Based on IoT, AI, Cloud Technology

Intelligent Water Leakage Management System

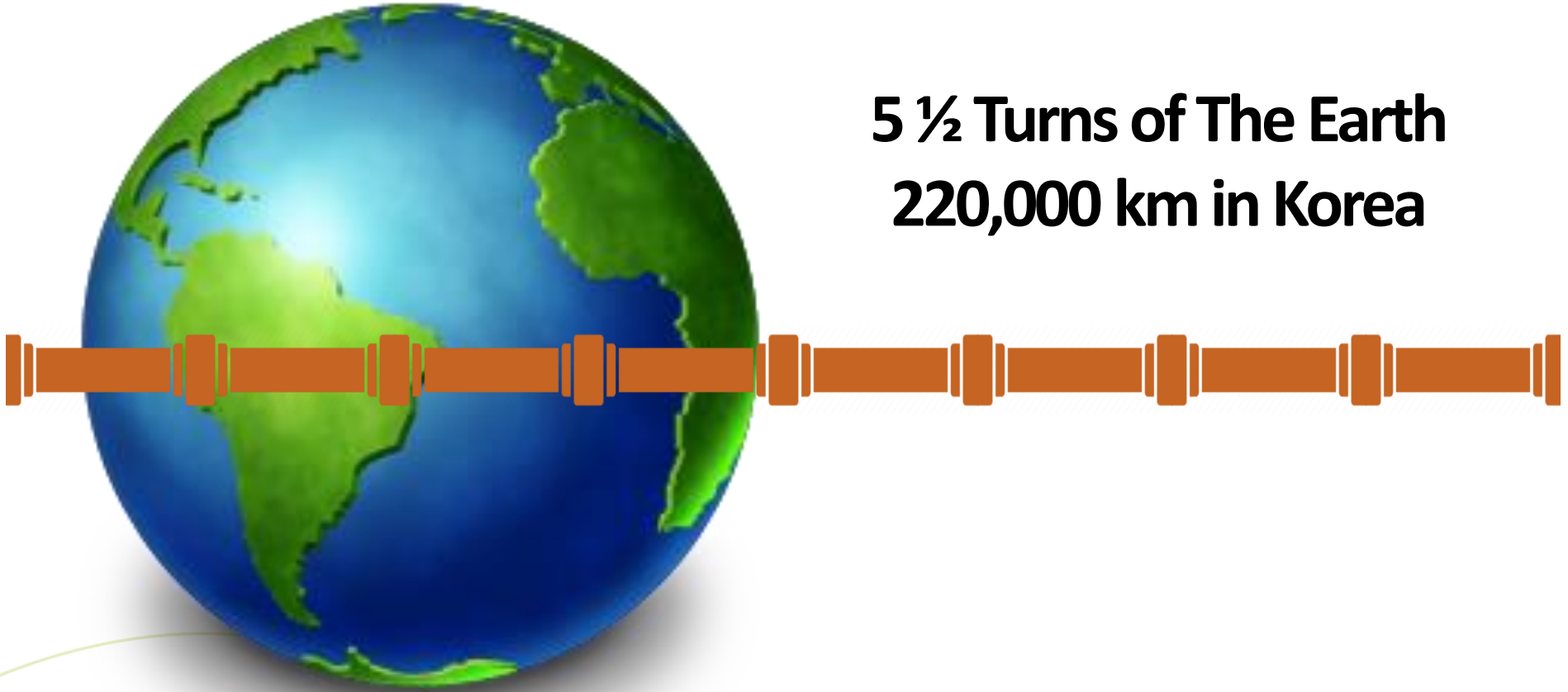
WI.Plat (Water Intelligent Platform)

CEO

Sanghoon Cha

K water Start-up WI.Plat

Pipe line of Korea is very long enough to rotate 5.5 turns of the earth

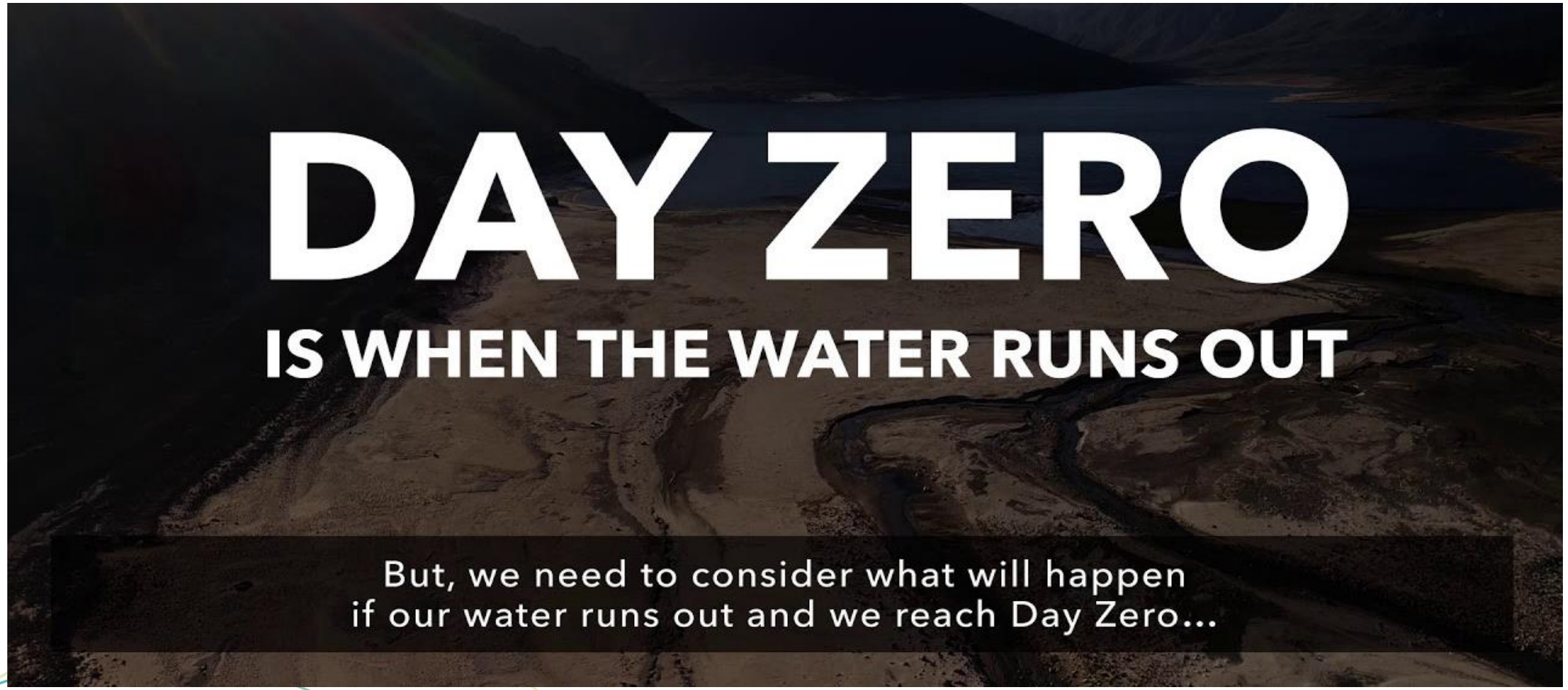


5 ½ Turns of The Earth

220,000 km in Korea

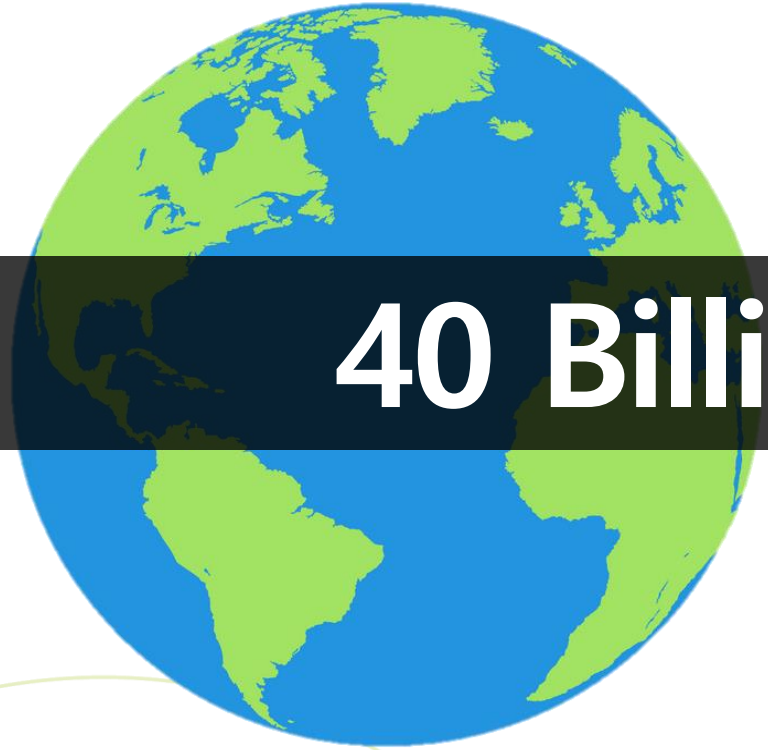
Water leak detection is still relied on the experience of professional water leak detectors

Water leak is getting important issue for many countries suffering from a severe drought



