X-TELIA

NWWC 2024

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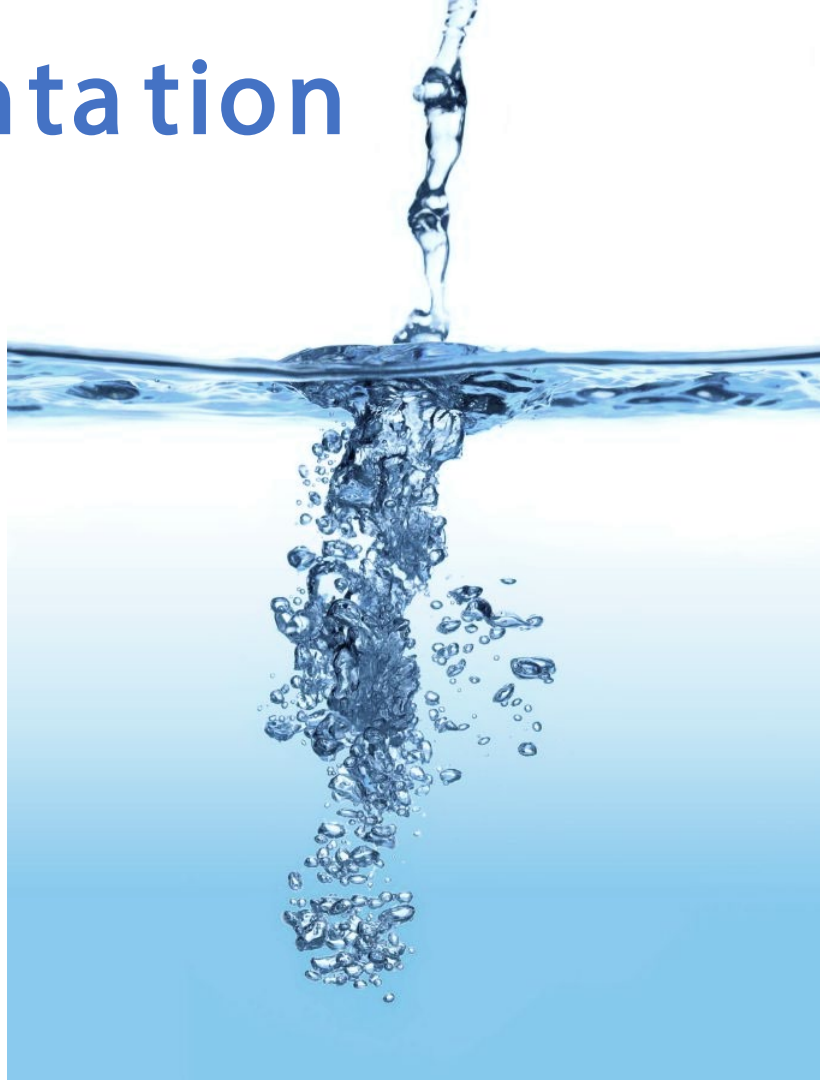
Addressing the Global Water Crisis through Continuous Water Meter Reading

Leveraging IoT, Advanced Analytics, and AI for Sustainable Water Management

Goal of this presentation

This session explores next generation **continuous water meter reading** powered by **IoT**, **Advanced Analytics**, and **AI**, offering **new powerful insights** and **tools** for smarter, sustainable water management.



