CONTINUOUS AND PROACTIVE WATER LOSS MANAGEMENT

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MY BACKGROUND

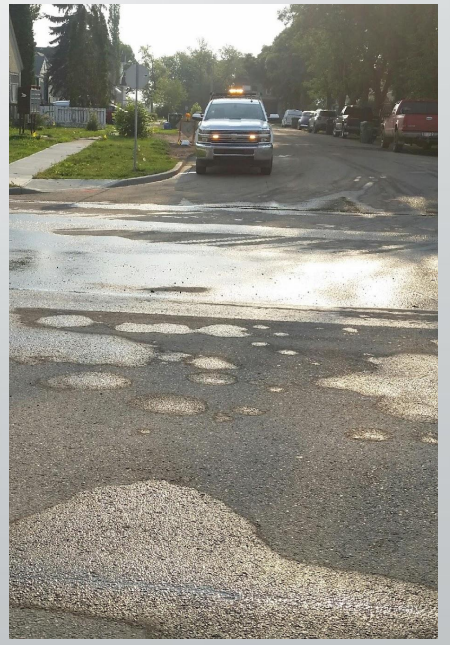
- University of British Columbia – B.A.Sc in Engineering. Licensed professional engineer in BC, Alberta and Ontario
- Conducted and supervised acoustic watermain testing surveys for 9 years. Piloted new technology with partners and conducted training in 7 provinces
  - Small water systems such as infrastructure present in First Nations, villages, and hamlets
  - Mid sized water systems in Towns and small Cities
  - Large sized water systems in larger urban municipalities, including transmission mains
- Developed and instructed the "Water Loss Management" course, certified for 0.6/0.7 CEUs in 5 provinces based on the AWWA M36 standard

OVERVIEW

- CHALLENGES & DIRECTIVES
- DIVERSE APPROACHES
- INSTALLATION
- DATA VIEWING & ANALYSIS
- BENEFITS
- SUPPORTING OPERATIONS
- CENTRAL EVENT MANAGEMENT

OPERATIONAL CHALLENGES

- Aging assets and infrastructure
- Depleting Raw Water Sources*
- Personnel Shortages*
- Increased water costs, shrinking budgets*
- Steep increase in demand*
- Higher operating costs from losses
- Decrease in water pressure
- Emergency Main Breaks and Repairs
- Increase in energy consumption
- Damage to property and assets



OPERATIONAL DIRECTIVES

- Water Conservation Initiatives
- Proactive Monitoring of Watermains
- Efficient Operations of Distribution Network
- Reduction in field-based resources
- Quality data sampling, documentation and Geo tagging
  - Ex: Reservoir level data with no consumption and minimum night flow monitoring
- Automation in data analysis

