IIoT, AI, Cloud Technology

“Appropriately”
Intelligent Water Leakage Management System

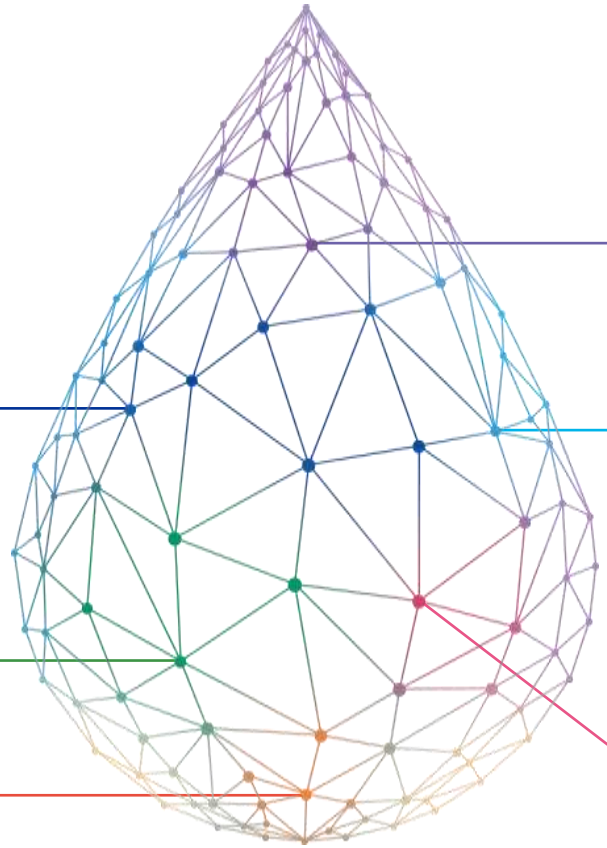
WI.Plat

WI.Plat is a start-up founded with support from Korean government & K-water

K water Start-up

WI.Plat

K water



Established in 1967

Organization
- Headquarters
  (5 divisions, 27 dept.)
- 3 Regional Headquarters
- 74 Regional Offices

Responsible for Total Water Resources Management in South Korea

Employees
approx. 5,800

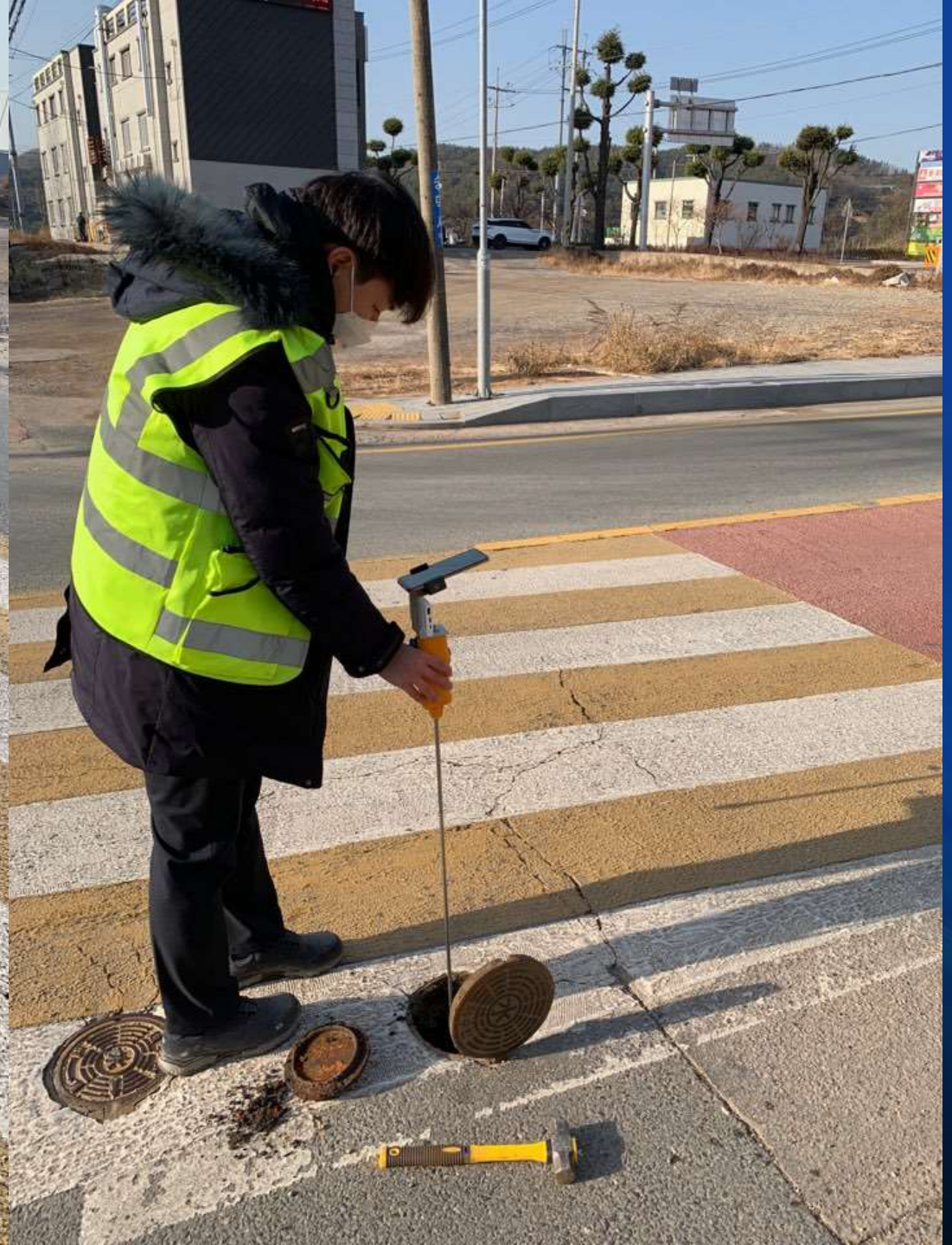
Revenue
3.2 billions USD
(2018)