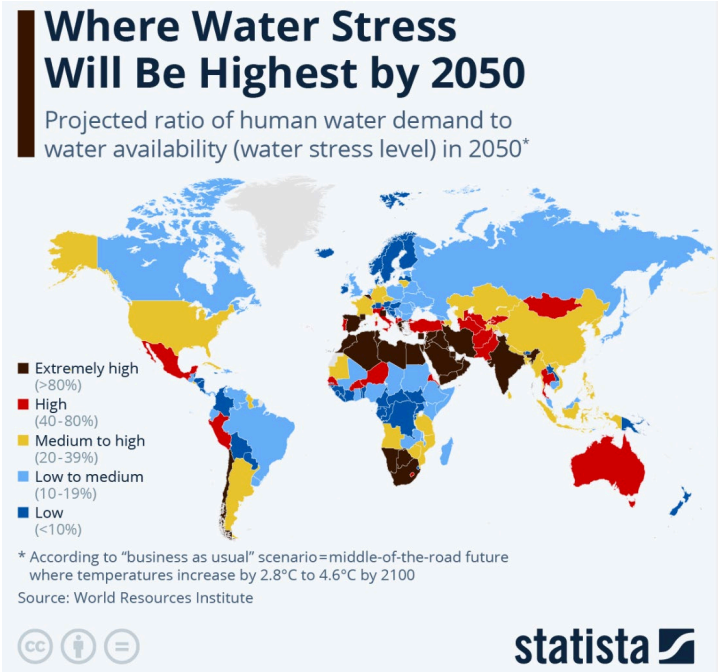
Introduction – The Water Crisis

A global crisis

Water stress : 25% of the global population live in countries experiencing extremely high water stress, where water use exceed 80% of available supply annually (WRI)

Projected Demand Increase: Global demand expected to rise by **20-30% by 2050**, due to population growth, industrial use, and increased agriculture (Unwater)

Impact of Climate Change: Over 50% of the continental U.S. has experienced drought conditions since 2000, with the western states particularly affected. (Wikipedia)



Implications:
The **growing disparity between water supply and demand** underscores the need for sustainable water management practices, **technological innovations**, and international cooperation to address the impending water crisis.

Economic impact:
By 2030, the water crisis **could cost** some regions **up to 6% of GDP** as access to water becomes more limited and costly (World Bank).

Reducing Non-Revenue Water

We can't be wasting a single drop

NON-REVENUE WATER (NRW)

Real losses: leaks and pipe bursts
Apparent losses: unauthorized consumption, metering inaccuracies

	% NRW	Annual Wasted water
Globally	30%	126 billion m^3
Europe	20-30%	60-90 billion m^3
USA	24%	13.8 billion m^3
Canada	13%	0.62 billion m^3

NON-REVENUE WATER (NRW)

Globally - water produced but not billed to customers—accounts for approximately 126 billion cubic meters annually. This volume represents **about 30% of water supplied worldwide**, translating to an estimated **economic loss of USD 39 billion** each year. (Iwap Online)

CANADA: NRW represents a significant challenge. On average, Canadian municipalities experience **water losses of approximately 13% due to leaks**, unauthorized consumption, and metering inaccuracies. This percentage varies across regions, with some areas reporting losses exceeding 20% (World Bank).

USA: NRW accounts for approximately 24% of the total water supplied by utilities. This encompasses both real losses, such as leaks and pipe bursts, and apparent losses, including unauthorized consumption and metering inaccuracies (IWA).

Traditional Water Meter Reading is not the solution

Limitations: Periodic readings, **lack of real-time data**, reactive vs. proactive response.

Consequences: Inefficiencies in detection, delayed response to issues, increased water loss.

Continuous hourly meter reading changes absolutely everything.

Feature	Traditional Water Meter Reading	Continuous Water Meter Reading
Data Collection Frequency	Periodic (monthly, quarterly)	Continuous, hourly
Data Availability	Limited, often delayed	Instantaneous, up-to-date
Issue Detection	Reactive (issues detected after the fact)	Proactive (immediate leak or anomaly alerts – abnormal usage)
Usage Insights	Limited; broad patterns	Detailed; granular usage patterns
Resource Management	Difficult to optimize	Enables precise, data-driven management
Maintenance Response Time	Slow (after manual data review)	Fast (automated alerts trigger quick response)
User Engagement	Low; few usage insights for users	High; real-time data enables behavior change – User Portal