Water leakage sometimes threatens our lives

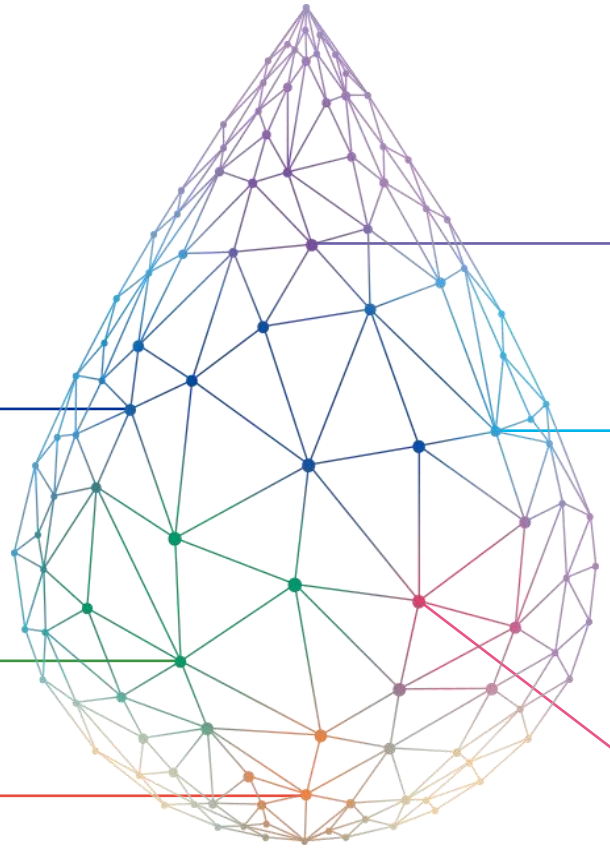
It also causes financial loss of 40 billion USD globally every year



40 Billion USD

WI.Plat was founded as a K-water in-house venture to address the global water leak issue

K water



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

Employees
approx. 5,800

Total Assets
20 billions USD
(2018)

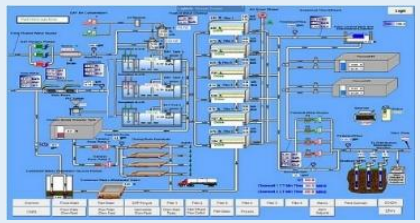
Established in 1967

Responsible for Total Water Resources Management in South Korea

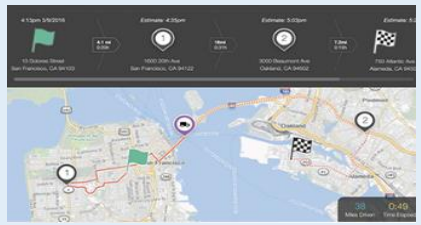
Revenue
3.2 billions USD
(2018)

System, Engineering, Devices are necessary for a successful water leak management

GIS Info



SCADA



IoT Platform

Customer Service

System 15%

Engineering 50%

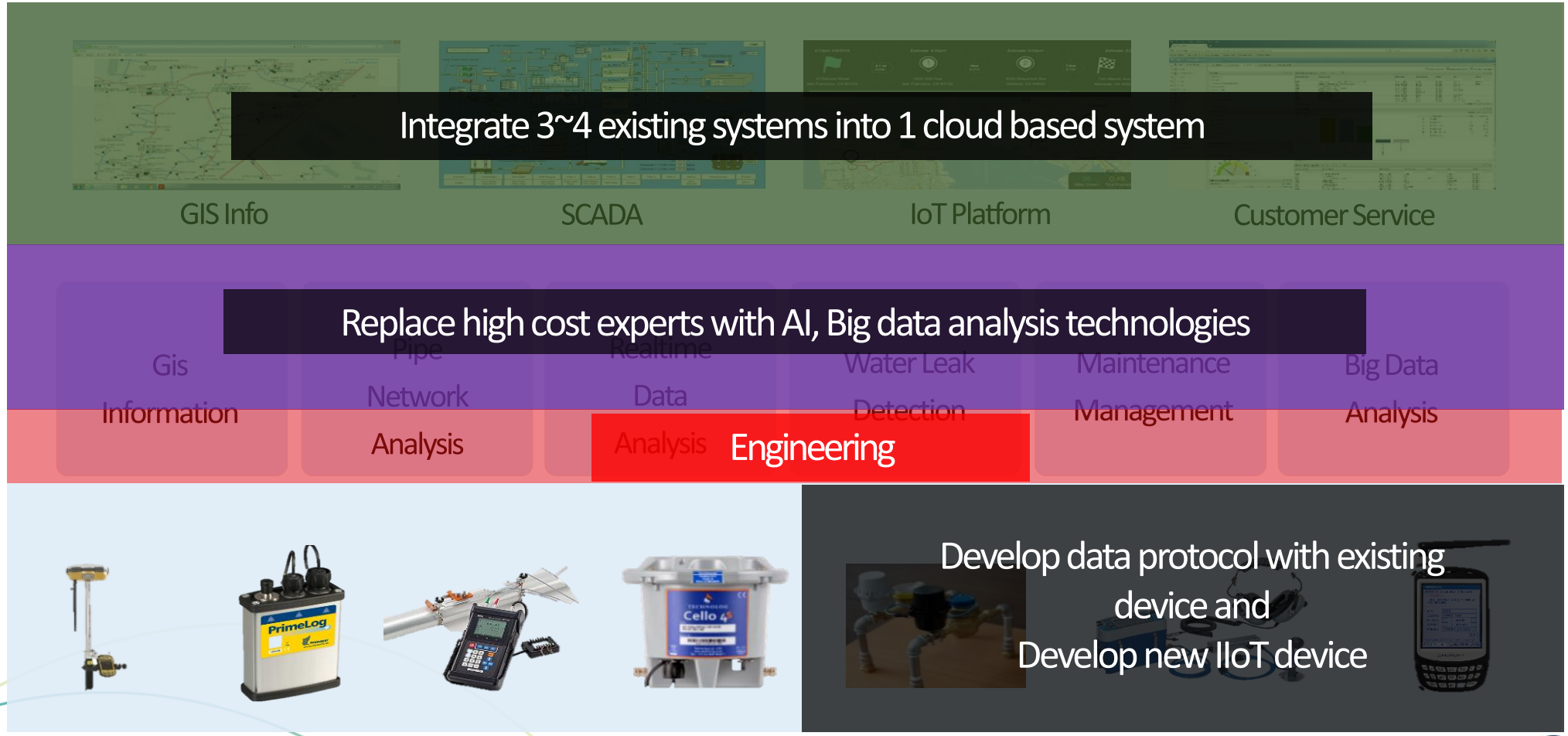
Gis Information	Pipe Network Analysis	Realtime Data Analysis	Water Leak Detection	Maintenance Management	Big Data Analysis

Device 35%

EAKPF Republic of Korea

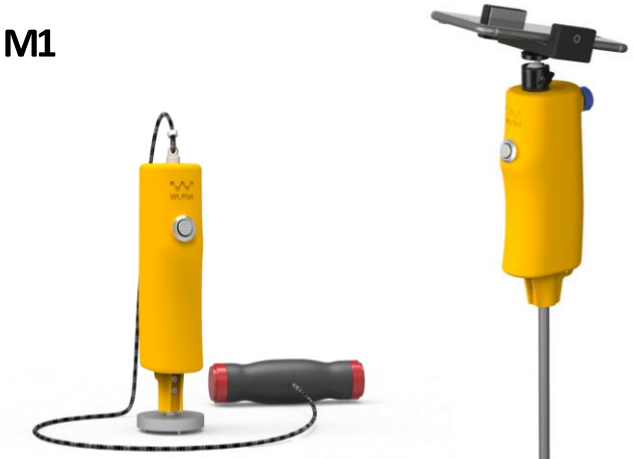
ADB

IoT, AI, Cloud technology have been used for overcoming the constraints

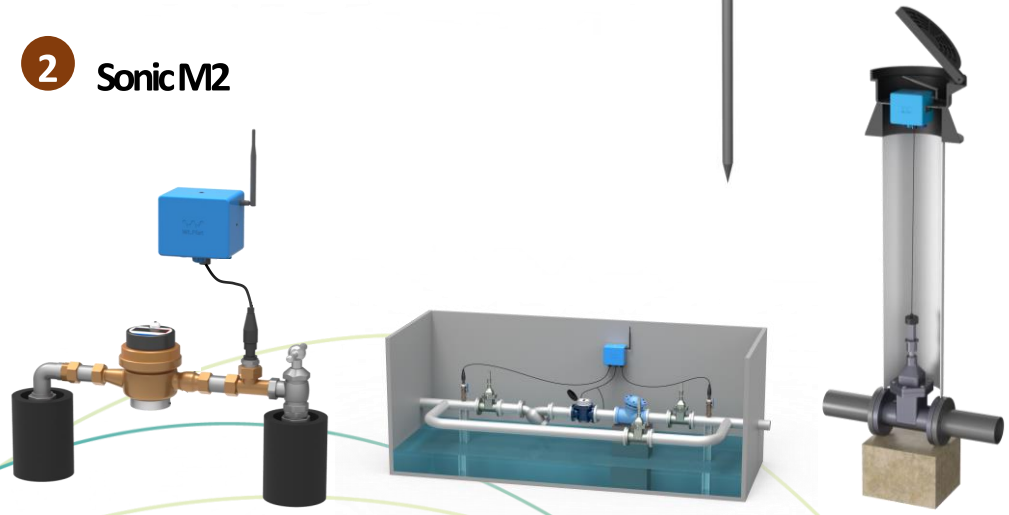


NELOW system consists of H/W(Sonic M1, M2), S/W(Web, App)

