

Innovative Solutions to Property Protection

NYSIR 2024 Symposium

Adam Care

Client Innovation & Solution Leader

HSB

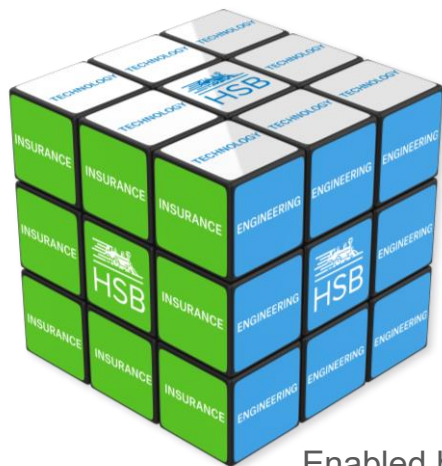
HSB & Sensor Solutions Overview

Vision

HSB's North Star

With a mindset firmly focused on the future, we leverage our expertise in **technology**, **engineering**, and **insurance** to empower our partners and help businesses and individuals thrive.

Reshaping the **future** and **modernizing** specialty insurance requires **three** areas of expertise that HSB provides:



Examining the future on **insurance** and driving innovation

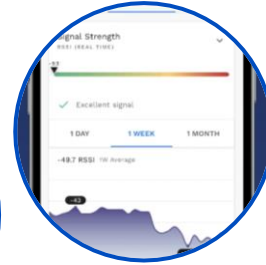
Employing 150+ years of **engineering** rigor

Predicting and preventing loss through novel **technology**

Enabled by HSB's vast **data**, evolving **ecosystem partners** and the breadth of the **Munich Re Group**

Timeline: For over a decade, HSB has been leading the insurance industry into a new 'Connect and Protect' paradigm

HSB
Sensor Team
Created



2013

2014 - 2016

2017 - 2019

2020

2021

2022

2023

2024

- 1st Commercial Pilot
- 1000 Sensors Installed
- SCV (now MRV)
- Meshify Acquisition

- 5000 Sensors
- Whisker Labs
- LoRaWAN Sensors
- Mashup@HSB / 13th Floor

- Leak Freeze Sensor
- 8500 locations

- Meshify Insights Client Data Dashboard
- SensorSignup.com
- 1st IoT-enabled Product
- Type II SOC 2

- Meshify Protect app
- Digital Alert Acknowledgements
- Schneider Electric
- HELIXintel
- 506% ROI

- Defender Sensors
- Leak Rope and Probe
- Defender Water Shutoff
- 1st IDP POC with Schneider Electric
- Qmerit (home installer)
- 639% ROI

From 'Predict and Prevent' to 'Connect and Protect'

We leverage tech, insurance, and IoT data in our 3 focus areas

Sensor Solutions by HSB®

'Predict and Prevent' insurance-related perils



Meshify
Defender



Cellular
Leak/Freeze



Meshify
Defender Water
Shutoff



Ting
(Electrical Fire)

Risk Solutions

Innovative coverages, warranties for OEMs and startups



Examples:

- Data-driven performance guarantee for Asset Advisor - Schneider Electric
- Guaranteed AI Diagnostics warranty for Augury (industrial startup unicorn)

Data Solutions

Enable 'Connect and Protect' with new business models and data-driven products for insurers and end-customers



Examples:

- World's first parametric insurance for non-weather perils

Products: Elevating our foundational hardware and software offerings to support scalable growth

Sensor Hardware



Meshify Defender
Sensor (LoRa)



Meshify Leak & Freeze
Sensor (Cellular)



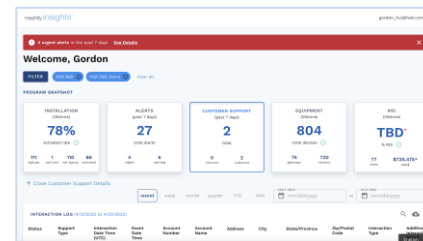
Meshify Defender
Water Shutoff (LoRa)