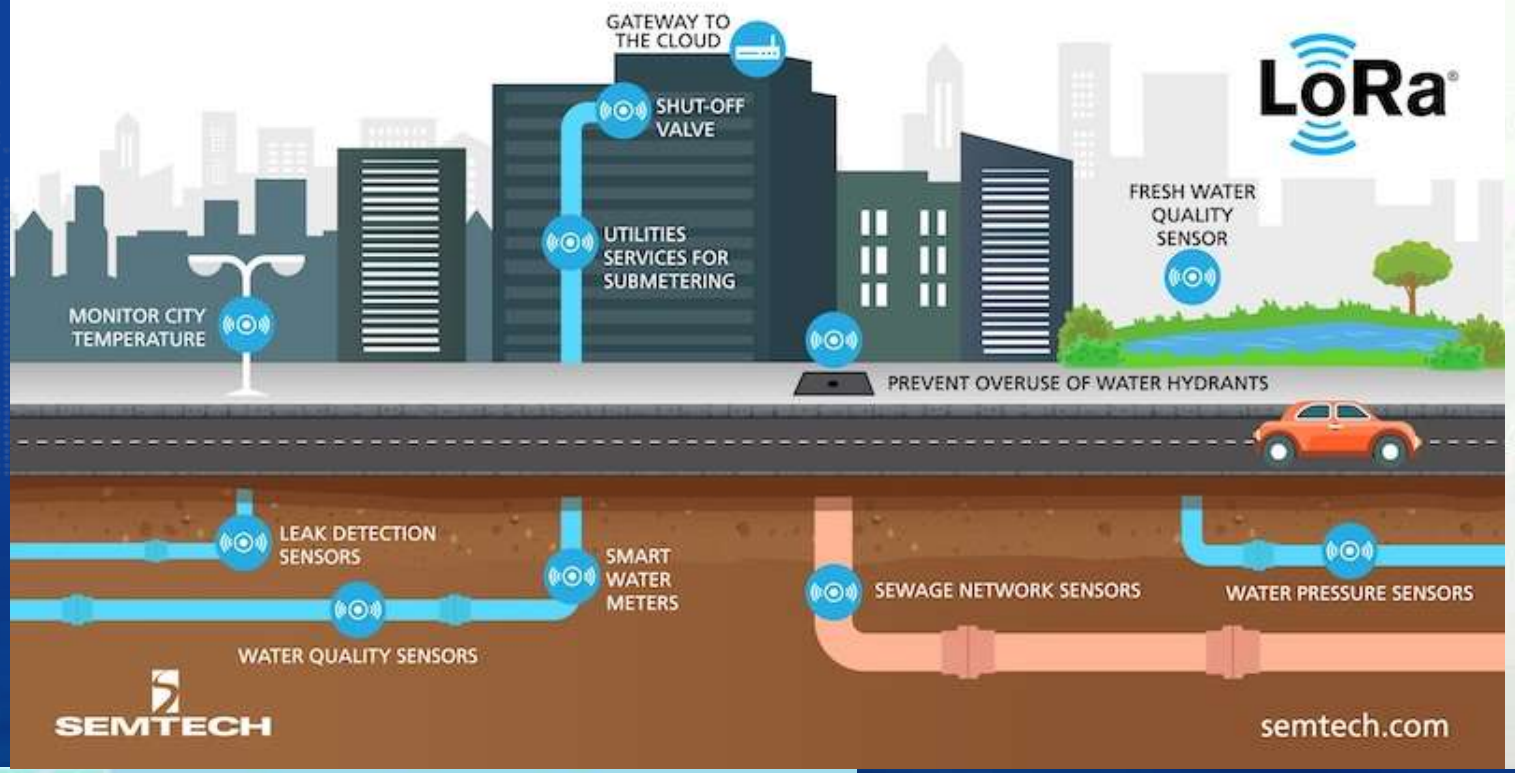
Total Assets
20 billions USD
(2018)

Founded in March 2020 as a K-water start-up, Finalist of P4G Partnership, POC(Vietnam, Indonesia, Malaysia), Winner of various competitions

WI.Plat

- ‘19.9.1 Agreement signed
  KISED - K-water - WI.Plat
- ‘19.12.1 10 K-water innovation challenge
- ‘20.1.29 KOICA CTS Seed 0
  Nation : Indonesia
- ‘20.3.3 Corporation establishment
- ‘20.3.10 P4G Partnership finalist winner
  Nation : Vietnam
- ‘20.3.27 K-water Overseas market promotion
  Nation : Malaysia
- ‘20.4.14 7th Nest
- ‘20.5.27 Agreement signed for investment
- ‘20.6.30 Agreement signed for investment
- ‘20.8.20 Winner of ECOTON
- ‘20.9.23 Grand Prize of digital startup competition
- ‘20.9.24 Grand Prize of social startup competition
- ‘20.11.20 Winner of Water Start-up Competition
- ‘20.12.04 Winner of Eco Start-up Competition





[Source: t.ly/BZKc]

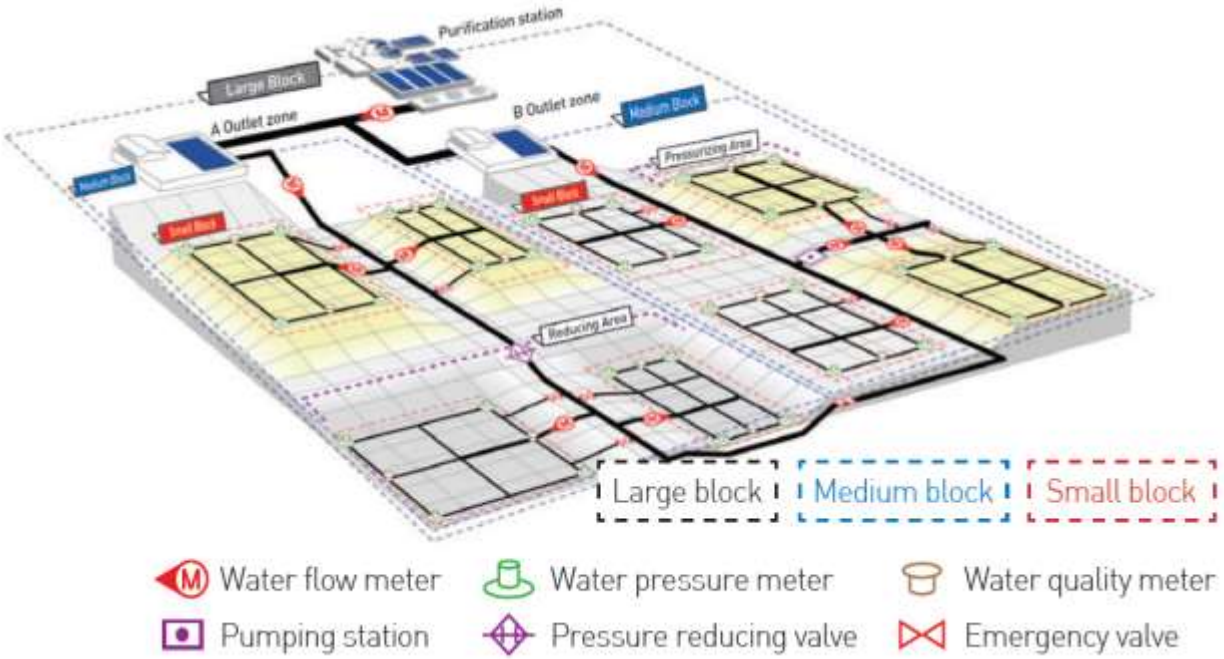
TRACK YOUR
WATER USAGE
ANYWHERE YOU GO

Smart water meters allow customers to monitor their daily water usage, just like your mobile data.

- Obtain water usage data via a mobile app or online portal
- Receive high usage notifications and leak alerts
- Manage your usage on a daily basis
- Take action to save water and money