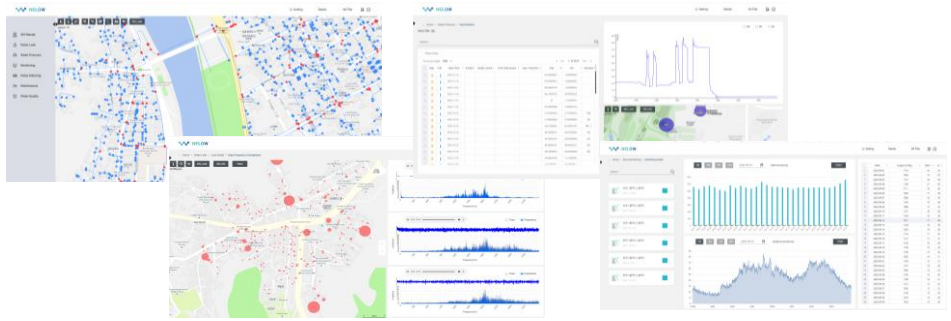
1 Sonic M1



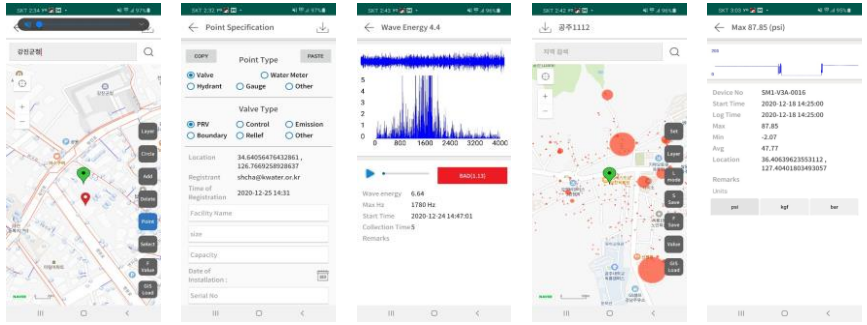
2 Sonic M2



3 NELOW_Web



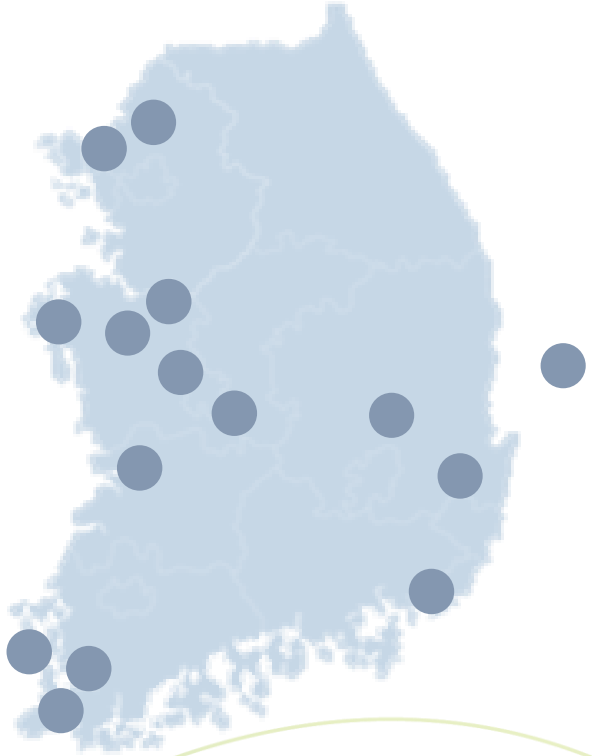
4 NELOW_App




Client collects water leak sound with Sonic M1

NELOW can replace the professional water leak detectors with non-professional peoples

This technology has been verified in 15 locations by using K-water test-bed program



누수복구 결과 보고서

탐사번호	나주-1	관용도[1]	급수관로	공사위치(소블록)	금남
복구일자	2010.10.14	누수관종[2]	HIVP	관경(㎜)	15
누수부위[3]	직관부	누수원인[4]	관로노후	복구내용[5]	직관교체
복구비(원)	450,000	수압(kgf/㎠)	4.0	누수부 크기(㎝)[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

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

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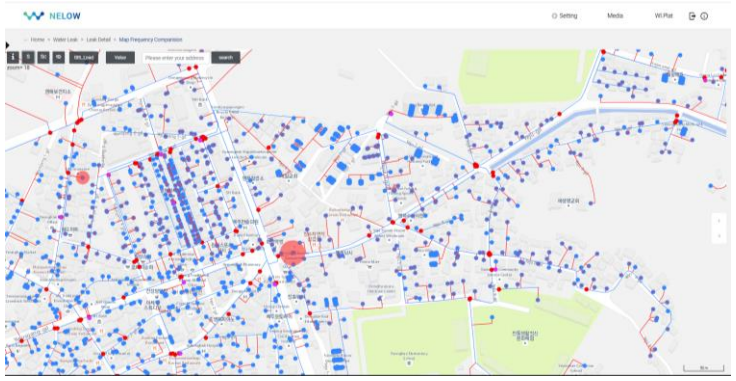
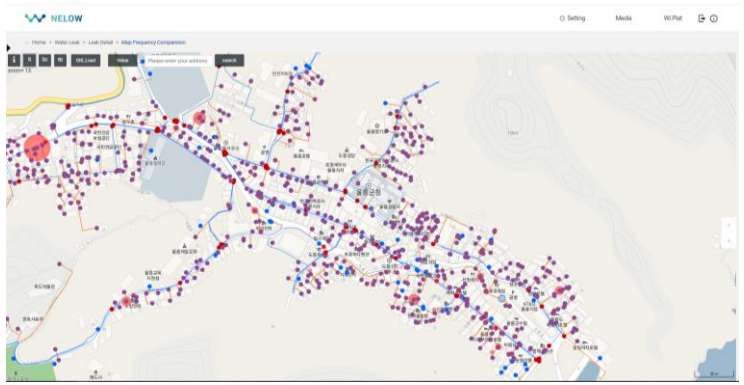
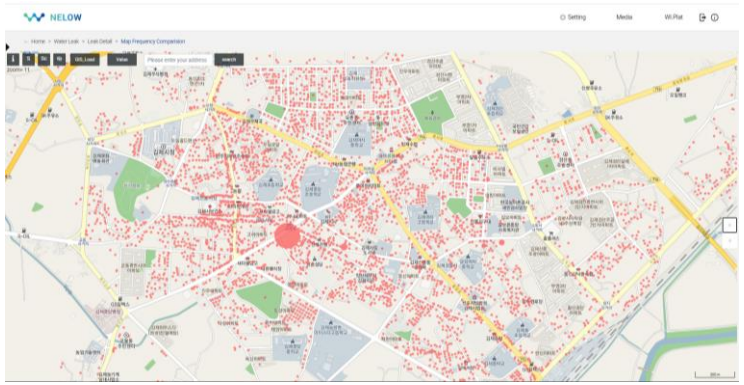
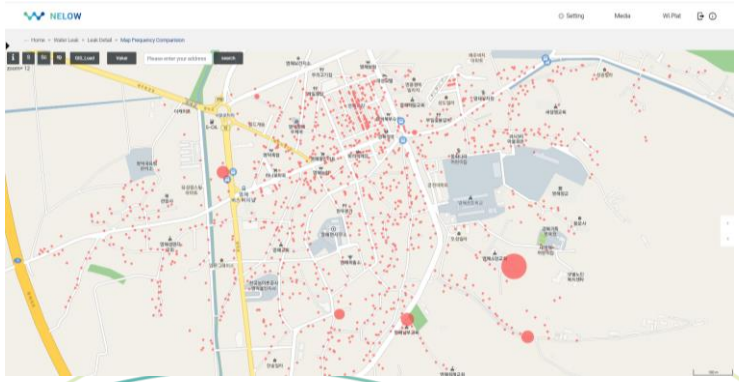
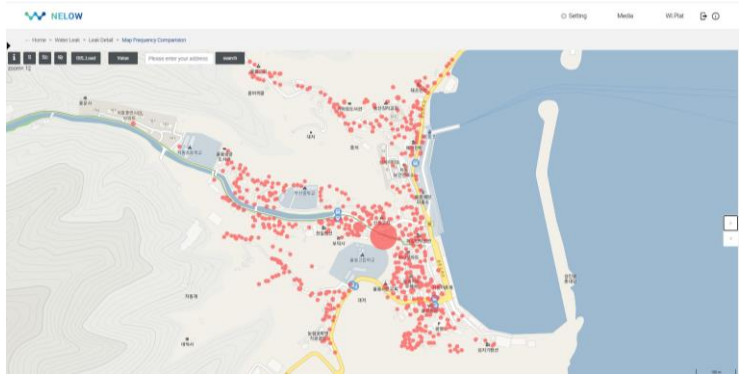
9 Local water service authorities are using NELOW since February of 2021

