

Consumer Leak Detection Devices

Doug Bennett
Southern Nevada Water Authority



Panelists

Gabe Halimi, CEO, Flo Technologies

Clay Kraus, Market Development Director, Rachio

Eric Adler, CEO, Flume, Inc.


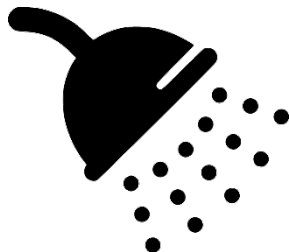

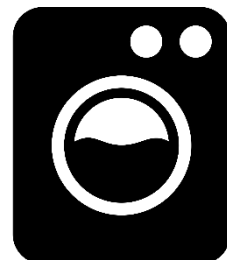

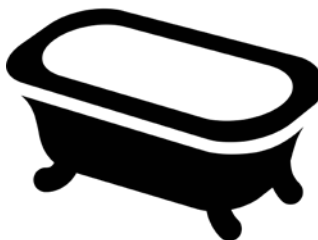
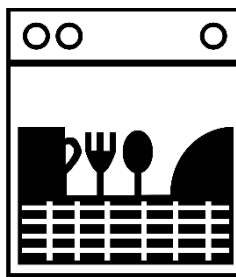
Ryan Kim, CEO, Phyn

Keri Waters, CEO, Buoy



**Residential
End Uses of
Water 2**

WRF 4309b

						Misc.		
Device	Toilet	Shower	Faucet	Clothes Washer	Leak	Other	Bath	Dishwasher
% indoor use	24%	20%	19%	17%	12%	4%	3%	1%
Gallons per household per day (gphd)	33.1	28.1	26.3	22.7	17.0	5.3	3.6	1.6



12% of leaks were hot water (derived from REUWS2 subsample).

In the Las Vegas region, 12% of SFR demand is approximately 9 Billion Gallons Annually (28 KAF).

Residential End Uses of Water 2 – WRF 4309b

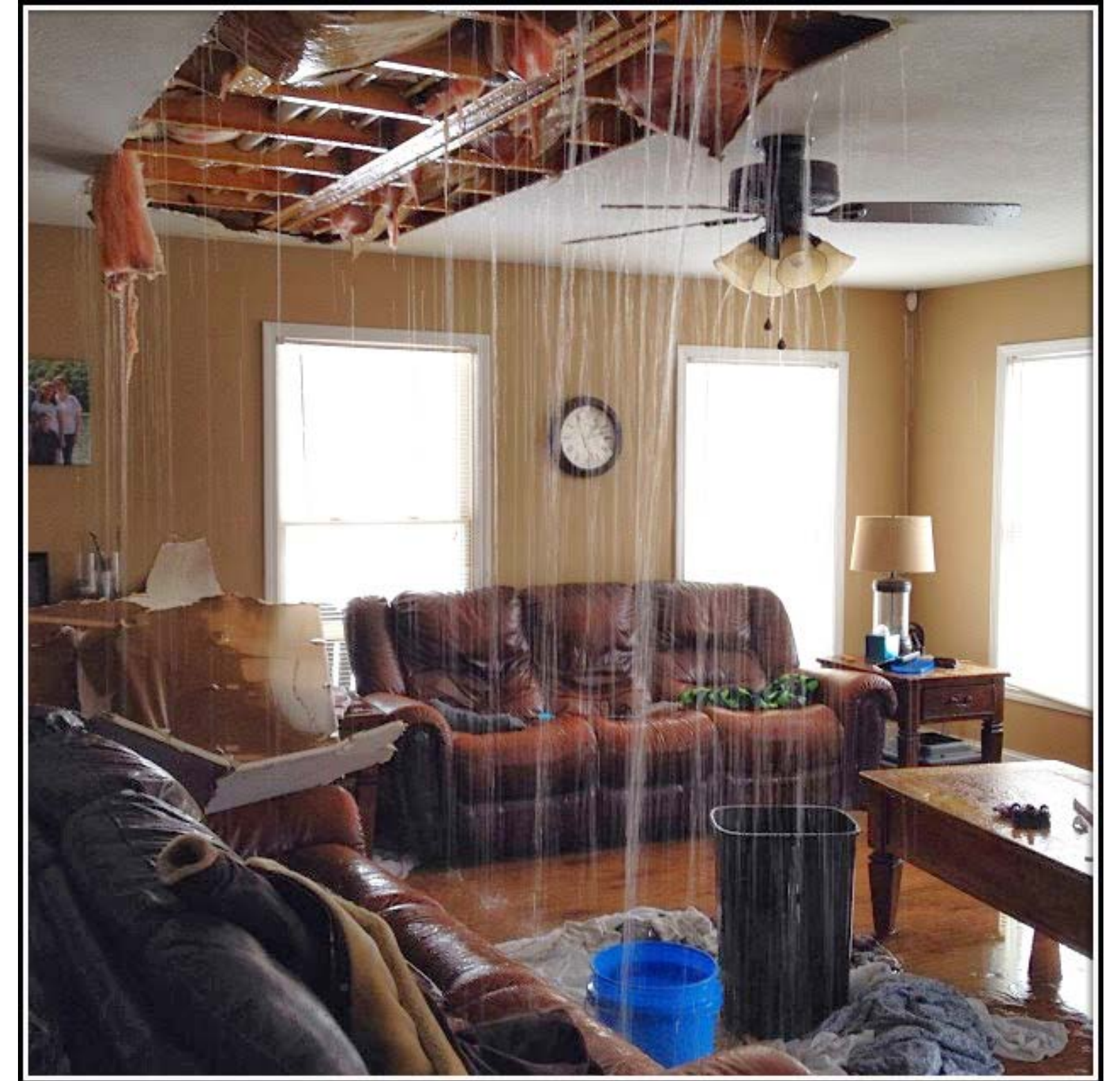
Leakage Range (gphd)	Number of Homes	Percent of Homes	Average Leakage (gphd)	Total Leakage (gpd)	Percent of Leakage Volume
All Homes	762	100%	17	12970	100%
100-550	21	3%	189	3968	30%
50-99	48	6%	67	3227	25%
0-49	693	91%	8	5774	45%

55%

9% of homes accounted for more than half of the water lost to leaks.

Plumbing system failures:

- Leading cause of residential water losses
- Average claim \$5,092 per incident (after deductible)
- 65% caused by a material failure. 18% by freezing.
- Homes over 15 yrs experience a disproportional percentage of claims.
- 22% of all material failures occurred beneath the slab in homes without basements.
- Supply line failures between the meter and home are not typically covered by homeowners' insurance and not reflected in these statistics.





Barn find: “Prehistoric Porsche discovered in melting glacier. Caveman still at the wheel”

SNWA Pilot Program: Leak Detection Devices

- Self-selected population through voucher program.
- 50% of device cost not to exceed \$200.
- Metering accuracy evaluation through Utah State University.
- Planned start date November 1, 2018.
- Seeking peer utility partners to enlarge study population.

