

Detecting the Drip: Emerging Technologies Combating Water Leakage and Waste

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Borneo
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Background

Why Every Drop Counts



- Growing water scarcity
- Every litre lost has already been treated and pumped
- Service delivery and reliable water supply
- Climate resilience



The Scale of the Challenge



- South Africa's Non-Revenue Water (NRW) exceeds 46%
- Water Losses exceed 41%
- Nearly half of treated water does not generate revenue
- Global average for NRW is 30%
- Representing approximately 126 billion m³/year



Causes of NRW

- Ageing infrastructure
- Burst pipes
- Slow turnaround times for repairs
- Metering errors
- Illegal connections



TRADITIONAL WATER MANAGEMENT

Reactive. Manual. Resource Intensive.



Manual Monitoring

Limited visibility
and slow response



Reactive Repairs

Fix after failure
leads to higher
costs



Water Loss

High leakage
and unaccounted
water



Data Silos

Disconnected
systems and
poor insights

VS.

SMART UTILITIES

Proactive. Data-Driven. Sustainable.



Smart Monitoring

Real-time data and
actionable insights



Predictive Maintenance

Prevent issues and
optimize operations



Water Efficiency

Reduce losses and
conserve resources



Integrated Systems

Connected data for
smarter decisions



Digital Transformation in Utilities

- Internet of Things
- Artificial Intelligence
- Big Data Analytics
- Machine Learning
- Digital Twins



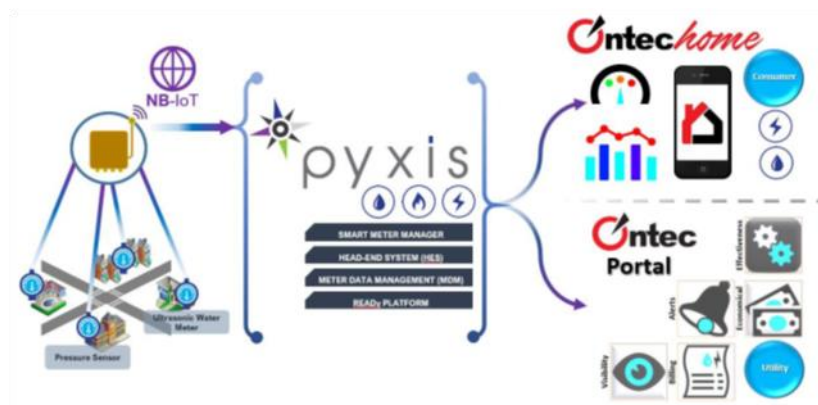
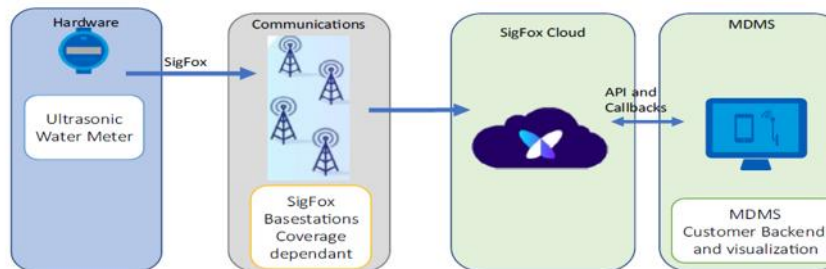
Innovation Portfolio

WRC Innovation Portfolio



- Smart Valve Systems
- Intelligent Leak Detection
- Digital Maintenance Platforms
- Smart Customer Applications
- NRW Knowledge Portal





AquaTrip

- AquaTrip is a water leak detection system which is permanently installed on a water line
- The AquaTrip protects buildings from both unknown and known water wastage and consequently reduces users' water consumption by up to 70%
- Battery operated and does not require maintenance and/or mains power
- The system has undergone demonstrations and validations in various environments and is ready for diffusion and uptake
- Pilot with schools in partnership with Joburg Water
- Water savings of about 90% and monetary savings of close to R500k



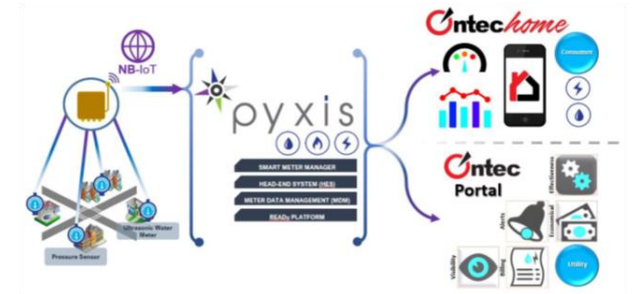
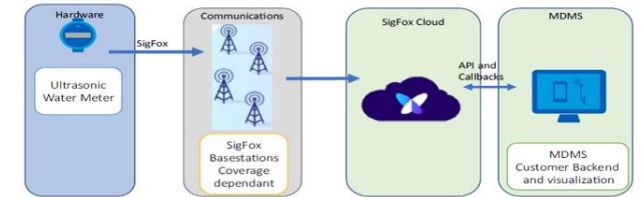
TRL 9