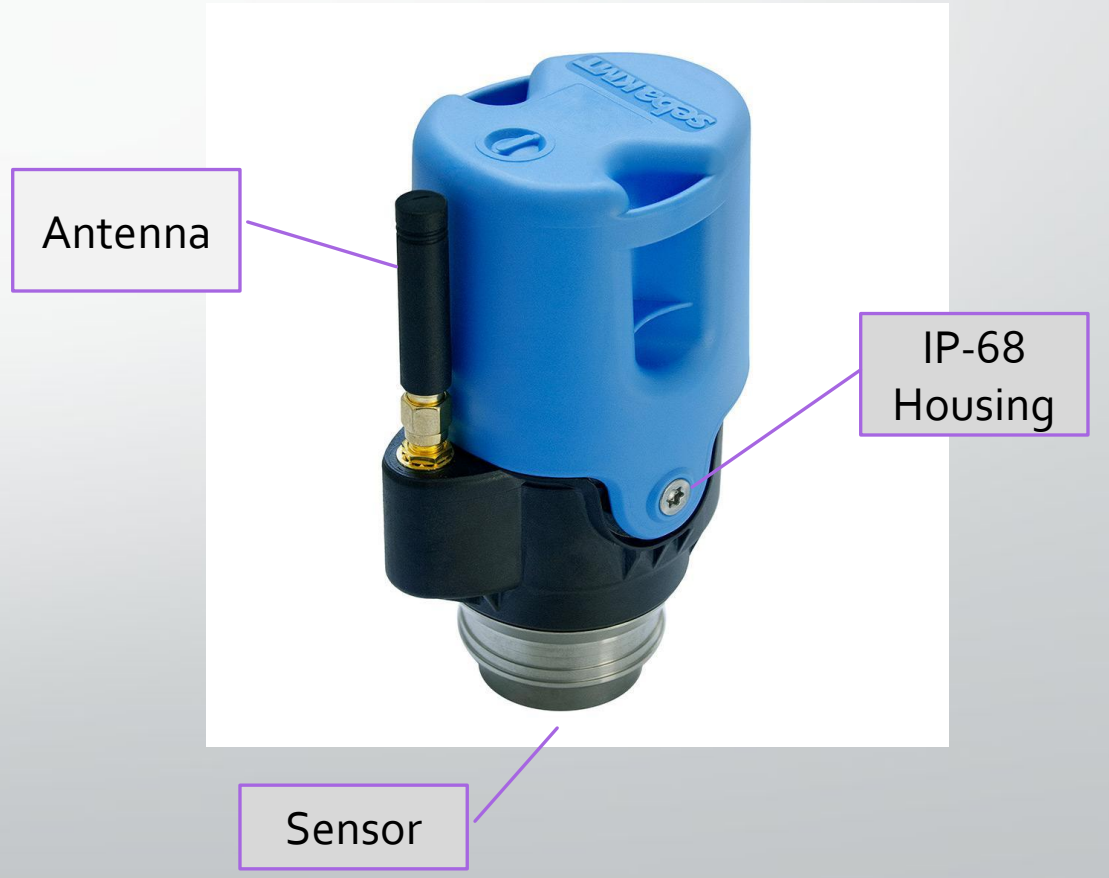
DIVERSE APPROACHES

- Key questions, depending on the system (network size, location, asset accessibility etc.):
  - Automated data collection, analysis, and alerts with in-house staff for leak pinpointing
    - Permanent or temporary placement of acoustic, pressure data loggers
    - Accurate data from sensors, meters, and accounting
    - Suitable equipment and training considerations for staff
  - Acoustic watermain testing surveys – periodic basis
  - Data from sensors (acoustic-hydrophonic, pressure, temperature, flow) that is managed centrally