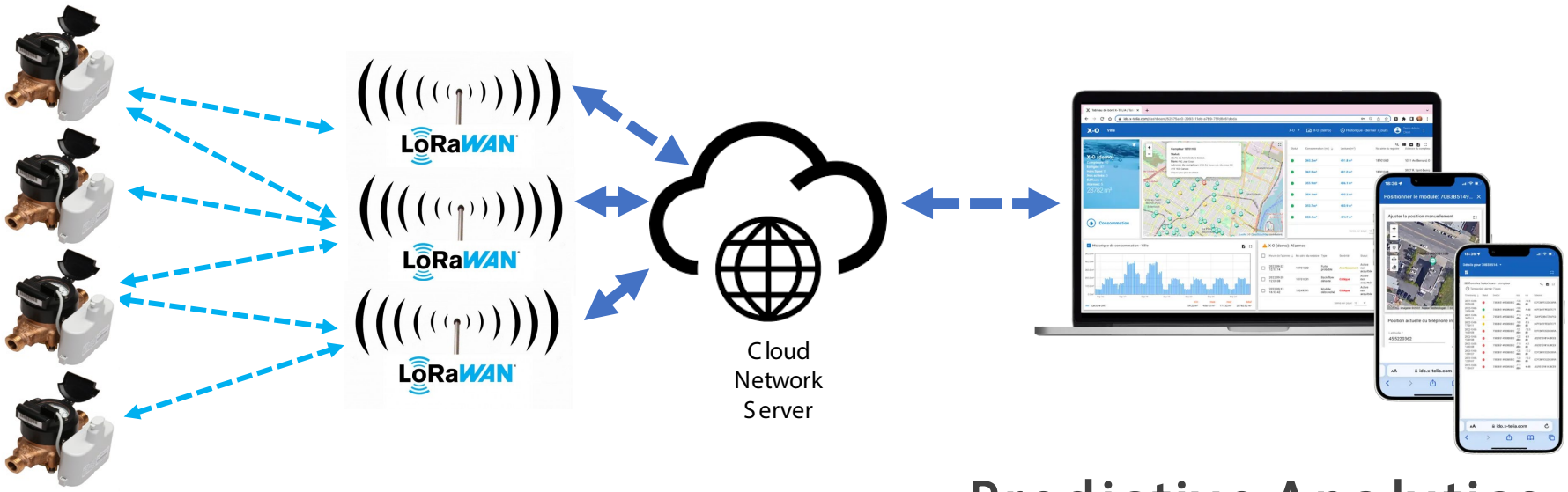
Technology framework

Water meters + MIUs

Gateways

Network Server

Advanced AMI application



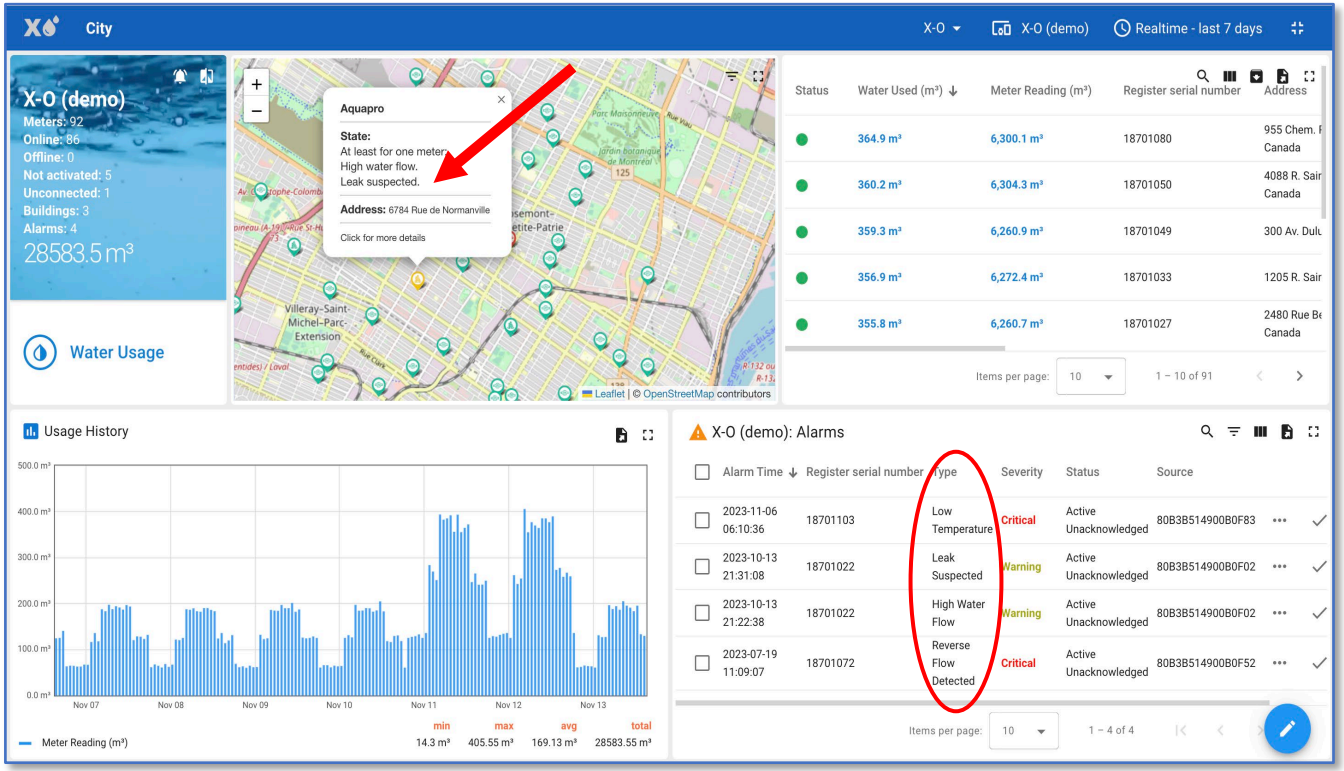
IoT

Predictive Analytics and AI

End-to-end secure payload

Practical Applications for Utilities