Whisker Labs
Ting

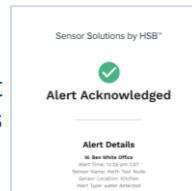
Software Applications

Meshify Protect
Mobile App



Meshify Insights
Client Dashboard

Digital Alert
Acknowledgements



Ting Mobile
App

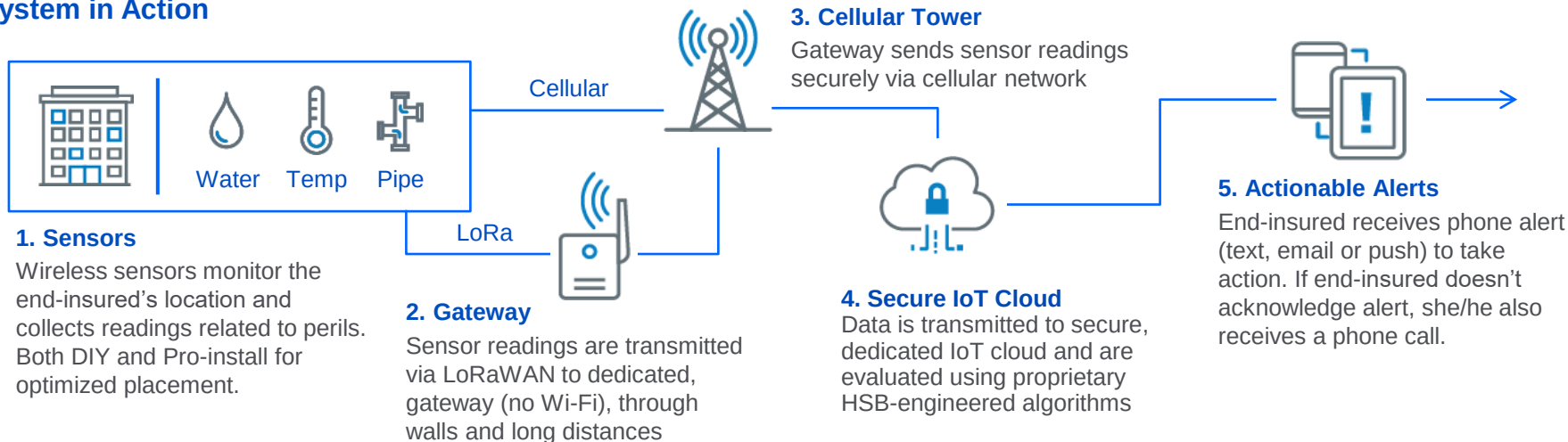


Meshify, our IoT subsidiary in Austin, TX, our Munich Re colleagues, and HSB engineers are dedicated to pushing the envelope of technology and data to create IoT insurance solutions



How it Works: Technology that enables end-insureds to take action, preventing potential property or equipment loss

System in Action



Key Perils



Water
Leaks



High
Temperatures



Power
Outages



Heating System
Failure



Frozen
Pipes



Freezing
Temperatures



Mold
Conditions



Refrigeration
Failure

Return on Investment: Our program drives value, and clients are seeing a meaningful impact

639%

**Scale Clients'
Average RoI**

(1/1/18 to 4/30/23)

Depending on occupancy,
ROI range = 300% to 1300%

$$\text{ROI} = \frac{(\text{Client Confirmed Loss Averted} - \text{Earned Program Fee})}{\text{Earned Program Fee}} \times 100$$

- Calculation leverages client-confirmed "saves" as the sole driver of return
- Additional benefits from new business or retention are not included
- Impact of LAE and BI are also not included in calculation

Occupancies in Top 10

- K-12 Schools*
- Municipalities*
- Human Services
- Assisted Living & Nursing Homes
- Houses of Worship
- Commercial Real Estate (e.g. office buildings, strip malls)
- Specialty Retail Stores
- Apartments and Condos
- Campuses (Education, Hospital)

**Recorded 737% RoI in this period*

NYSIR – Sensor Solutions Program Overview

Devices

1,491

Total Deployed
Devices

173

Gateways

1,318

Sensors

Enrolled Locations

101

Subscriber Locations

86

Subscribers
(School Districts)

83

Installed Locations

Loss Saves

686%

Lifetime ROI

43

Total Subscriber
Confirmed Saves

\$2M +

Total
Saves Value

- Using standard kits for all new enrollments comprised of:
 - 2 gateways
 - 9 Water sensors
 - 6 temp sensors
 - 2 Leak probes
 - 2 leak ropes
 - 1 temp probe
- 40 Subscriber locations enrolled in 2023
- NYSIR has targeted 74 Subscribers based on prior water/freeze damage
 - 17 additional Subscribers have enrolled since 2023
- 23 additional Subscriber locations, outside of prior loss targeting, have also enrolled since 2023
- 8 subscriber locations enrolled in 2024
 - 5 subscriber school districts
- 20 refrigeration saves
- 7 freeze saves
- 16 water saves

Weather & IoT

U.S. 2023 Billion-Dollar Weather and Climate Disasters



This map denotes the approximate location for each of the 28 separate billion-dollar weather and climate disasters that impacted the United States in 2023.

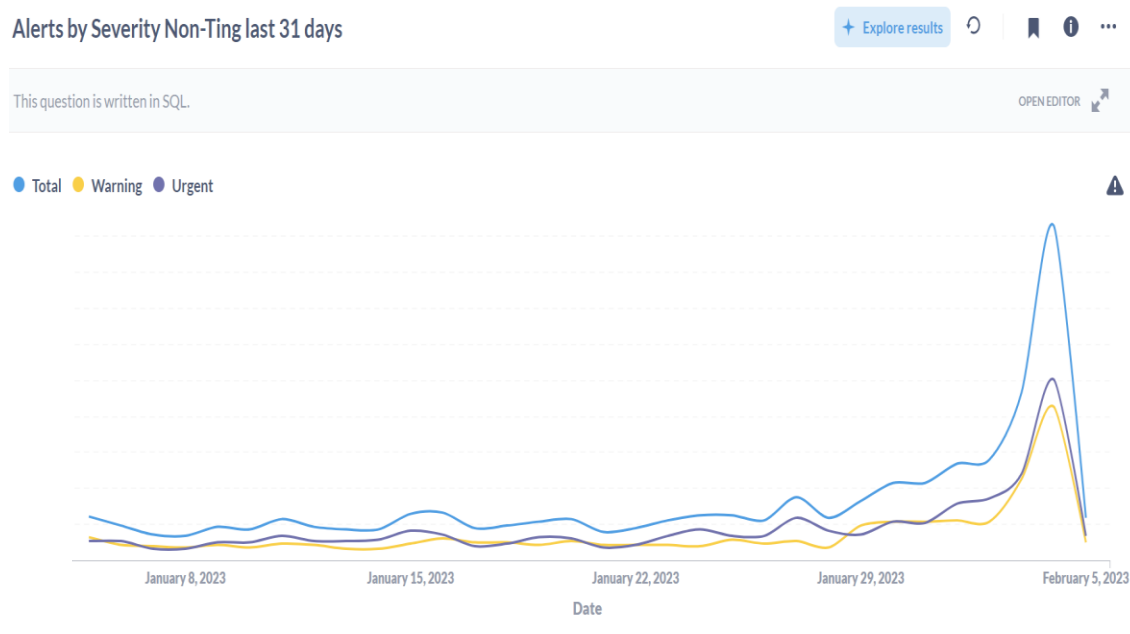
February 2023 Arctic Blast brought dangerously frigid temperature with wind chills as cold as -50F to New England and surrounding regions