Remote Network Field Modules

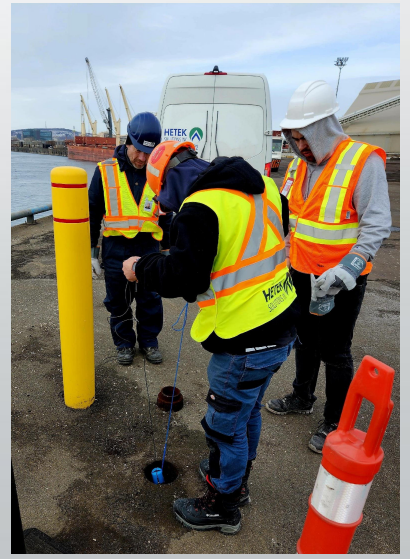
CAPABILITIES

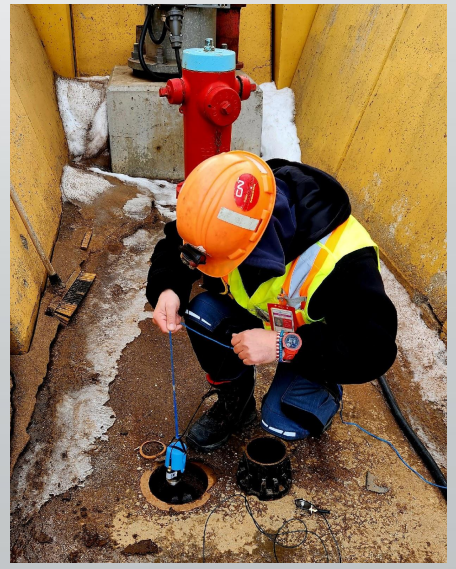
- Sensing: Acoustic (Accelerometer/Hydrophonic, Pressure, Temperature)
- NB IoT Technology
- Record Multiple Intervals
- Data Transmission Daily
- SIM card included
- Web Portal to access data
- Long battery life
- Permanent or Temporary deployment
- GPS tagging of devices



INSTALLATION

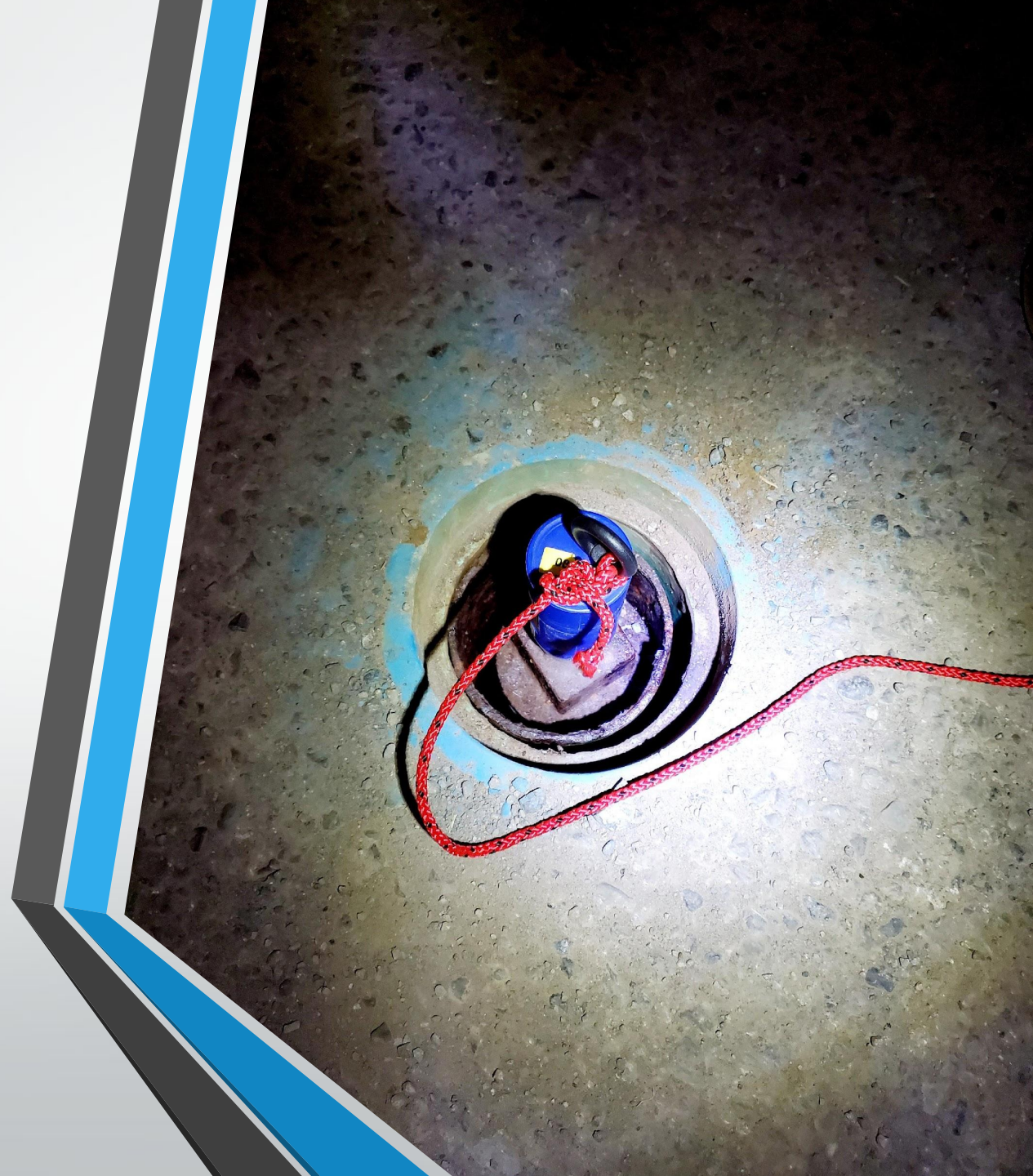
- Installation inside chambers of the watermain, valves or hydrant valves.
- All major pipe materials including PVC, Cast Iron, Ductile Iron, AC etc.
- Distance consideration depending on sensor range capabilities
- Long antennas used for deep bury pipes
- Using mobile app for configuration