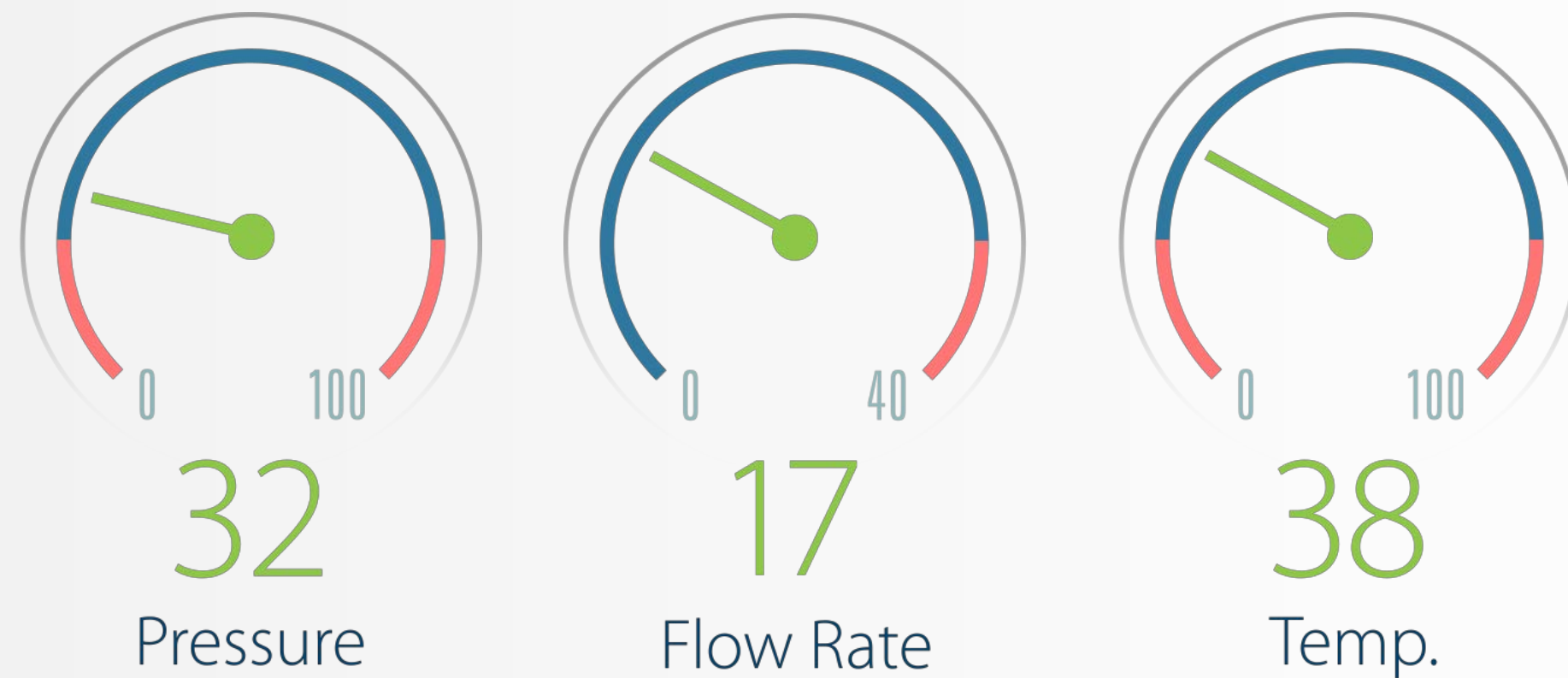
Meet



A Water Monitoring
and
Leak Protection System.

Whole Home Protection

- A single Flo monitors and protects the entire home utilizing: flow, pressure, and temperature sensors.
- Including behind walls, in the foundation, washers, toilets, and anywhere else.



MicroLeak™ Technology

- Using Pressure, Flo detects leaks as small as a single drop per minute.
- Daily MicroLeak tests monitor and maintain a leak-free home, providing early detection therefore reducing the likelihood of water damage.
- The average U.S. household wastes over 17 gallons of water a day due to undetected leaks. That's over 1,000,000,000,000 gallons lost a year in the U.S due to leaks.





FloSense™ Technology

- No two homes are exactly the same. To protect each home, you need to understand the characteristics of each home.
- Knowing when and how water is used, enables FloSense to differentiate between normal and abnormal water use for each home.
- Providing customers with data around how much water they're using and where, empowers conservation.



Automatic Water Shutoff

- The solution isn't just detecting, we need to be able to stop leaks and water waste too.
- Flo alerts the user of any issues it detects so the user can take action – that means shutting the water off right from the Flo app.
- On a plane, or not paying attention to your phone? Flo will automatically shut the water off to protect the home.
- The Flo Community has saved an estimated 1.1 million gallons of water.



Thank you.

Questions? Contact Gabe.
g@meetflo.com



Making sustainable water use effortless and personally rewarding.

A company focused on taking the guesswork out of outdoor irrigation and water use.



