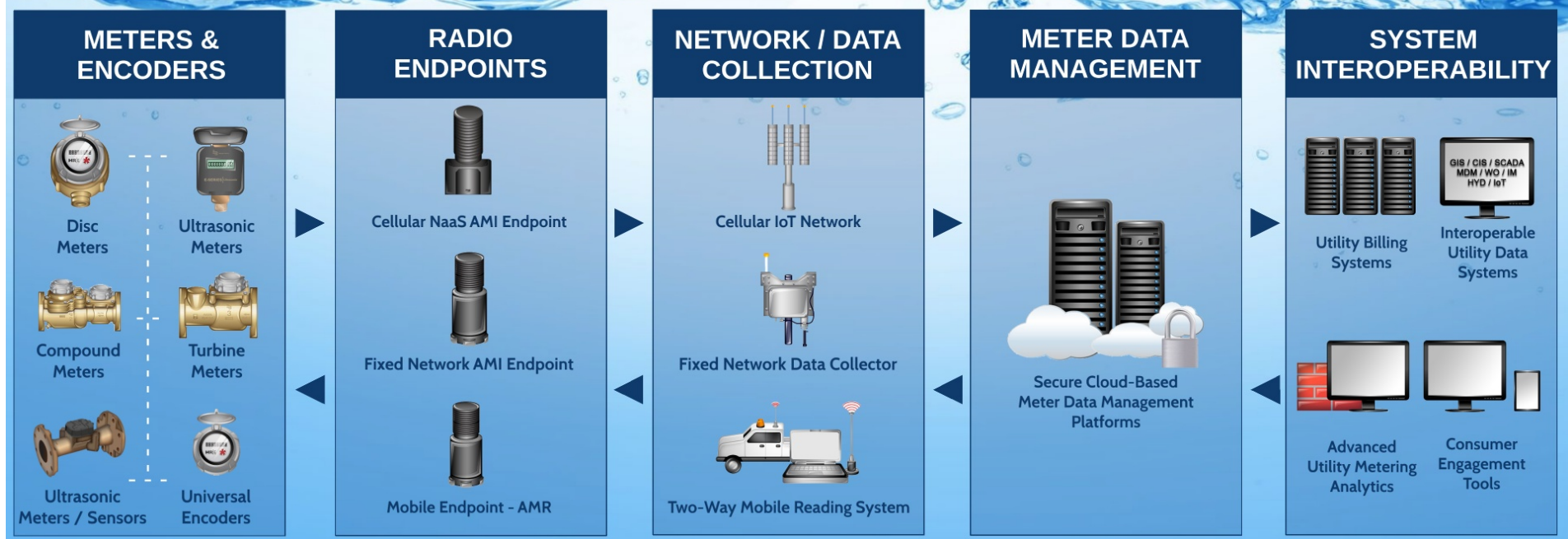


# CWWA 2020 FALL CONFERENCE

## HOW TECHNOLOGY IS CHANGING THE WATER UTILITY INDUSTRY



*“Once a new technology rolls over you, if you're not part of the steamroller, you're part of the road.”*

Stewart Brand, Writer



Tip of the Day  
**EMBRACE  
TECHNOLOGY**





# HOW TECHNOLOGY IS CHANGING THE WATER UTILITY

## AGENDA

- Electronic Meters 01
- Remote Flow Restriction Valves 02
- Fixed Network Technology 03
- Network as a Service 04
- Software as a Service 05
- Advanced Data Analytics 06
- System Integration 07
- Consumer Engagement Tools 08
- Metering as a Service 09
- Questions and Answers 10



## PARTICIPANT FEEDBACK QUESTION #1

Are you using electronic meters within your water utility today?

- 1 Yes
- 2 No - Haven't considered them
- 3 No - Too costly
- 4 No - Don't understand / trust them
- 5 No - Other



# ELECTRONIC METERS

## RESIDENTIAL AND C&I APPLICATIONS

- 1 Ultrasonic and electromagnetic meters introduced to the U.S. market in 2008
- 2 No moving parts = No wear = No maintenance
- 3 Long-Term Accuracy = Long-Term Sustained Revenue
- 4 Excellent low-flow accuracy helps with finding minute customer leaks
- 5 AWWA C715-18 standard for Electromagnetic and Ultrasonic Meters
- 6 Change: Improve utility revenue