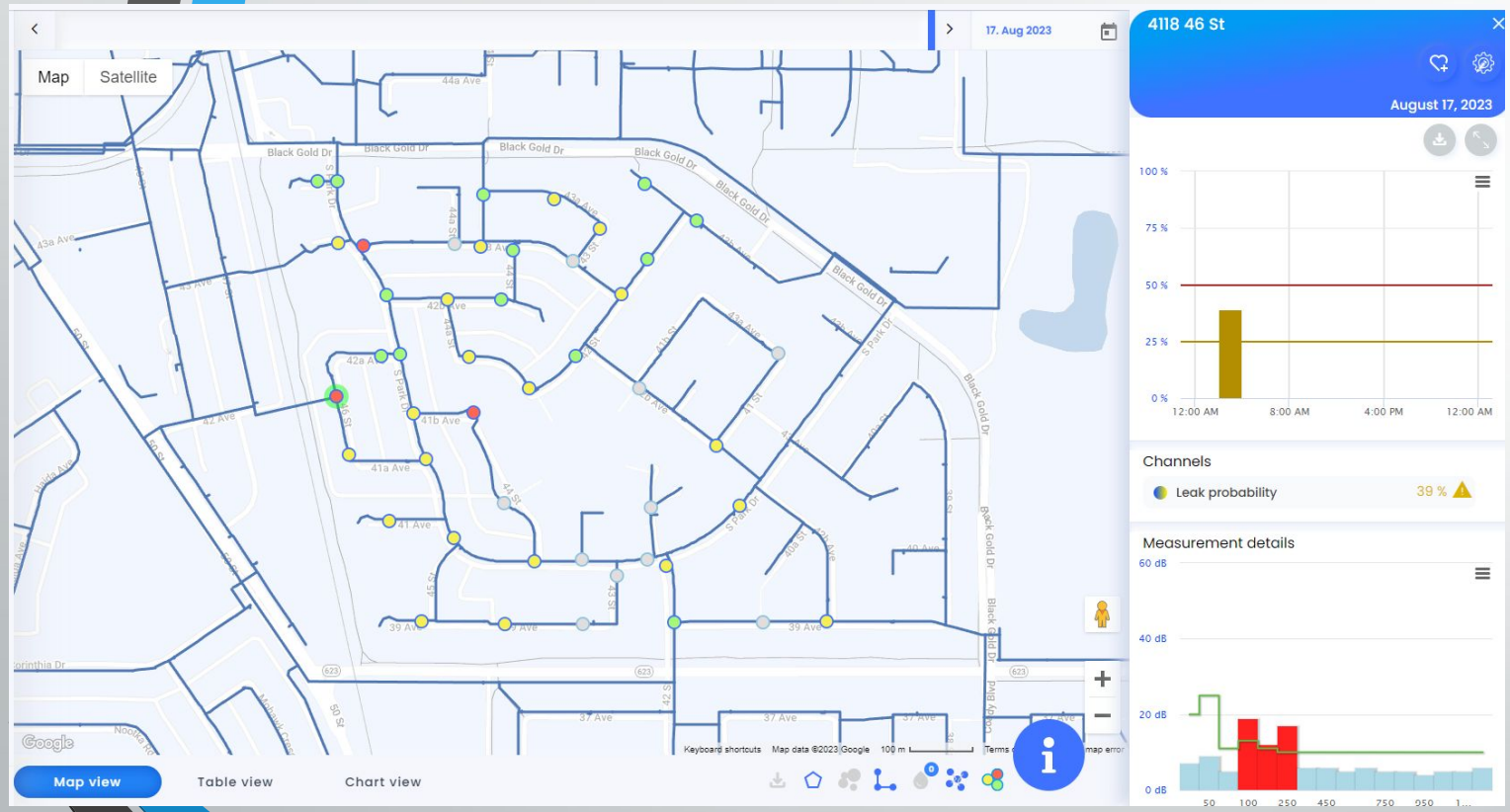


FIELD CHALLENGES

- Poor connectivity Moving of antenna, signal boosters
- Inadequate clearance Cut valve rods
- Debris Use nearby alternate, or cleaning of chamber
- Longer distances between main valve chambers Use of hydrant valves as alternates