amazon



alexa



nest

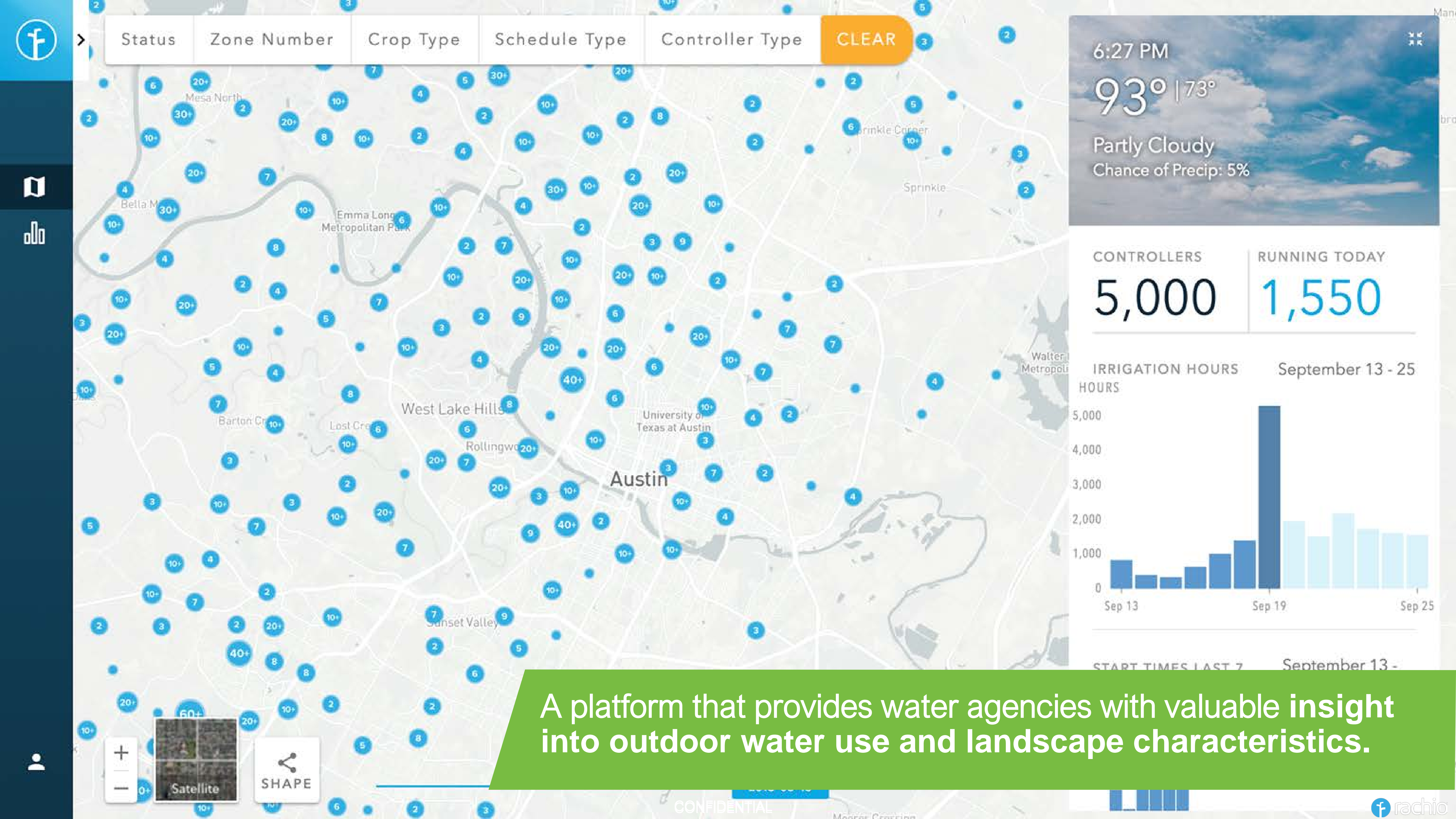


Bringing to light leaks that might otherwise go unnoticed, and helping homeowners understand true outdoor use.



A leak was detected in the vegetable garden.

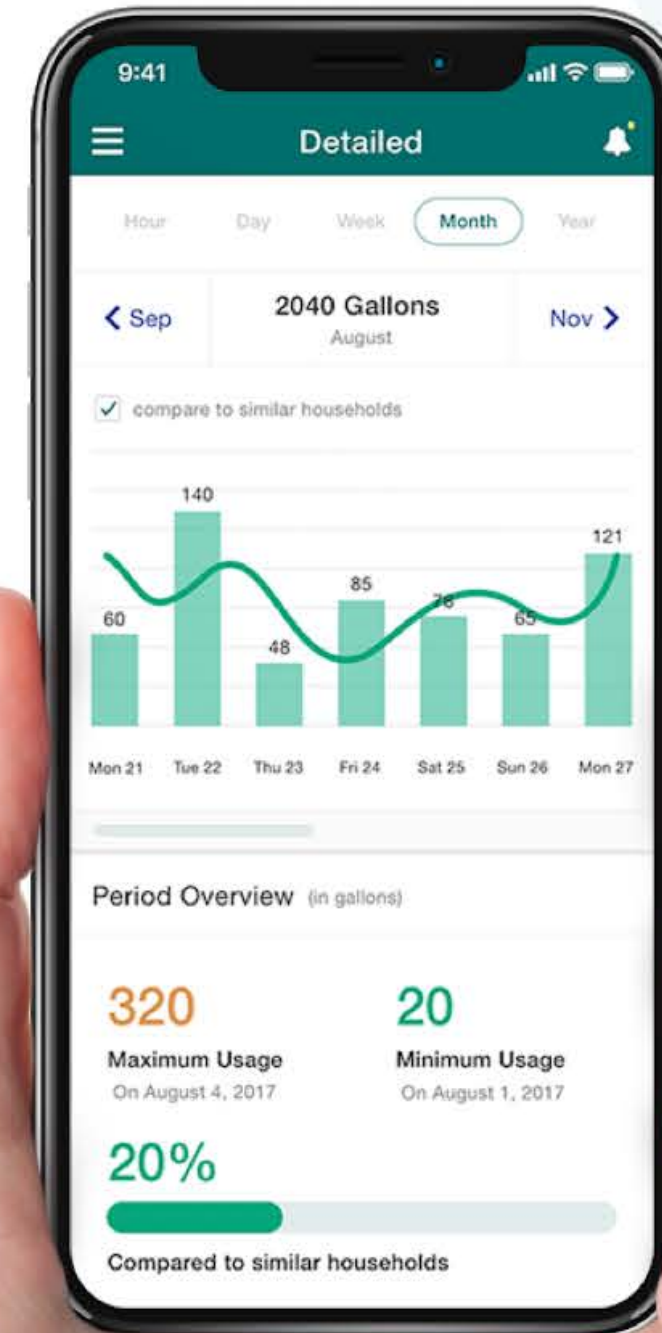




A platform that provides water agencies with valuable insight into outdoor water use and landscape characteristics.



