - Head of the Earth and Planetary Image Facility, Ben-Gurion University of the Negev

Blumberg has published [numerous papers](#) in the field of remote sensing, image processing, and target detection.



## Prof. Masanobu Shimada

Vast knowledge in Synthetic Aperture Radar (SAR) and as a member of the Japanese Aerospace Exploration Agency

# Stellar results in the water vertical: total revenues >\$10M with only \$3M invested

259 HIGH-QUALITY CUSTOMERS WORLDWIDE



22 PARTNERS & RESELLERS IN 41 COUNTRIES



>12,400 LEAKS VERIFIED, \$13M/YEAR SAVED TO DATE

12,635,200 CUBIC METER EVERY YEAR = 3,260 MILLION GALLONS EVERY YEAR  
EQUAL TO 50% OF MEDIUM CITY (EVERY YEAR AND GROWING)

STRONG NETWORK EFFECT

GREAT INBOUND BUSINESS DEVELOPMENT





**Thank You**

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