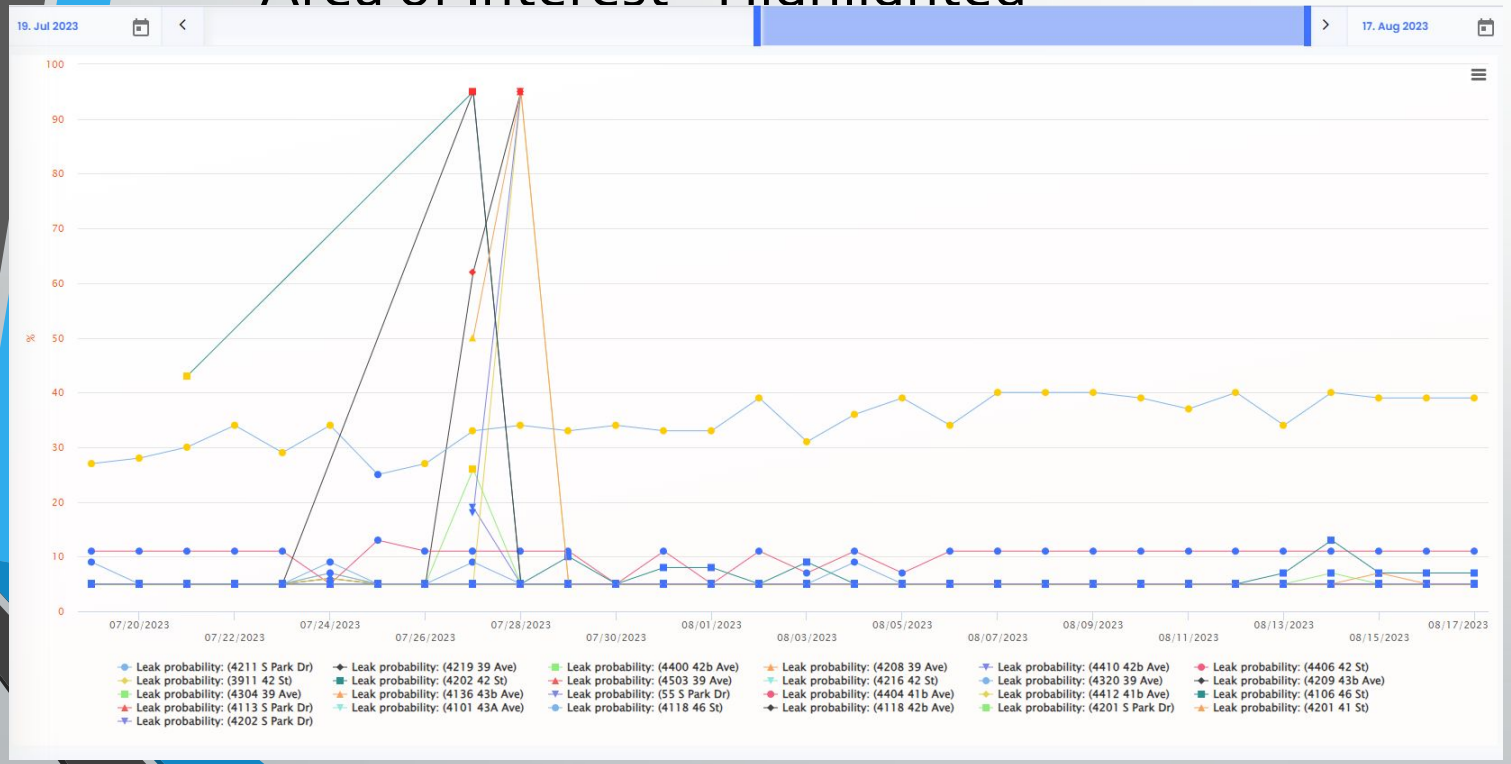
DATA VIEWING & ANALYSIS

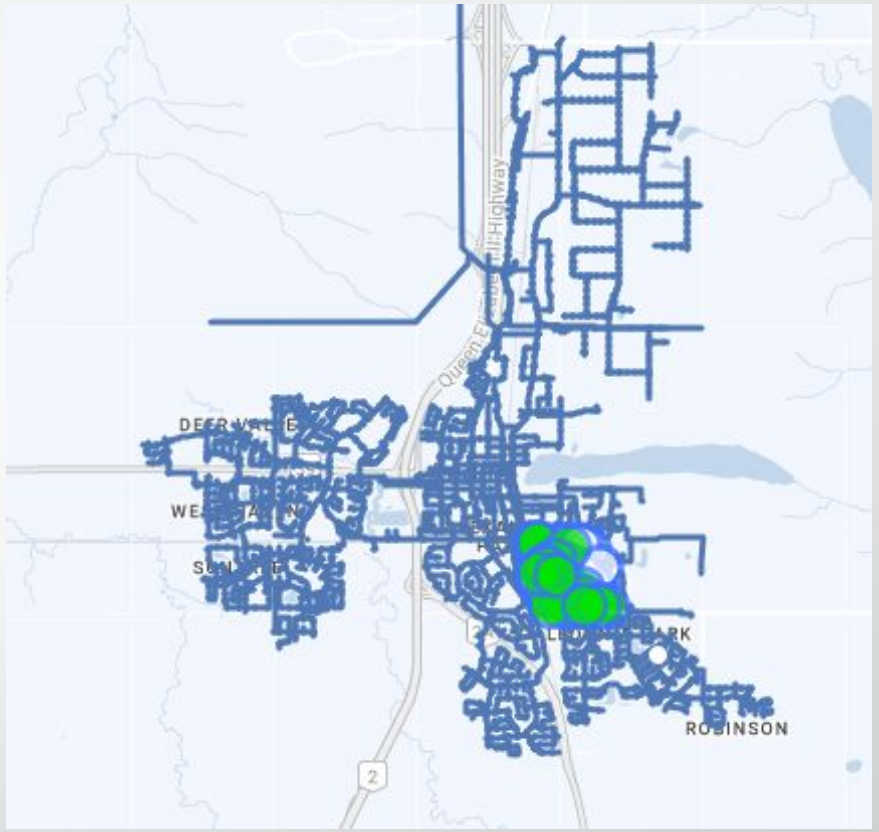


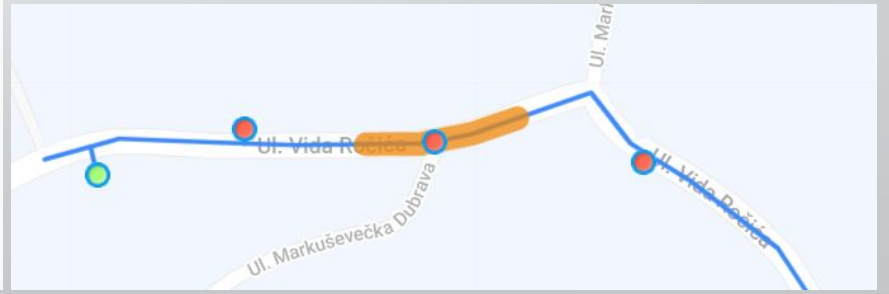
- Leak warnings displayed
- Battery status (%), Mobile Signal Strength, Temperature
- Data costs included
- Multiple logins available for access by various personnel
- Historic trend analysis
- Remote firmware updates and configuration
- Acoustic data output in sound level (dB) and frequency (Hz)
- Captures audio files