Real-Time Anomaly Detection



Data Insights and Predictive Analytics

Data Advantage: rich datasets provide deep insights.

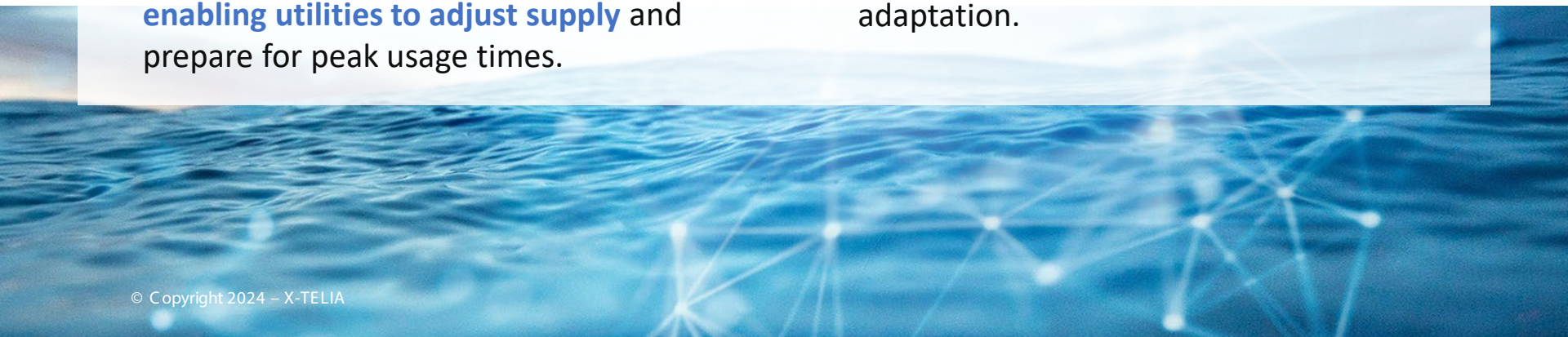
Predictive Models: Machine learning algorithms can predict usage trends and demand.