Intelligent Leak Detection & Real-Time Water Management



Flume Solution



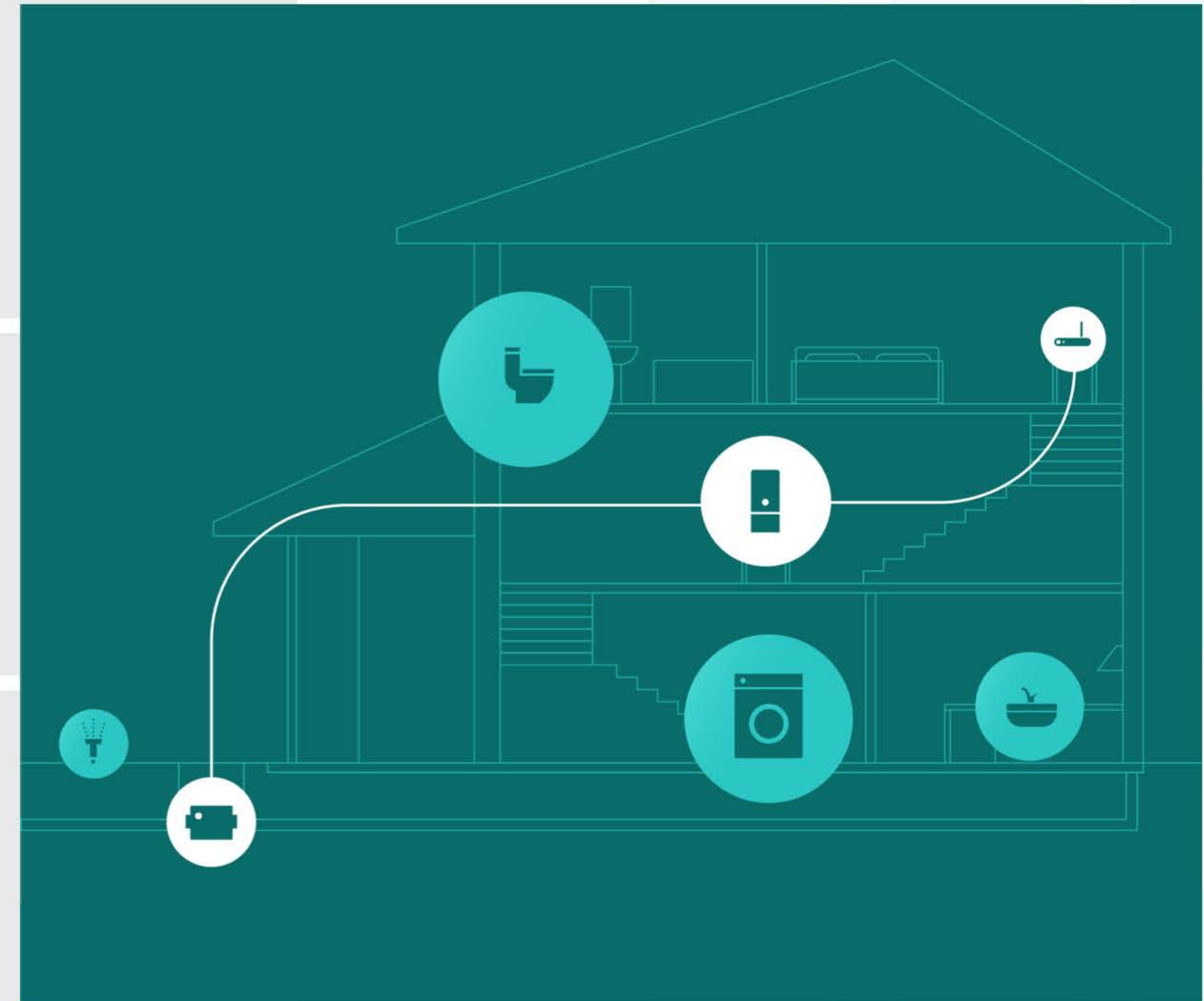
WATER SENSOR



BRIDGE



MOBILE APP



The Flume Water Sensor

- Straps to existing water meter
- Monitors **entire property** water usage
- Sends water usage data to Flume Bridge
- ~2 year battery life / waterproof case
- 99% accuracy to water meter
- Automatic updates



The Flume Bridge



- Receives data from Flume Water Sensor
- 1000+ foot RF range
- Connects to WiFi in the home
- Sends water usage data to the Flume Cloud
- Plugs into wall outlet
- Automatic updates