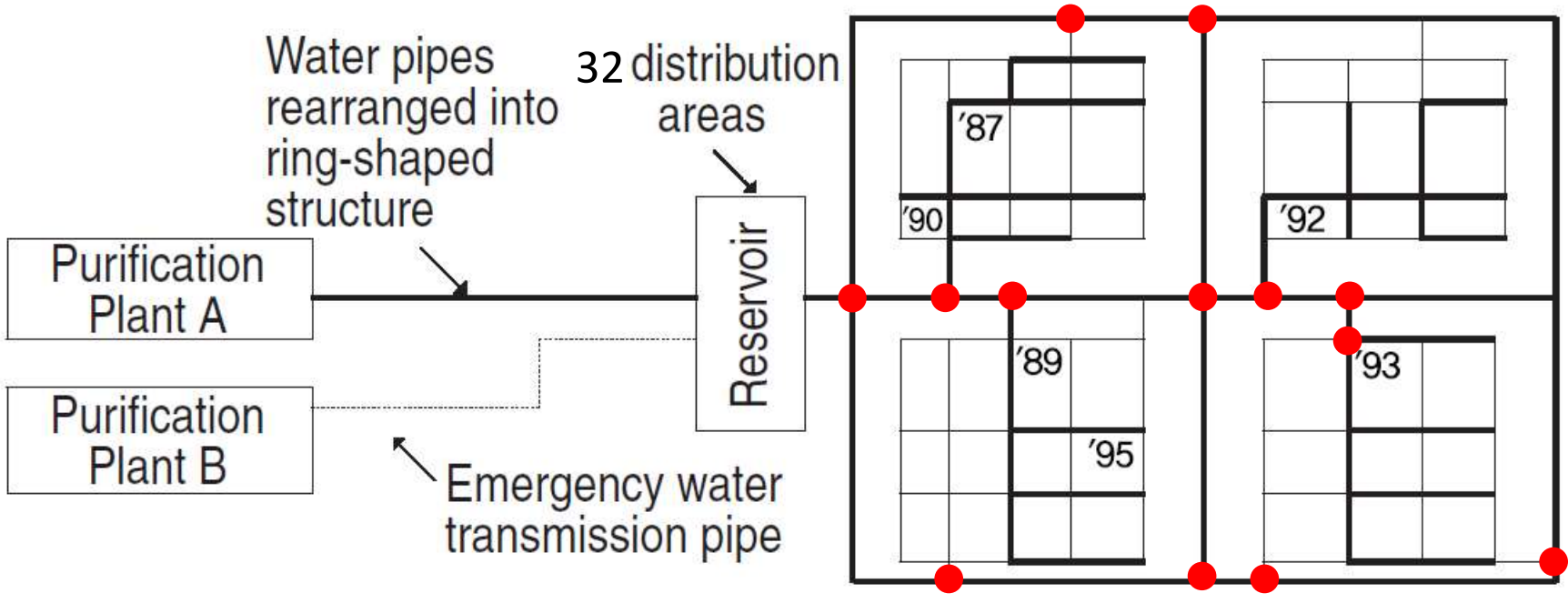
PUB to install
300,000
smart water meters
at households and businesses by
2023

[Source: t.ly/Gqep]



Seoul, Korea, 10 million citizens
1st level DMA's: 32
2nd level DMA's: 104
3rd level DMA's: 2,037
* 1 (3rd level) DMA includes 1,000 ~ 2,000 Households

District Metered Area, DMA

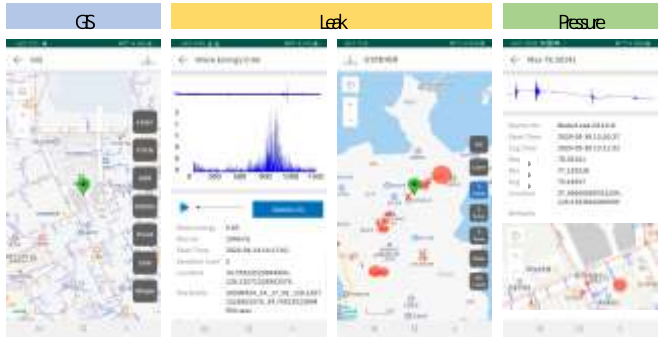


Intelligent water leakage management system is composed of H/W(Sonic M1, M2), S/W(NELOW, Never Lose Water)

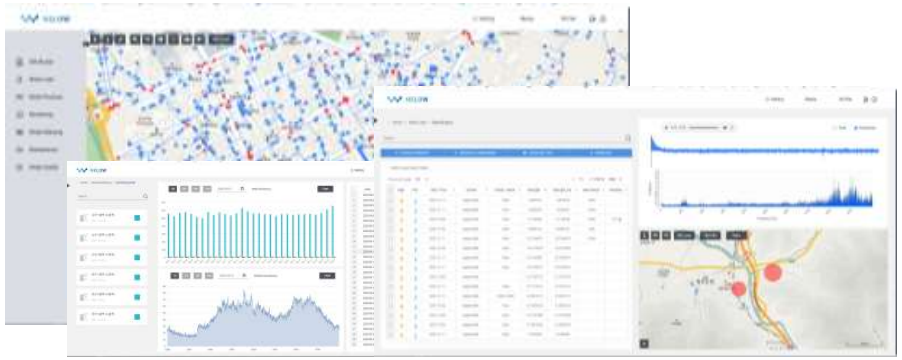
1 SonicM1

2 SonicM2

3 NELOW_App



4 NELOW_Web



Major function & Capability of Sonic M1, M2

Sonic M1 (Handheld)

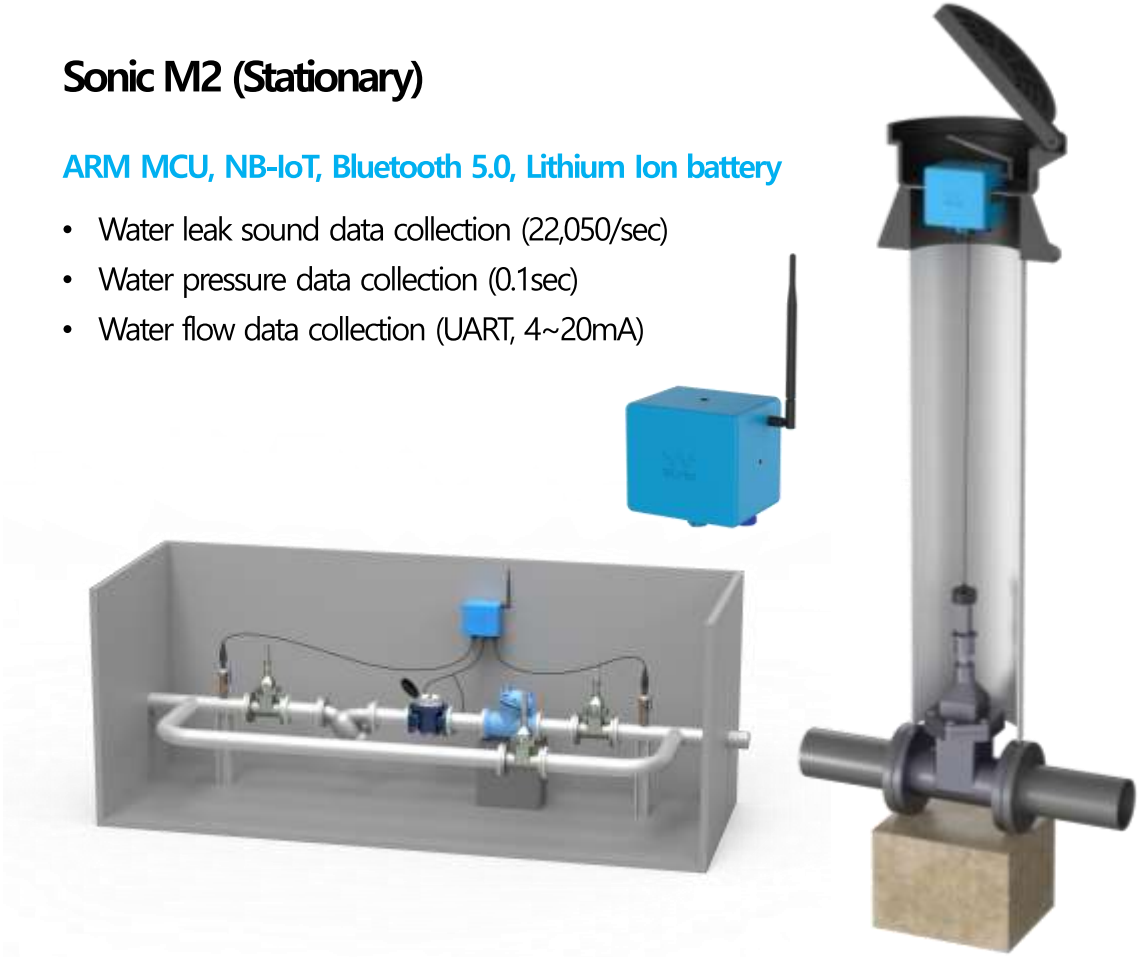
ARM MCU, Bluetooth 5.0, Lithium polymer battery