- The Arctic Blast formed on Feb 3rd and dissipated on Feb 4th
- It brought coldest wind chills in decades, with Mt Washington in NH experienced wind chill of -108 F
- The cold moved into the Northeast Friday morning, with a wind chill reaching -21 F in Maine, -22 F in Vermont
- The worst of the cold arrived Saturday morning
 - Boston reached -9 F with wind chills of -35 F

HSB IoT sensor program provided timely alerts to help mitigate storm related losses

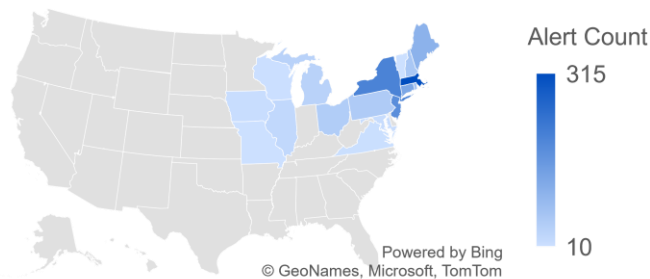
Alerts by Severity Non-Ting last 31 days



- On Feb 4, total urgent and warning Freeze and Water alerts increased by **700%** compared to average daily alerts in Jan
- Alerts were mostly triggered by freeze events
 - **95%+** were **freeze** alerts

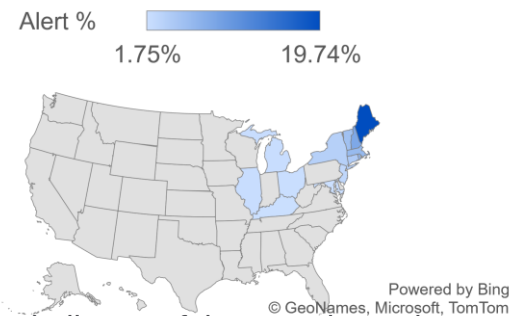
Alert activities were concentrated in Northeastern US

Arctic Blast: HSB Sensor Alert Heatmap



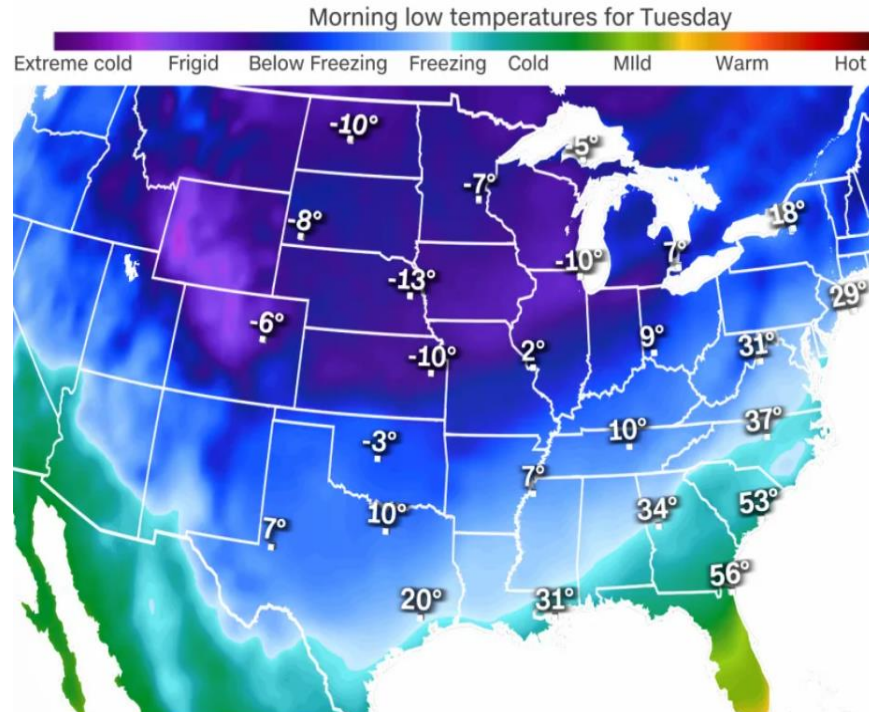
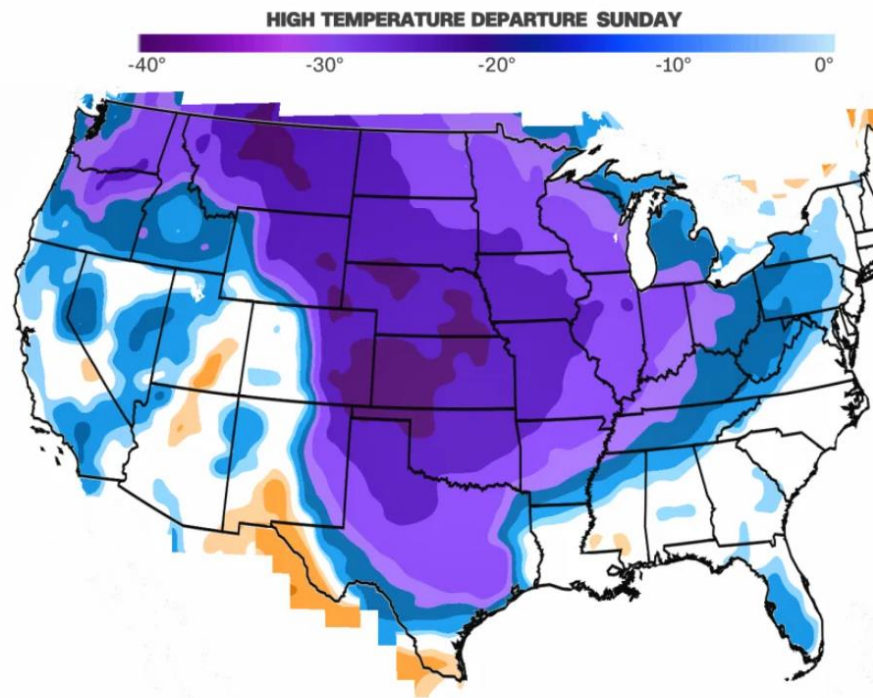
- Alerts were mostly concentrated in MA, NY, NJ, CT, and ME
 - 22% from MA
 - 15% from NY
 - 13% from NJ
 - 10% from CT
 - 8% from ME