The Flume App



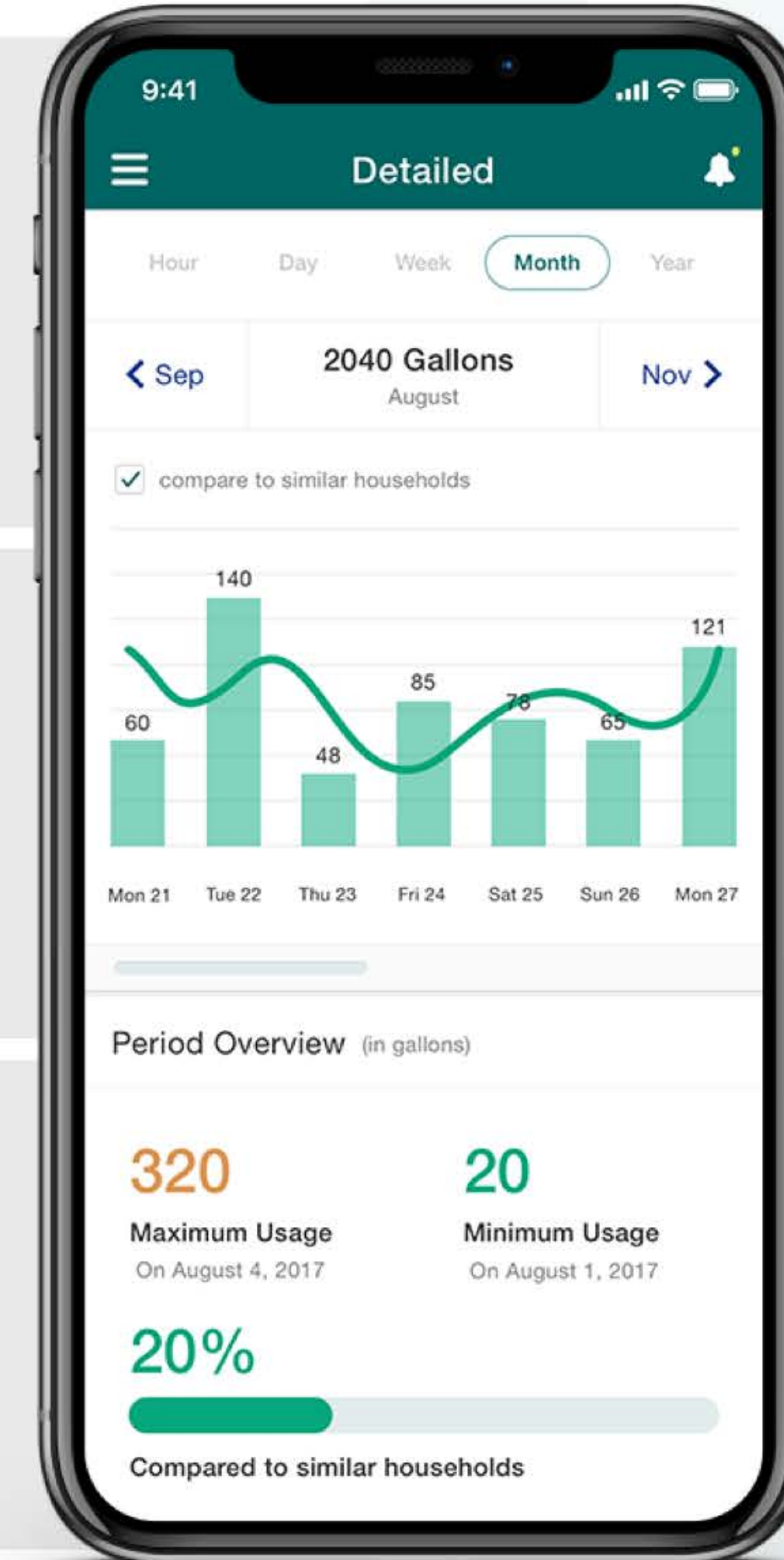
REAL-TIME WATER MANAGEMENT

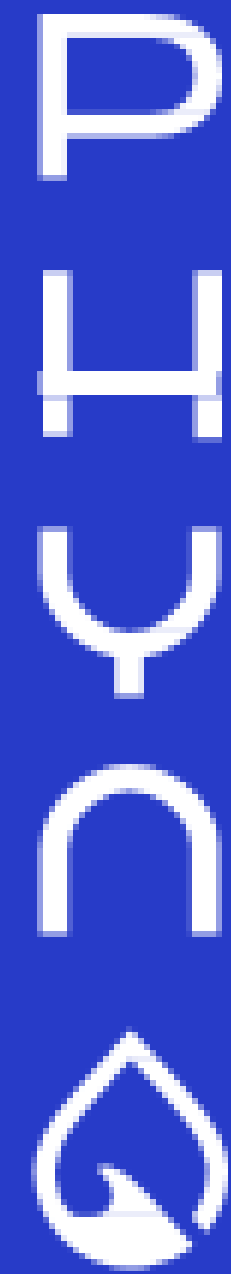


LEAK AND USAGE NOTIFICATIONS



GOALS & CUSTOM ALERTS

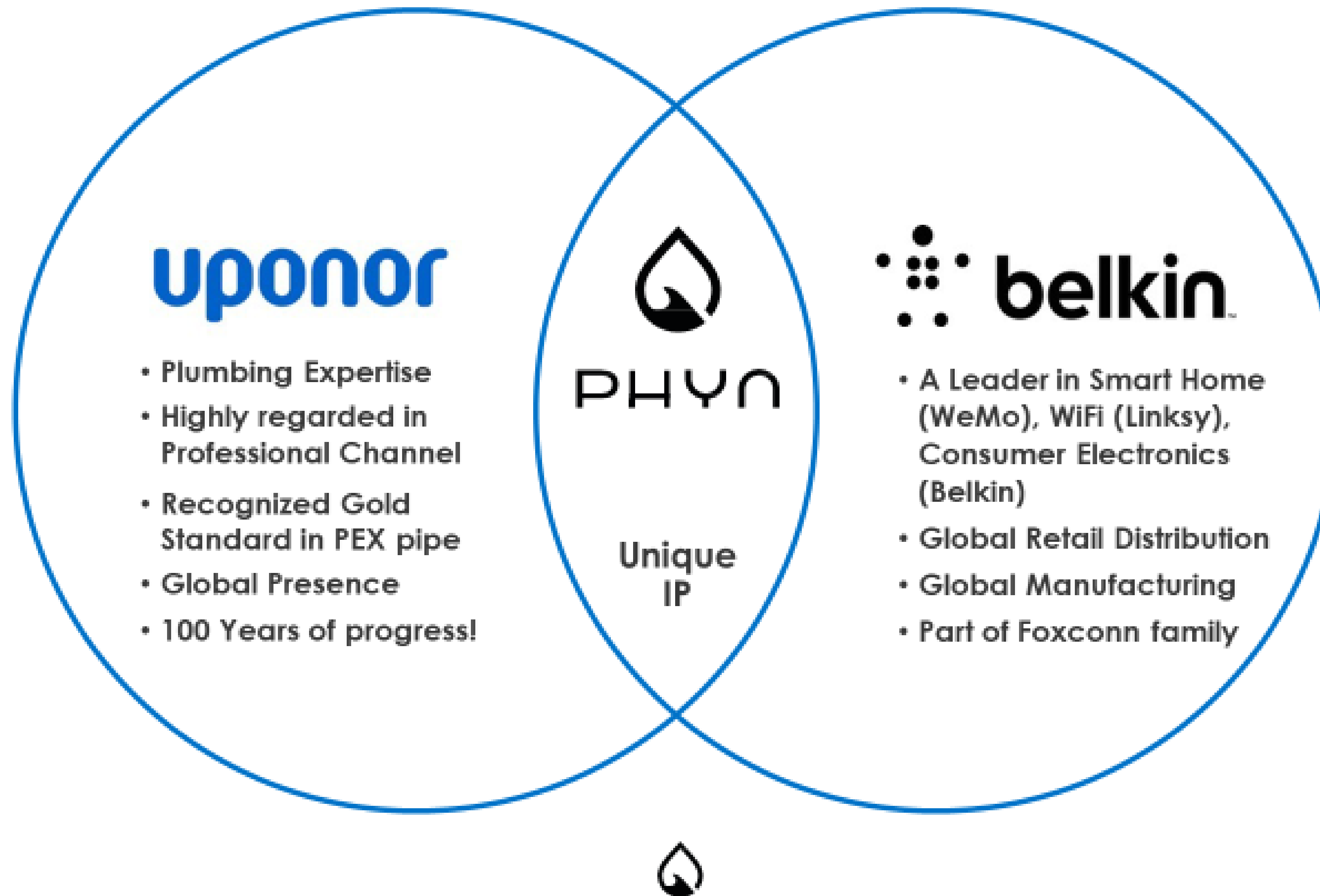




Intelligent water solutions for your home and your family

PROTECT • CONSERVE • ENHANCE

Phyn LLC – Joint Venture Backed by Industry Leaders



PHYN PLUS

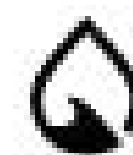
Protects: Detects Leaks, Alerts, & Mitigates Damage

Conserves: ID's and tracks usage by fixture category

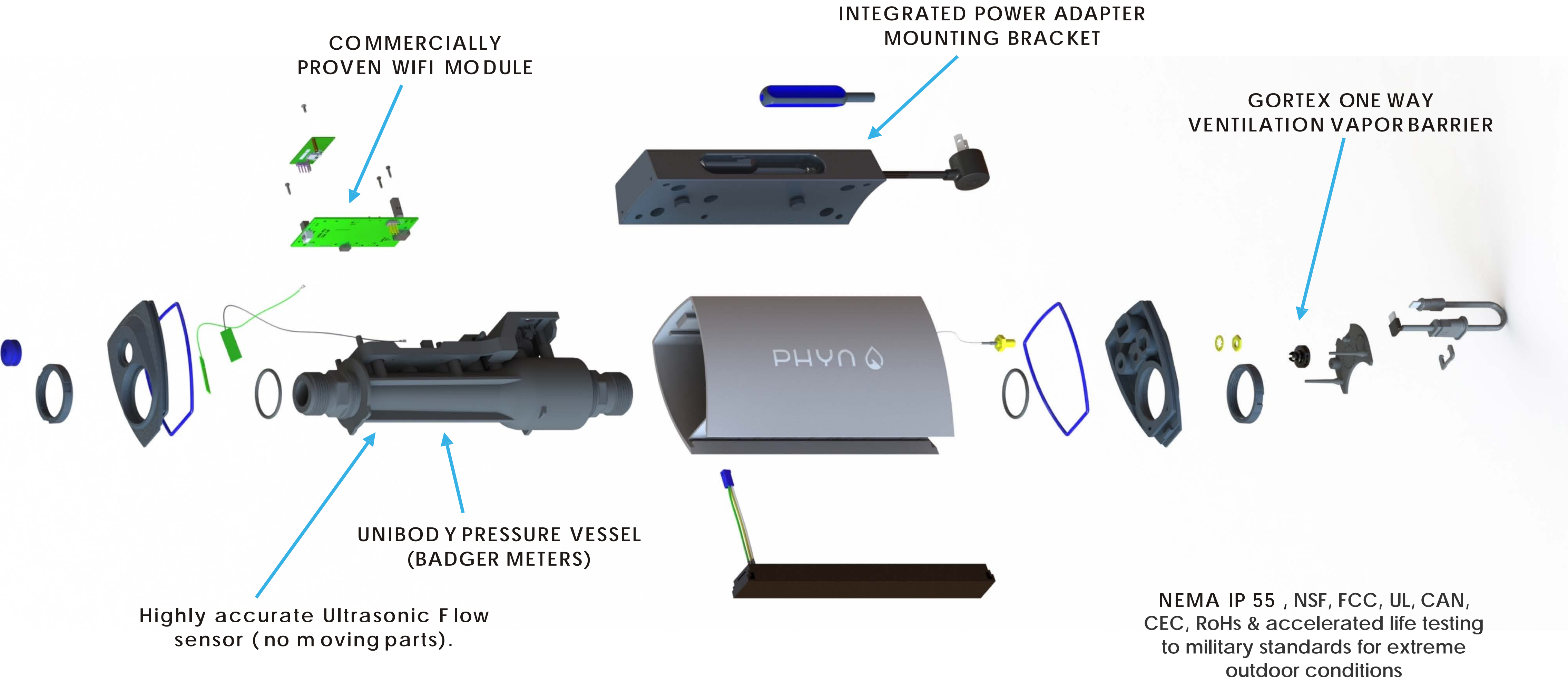
Enhances & Engages: Observes, Learns, Predicts, Anticipates