- Water leak sound data collection (22,050/sec)
- Water pressure data collection (0.1sec)
- Water flow data collection (UART, 4~20mA)

Sonic M2 (Stationary)

ARM MCU, NB-IoT, Bluetooth 5.0, Lithium Ion battery

- Water leak sound data collection (22,050/sec)
- Water pressure data collection (0.1sec)
- Water flow data collection (UART, 4~20mA)



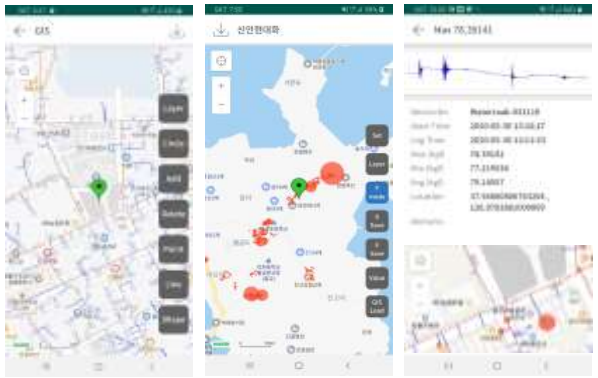
Major function & Capability of NELOW S/W (Good S/W Certified in Korea)

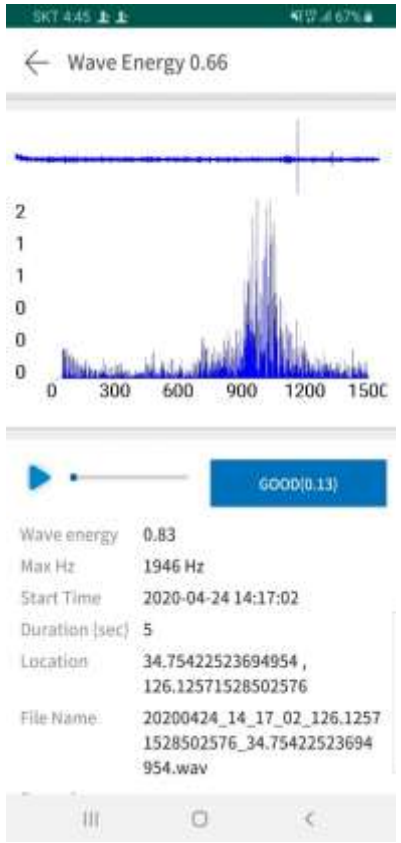
NELOW_App

Android 8.0

Major Function

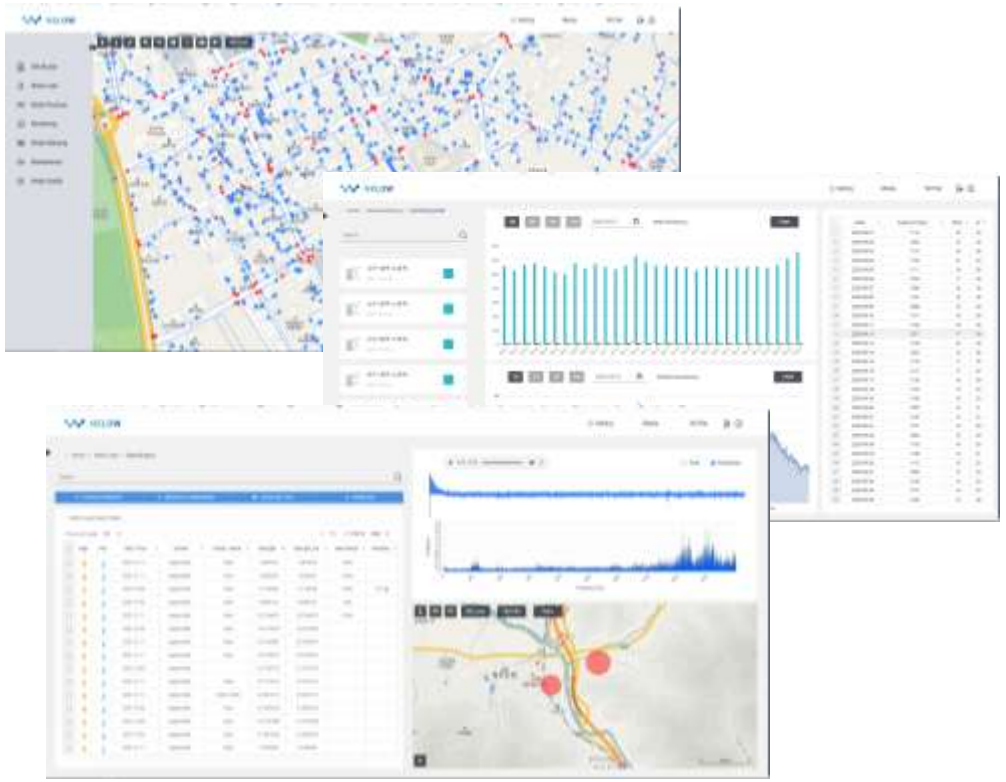
- GIS management
- Water leak management
- Block monitoring
- Water pressure management
- Maintenance management





NELOW_Web

JAVA Script, Node.js, Open Layers




Client collects water leak sound with Sonic M1

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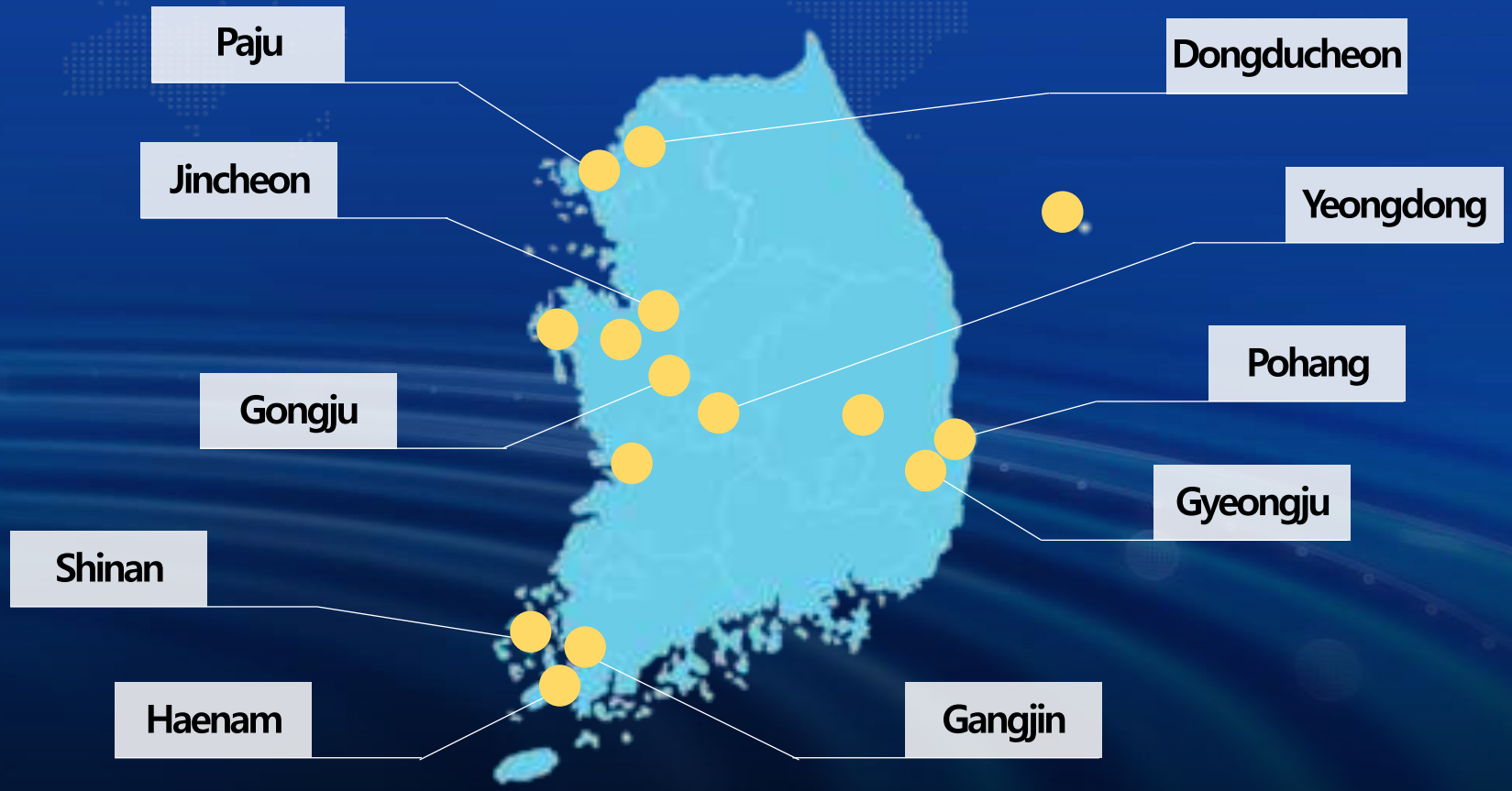
15 Pilot projects have been completed successfully with K-water in 2020