DATA VIEWING & ANALYSIS

- GIS data from water network can be imported
- Area of Interest - Highlighted



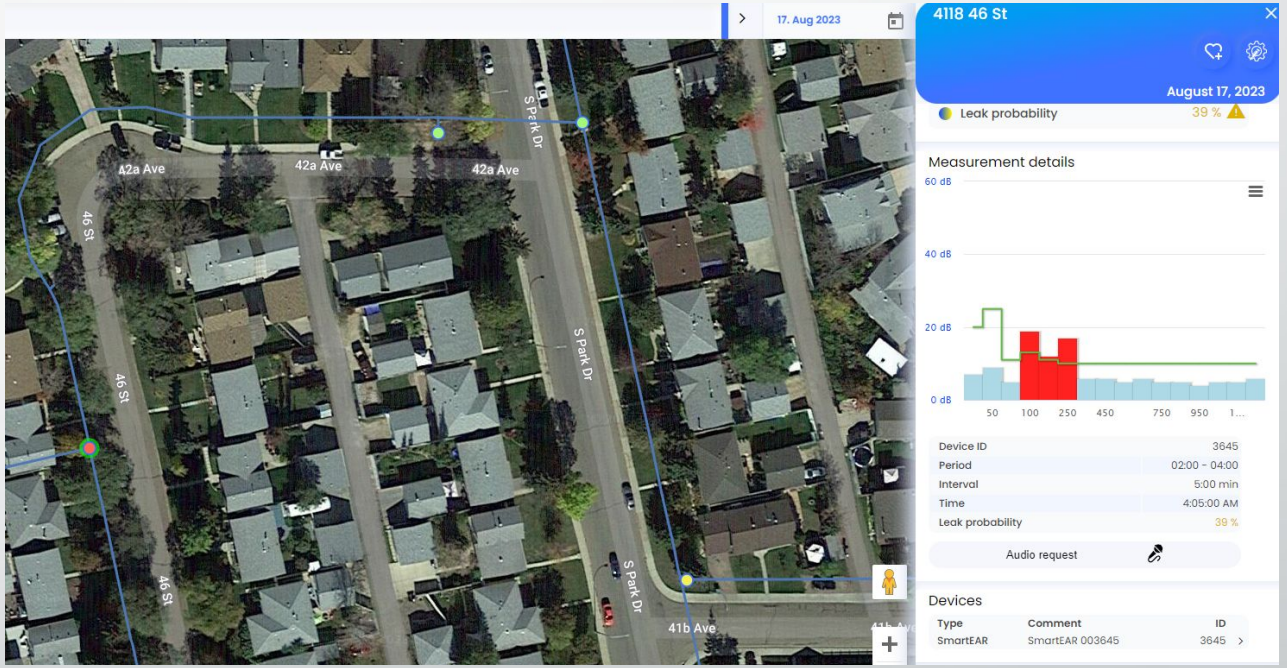




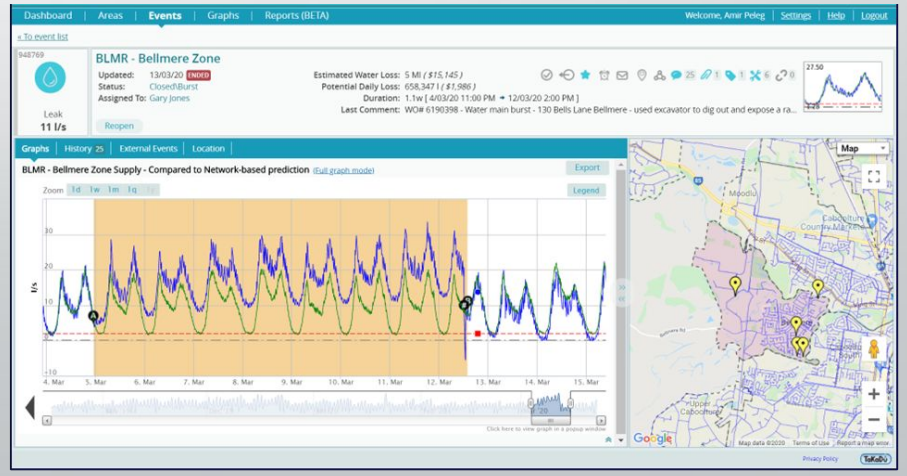
BENEFITS

- Proactive monitoring of watermain for suspected leaks
- Cost savings in detecting losses early & reducing leak detection survey time
- Low cost of ownership
- No periodic maintenance needed
- Decreasing emergency repairs
- Uses existing infrastructure
- Environmental stewardsh

(grants, certification etc.)



Supporting Operations



CURRENT PROJECTS

- **Network Acoustic Logging Devices**
  - Port of Montreal, Quebec
  - City of Leduc, Alberta
  - City of Humboldt, Saskatchewan

- **Acoustic Watermain Testing – Field Services**
  - First Nations, Municipal, Private systems, and Engineering firms across Canada
  - Loggers, Multisegmented Correlation and Pinpointing
    - Zonal/Rotational
    - Emergency / As-Required
    - Annual Basis

Central Event Management (CEM)