Arctic Blast: Alert per Sensor Heatmap



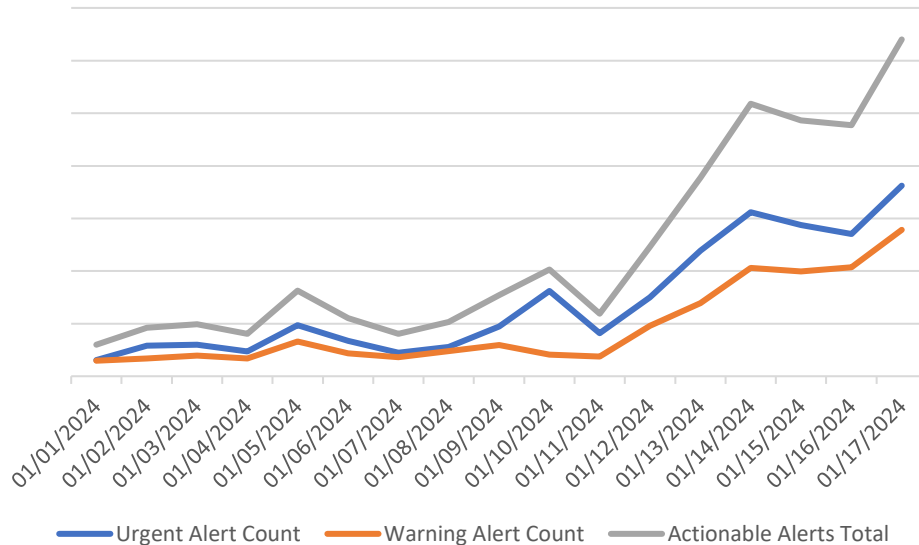
- A key indicator of the severity and breadth of this cold wave was the elevated rate of exposure warning and urgent action required alerts per sensor.
 - ME had roughly **20%** Alert per sensor rate during the arctic blast (1 in 5 active sensors alerted).

January 10-17, 2024, Arctic Blast caused sustained low temperature conditions across the country



HSB IoT sensor program provided timely alerts to help mitigate arctic blast related freeze and water losses

Daily Actionable Freeze and Water Alerts Analysis (Urgent and Warning Alerts)



- During the 7-day period from January 10–16, average daily urgent and warning freeze & water alert activities **increased 400%** compared to normal average daily alerts
- Alerts were mostly triggered by freeze and water events
 - Roughly 95% are freeze and water related urgent plus warning alerts
 - Freeze alerts alone accounted for roughly 70%

NYSIR Subscriber Winter Frozen Pipe Save



One frigid February Saturday, smart sensors played a major role in helping a New York school district avert a costly crisis. The staff had taken all precautions to ensure against any problems occurring from dropping temperatures in their buildings. They had closed dampers, made sure water was circulating and that hot boxes were equipped with heat. Despite their diligence, the louvers in the boiler room froze open anyway, letting in cold air and knocking out the boilers.

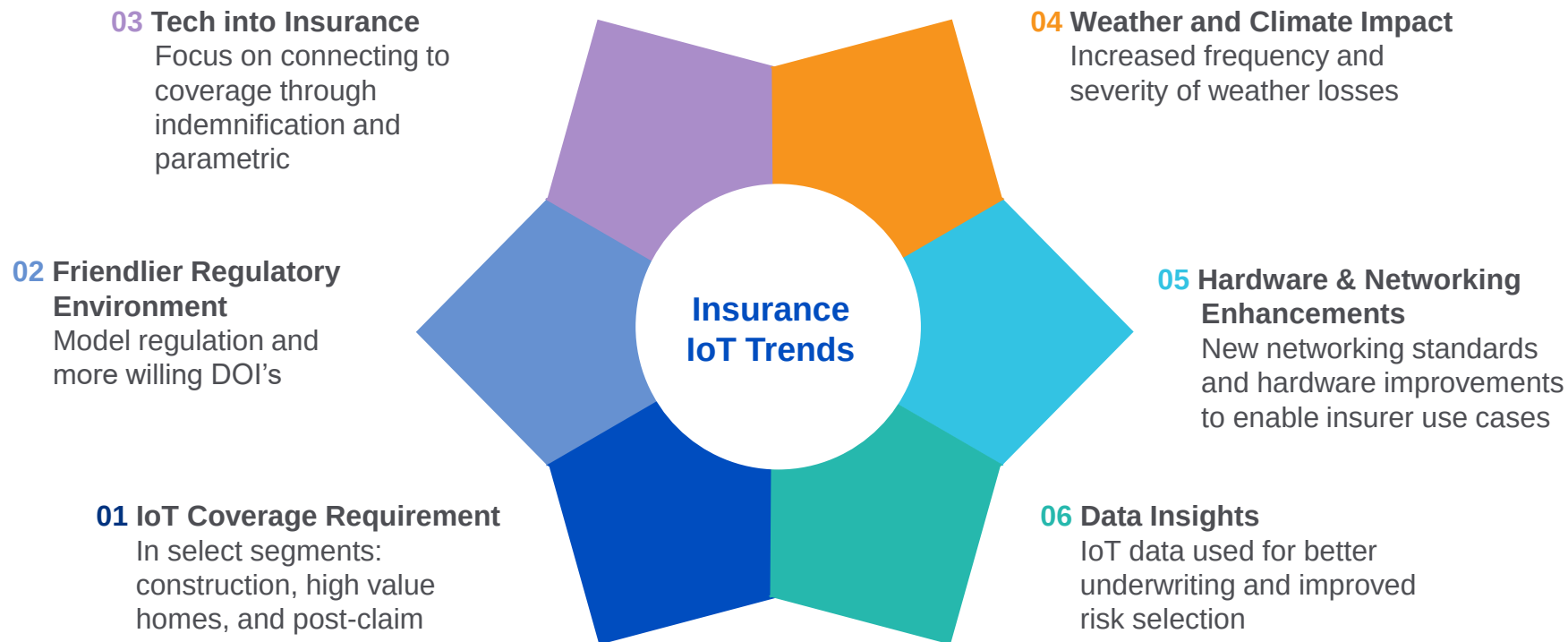
Fortunately, the district had installed Sensor Solutions by HSB[™], a monitoring service offered through their insurance policy with New York Schools Insurance Reciprocal. On this day, the sensors were sending notifications and emails to school contacts every two hours flagging the dropping temperature. Staff in the building that Saturday saw the emails, investigated, found - and fixed - the cause of the problem before it became a crisis.