Patented, field-tested algorithms (refined for over 9 years) detect events, including leaks, as they happen, before they cause major damage, while minimizing false positive alarms

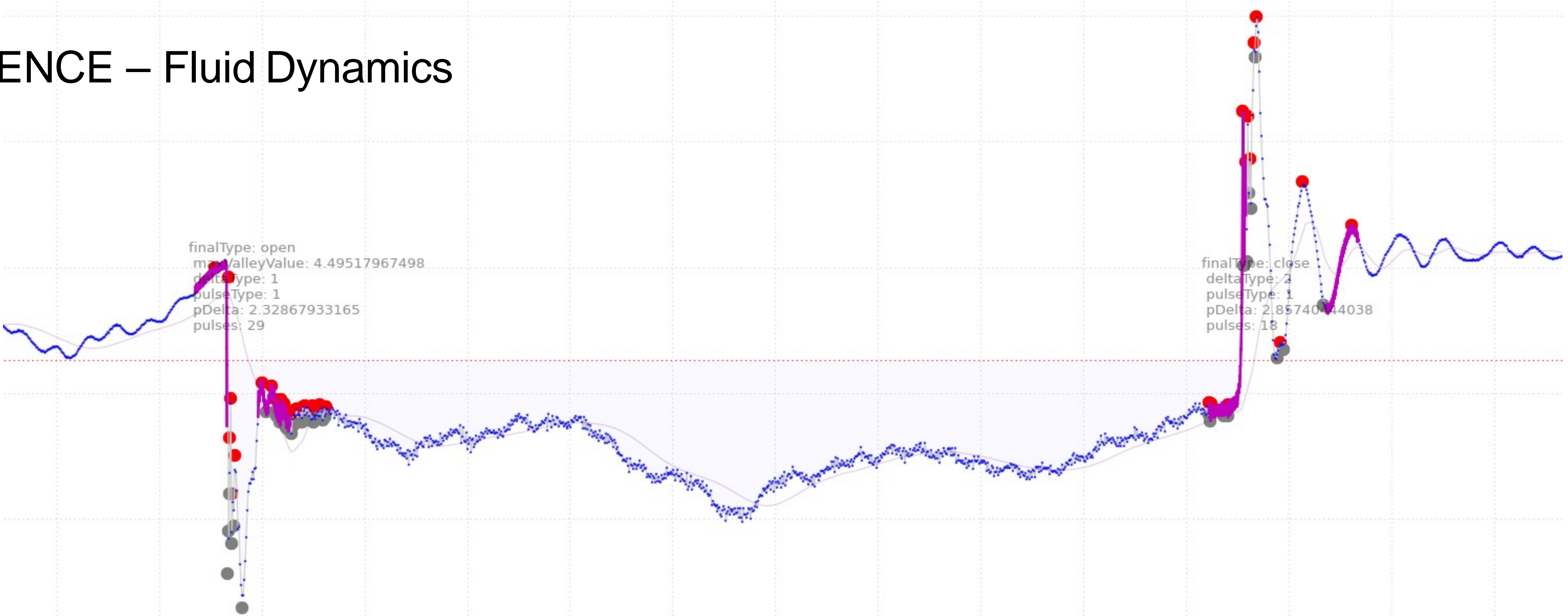
Includes a remotely controllable **Shut Off Valve** that can be triggered autonomously when a high risk leak is detected or manually via an elegant, user friendly app



ENGINEERING - Hardware



SCIENCE – Fluid Dynamics



High Definition Pressure Monitoring

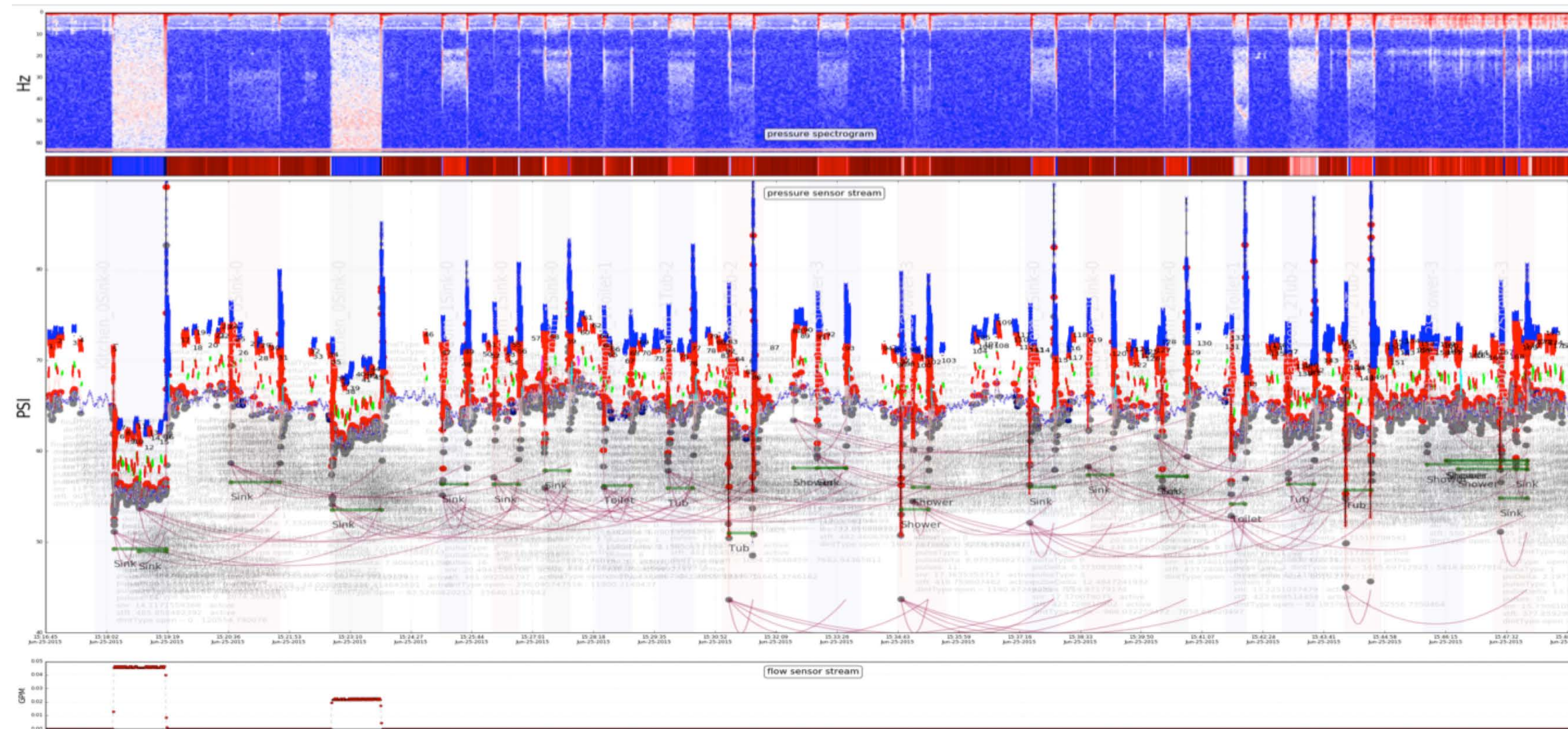
By monitoring micro pressure wave variations hundreds of times per second, Phyn is able to fingerprint each type of fixture in the home then detect, and identify each event including leaks using patented Machine Learning approaches to extracting features that uniquely identify the source of the event

Transient Event Wave Analysis

Transient Waves (Micro pressure waves that move at 4 x speed of sound) - are unique to the source of the usage event (e.g. sink, toilet, shower, leak, etc.). Exhibits *identifiable features* that can be learned and predicted by patented Machine Learning techniques & algorithms.