# LATEST ELECTRONIC METERS

IMPROVED ACCURACY AND WIDER OPERATING RANGE

Size	Operating Range	Max Cont. Duty	Extended Low
5/8"	0.08 - 30 GPM	30 GPM	0.04 GPM
3/4 "	0.1 - 40 GPM	40 GPM	0.05 GPM
1"	0.4 - 55 GPM	55 GPM	0.25 GPM
1-1/2"	1.25 - 100 GPM	100 GPM	0.40 GPM
2"	1.5 - 160 GPM	160 GPM	0.50 GPM
3"	.75 - 560 GPM	560 GPM	0.37 GPM
4"	1.5 - 1,100 GPM	1,100 GPM	0.75 GPM



# ELECTRONIC METERS

## ENHANCED FEATURES

- 1 Integrated Pressure Monitoring
- 2 Integrated Temperature Monitoring
- 3 Integrated Acoustic Leak Detection
- 4 Multiple Output Options (Encoder / 4-20 / Pulse)
- 5 Field Replaceable Electronics
- 6 Change: Additional data allows for better proactive management of distribution system







## PARTICIPANT FEEDBACK QUESTION #2

Are non-payment turn-offs/turn-ons a time consuming problem for your utility?

- 1 Yes
- 2 No - We don't do turn-offs for non-payment
- 3 No - We don't have many
- 4 No - Other

# REMOTE FLOW RESTRICTION VALVES

## OPERATIONAL EFFICIENCY

- 1 Primary application: Non-payment customers
- 2 Two valve designs: In-meter and separate
- 3 Controlled via AMI endpoint technology
- 4 Saves two truck rolls
- 5 Restore service within a few hours
- 6 Automatic monthly exercise cycle
- 7 Change: Reduction of truck rolls





## **PARTICIPANT FEEDBACK QUESTION #3**

**What is your primary meter reading methodology?**

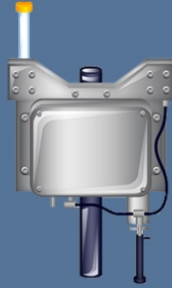
- 1 Manual**
- 2 Touch**
- 3 Mobile AMR**
- 4 Data Collector AMI Fixed Network**
- 5 Cellular AMI Fixed Network**



## DATA COLLECTOR FIXED NETWORK



Two-Way Communication



Two-Way Communication



Two-Way Communication



**FIXED NETWORK  
AMI ENDPOINT**

**DATA  
COLLECTOR**

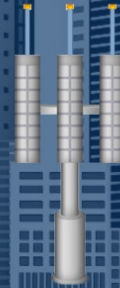
**CELLULAR / FIBER  
NETWORK**

**METER DATA  
MANAGEMENT  
CLOUD PLATFORM**

## CELLULAR NAAS FIXED NETWORK



Two-Way Communication



Two-Way Communication



**CELLULAR AMI  
NAAS ENDPOINT**

**CELLULAR  
NETWORK**

**METER DATA MANAGEMENT  
CLOUD PLATFORM**

# NETWORK AS A SERVICE CONSIDERATIONS

Endpoint Considerations under NaaS Agreement	Managed by Water Utility	Managed by NaaS Provider
Ownership of Radio Endpoints	✓	
Installation of Radio Endpoints	✓	
Pit / Mounting Maintenance of Radio Endpoints	✓	
Firmware Updates of Radio Endpoints		✓
Fixed Network Considerations under NaaS Agreement	Managed by Water Utility	Managed by NaaS Provider
Ownership of Fixed Network		✓
Planning / Installation of Fixed Network		✓
Access Lease Negotiation / Cost of Fixed Network		✓
Continuous Monitoring of Fixed Network		✓
Security of Fixed Network		✓
Annual Hardware / Tower / Foundation / Structure / Guy Wire Inspection		✓
Routine Preventive Maintenance of Fixed Network (Radio Equipment / Batteries / Generators / HVAC / Fencing / Security)		✓
Disaster Recovery of Fixed Network (Tornado / Hurricane)		✓
Periodic Outage Repair of Fixed Network (Lightning Strike / Storm Damage)		✓
Inventory of Spare Parts for Fixed Network		✓
Hardware Firmware Updates / Patches		✓
Replacement / Long-term Management of Fixed Network		✓
Future Growth Outside of Current Service Territory of Fixed Network (Additional Cost)		✓





# WHY ARE MDMS MOVING TO CLOUD-BASED SAAS SOLUTION?

## ANYWHERE

Utility data is available anywhere, not just in the office. Easy access to information when in the field with an internet connected device.