They have also received humidity notifications, and water sensors in the custodial closet have even picked up on accidental water spills from sinks and buckets which have been helpful.

This powerful sensor service and the swift action of school staff enabled the district to avoid a school shutdown and significant damage costs.

IoT Trends in Insurance

IoT: The Insurance Industry continues to boost its adoption of IoT due a variety of market trends



Equipment Monitoring & Future Innovation

Use Cases: We are focused property and equipment perils that drive losses in the insurance industry

 DETECT		 PREDICT	 ACT
 Water	Leak Detection • Sensor (Cellular) • Sensor (LoRa) • Probe • Rope • Flow Monitoring • Amazon Sidewalk	Freeze • Air Temp (Cellular) • Air Temp (LoRa) • Pipe Temp (LoRa) • Mold Conditions (LoRa) • Amazon Sidewalk	Shutoff • Shutoff - Small Pipe (residential / commercial) • Shutoff - Large Pipe (includes Construction Risk)
	 Fire	• Fire Pump (LoRa) • Small Commercial Electrical Fire • Large Commercial Electrical Fire	• Electrical Fire (Ting Residential)
 Equipment	• Power Outage (LoRa) • Ammonia Leak (LoRa) • High / Low Temp for HVAC System Failure (LoRa)	• Refrigeration Failure (LoRa) • Wine Cellar (LoRa) • Rotating Equipment (Augury) • Boiler Maintenance (LoRa) • HVAC+ (Residential)	• Equipment Maintenance (HELIXintel) <i>All use cases in green are in R&D</i>

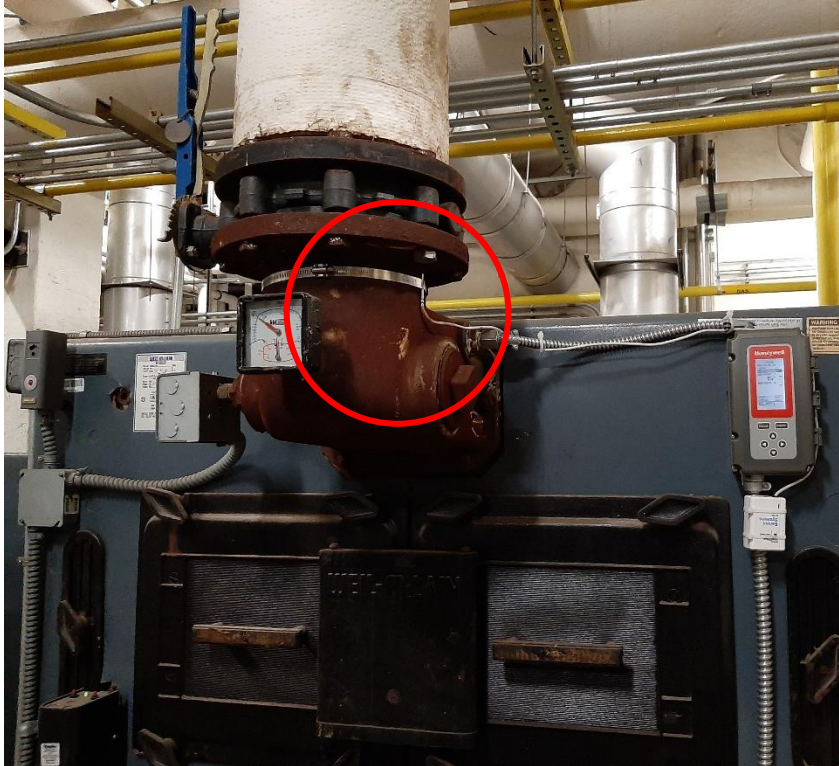
Boiler Monitoring Use Case - Steam Heating Boilers

LWCO Monitoring



Boiler Monitoring Use Case - Cast Iron Hot Water Boilers

Return and Supply Temperature Monitoring



Boiler Monitoring Use Case

Typical Losses of Heating Boilers

- Steam Boilers
 - Low water condition is the leading cause of loss
 - Caused by a combination of leakage in the boiler system and failure of LWCO protection system
 - Damages caused by low water condition may lead to total boiler loss and is the most significant among all boiler losses
 - Low frequency high severity (normally hundreds of thousand dollars)