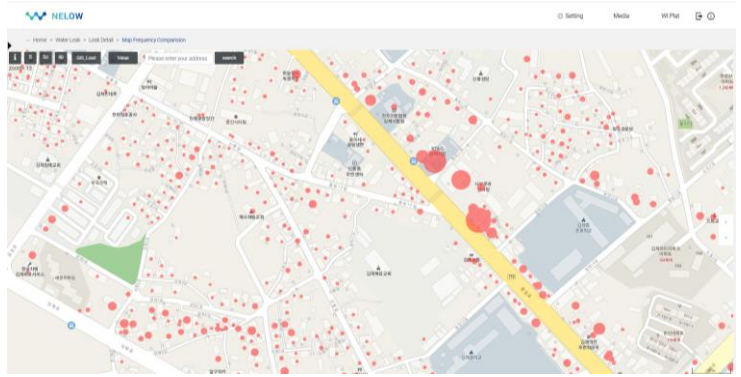




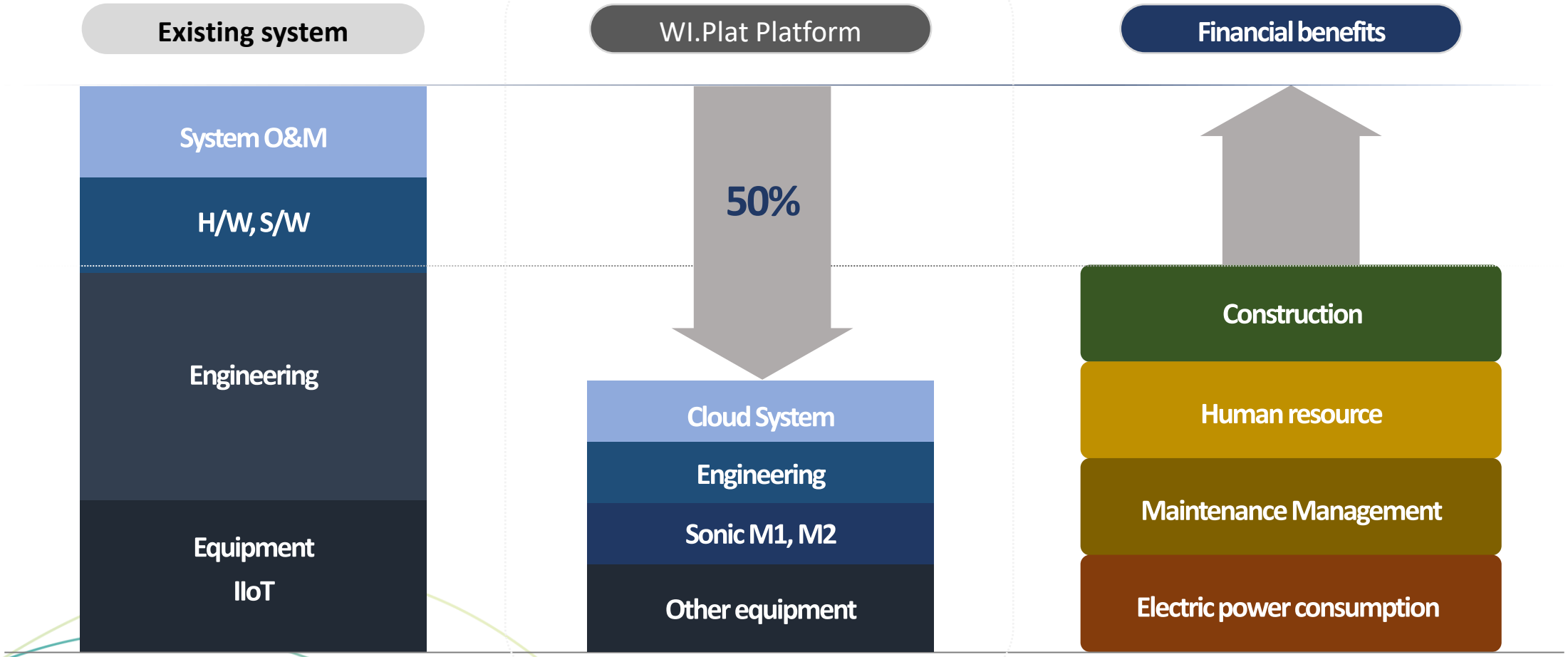








Water leak reduction can brings a huge benefit to developing countries



Performance based project with different level is also possible cooperated with local partner

Level 1

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

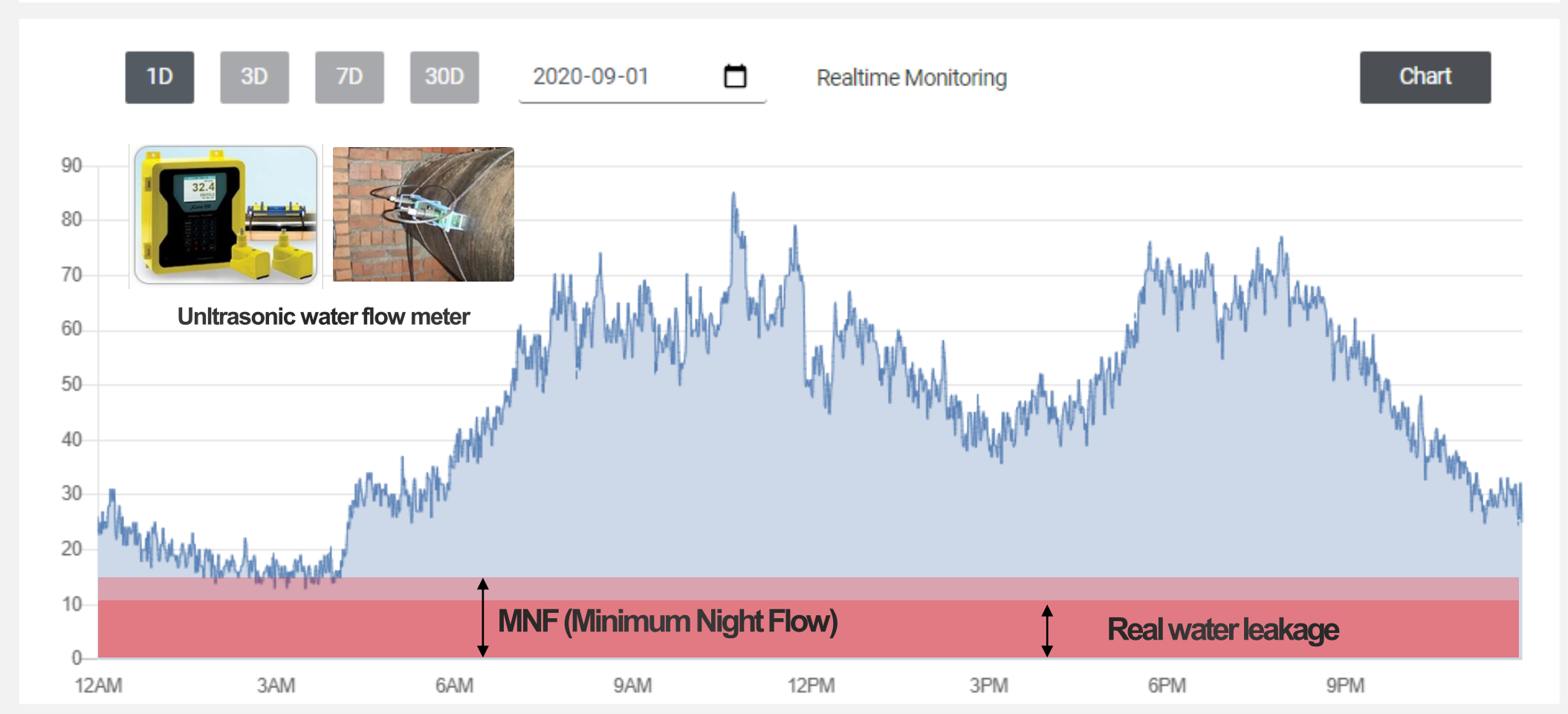
Goal : 50 % Reduction of MNF
(MNF : Minimum Night Flow)

Product & Service

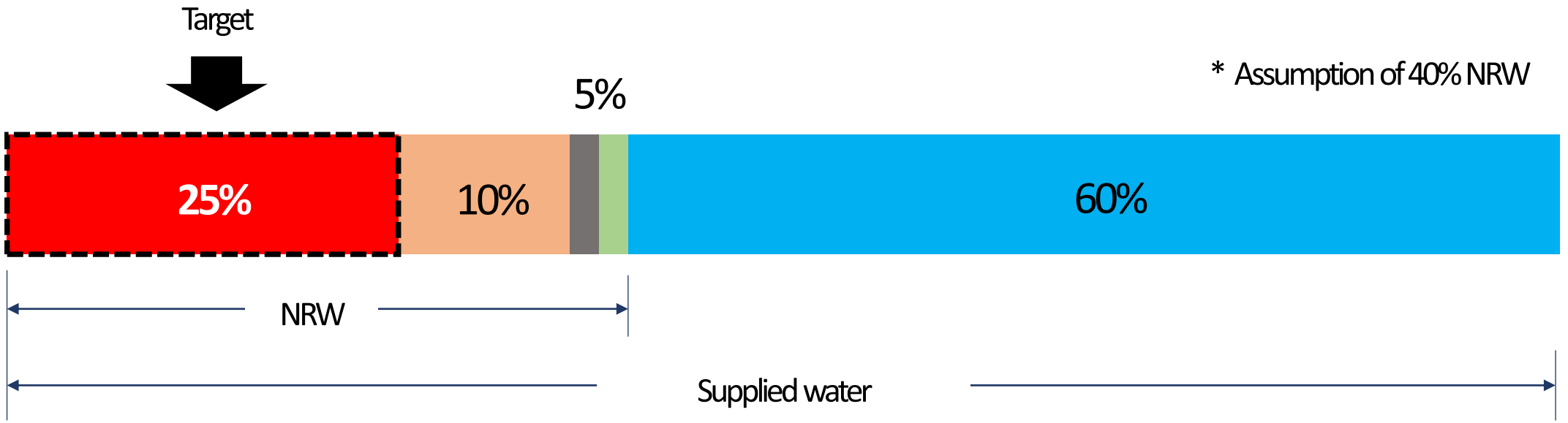
Sonic M1	Sonic M2 (Press, Water flow)	NELOW
DMA Construction	Water leak Detection	Water leak Recovery
GIS Management	Pressure Management	Technology Consulting