- Cloud based solution
- 24/7 Smart Analytics based on data from water and wastewater systems
  - PRV Failures
  - Metering issues
  - Increased minimum night flows
  - Infiltration into sanitary systems
  - Pressure transients
- Increase in operational efficiency and prioritization based on incidents

Central Event Management (CEM)

Network components

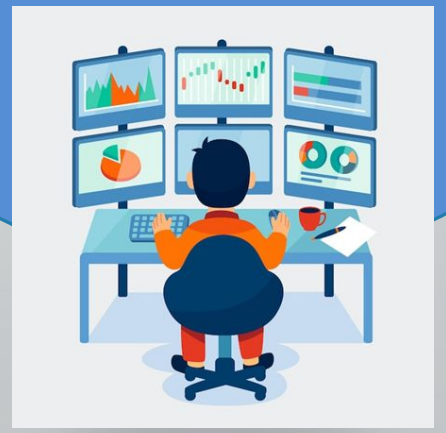
Multiple types of smart sensors, IoT devices, Telemetry, Data collection

Software / Analytics

Smart analytics for detection of leaks, bursts, data issues, water quality, and network performance

24/7 Monitoring

An outsourced central control room, offering 24/7 network monitoring optimizing resource availability, event analysis, and prioritization of events



THANK YOU!

Say Hi at Booth#53

HETEK SOLUTIONS INC.

EnviroMed DETECTION SERVICES

OUR SOLUTIONS. YOUR SAFETY

WATER LOSS MANAGEMENT

- PRODUCT SUPPLY
- FIELD SERVICES
- TRAINING & CEU COURSES
- OPERATIONAL SUPPORT