- Cast Iron Hot Water Boilers
 - Section cracking is the leading cause of loss
 - Often caused by thermal shock – a result of rapid water temperature fluctuation
 - High frequency low severity (normally tens of thousand dollars), but severity may still go up high among discontinued boilers

Boiler Monitoring Use Case

How to Prevent These Losses

- Low water condition in steam boilers
 - Regular LWCO testing to make sure this safety device is in proper working order
 - The most common testing method is to blowdown the LWCO device and confirm burner shut-off

- Cracking in cast iron hot water boilers
 - Reduce thermal shock
 - Properly plumbing the water return piping system
 - Tuning up control system and do not let the return temperature drop too low
 - Proper heating zone control and operation

- Pain Points
 - Difficult to track adequacy of LWCO testing
 - Lack of awareness of thermal shock

Perishable Goods Monitoring Use Case

Typical Equipment Used to Store Perishable Goods



Walk-In Cooler/Freezer



Reach-In Cooler/Freezer (w/ Door)



Reach-In Cooler/Freezer (Open)

Perishable Goods Monitoring Use Case

Typical Hardware Used During Installations



Meshify Gateway



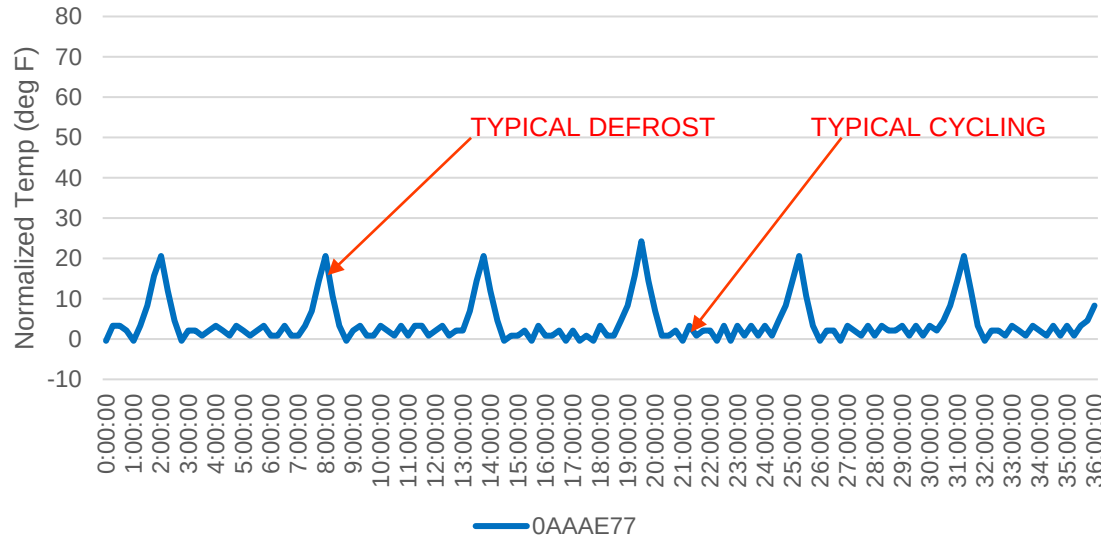
Meshify Temp. Sensors (V1/V2)



Meshify Temp. Sensors (V3)

Perishable Goods Monitoring Use Case

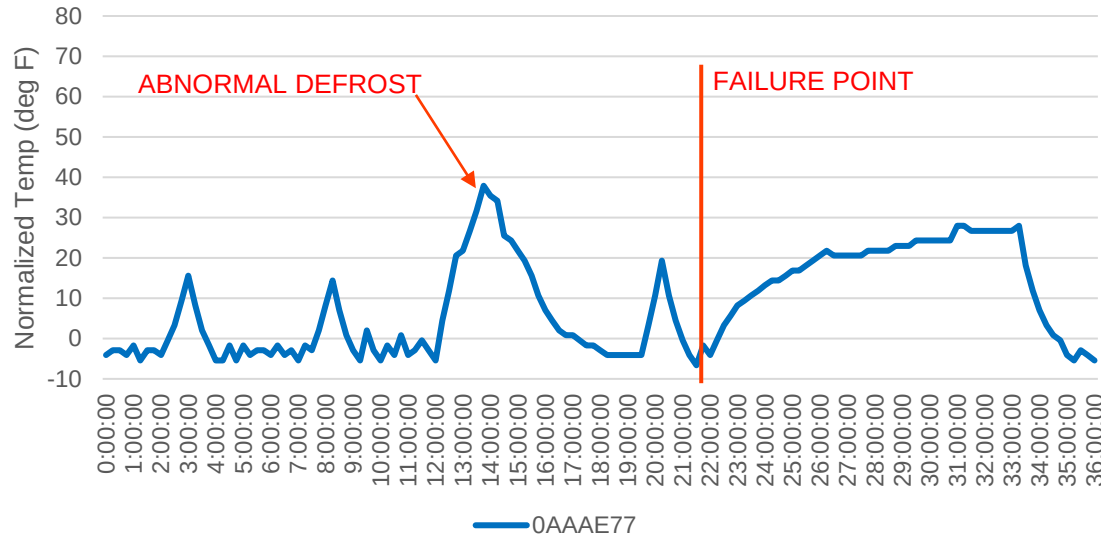
Example of Refrigeration Equipment Normal Operation



- System cycles on/off regularly every 15-30 minutes with temperature deviations between 5-10 deg F
- System defrosts every 6 hours with temperature deviation between 15-20 deg F