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

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



Real water loss is the project target in terms of NRW (Non Revenue Water)



Real water loss

Customer metering inaccuracies

Unauthorized consumption

Others
- Systematic data error
- Unmetered consumption
- Metered unbilled consumption

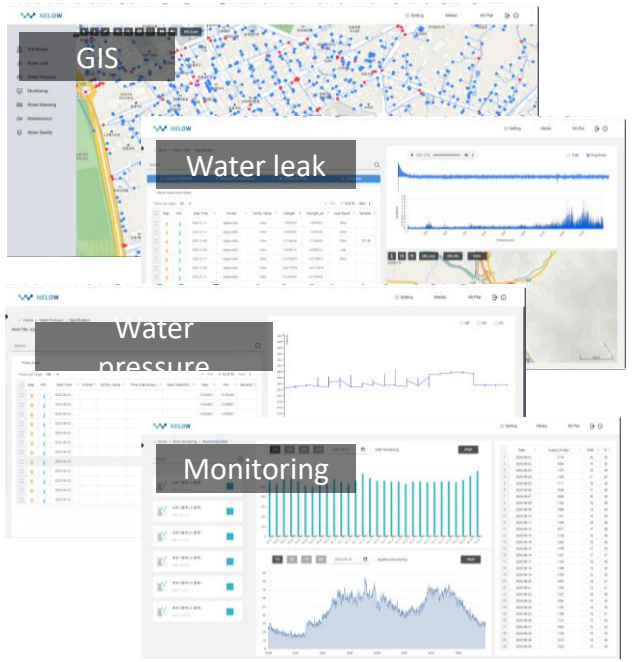
Metered billed authorized consumption

NELOW system is enough for achieving the goal of Level 1

+

+

+



Sonic M1
(Water leak detection)

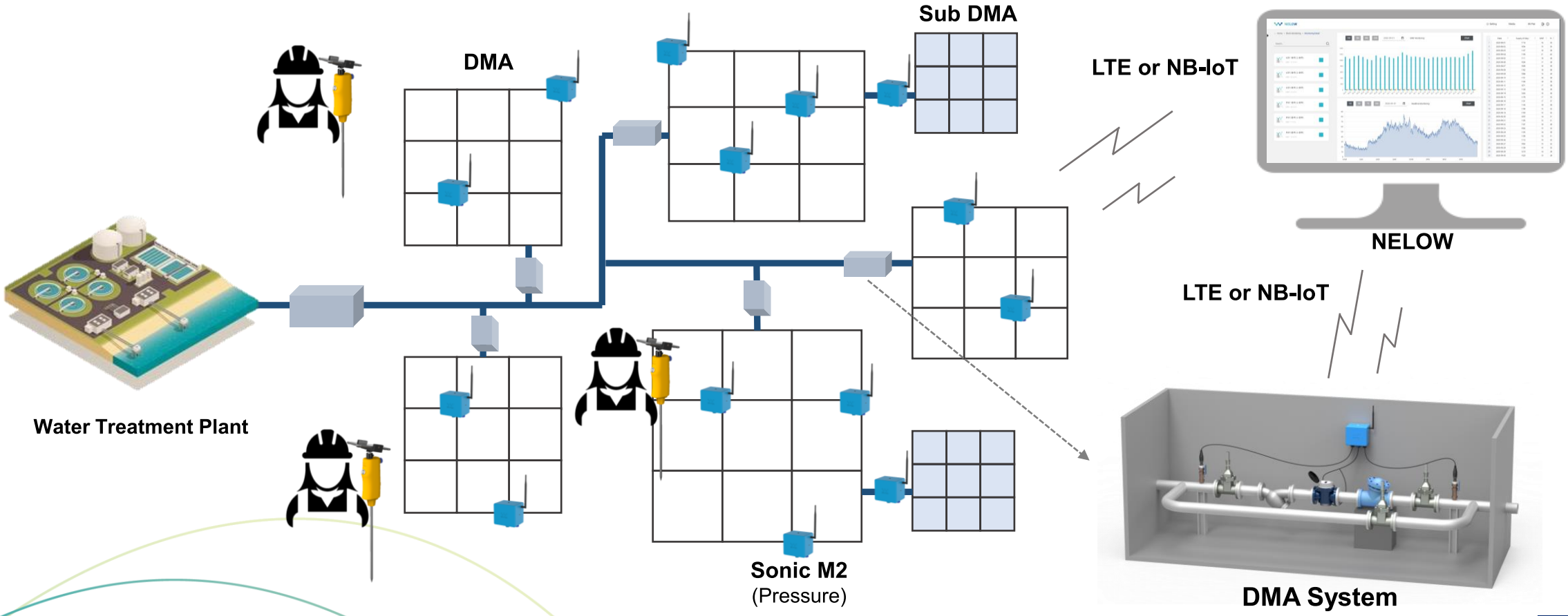
Sonic M2
(Water pressure monitoring)

NELOW_App

NELOW_Web

Level 2 needs DMA(District Metering Area) management system

(DMA makes it possible to save time for water leak detection and control water pressure)



Advanced water leak management requires 3 types of technology

Detection

Reduction

Prevention

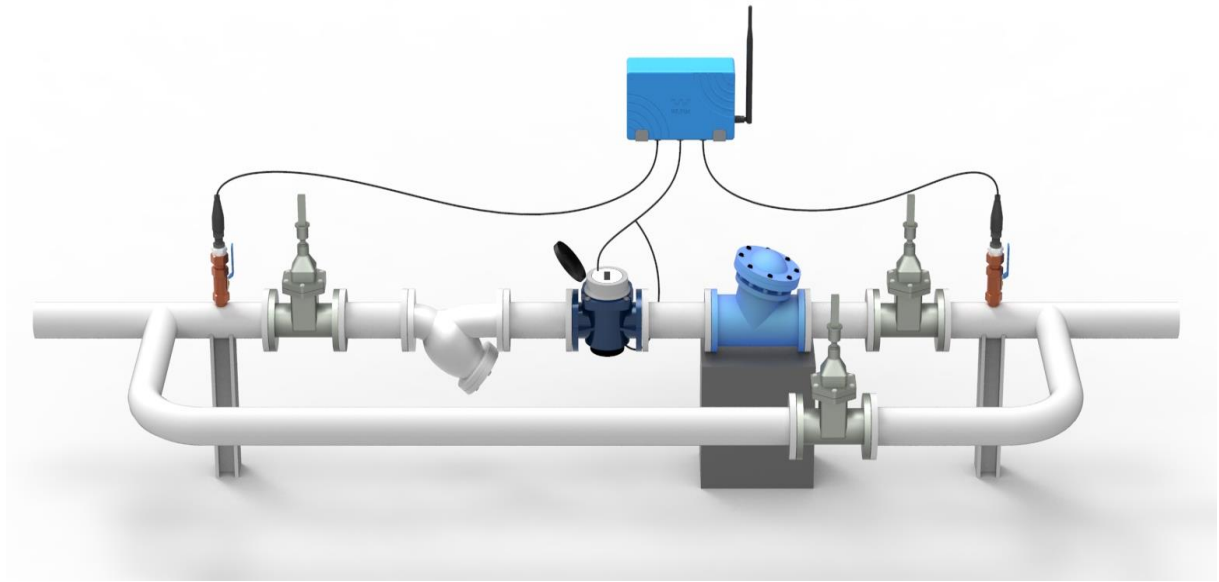
Water leak detection is normally approached from **Shape to Line to Point**

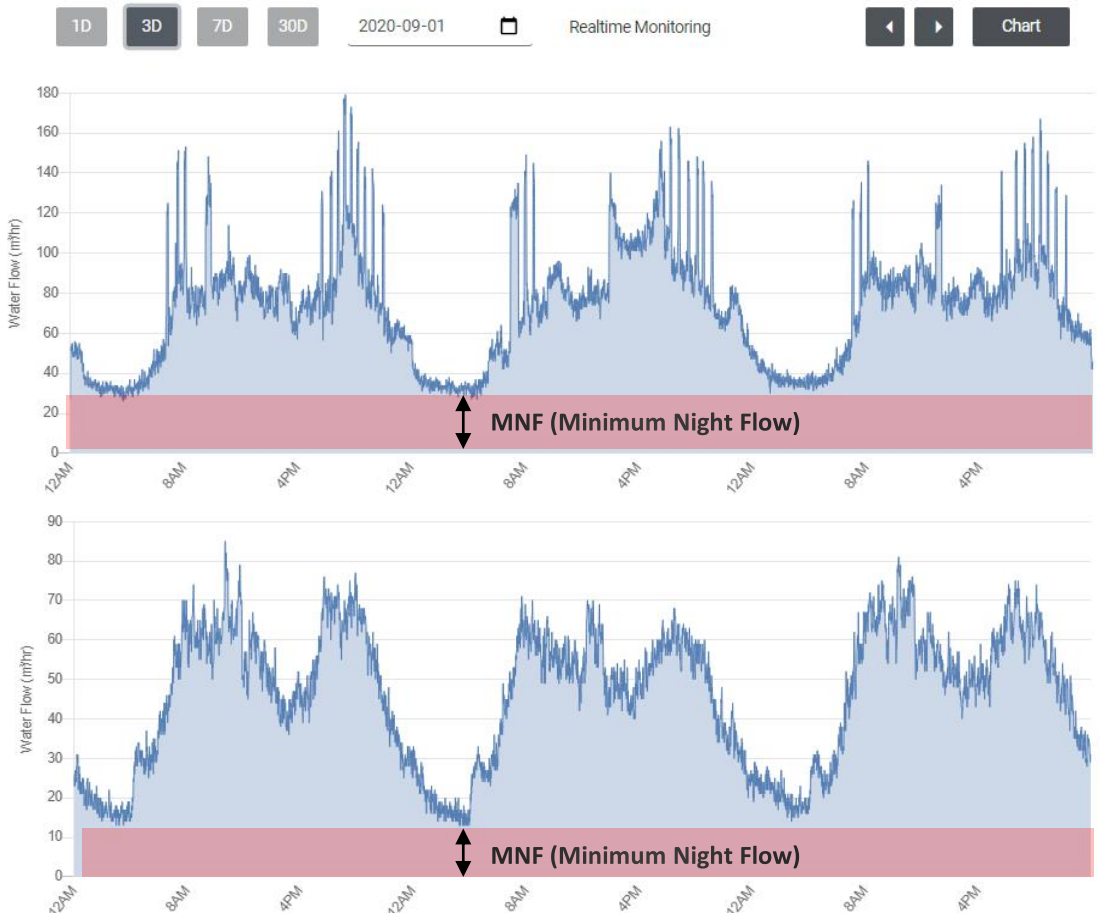
Water Flow

Water Pressure

Water
Leak Sound

MNF(Minimum Night Flow) monitoring of DMA is required for narrowing water leak suspicious area