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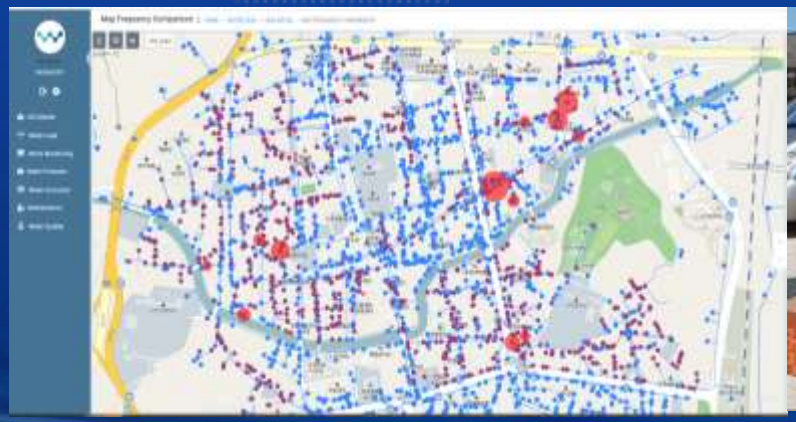
Naju City : K-water employees found out 6 water leaks for 2 days (50,000 USD Saved)
Chung Song City : K-water found out 9 water leaks for 2 days (180,000 USD Saved)

누수복구 결과 보고서

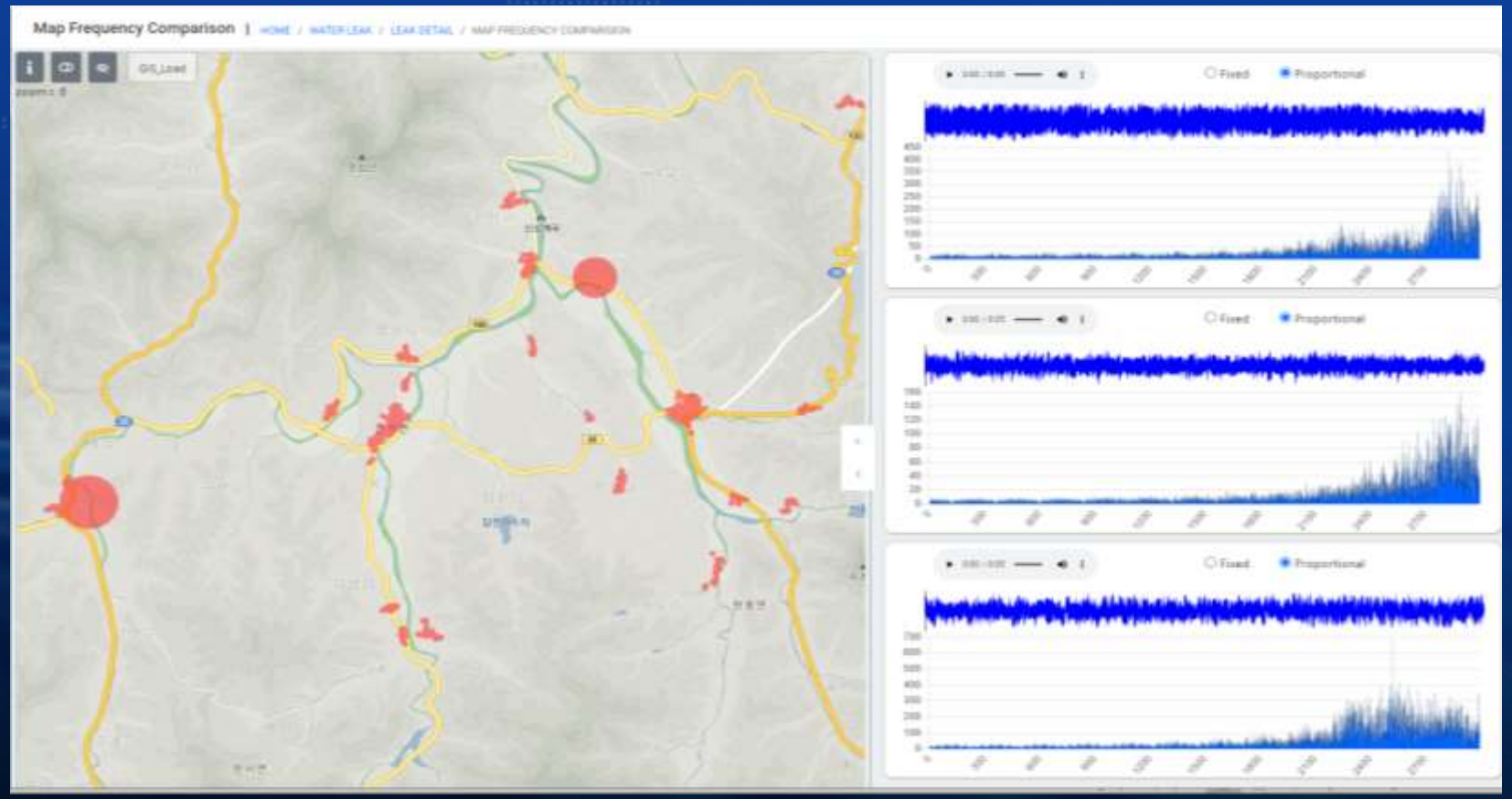
탐사번호	나주-1	관용도[1]	급수관로	공사위치(소불록)	관내
복구일자	2010.10.14	누수관종[2]	HIVP	관경(mm)	15
누수부위[3]	직관부	누수원인[4]	관로노후	복구내용[5]	직관교체
복구비(원)	450,000	수압(kgf/㎠)	4.0	누수부 크기(cm)[6] 직경	0.6
				가로	-
				세로	-
누수추정량[7] (㎥/일)	79.9	누수방지량[8] (㎥/년)	29,163	누수방지액[9] (천원/년)	12,686
누수전경					

□ 청송 세부 적출현황

담사반	위치	급수구역	적출No.	완료여부 (일지, 물량 t/h)
예천	고현교 하천횡단 구간	진보	진보-01	완료(9.23, 6.0t/h)
	나실(가) 입근	부남	부남-01	완료(9.15, 3.0t/h)
	청운안길 15(배가)	청송	청송-01	완료(9.18, 0.8t/h)
	주왕산로 30-2	청송	청송-02	완료(9.14, 3.3t/h)
거제	월막7길 8	청송	청송-03	완료(9.14, 3.7t/h)
	시장길 3-1	청송	청송-04	완료(9.15, 1.6t/h)
고령	진안서길 17	진보	진보-04	미정(본관,민원多)
	안현로 501	안덕	안덕-02	완료(9.17, 1.5t/h)
청송	덕리 485-1	청송	청송-05	완료(9.14, 4.0t/h)