Perishable Goods Monitoring Use Case

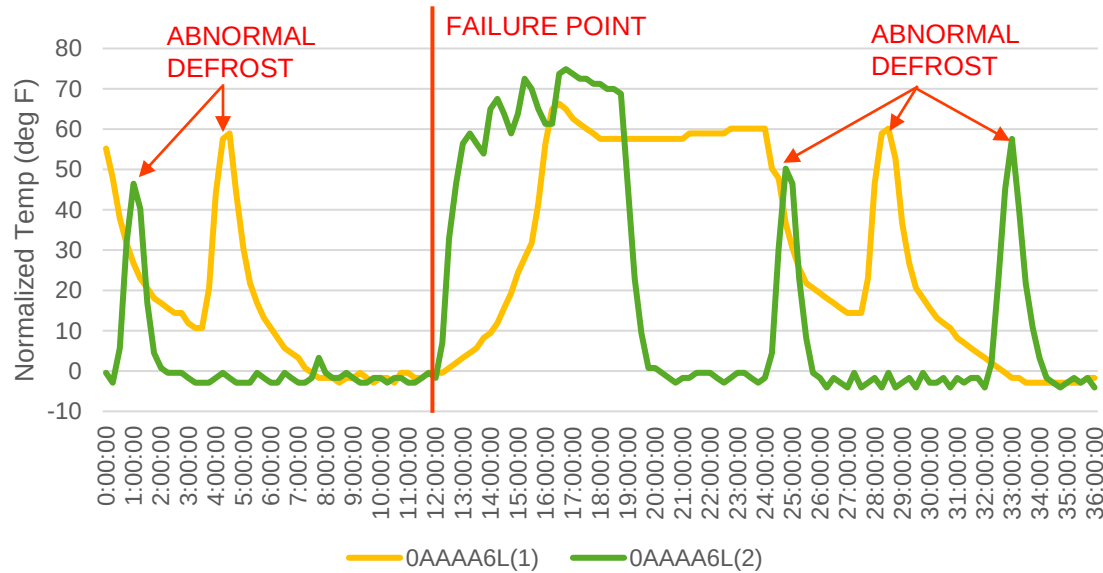
Example of Refrigeration Equipment Compressor Failure – Single Occurrence



- Sensor located in walk-in freezer that stores up to \$10,000 of ice cream
- Incident starts with abnormal defrost cycle with high temperature deviation
- Approx. 10 hours after abnormal defrost the compressor fails

Perishable Goods Monitoring Use Case

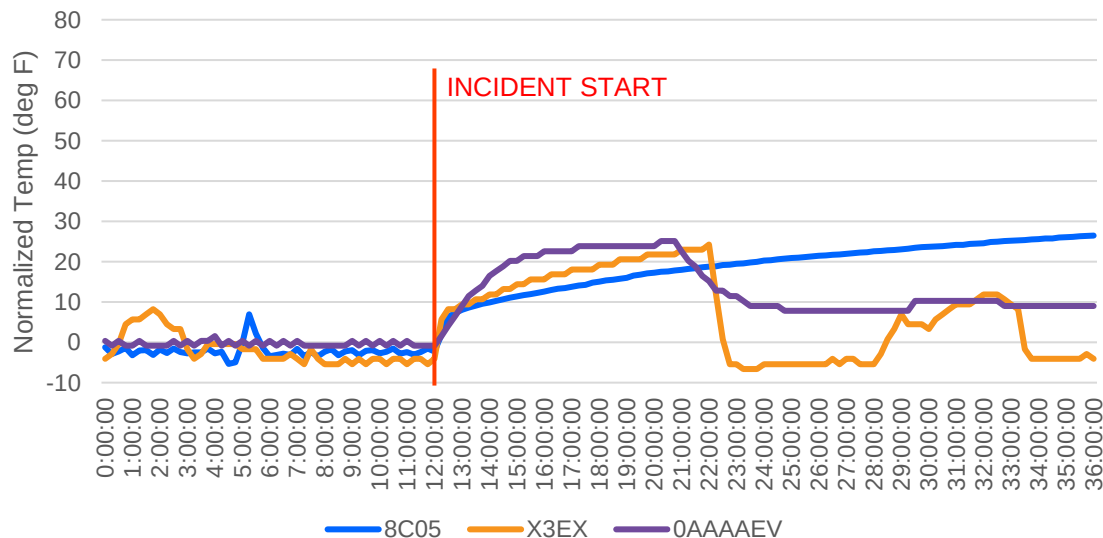
Example of Refrigeration Equipment Compressor Failure – Repeat Occurrence



- Sensor located in reach-in freezer that stores up to \$5,000 of meat
- Compressor failed twice within two-week period
- Each failure was preceded by abnormal defrost cycle with high temperature deviation
- Even after compressor repair/replace the defrost cycles remained abnormal suggesting underlying issue is unresolved

Perishable Goods Monitoring Use Case

Example of Refrigeration Equipment Door Left Open

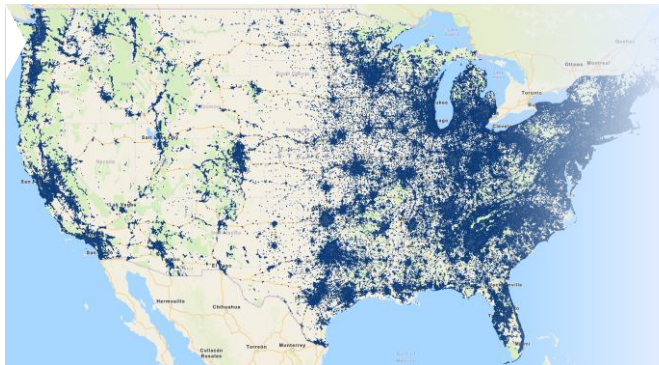


- Three separate incidents where door was reported as being left open
- Systems showed normal operation prior to incident
- Upon incident start there is a quick temperature gain that levels off as system struggles and is unable to maintain temperature
- Once door is closed system is able to recover back to normal operation