Water leak sound analysis technology is required for pinpointing the location of water leak

Local partner or Water service com

Water service com

Water leak
Sound collection

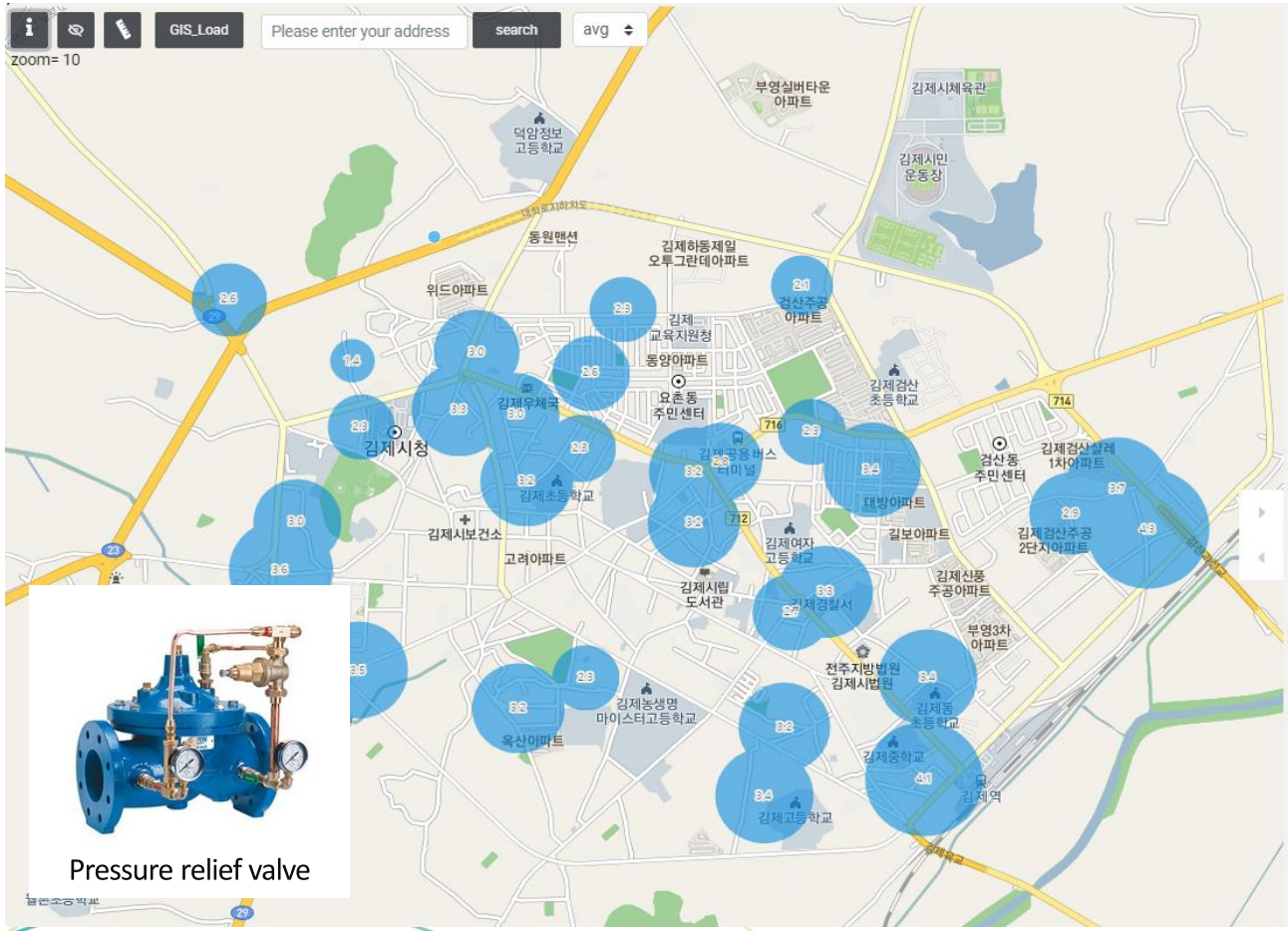
AI model analysis
For suspicious spot detection

Additional water leak
Sound collection for suspicious point

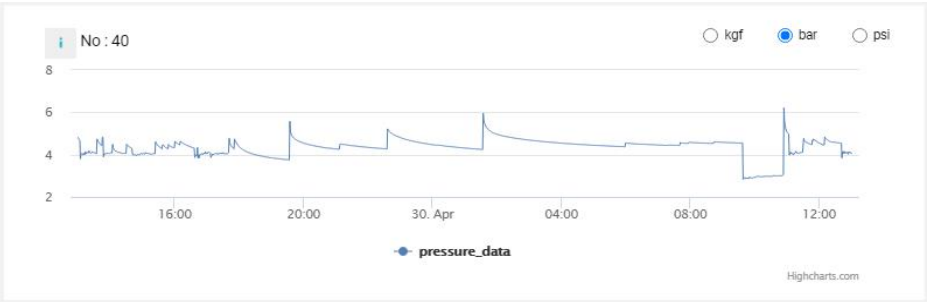
Pinpoint
Water leak spot

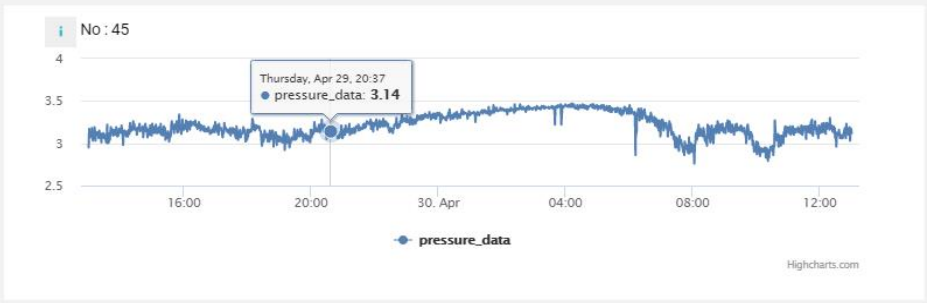
Recovery

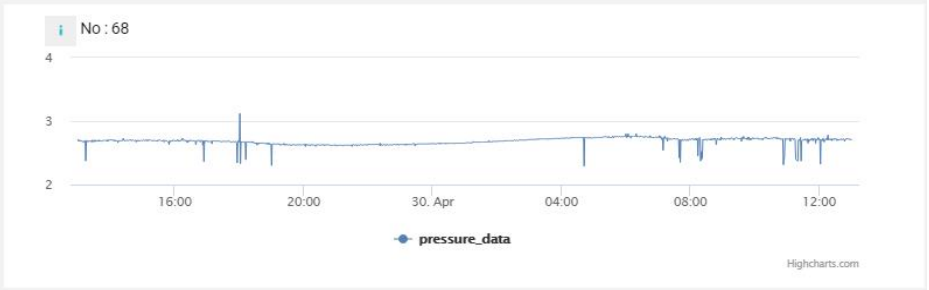
Water leak reduction can be achieved from controlling water pressure in DMA



Pressure relief valve







Water leak prevention can be achieved from controlling water hammering pressure

Home > Water Pressure > Specification

Work Title :

Search...