Ontec Smart Water Meter



- A smart water metering solution that provides benefits such as effective monitoring of consumption points, creating consumer awareness leading to behavioural change, quantifying water losses, improving Non-Revenue water losses and increasing/optimising revenue collections.
- Pilot project in partnership with Drakenstein Municipality
- 129 smart meters have been installed (115 meters in residential communities. 12 in schools and 2 bulk meters)
- Meter data is successfully being received through the Ontec platform.
- The project has achieved an average 30-day read rate of 92%, demonstrating strong communication performance and reliable data availability.



TRL 8

ProtApp



- The ProtApp is a Real Water Losses reporting and maintenance solution
- Digital platform that enables municipalities to capture, monitor, and report water and wastewater treatment data in real time using mobile devices. It replaces paper-based systems with verified, cloud-based data, improving accuracy, operational visibility, and response to risks.
- Commercial potential by drastically cutting real water losses, reducing non-revenue water, and collecting data to influence budget allocation based on the infrastructure pain points.
- The ProtApp solution is being piloted at 4 sites in partnership with Chris Hani DM in the Eastern Cape



TRL 8



Smart Valve

- A product of Davis & Deale
- Smart or conventional meter installations
- Designed as an IoT (internet of things) device
- The Smart Valve, with the aid of its management platform, performs the following:

The Smart Valve monitors water usage by using two main protocols (SigFox, or NB-IoT)

The Smart Valve is able to remotely open, close, or restrict water to individuals, or entire areas, as well as setting a pre-determined amount of water for release.

The Smart Valve software detects leaks and performs weekly self testing by conducting an open and close routine.

The Smart Valve has a battery life of up to 10 years.

- Supported for a pilot project through funding from the WRC
- Product in the market locally and in SADC countries



TRL 9



Digi Aqua



- Platform designed to revolutionize the way water leaks and plumbing issues are managed
- Connects certified, vetted plumbers directly with facility managers, property owners, and businesses in real time
- The platform ensures rapid response to leaks and water-related emergencies, minimizing water losses and promoting efficient water usage
- Pilot project funded for preliminary field testing and market validation
- Evaluation of the platform in a real-world environment, allowing for the assessment of user engagement, service efficiency, and overall effectiveness
- The pilot was conducted in Gauteng coordinated by City of Tshwane, with a focus on testing and refining the platform's functionalities based on feedback and performance metrics
- Enhanced user interface, more automation, scalability competencies, more data security, regulatory compliance



Date	Name	Location	Is this an emergency?	Is this a plumbing issue?	Do you have any photos of the problem?	Do you agree to the Digi Aqua Terms and Policies?
2/13/2024	Thando Gadebe	Yes	Yes	Leaking pipes	Yes	Agree
3/3/2024	Sunnet McLeod	Yes	Yes	Leaking taps	Yes	Agree
3/3/2024	Chene McLeod	Yes	Yes	Shower	Yes	Agree
3/3/2024	Valencia Mkhosi	Yes	No	Leak detection services	Yes	Agree
2/2/2024	Angela	Yes	Yes	Leaking pipes	Yes	Agree
3/8/2024	Carwell	Yes	Yes	Bathroom installation/fix	Yes	Agree
3/12/2024	Melrose	Yes	Yes	Water pipe connection	Yes	Agree
3/15/2024	Wesley	Yes	No	Leaking pipes	Yes	Agree
3/14/2024	Mantabing	Yes	Yes	Toilet	Yes	Agree
3/15/2024	Nazareth	Yes	Yes	Leaking taps	Yes	Agree
3/15/2024	Antony	Yes	Yes	Water pipe connection	Yes	Agree
3/17/2024	Mantabing	Yes	Yes	Toilet	Yes	Agree
3/18/2024	Diamond	Yes	No	Shower	Yes	Agree
3/19/2024	Kelvin	Yes	Yes	Water pipe connection	Yes	Agree
3/19/2024	John	Yes	Yes	Toilet	Yes	Agree
3/21/2024	Wanda	Yes	Yes	Shower	Yes	Agree
3/22/2024	Hazel	Yes	No	Toilet	Yes	Agree
3/22/2024	Deborah Dethan	Yes	No	Leaking pipes	Yes	Agree
3/22/2024	Soren	Yes	No	Shower	Yes	Agree
3/25/2024	Tony	Yes	No	Leaking pipes	Yes	Agree
3/25/2024	SPENCER MOKOBE	Yes	Yes	Shower	Yes	Agree
3/25/2024	Kwesi	Yes	Yes	Leak detection services	Yes	Agree