## SECURE

Security is done by a large team of professionals who specialize in security and are up to date on the latest security threats to keep "YOUR" data safe. (ISO 27001 Certified and SOC 2 Compliant)

## UPGRADES

Utility automatically has access to the latest advanced software features and analytics without additional costs.

## RECOVERY

Ideal for disaster recovery emergency. Following natural disaster, utility would simply need access to internet connected computer.

## SUPPORT

With a cloud-based system, you will have less dependence on your busy IT Staff, allowing them to focus on your internal systems.

## SCALEABLE

Utility can choose to start with ten meters today and add ten thousand next month without purchasing new larger more powerful servers. - Three years of data storage available.





# WHAT CAN DATA ANALYTICS DO FOR ME?

- Brings True Meaning to Interval Data
- Provides Proactive Intelligence
- Eliminates Need to Run Reports
- Enhanced Customer Service



# DATA ANALYTICS IN ACTION



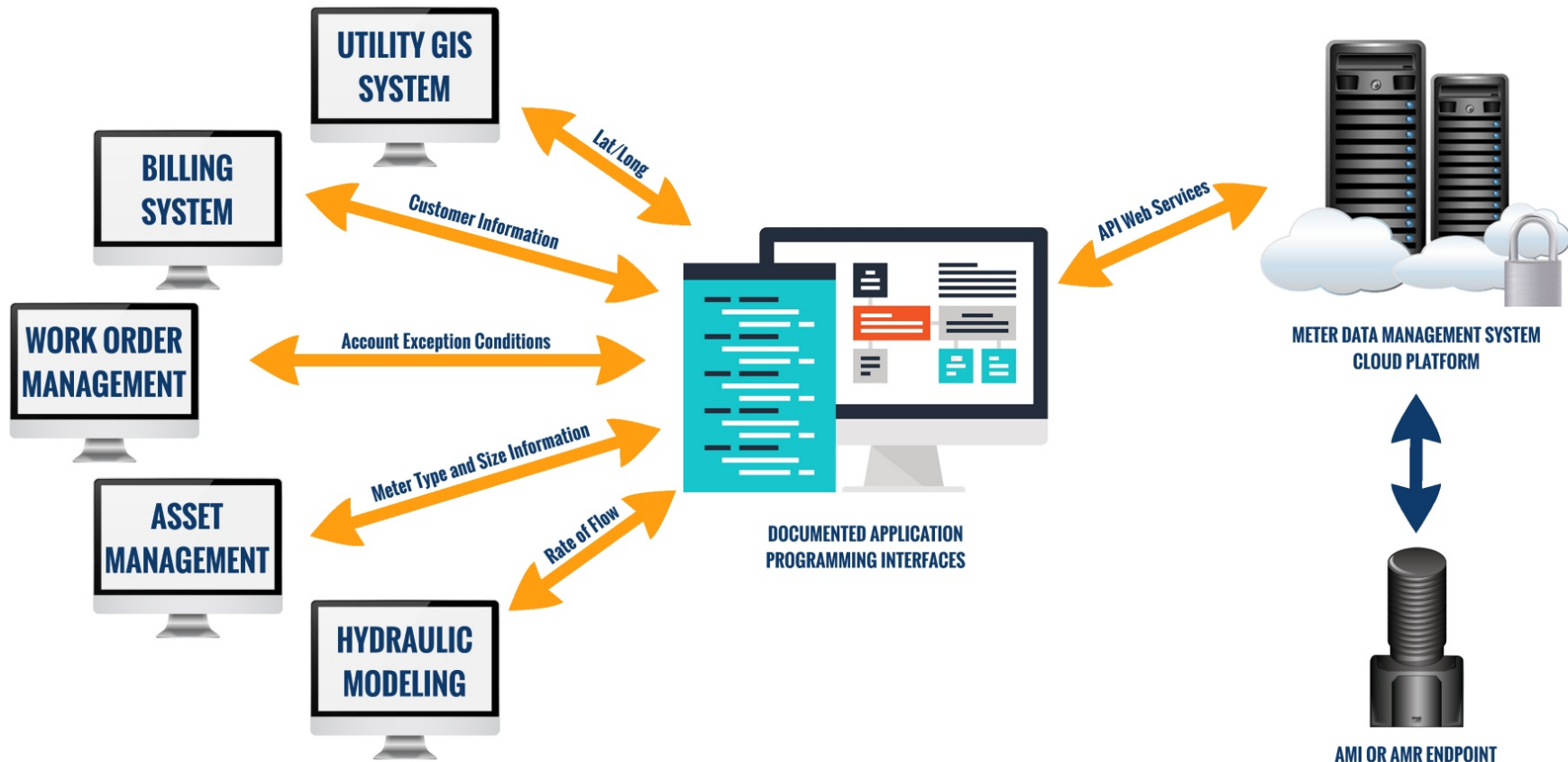


# Analytics Software Platform

District Metering Area (DMA) Analysis



# UTILITY SYSTEM INTEROPERABILITY THROUGH STANDARD API



UTILITY DATA SYSTEMS

AMA API WEB SERVICES

MDMS DATABASE



## PARTICIPANT FEEDBACK QUESTION #4

What is the main reason for customer service calls?

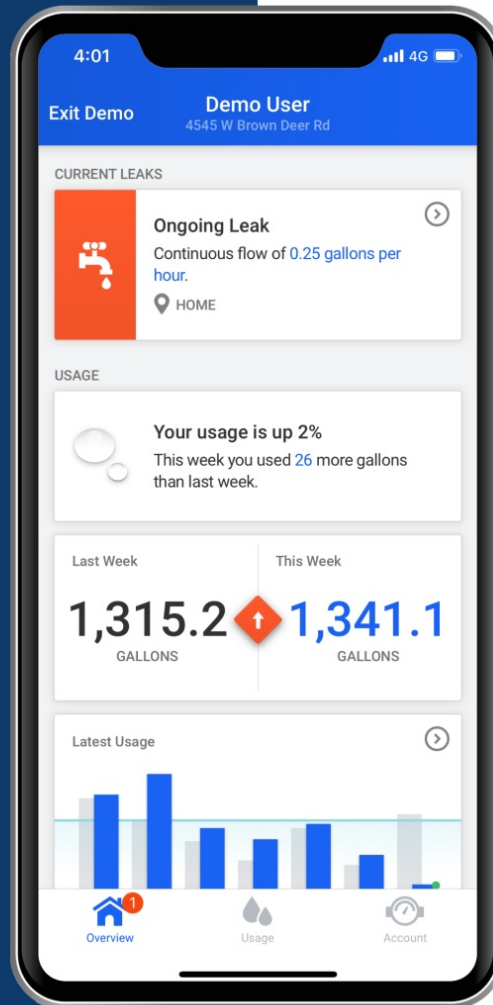
- 1 High bill dispute / Don't understand their bill
- 2 I think I have a leak in my home
- 3 Water quality issue
- 4 Water pressure issue
- 5 Other



# Consumer Web Portal

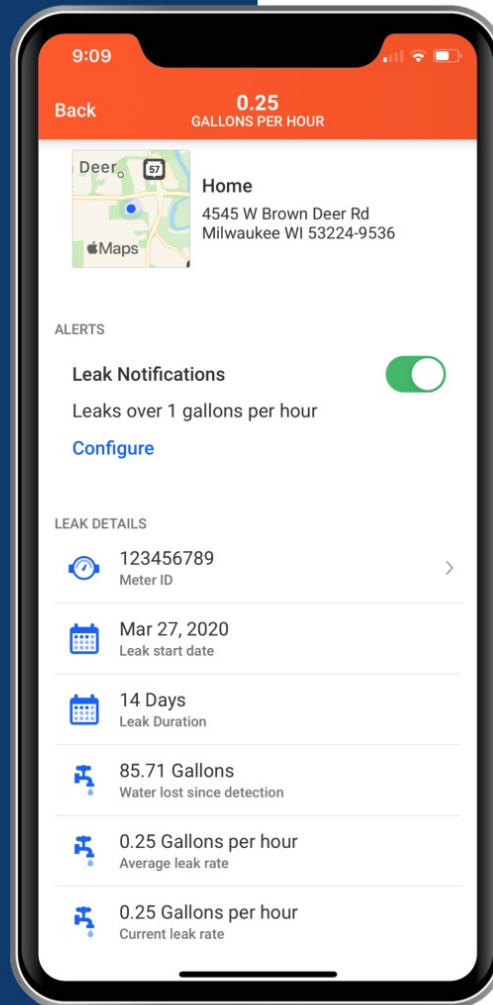
## Enhanced Customer Service through Responsibility and Ownership





