

# Remote Water Quality Monitoring Solutions

BIPIN KUMAR SRIVASTAVA, BUSINESS DEVELOPMENT MANAGER

3<sup>RD</sup> OF OCTOBER

**Environmental  
Monitoring  
Workshop '22**



# Introduction

- Role : Working as BDM, Environmental Segment – Middle East.
- Expert : Customized environmental monitoring and hydrographic survey solutions.
- Works with SAP, Turkey & Africa Region's colleagues to provide customized environmental solutions.
- Experience : 18+ years with exceptional track record in strategic planning, sales and marketing.
- Education : BE E & Telecom. and MBA-IT.
- Commitment : Go an extra mile to ensure customer satisfaction.



# Session Agenda



- About Xylem
- Xylem Analytics Overview
- Environmental Data Buoys
- Turnkey System with IOT Solution
- Autonomous & Remote Vehicles
- Vertical Profiling System
- Questions

# xylem

As the world's leading global water technology company, Xylem has a unique opportunity and responsibility to solve water and smart infrastructure challenges.

2020 Revenue \$4.88B

Employees ~16,000

Countries ~150

Continents 7



xylem  
Let's Solve Water

# Water Technology Company

spanning the entire water cycle

Utilities / Building Services /

Industrial / Agriculture

**Treat**  
Water Treatment  