SOFTWARE – Machine Intelligence



4D Signal Analysis & Deep Learning

Patented Machine Learning techniques & algorithms leverage 4-D signal analysis that employ deep learning neural network techniques to accurately filter out noise & minimize false positive selection to maximize accuracy & User Experience

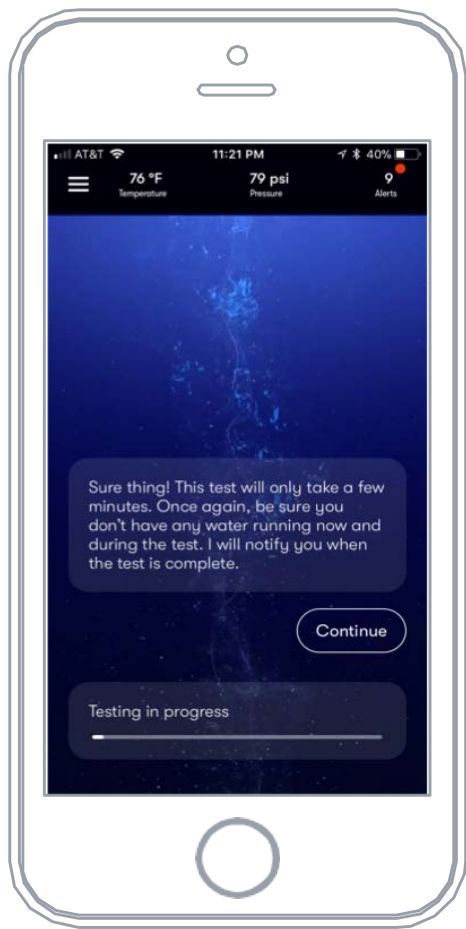


DESIGN – User Experience



DATA DRIVEN B 2 B INSIGHTS

Rich, data driven insights, visualizations and other data feeds tailored to B2B partner needs made accessible via secure APIs



UNIQUE USER EXPERIENCE

Designed specifically for the professional installer as a tool to support the installation, configuration and maintenance of the Phyn solution



USAGE AWARENESS

Customizable dashboard for homeowners showing both real time as well as historical water consumption trends and leak notifications



Buoy: Complete Water Management



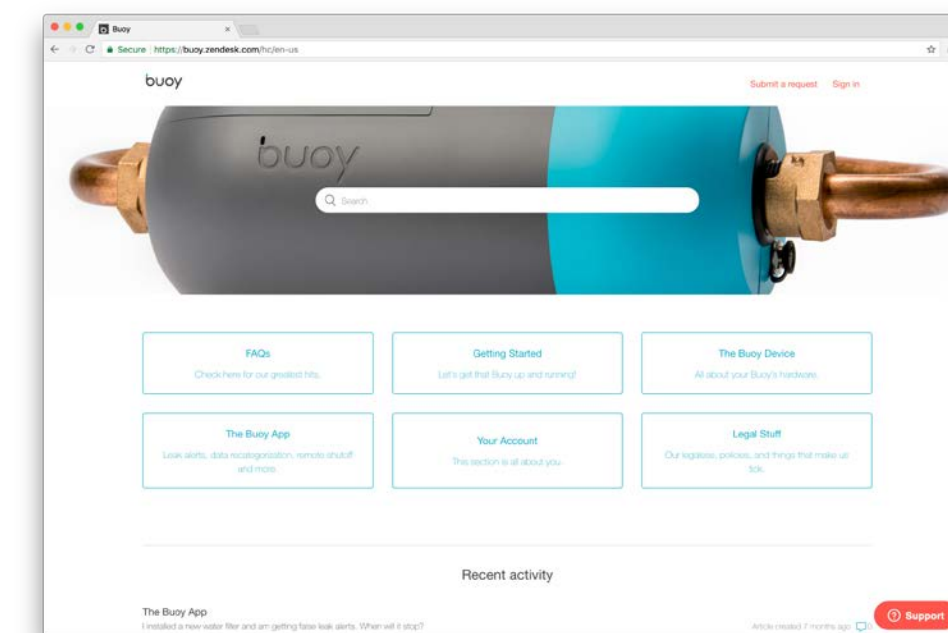
Hardware

A single device monitors water flow rate and sends water usage data to the app.



Software

The app disaggregates data in real time, shuts off water remotely or automatically.



Service

Real people answer the phone 7 days/week, emergency plumbing help 24/7.

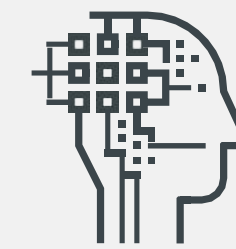
Simple Installation Process

- Included in the price
- Buoy-certified plumber
- Nationwide coverage with SLAs
- Annual maintenance check
- SWIM coverage 7 days/week



Depth and Breadth of Data

- 90% accuracy by volume
- 9% of overall water use detected/validated as leaks
- Disaggregation includes compound events
- Category-based learning