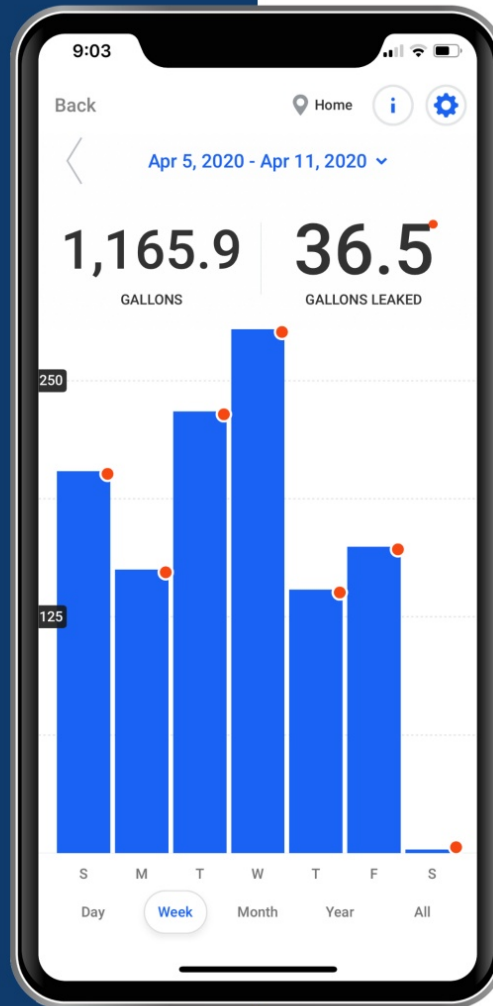
# Consumer Smart Phone App

Leak Notifications  
and Weekly Usage  
Information



# Consumer Smart Phone App

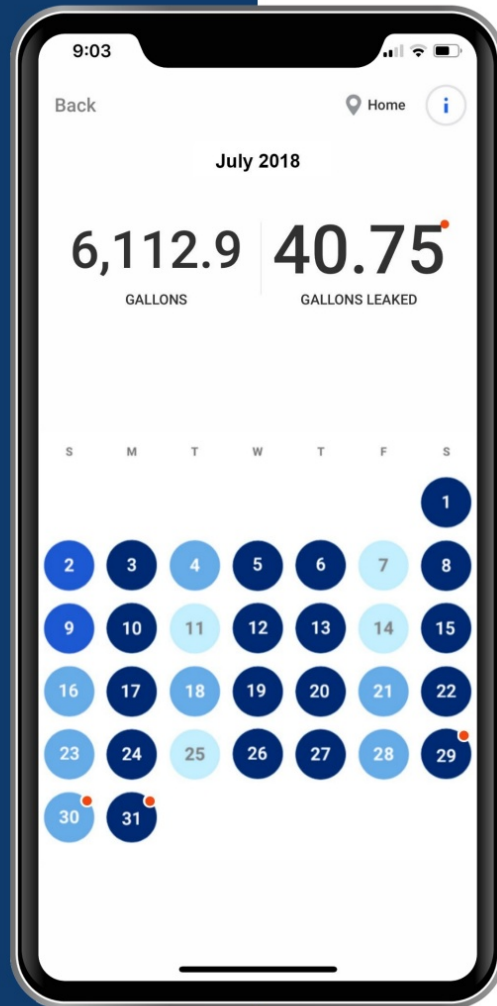
Leak Notifications  
and Weekly Usage  
Information



# Consumer Smart Phone App

Detailed Customer  
Usage Graph View





# Consumer Smart Phone App

Detailed Customer  
Usage Monthly  
Calendar View



## PARTICIPANT FEEDBACK QUESTION #5

What is the main reason your utility hasn't migrated to the latest meter reading technology?

- 1 Current system works well
- 2 Don't have capital budget
- 3 Don't have time to manage the project / deployment
- 4 Afraid of moving to new technology due to lack of understand of the systems or how it could disrupt our current operation
- 5 Other

# METERING-AS-A-SERVICE

METER READING SYSTEM UPGRADES MADE EASY



## PLANNING

REVIEW BUSINESS PROCESSES / SYSTEM DESIGN / INSTALL PLAN



## FUNDING

MOVES SYSTEM COSTS FROM CAPEX TO OPEX



## INTEGRATION

INTEGRATE NEW AMI SYSTEM TO OTHER UTILITY SYSTEMS



## DEPLOYMENT

HARDWARE & SOFTWARE INSTALLATION / TRAINING / MARKETING



## MAINTENANCE

SUPPORT / ANNUAL LARGE METER TESTING / PROCESS ANALYSIS





# QUESTIONS & ANSWERS

We would like to sincerely thank all the CWWA members for your time and attention.



**Badger Meter**

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