Predictive Water Usage Patterns

Advanced Analytics

How AI can change the game

- **Real-Time Anomaly Detection** - AI can detect unusual patterns, like sudden spikes or drops in usage, **to quickly identify leaks**, unauthorized use, **or faulty meters**.
- **Dynamic Demand Forecasting** - AI can forecast hourly demand combining historical and weather forecast data, **enabling utilities to adjust supply** and prepare for peak usage times.
- **Drought and Scarcity Response** – AI can **predict supply impacts during droughts**, enabling targeted restrictions and strategic conservation measures.
- **Long-Term Resource Planning** - AI-driven **insights from usage trends support infrastructure planning**, conservation policies, and climate adaptation.

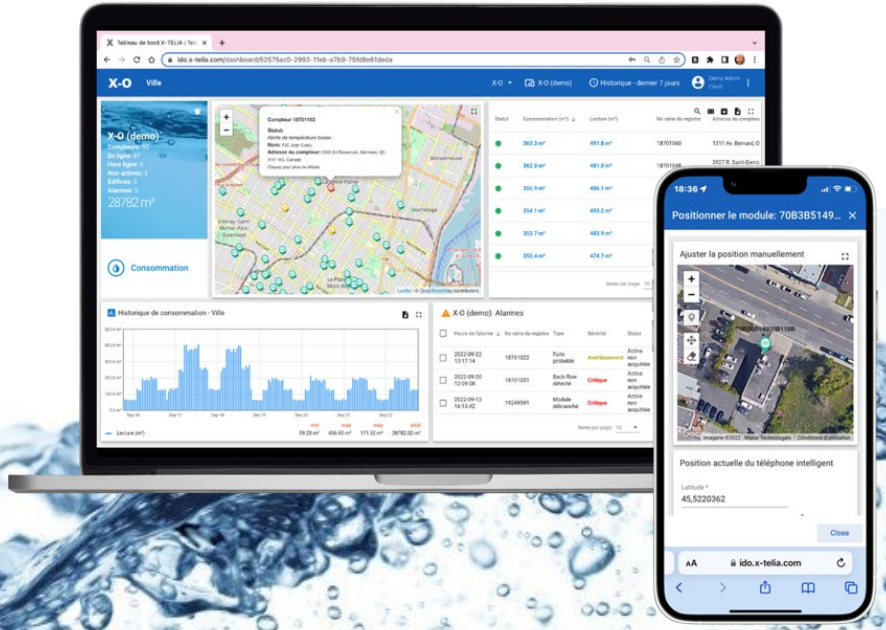


How AI can change the game

- **Personalized Conservation Tips**
  Based on individual usage patterns, AI can **offer tailored suggestions to reduce water use**, like shorter showers or off-peak irrigation.
- **Customer segmentation for Demand Management**
  AI can segment customers based on water consumption habits, allowing utilities to tailor outreach programs. **Conservation alerts for high-usage customers**, incentive rewards for efficient users.
- **Empowering Policymakers**
  Accurate and timely usage insights allow for **evidence-based decision-making** leading to better **targeted policy measures** while providing the means to **measure their effectiveness.**
- **Time-Based / Dynamic Pricing**
  AI can help utilities develop time-of-use pricing models, **encouraging consumers to shift water usage to off-peak hours**.

Conclusion and Q&A

As the water crisis grows, **continuous water meter reading**—powered by **IoT** and **AI**—will provide essential tools like **real-time leak detection**, **dynamic demand forecasting**, and **deep usage analytics**, enabling proactive and sustainable water management.



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