Acquire > Test > Treat

**Track & Transform**

**Treat**  
Wastewater Treatment  
Treat > Test > Return

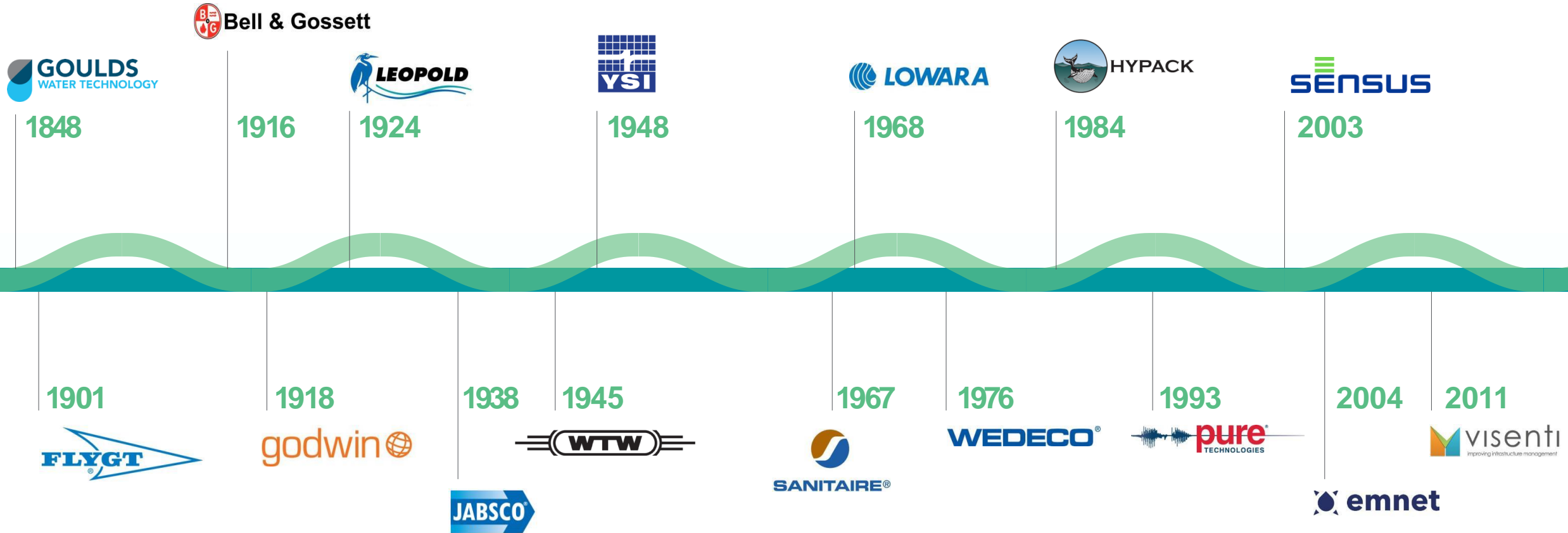
**Transport**

Water Intake

Water Return

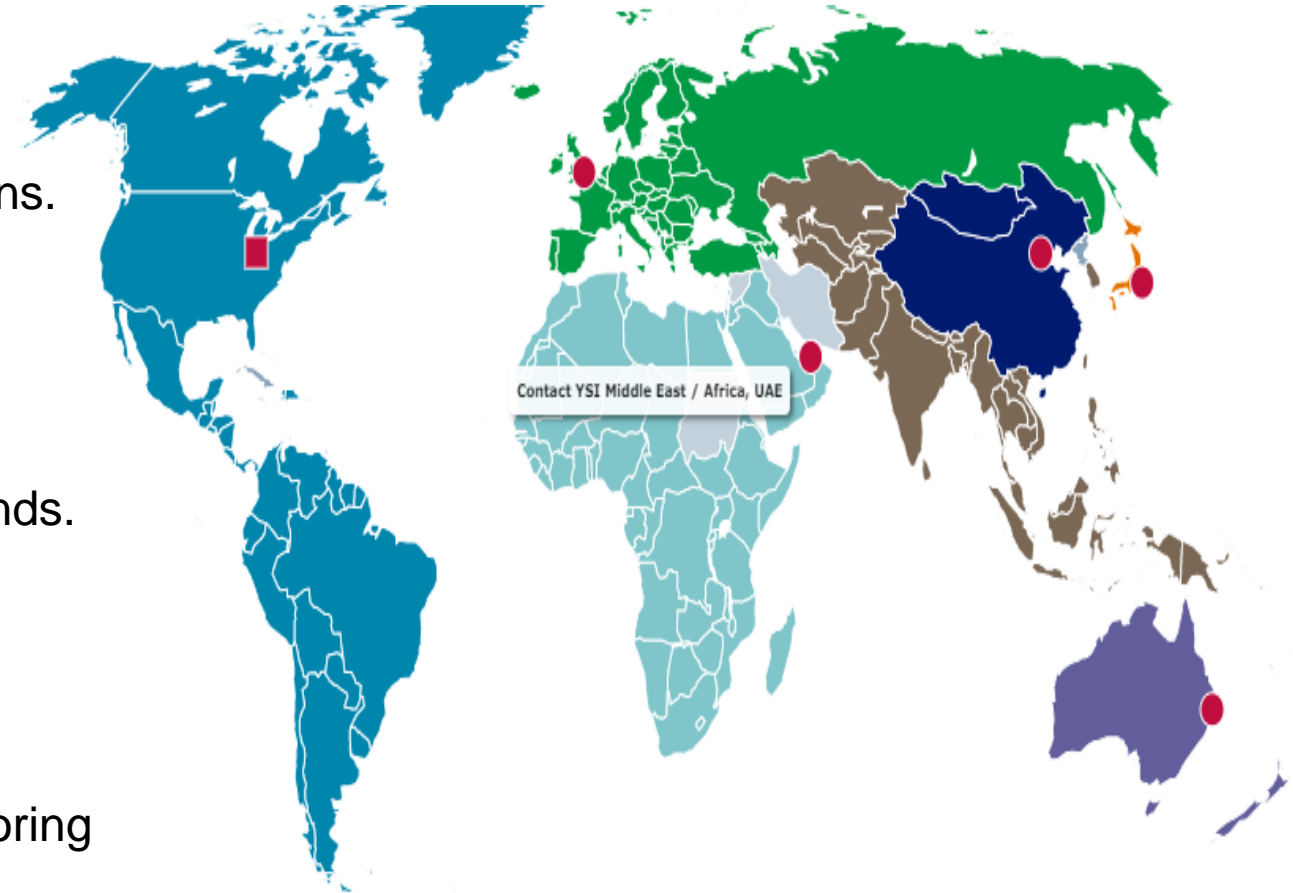
Oceans / Lakes / Rivers /  
Groundwater

# A Strong Brand Legacy

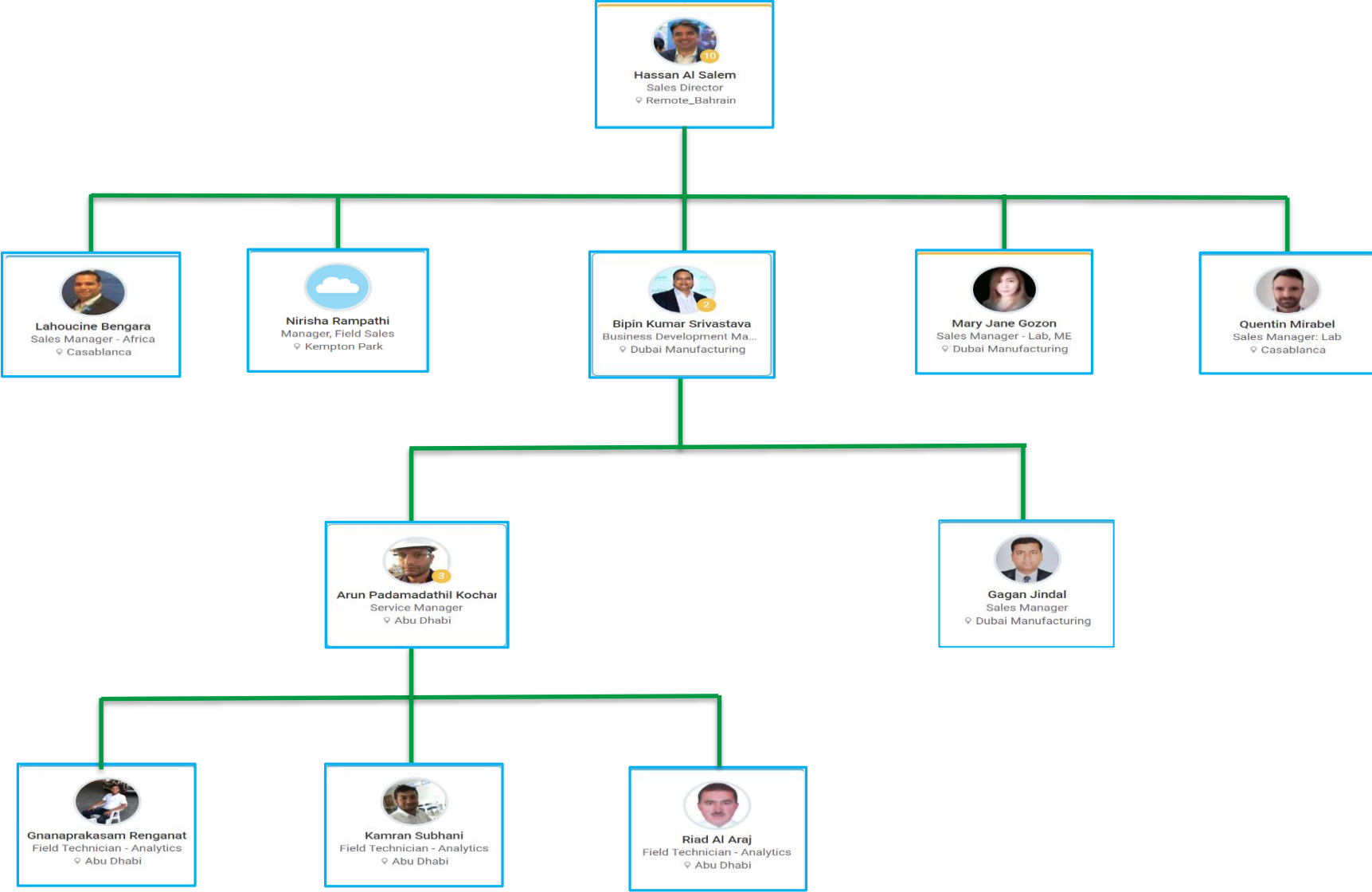


# Xylem Analytics

- Part of Xylem Inc.
- Developing advanced monitoring and control solutions.
- 1,200 employees worldwide.
- Analytical solutions for water with 10 world class brands.
- Regional integration centers (RIC) around world.
- Digital sampling to customized environmental monitoring solutions.