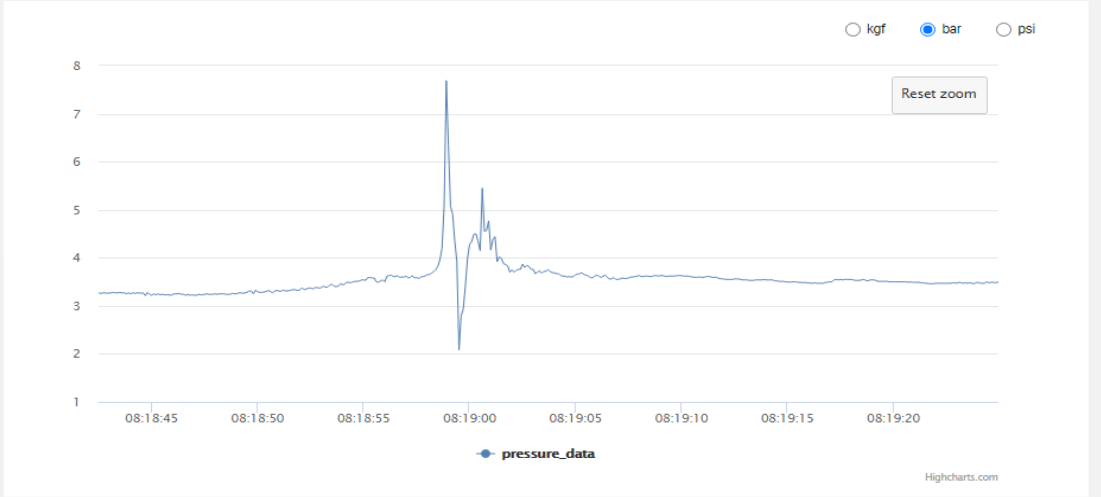
Pressure Data

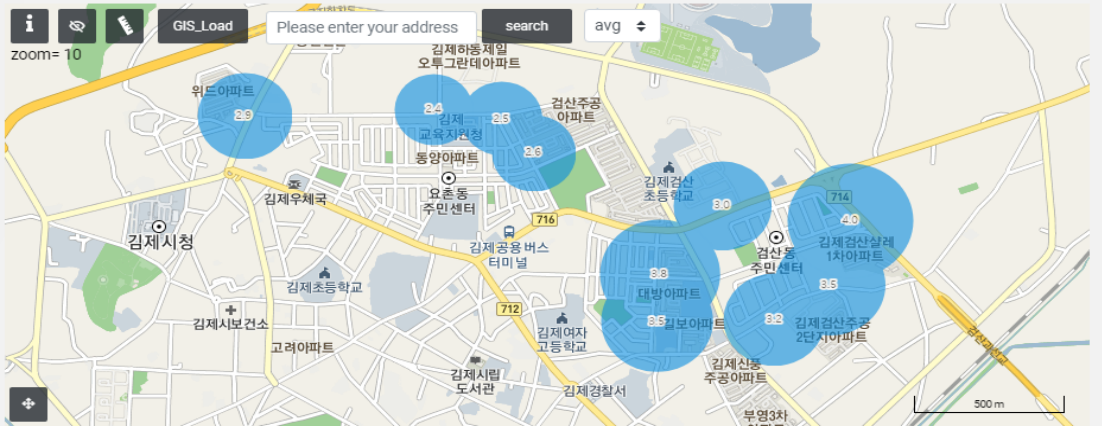
delete

Rows per page 15 Prev 1 - 10 of 10 Next

Map	Info	Start Time	Worker	Device Number	Facility	Save Time(s)	Max(bar)	Min(bar)	Avg	Elevation	Remarks
		2021-04-14 15:00:00	mjhyun@wiplat.com	SM1-V3A-0097		1004502	7.6944	2.0808	3.5066		
		2021-04-14 15:00:00	mjhyun@wiplat.com	SM1-V3A-0110		1004515	9.2306	2.7696	3.7831		
		2021-04-14 15:00:00	kjs_1000@naver.com	SM1-V3A-0109		1004500	3.4604	2.34	2.9364		
		2021-04-14 15:00:00	kch3983@kwater.or.kr	SM1-V3A-0096		1004459	2.7082	2.0581	2.3876		
				SM1-V3A-0128		1004500	4.8814	2.4931	3.9713		
				SM1-V3A-0092		1004500	2.8371	2.2552	2.4835		
				SM1-V3A-0103		1004515	4.6622	1.9726	3.4749		
				SM1-V3A-0129		1004516	4.8607	2.0822	2.5772		
				SM1-V3A-0063		1004457	5.0193	2.3407	3.0474		
				SM1-V3A-0113		1004517	4.3878	-0.0972	3.1708		

Water level control valve





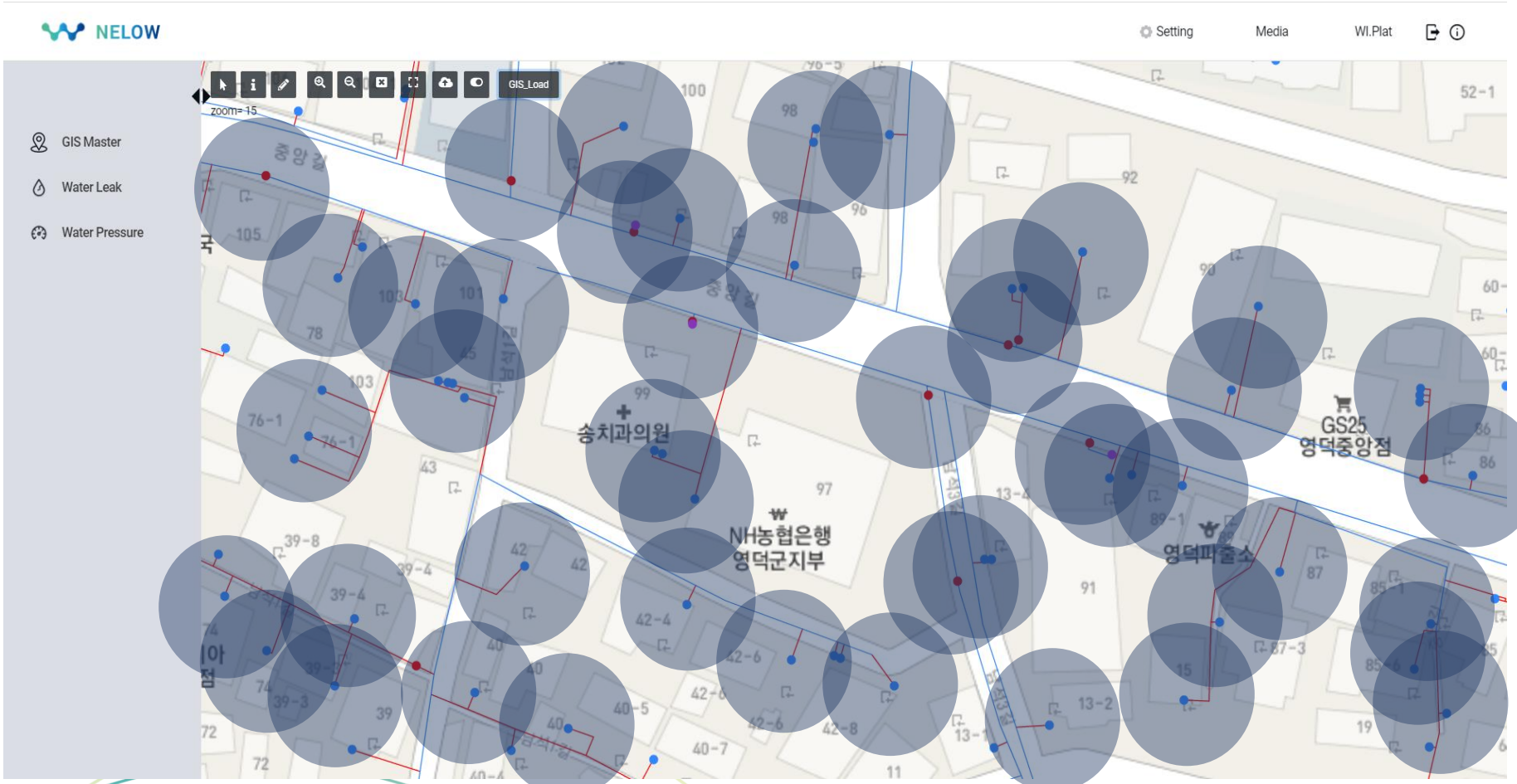
EAKPF Republic of Korea

ADB

Water leak sound disappears in proportion to the sound absorption rate of pipe

	PVC/PE	STEEL	GROUND	WATER
				
Sound absorption rate	0.6~0.7	0.04~0.05	0.8~1	0.5~0.6
Sound speed	2~2.3 km/s	5.7~5.9 km/s	0.2~2.5 km/s	1.4~1.5 km/s

Water leak sound has to be measured every 20~30 meters on non-metallic pipe



Local peoples will be hired for collecting water leak sounds

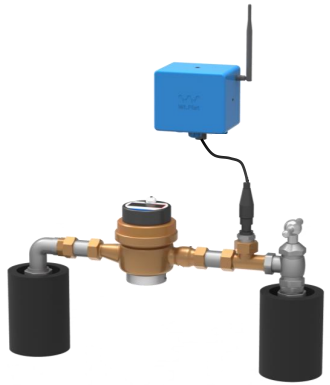
(1 person normally collects 100~120 water leak sounds)

All Korean clients are using 1 year subscription service

NELOW

Sonic M1
(Sound)

+



Sonic M2
(Pressure)

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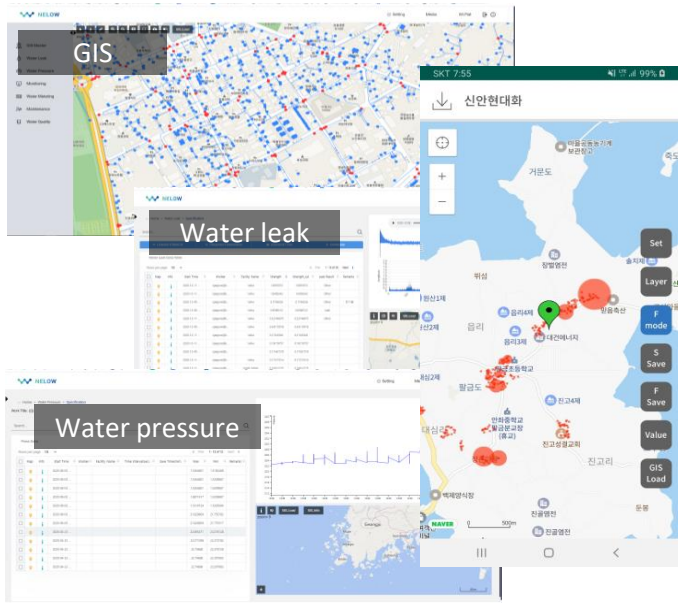