Intellectual Property



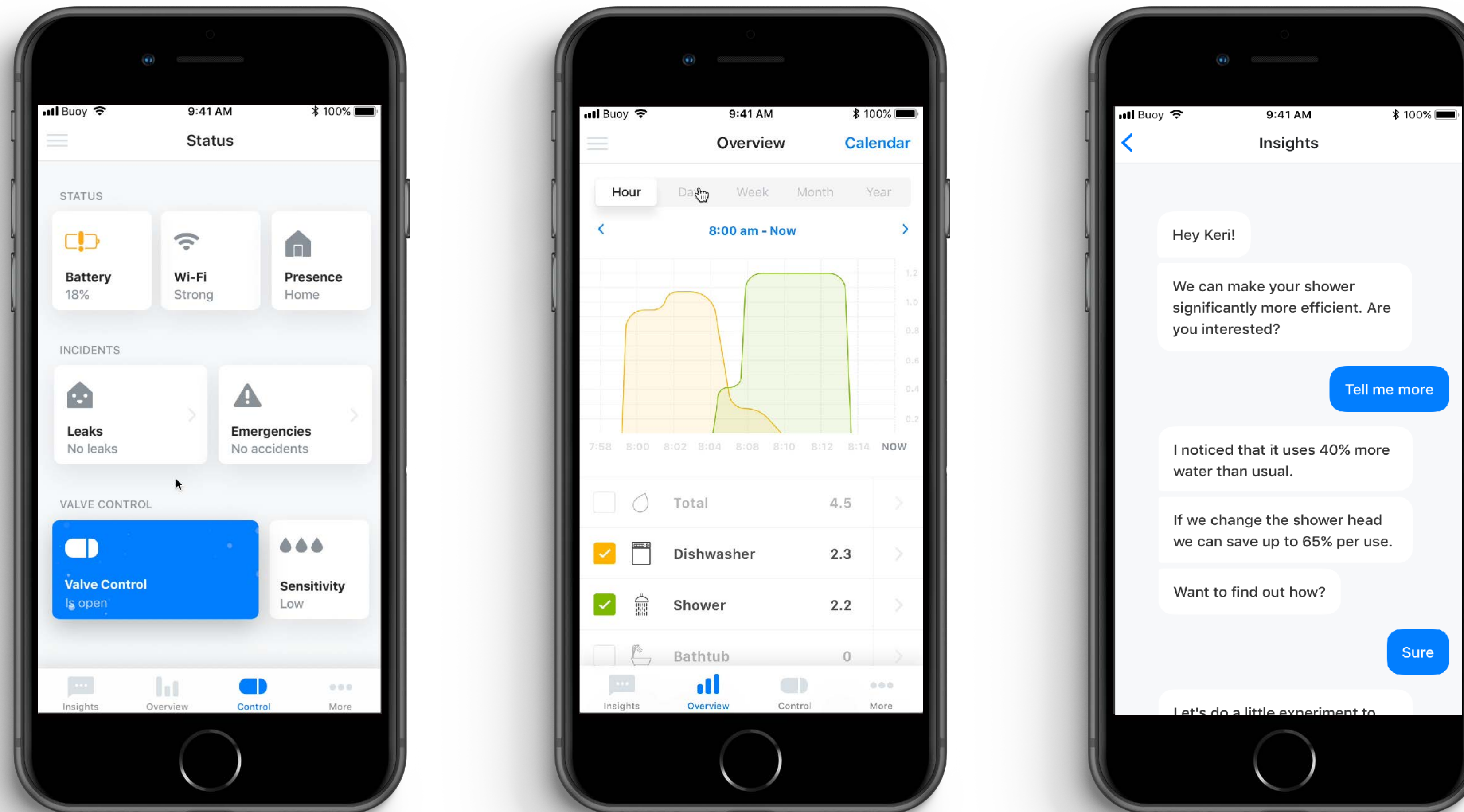
Consumer Focus



Quality Service

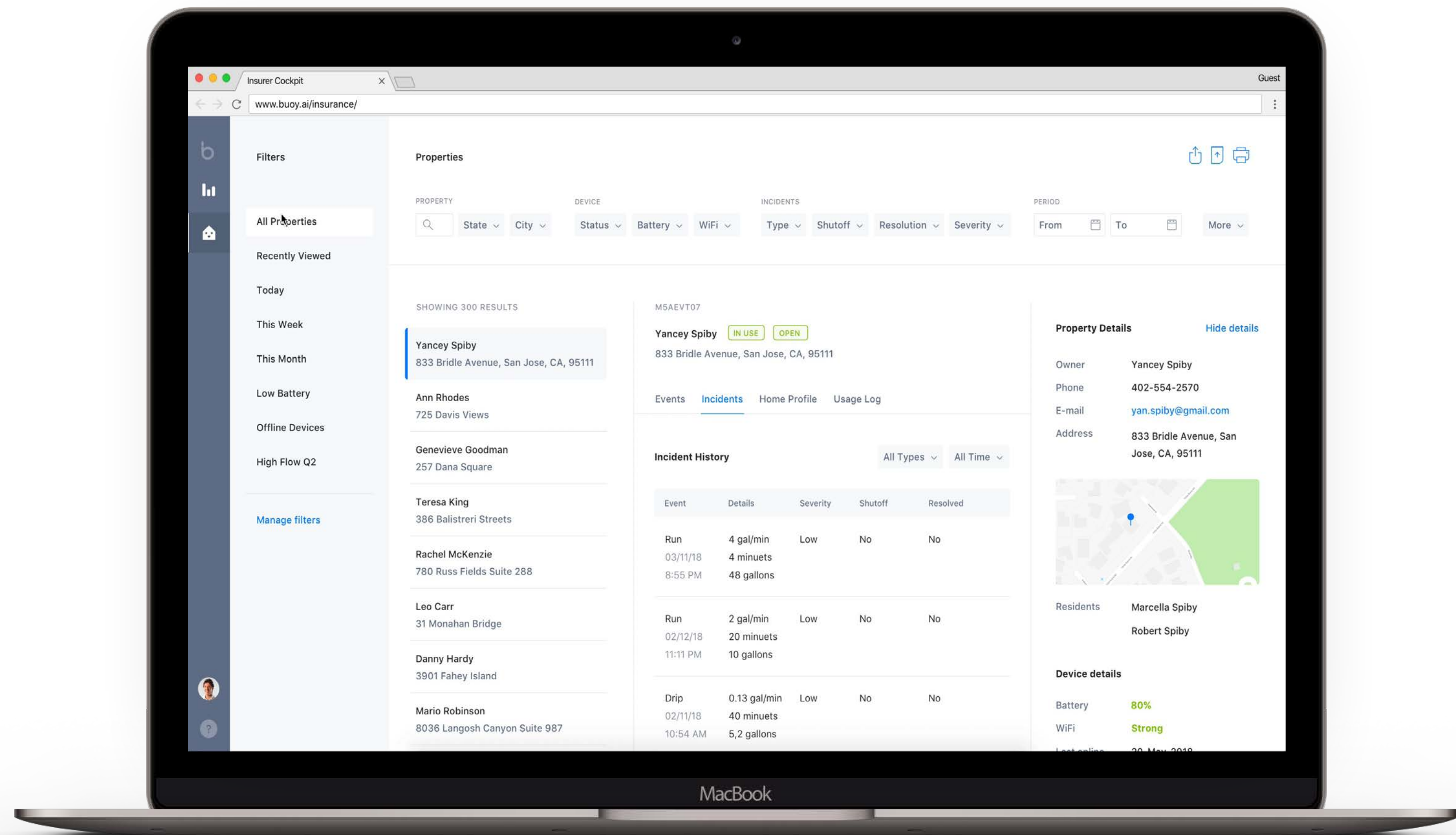
The Buoy App

Security, control, data overview and actionable insights increase the quality and quantity of user engagement.



B2B Partner Dashboard, Buoy's Proprietary BI Solution

- Powerful single point of access to real-time data
- Buoy API enables new, more secure approach to risk.



Panel Q&A

- Industry standards – what exists and what is needed?
- Leak detection vs. Customer engagement – Which saves more?
- Reliability and longevity of products?
- Will utilities embrace these devices? What challenges exist?
- Stimulating the marketplace – Who are the players and why should they care? Insurers, homebuilders?
- Beyond the home – Are there opportunities in the multi-family, commercial and industrial sectors?