# RIC Structure for Sale/Delivery/Capacity





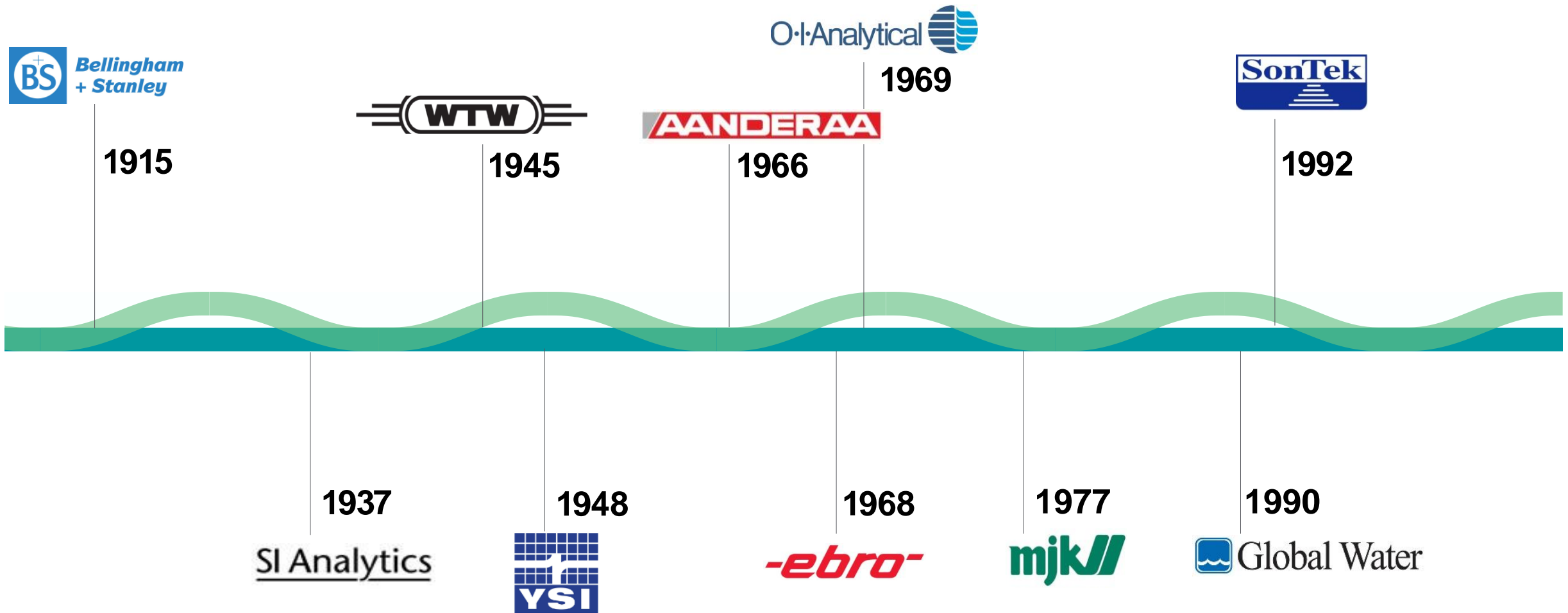
# Xylem Analytics UAE RIC Capabilities

- Product selling
- Complete integrated system & solutions
- After sales support
- Warranty coverage
- Service & repair
- Calibration
- On-site training & tech support
- Installation & commissioning
- Field maintenance services