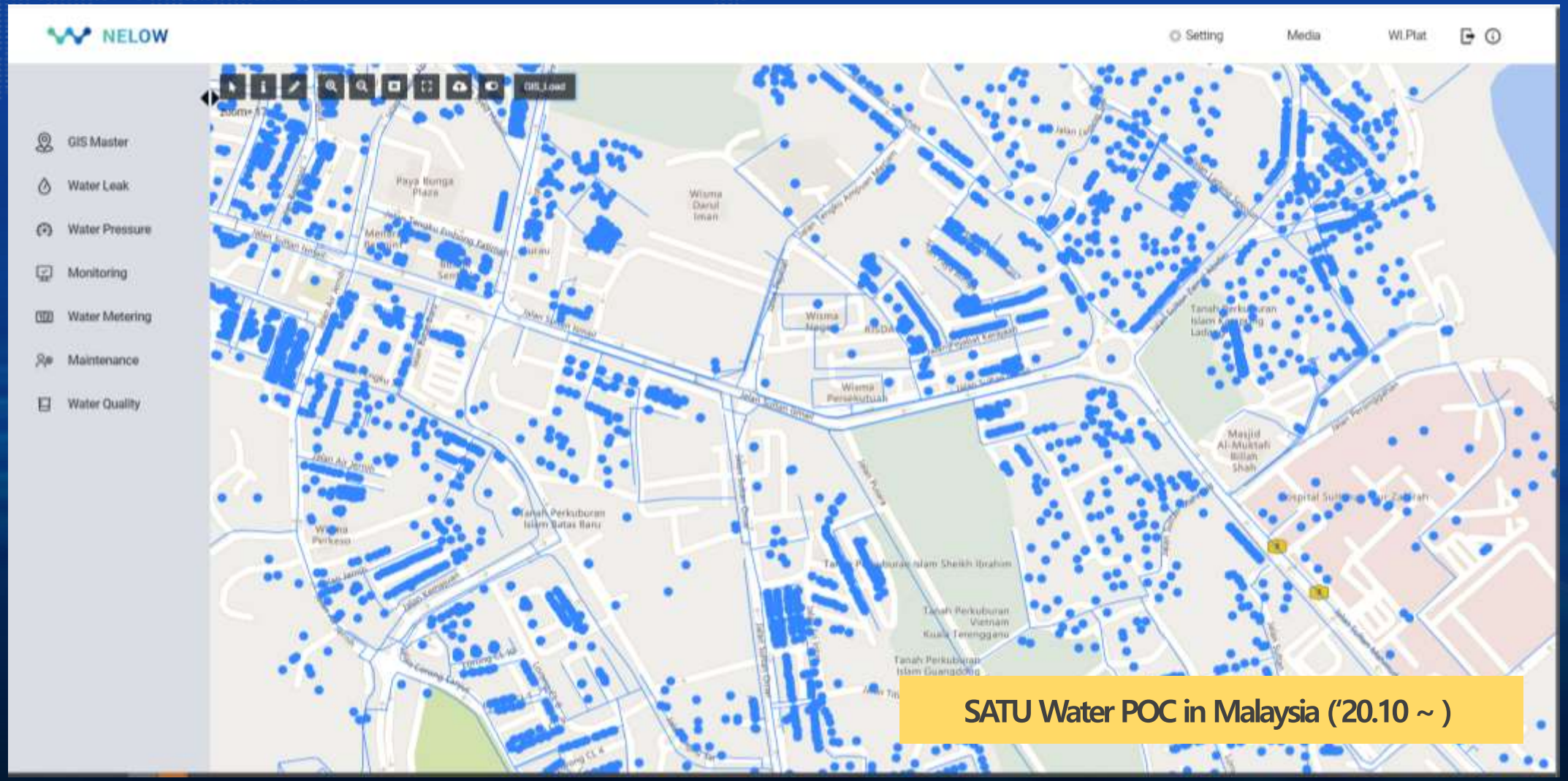


An employee (no expert in water leak management) is Carrying out water leak monitoring in Chungsong city of Korea

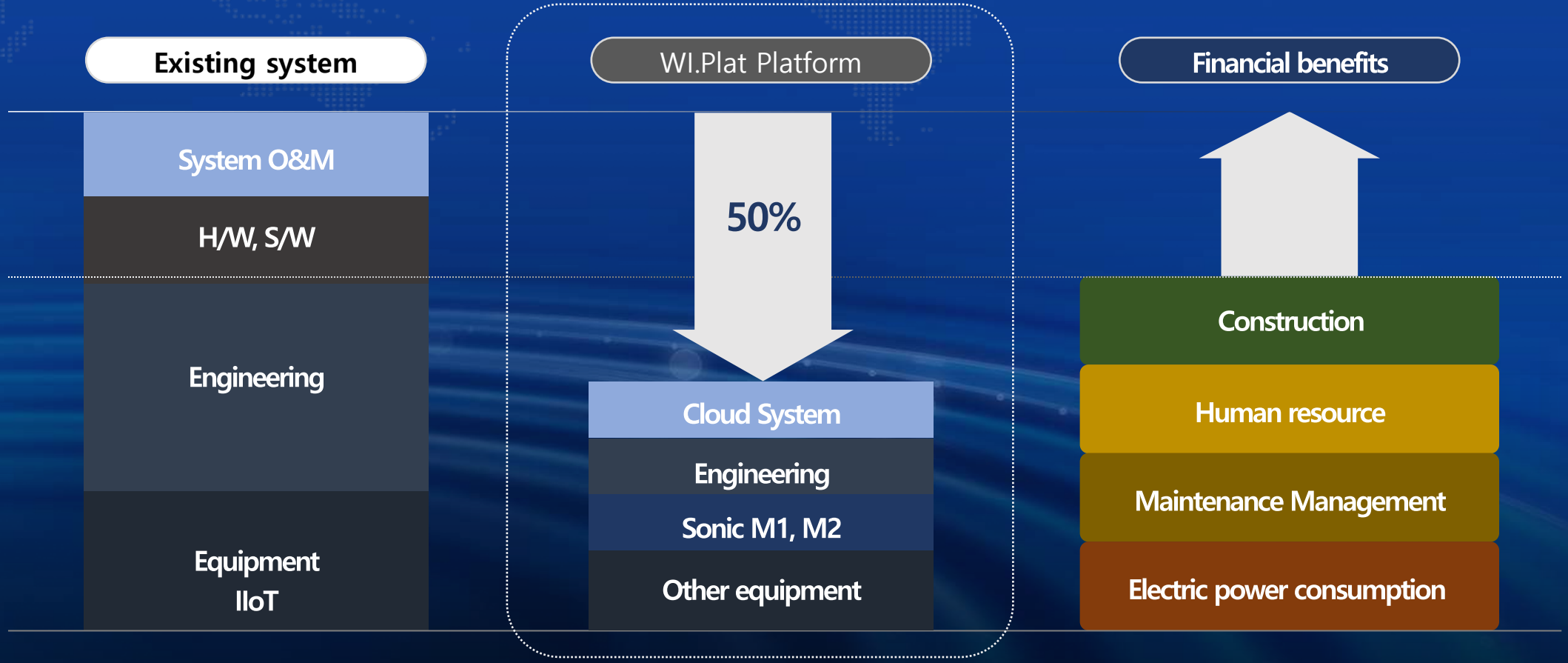


3 Overseas POC are in progress with Malaysia, Vietnam, and Indonesia

Proof-of-Concept



High financial benefit can be achieved from water leak reduction



Price & Function are competitive compared with other solutions in the market

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Web S/W | Leak Sonsor | Moni toring | AI Model | GIS | App