Amazon Sidewalk: Leverage breakthrough shared network and reduce solution subscription pricing

A

Ubiquitous and inexpensive shared network



amazon sidewalk

- Sidewalk leverages Amazon Ring and Echo devices to connect devices up to 2 miles
- Eliminates need for high-cost gateway

B

Shrink size and reduce COGS/price

Current - Defender

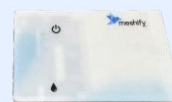


Sensor



Gateway

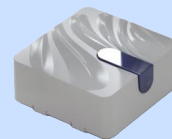
Defender Sidewalk Slim



Sensor
(No Gateway Needed)



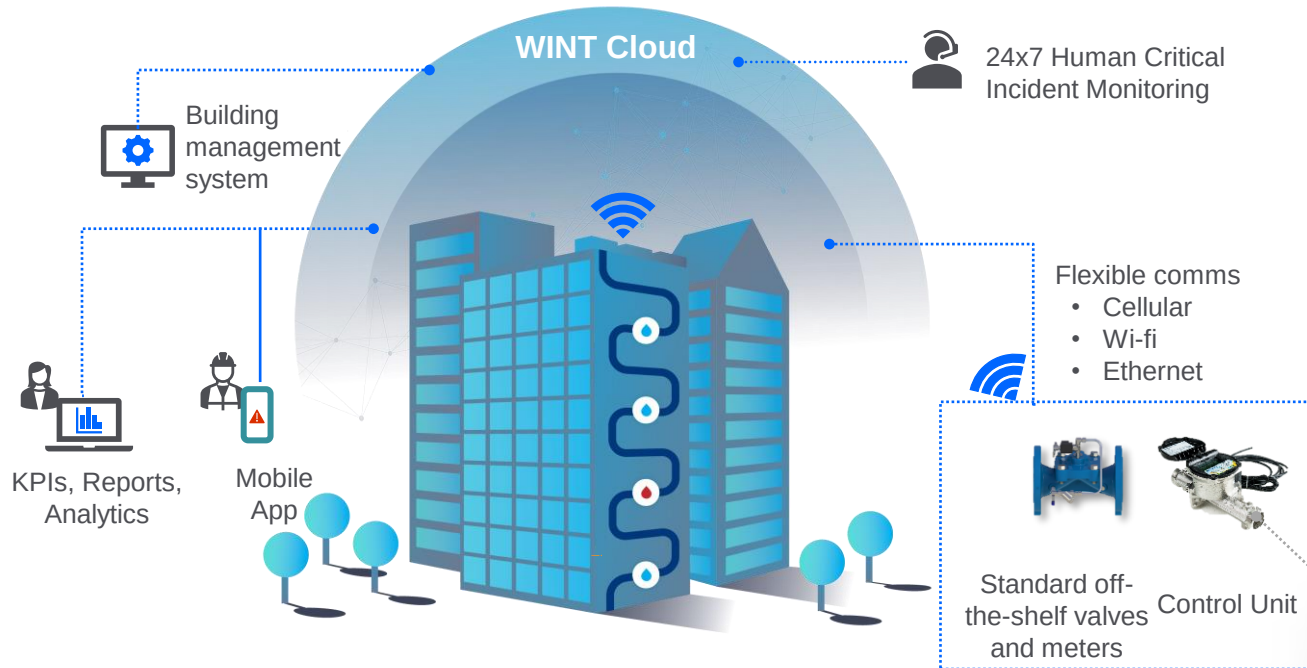
Defender Sidewalk V4



Sensor
(No Gateway Needed)

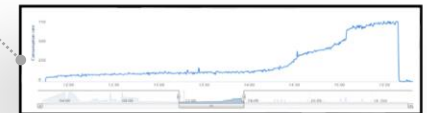
WINT for Construction Risks:

Enterprise water mgmt. platform to support a variety of scenarios



Supporting all water systems

- Temporary Water on Jobsites
- Main Feeds
- Domestic Cold
- Domestic Hot (circulating)
- Irrigation
- Cooling Tower
- Sprinklers
- HVAC Loops

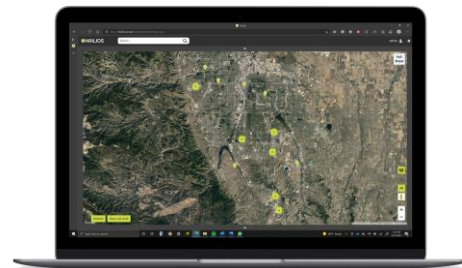
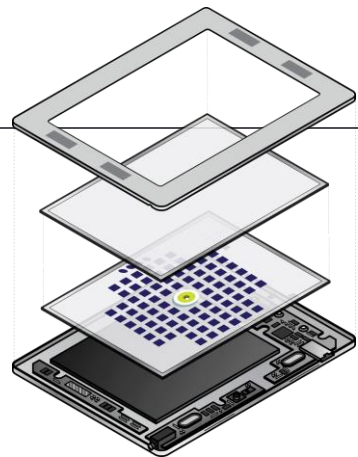


Water Leak Technology Warranty for Construction Risks

- WINT provides a **performance warranty** embedded with its service contract
- **Fully backed by HSB** via a Contractual Liability Insurance Policy (CLIP)
- Designed to mitigate the impact of **increasing deductibles** seen today in the construction insurance industry
- The industry's **first warranted inline leak mitigation solution**
- Coverage **up to \$250,000***
- Applicable to **new construction projects, renovations, and large retrofit projects**

** Eligible once WINT's technology deemed to be installed properly and has sufficiently baselined the risk, as per the warranty details*





The sensors act as an IoT platform that can bolt-on additional sensing capabilities with ease. Already being set up to add wind, flood, smoke, etc.

Parametric Insurance

Thank You!