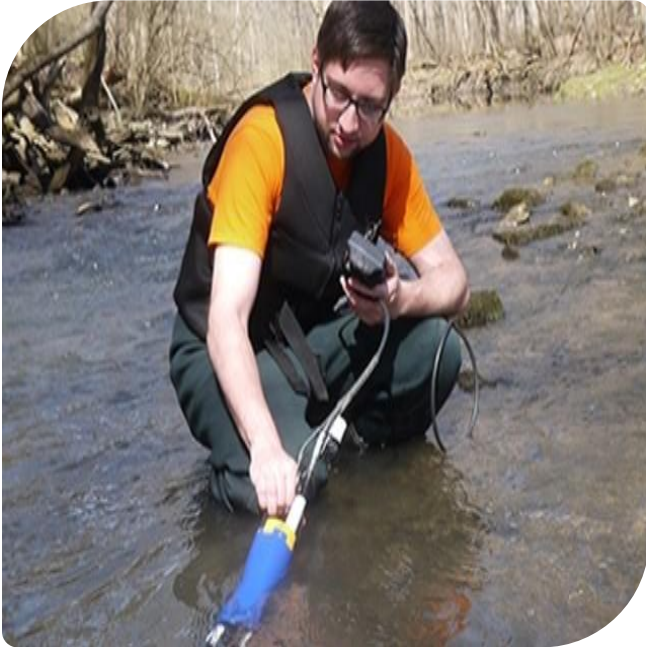
# Analytics Brands

## Bringing together the most progressive brands



# Vertical Segments

## Environmental



- Groundwater monitoring
- Source, raw & drinking water
- Irrigation canals & turnouts
- Stormwater/flood monitoring
- Aquaculture monitoring
- Ocean & coastal monitoring
- Ports & harbors monitoring
- Offshore renewables
- Offshore installation
- Bathymetry surveying