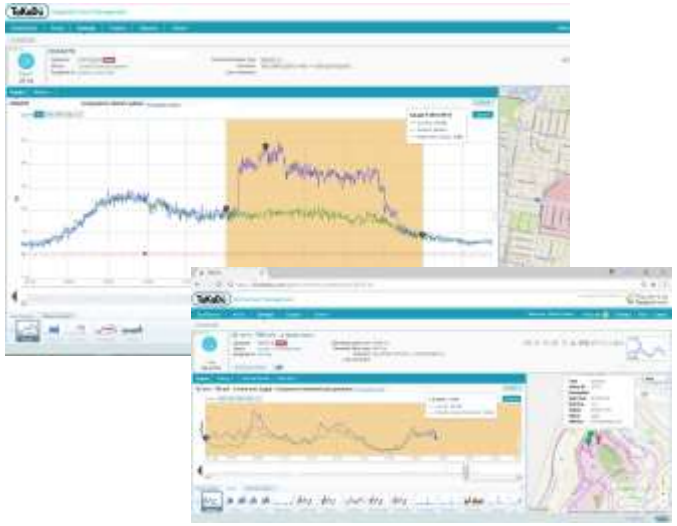
Price : 28,000 USD/Year
(For small town with population of 50,000)

* PBS (Performance Based Service)

TaKaDu

Web S/W | Leak Sonsor | Moni toring | AI Model | GIS | App

Price : 100,000~150,000 USD/Year
(For small town with population of 50,000)



Aquarius Spectrum

Web S/W | Leak Sonsor | Moni toring | AI Model | GIS | App

Price : Undefined

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Price policy of NELOW System (1 Set is suitable for a small town under 20,000 houses)

NELOW (1 Set)

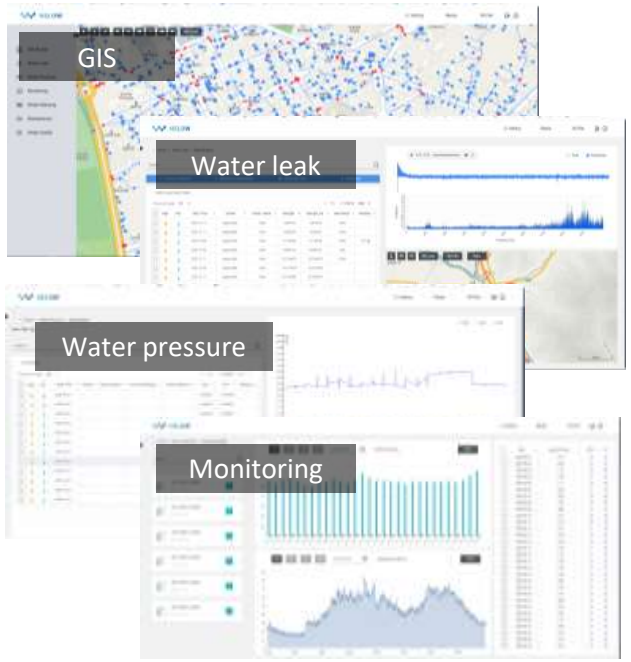
(Sonic M1 5, NELOW S/W License : 5)

Sonic M1

+

NELOW_App

+



NELOW_Web

Price (1 Set)

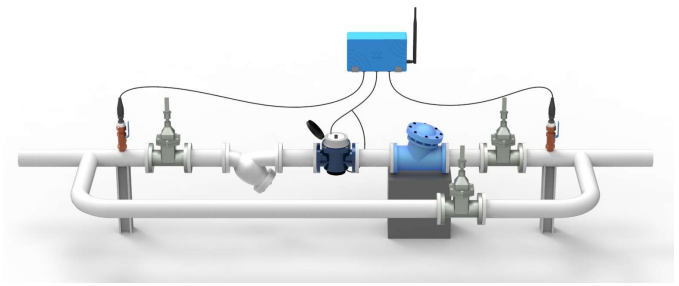
- Subscription type

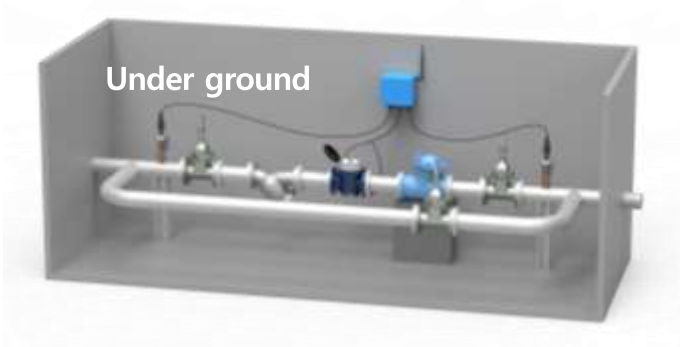
SUBSCRIBE **28,000 USD/Year**

- Construction type

150,000 USD/Year
(Server is not included)

It is option to install DMA Monitoring system or Realtime monitoring with Sonic M2





DMA Monitoring System
(Option)

Water pressure or meter
monitoring

Water leak monitoring
(Option)

WI.Plat

CEO & Vice are all specialists with long time experiences in water industry

CEO

- K-water 23 years
- Global Marketing, AI
- Ph. D. of Mechanical Eng (ABT)

Vice & CTO

- Seoul waterworks 15 years
- WB, ADB Consultant
- Ph. D. of Civil Eng (US)

Marketing

- Water sector 10 years
- Overseas marketting
- Business strategy

Leak detector

- K-water 7 years
- Leak detecting expert
- Field assessment

S/W Developer

- C#, C++, JAVA, PHP
- 7 years in K-water
- system achitecturer

S/W Developer

- JAVA, Vue.js
- Front end developer
- System designer

IIoT Developer

- IIoT engineer
- Firmware programer
- Linux, C++

R&D Manager

- Device engineer
- R&D manager
- Big data analysis

Proposal

for performance-based water leakage reduction project

WI.Plat

PBP(Performance Based Project) will be divided to Level 1, Level 2

Level 1 (3Year)

Goal : 30 % Reduction of MNF
(MNF : Minimum Night Flow)

Product & Service

Sonic M1	Sonic M2 (Pressure)	NELOW
DMA Construction	Water leak Detection	Water leak Recovery
GIS Management	Pressure Management	Technology Consulting

Level 2 (10 Year)

Goal : 50 % Reduction of MNF
(MNF : Minimum Night Flow)

Product & Service

Sonic M1	Sonic M2 (Pressure)	NELOW
DMA Construction	Water leak Detection	Water leak Recovery
GIS Management	Pressure Management	Technology Consulting

60~70% of MNF (Minimum Night Flow) is a real water leakage

(MNF will be measured with ultrasonic water flow meter or others for an assumption of water leak in target site)

Components of NELOW System for Level 1

Sonic M1
(Water leak detection)