NELOW Web & App

Price Policy

- **Subscription type** (AWS Cloud Server)
  1. Basic fee : 20,000 USD/year
  2. Usage fee : 1 USD/house
  3. 3 Sonic M1 will be supplied for free
  4. Sonic M2 : 700 USD/year (Optional)

SUBSCRIBE **40,000 USD/year**

- **Installation type**

160,000 USD
(Server and free update are not included)

* Example price is for small town of 20,000 houses / Usage fee will be discounted proportional to the size of city

K water Start-up WI.Plat

342,000 USD/Year can be saved assuming 30% MNF reduction in small town of 15,000 houses

Assumption (Level 1)

- 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 / Year

- 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 : 1.43 (3 Years)
Total Cost : 434,625 USD
Total Benefit : 650,156 USD

EAKPF Republic of Korea ADB

570,000 USD/Year can be saved assuming 50% MNF reduction in small town of 15,000 houses

Assumption (Level 2)

- 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 38,000 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)

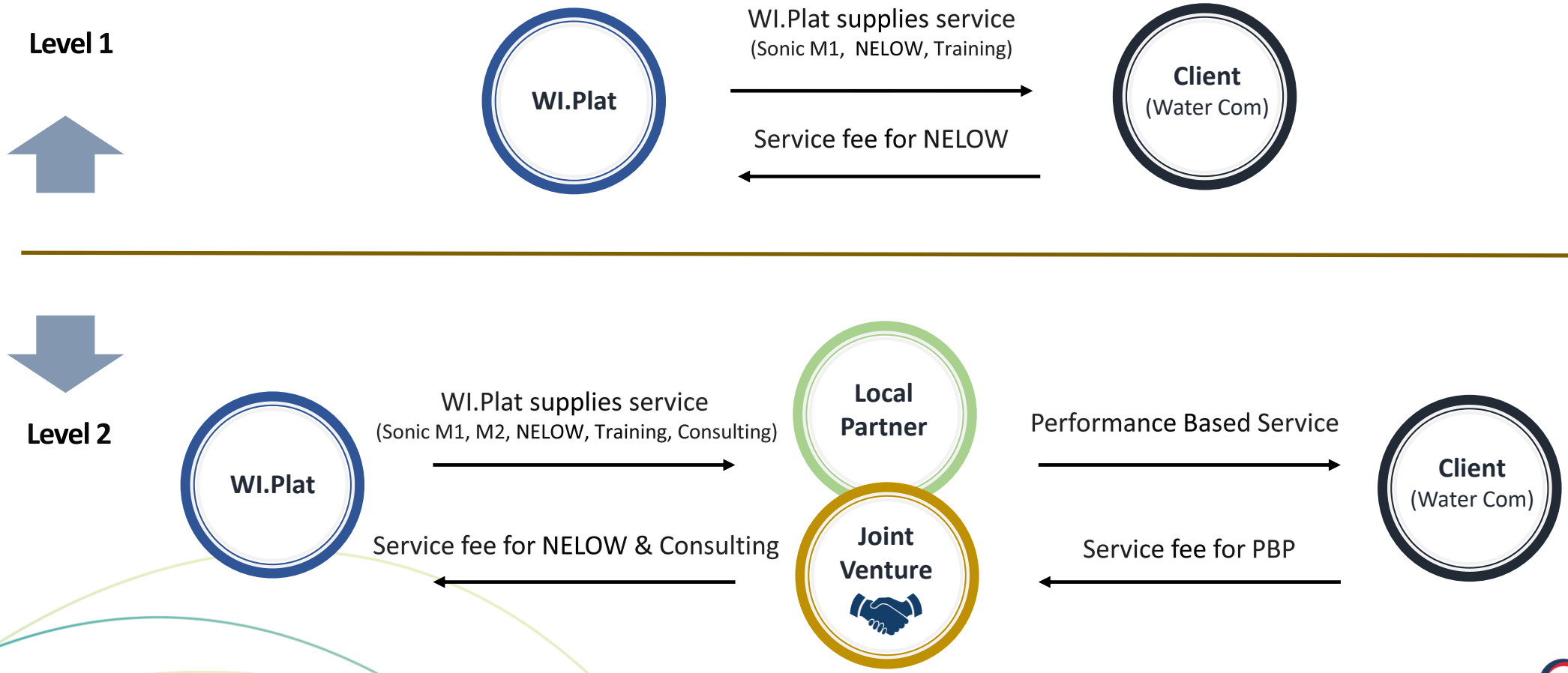
570,313 USD/Year

(3,125 ㎥/day × 365 day × 0.5 USD/day)

BC : 1.47 (10 Years)

Avg Cost : 292,593 USD
Avg Benefit : 507,578 USD

Performance Based Project can be served to client cooperated with local partner



WI.Plat will train and technically support for local partner to perform PBP with local client

Partner	Work scope	Remark
WI.Plat	• Supply of Sonic M1, M2, NELOW S/W • Technical training for detecting and data analysis of water leak with NELOW • Technical consulting for total water leakage management (Optional)	
Local Partner	• Water leak detection by collecting water leak sounds with Sonic M1 • Recovery of water leak spots (Optional) • Construction of DMA management system (Optional) (Water flow, pressure monitoring & Water pressure management with PRV) • Water pressure control by measuring water pressure with Sonic M2 (Optional)	
Client (Water Com)	• Supervision of PBP and verification of performance of the project • Recovery of water leakage (Optional)	

K water Start-up WI.Plat

5 month free POC(Project of Concept) will be served for technical verification of NELOW

1. MOU
(Local partner or client)

2. Supply devices and S/W

3. Training (On-line)

4. Water leak sound collection

5. Water leak detection & Recovery

6. Performance Verification

7. Negotiation for contract

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We are living in a flood of digital companies armed with innovative technologies

I E-Commerce I

coupang MEMEBOX HELLONATURE dailyHOTEL Yanolja B2LiNK

I Foodtech I

배달의민족 yogiyo FOODLY 부탁해!

I Fintect I

Toss WADIZ 증권 Plus for KAKAO 8 percent KTBSOLUTION KORBIT

I SNS/Communication I

JANDI StyleShare Flitto MY MUSIC TASTE vingle 이웅

I Sharing Economy I

SOCAR hellomarket MY REAL TRIP Wisdome plugger kozaza we share homes 모두의주차장

I Healthcare I

ybrain Zikto HealthWave HUINNO

I Education I

knowre Bapul BeNative Pro 차이나 Qualson Bravepops Company Create Products. Blossom Children.

I Utility I

Shaki malang JellyBus ALIVE

I Content I

LEZHIN COMICS jobplanet 직방 BEAT RIDIBOOKS BOOKPAL book jam piki

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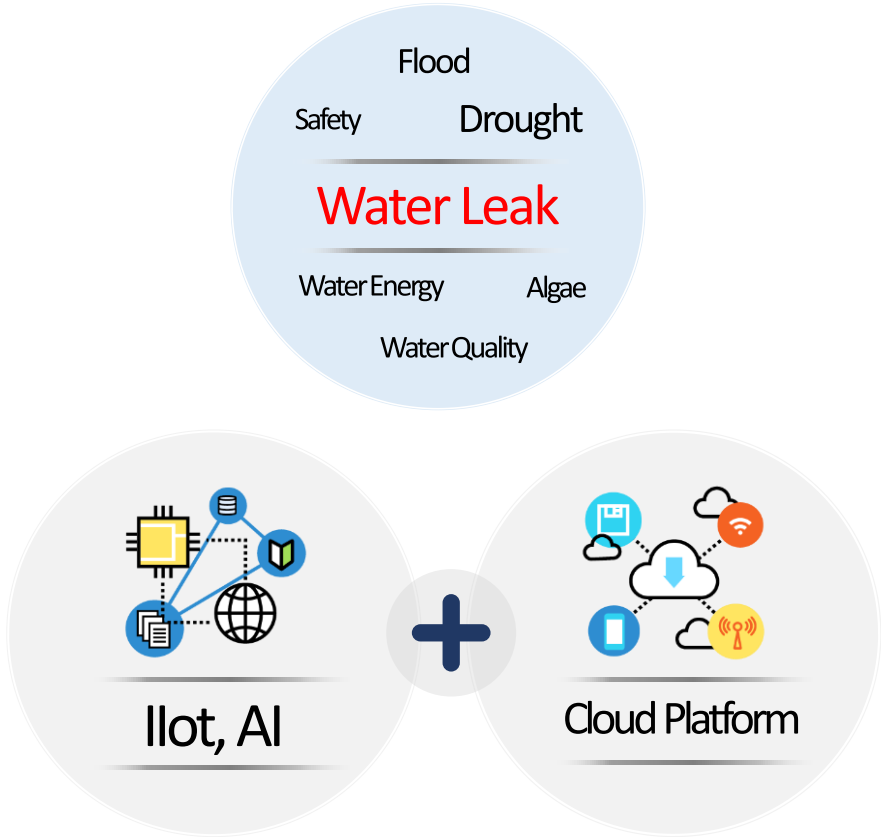
4th industry technologies have to be used for achieving the sustainable development



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Our ultimate goal is to bridge water service gab between developing and developed countries

Thank you

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