## Process



- Drinking water
- Domestic wastewater
- Industrial wastewater

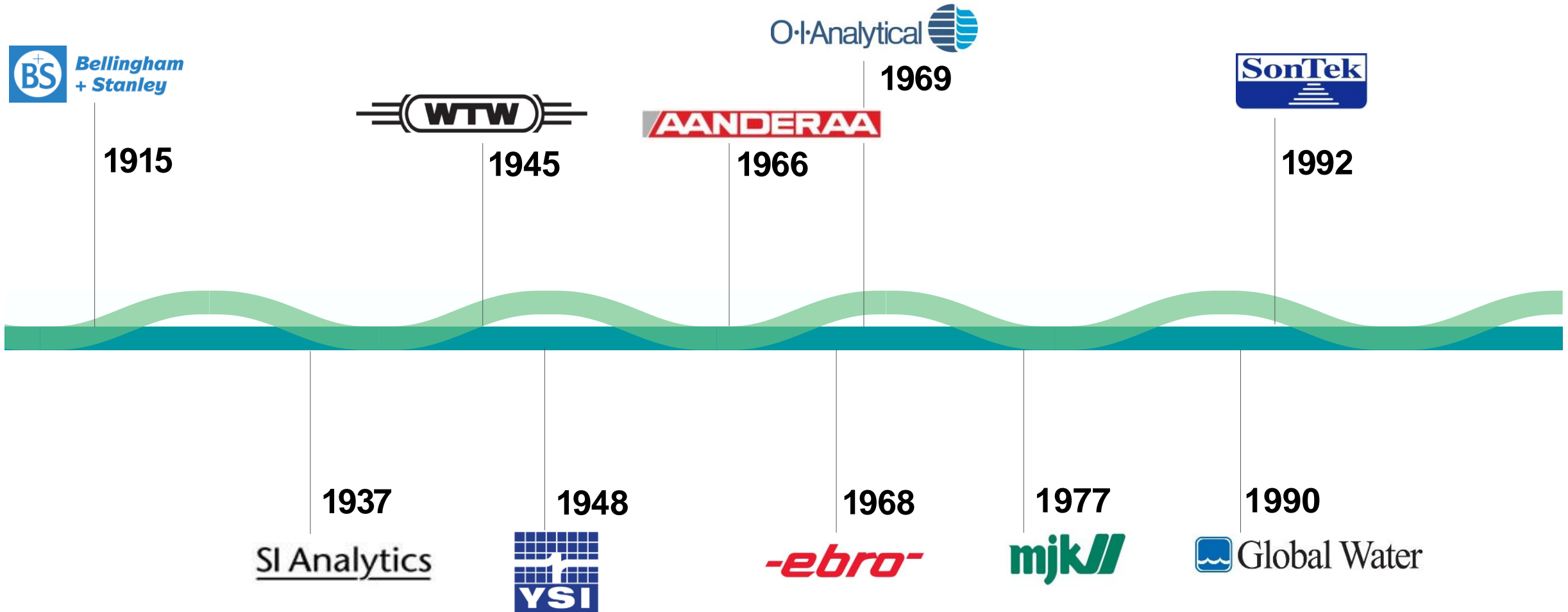
## Laboratory



- QA & QC Lab
- Pharmaceuticals
- Industrial
- Food and beverage

# Analytics Brands

## Bringing together the most progressive brands





Dam Surveys

River Surveys



Lake Monitoring

Groundwater Monitoring



Wetland Monitoring

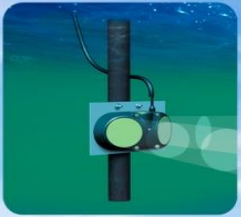


Storm water / Flood Monitoring and early warning



Digital Water Sampling & Flow measurements





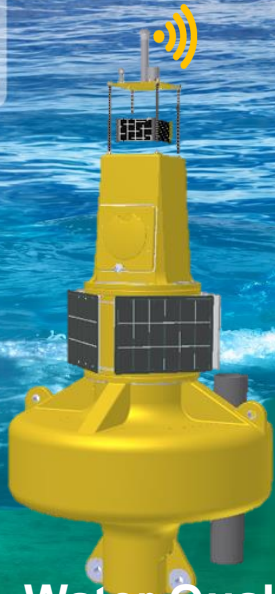
**Ports & Harbor  
Monitoring**



**Bathymetry Surveys**



**Digital Water Sampling  
Measurements**



**Marine Coastal  
Construction**



**Aquaculture  
Monitoring**

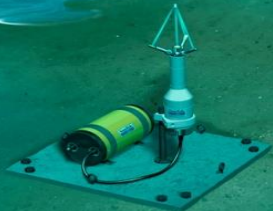
**Water Quality & Met-ocean  
Parameters Monitoring**



**Vertical Profiling  
System**



**Deep Water  
Monitoring System**

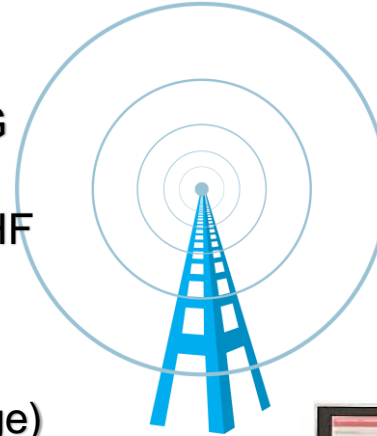


# Monitoring Station Components

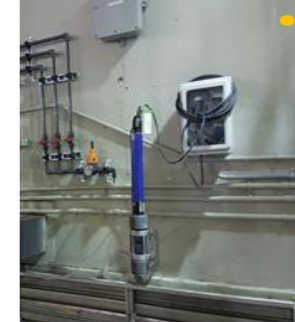
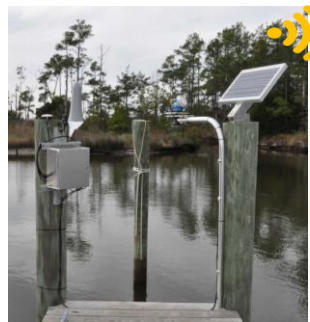


## Telemetry Modes

- Cellular Telemetry 3G/4G
- Radio Telemetry UHF/VHF
- Satellite Telemetry
- LoRa (short for long range)
- NB-IOT (Narrowband Internet of things)
- Direct Cable Connection