TRL 7

<https://managenrw.co.za/>

Welcome to the one-stop solution for
NON-REVENUE WATER (NRW)
MANAGEMENT
brought to you by



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Department:
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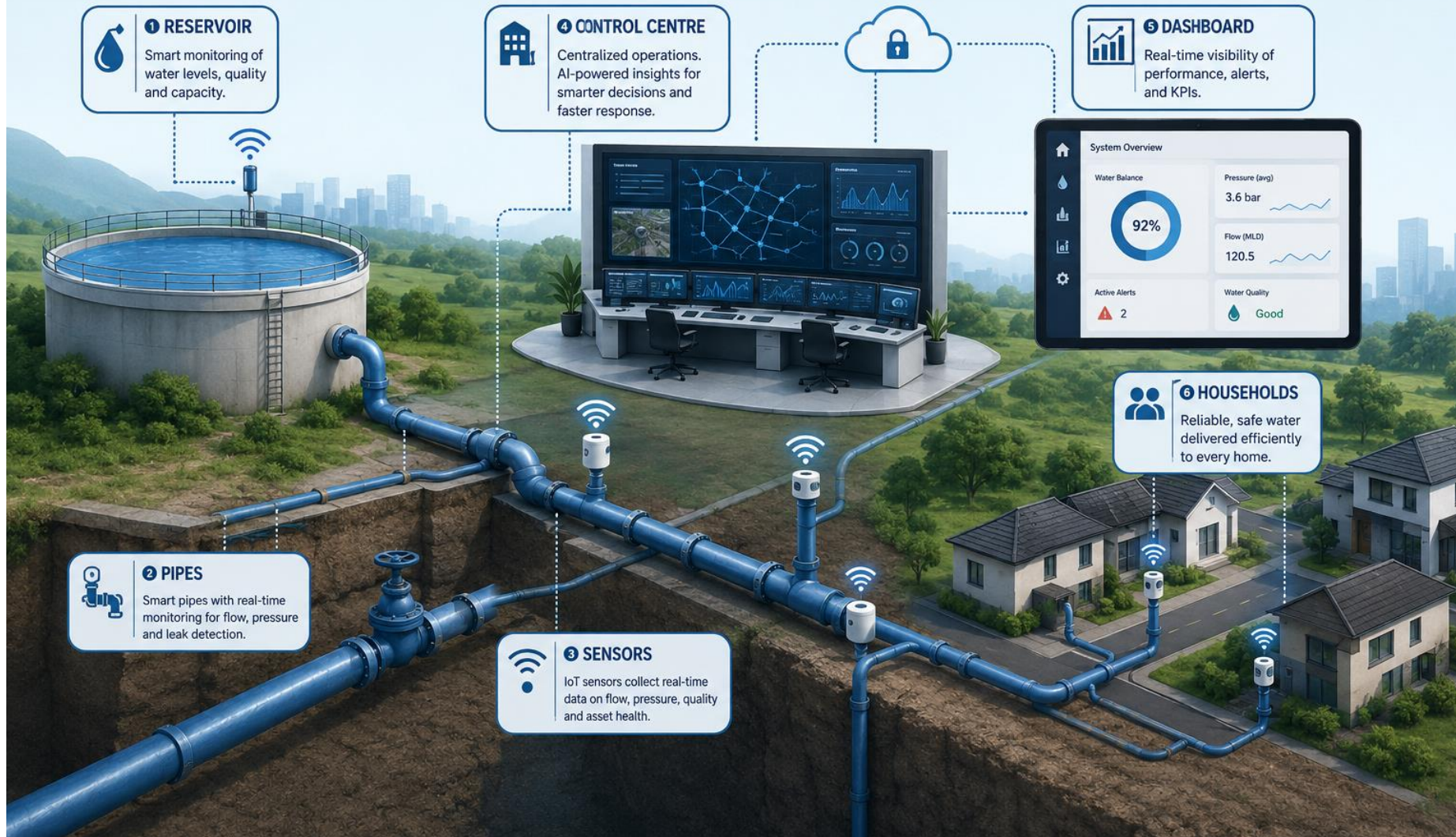
Lessons Learned

- Data quality is critical
- Technology supports the consumer and the people
- Collaboration improves outcomes
- Pilot projects reduces implementation risk
- Digital transformation is an ongoing journey



FUTURE SMART WATER UTILITY

Connected Assets. Intelligent Decisions. Sustainable Future.



Key Take-Home Message

- NRW remains one of South Africa's critical water challenges
- Emerging technologies are changing how municipalities manage water
- Better data enables better decision
- Collaboration accelerates innovation
- Smart water management is essential for future water security



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“Thank you for your time
and attention”