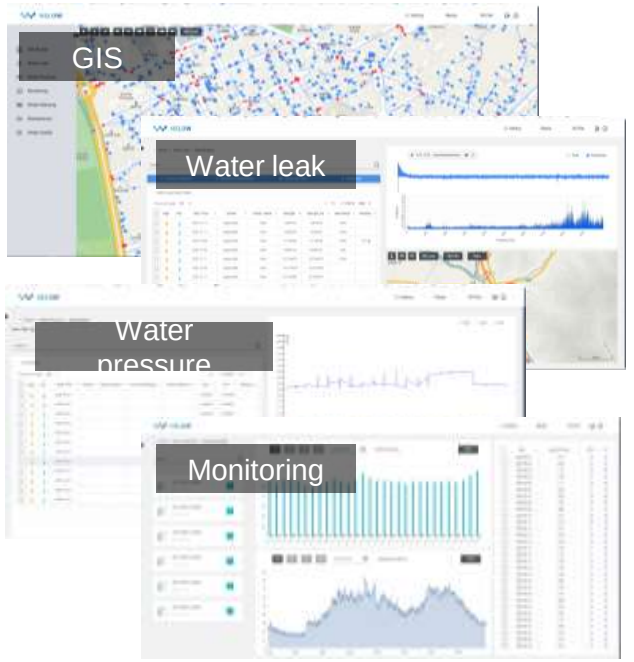
+

Sonic M2
(Water pressure monitoring)

+

NELOW_App

+



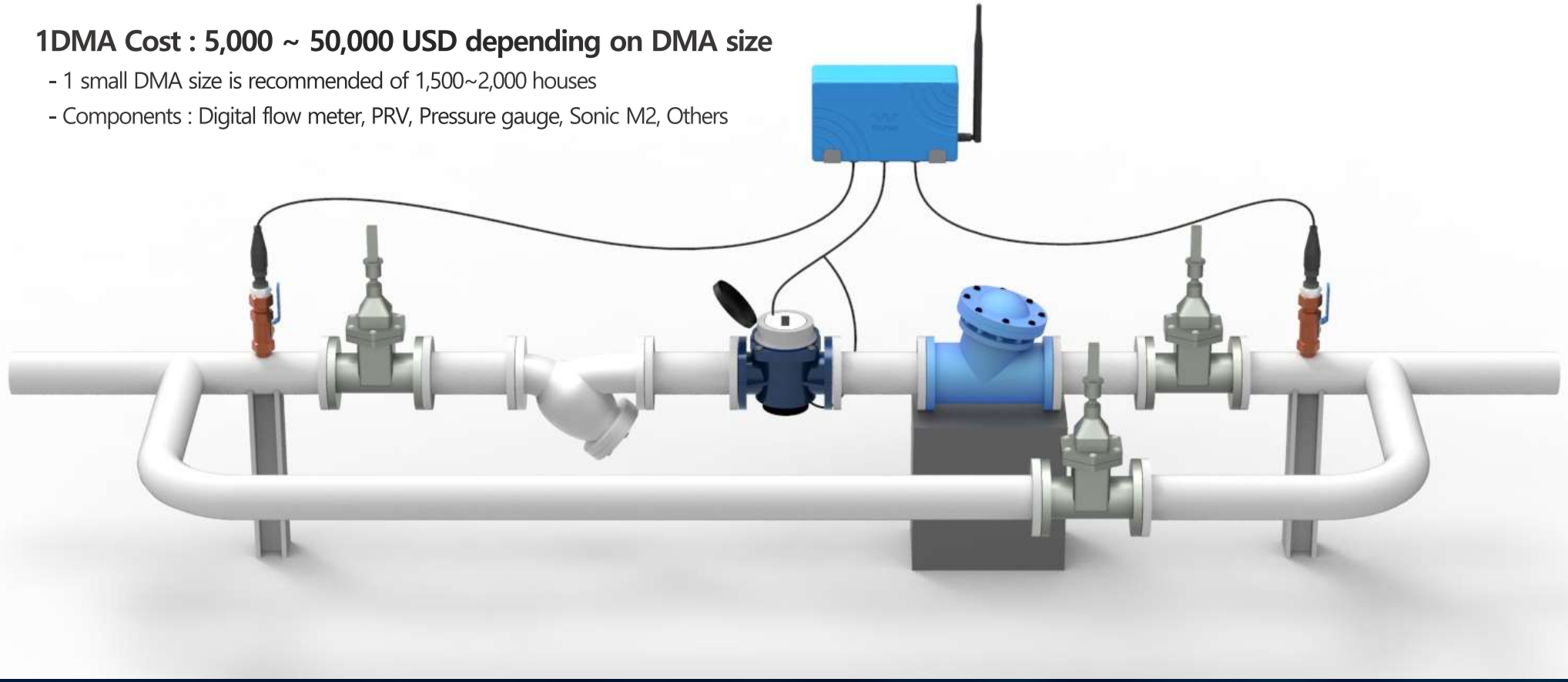
NELOW_Web

It is essential for Level 2 to construct DMA monitoring system

(It is necessary to conduct F/S for a design of DMA monitoring system)

1DMA Cost : 5,000 ~ 50,000 USD depending on DMA size

- 1 small DMA size is recommended of 1,500~2,000 houses
- Components : Digital flow meter, PRV, Pressure gauge, Sonic M2, Others



(Level 1, 3 Years) Water leak reduction benefit will be 342,000 USD/Year
Assuming 30% MNF reduction in small town of 15,000 houses

Condition

- Small Town 15,000 houses
- Water supply 15,000 ㎥/day
- Water leak rate 25%
- MNF 6,250 ㎥/day
- DMA 10,000~60,000 USD
- Unit production cost 0.5 USD/㎥
- NELOW System 28,000 USD/Year
- Discount rate 11%

Engineering : 116,875 USD

- GIS Management
- Water leak Detection
- Water leak Recovery
- Pressure Management
- Technology Consulting

Target goal & B/C

30% Reduction of MNF
1,875 ㎥/day (final year)

1 Year	2 Year	3 Year
30%	60%	100%

Water leak reduction benefit (final year)
342,188 USD/Year
(1,875 ㎥/day × 365 day × 0.5 USD/day)

BC : 1.23 (3 Years)
Total Cost : 506,625 USD
Total Benefit : 650,156 USD

(Level 2, 10 Years) Water leak reduction benefit will be 570,313 USD/Year Assuming 50% MNF reduction in small town of 15,000 houses

Condition

Small Town
15,000 houses

Water supply
15,000 ㎥/day

Water leak rate
25%

MNF
6,250 ㎥/day

DMA
10,000~60,000 USD

Unit production cost
0.5 USD/㎥

NELOW System
28,000 USD/Year

Discount rate
11%

Engineering : 163,993 USD/Year

GIS Management

Water leak Detection

Water leak Recovery

Pressure Management

Technology Consulting

Target goal & B/C

50% Reduction of MNF
3,125 ㎥/day (final year)

1 Year	2 Year	3~10 Year
30%	60%	100%

Water leak reduction benefit (final year)
570,313 USD/Year
(3,125 ㎥/day × 365 day × 0.5 USD/day)

BC : 1.52 (10 Years)
Total Cost : 506,625 USD
Total Benefit : 650,156 USD

Level 1 can be served directly with Client
Local agent or Joint Venture is necessary for Level 2

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Work scope of each party

Partner	Work scope	Remark
WI.Plat	• Supply of Sonic M1, M2, NELOW S/W • Technical training for detecting water leak with NELOW • Technical consulting for total water leakage management (Option)	
Local Agent	• Water leak detection by collecting water leak sounds with Sonic M1 (Level 1) • DMA monitoring system construction with Sonic M2 (Level 2) • Recovery of water leakage spot (Level 2) • PRV Installation and Water pressure management (Option)	
Client (Water Com)	• Supervision of performance based water leak reduction contract • Verification of performance of contract with other parties	

* PRV : Pressure Relief Valve

WI.Plat

Free 5 month POC will be served before PBP contract

(Target site is supposed to be under 2,000 houses)

1. MOU (Target site selection)

2. Supply devices and S/W

3. Training (On-line)

4. MNF measure

5. Field activities (Detection, Recovery)

6. Performance Verification

7. PBP contract


WI.Plat
Water Intelligent Platform (WI.Plat)