## Data Collection, Management, Display & Monitoring



Automatic Tide Station Radar

Automatic Tide Station Pressure

Automatic Weather Station

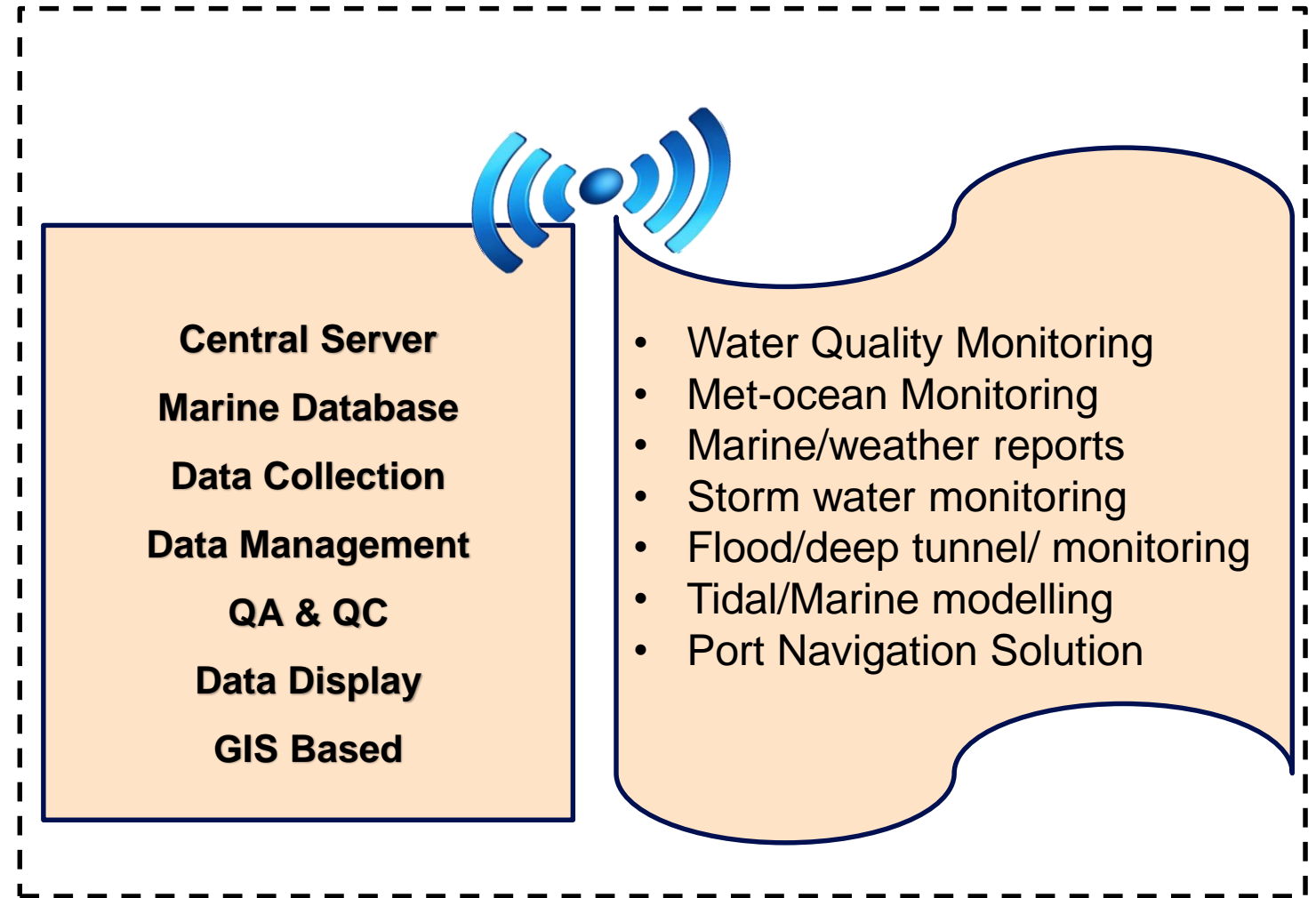
Storm/Flood Monitoring Station

Drinking Water Monitoring Station

Drinking Water Monitoring Station

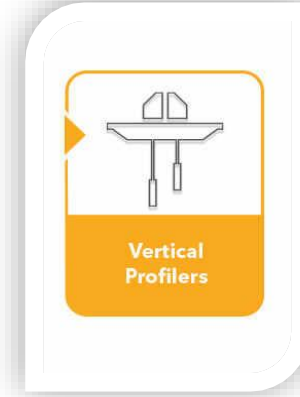
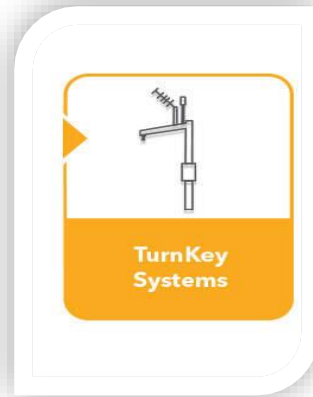
Waste-water Monitoring Station

# Remote Monitoring & Early Warning System



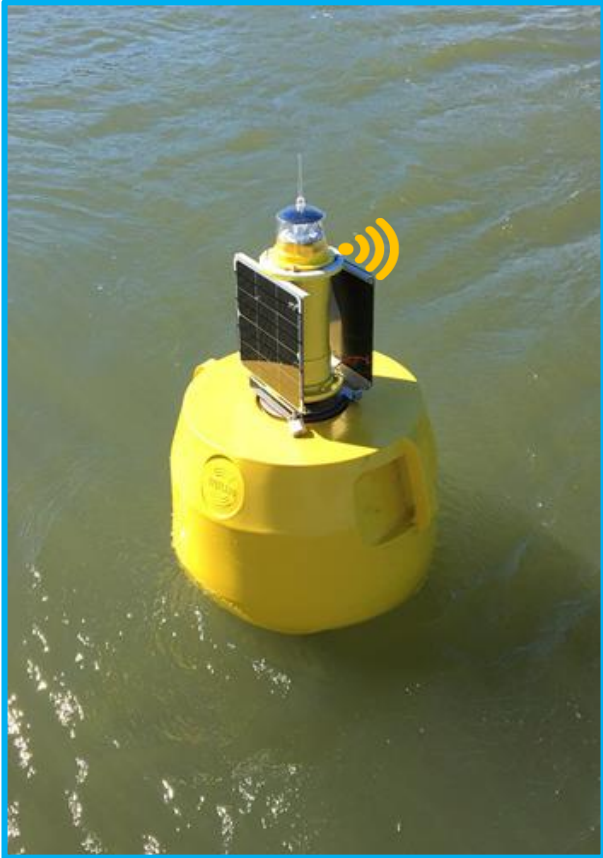


# Right System for you?



# Environments Data Buoys Solutions

**DB600 (60cm)  
WQM & Point Current**



**DB1250 (1.25m)  
WQM**



**DB1750 (1.75m)  
WQM & MET**



**MOTUS (1.75m)  
Met-ocean with WQM**



# Environments Data Buoys Solutions



Product Name	Sonde Spar	Harbor Buoy	Inshore Buoy	PISCES	Bay Buoy	Coastal Buoy
Legacy Name <sup>1</sup>	EMM25	EMM68	EMM150	EMM350	EMM700	EMM2.0
Recommended Seastate <sup>2</sup>						
System Weight kg (lbs)	22.7 (50)	50 (110)	68.0 (150)	159 (350)	186 (410)	544 (1200)
Buoyancy kg (lbs)	27.2 (60)	91.6 (202)	150 (330)	363 (800)	635 (1400)	1656 (3650)
Net Buoyancy kg (lbs)	2.27 (5)	41.7 (92)	50.8 (112)	204 (450)	454 (1000)	1111 (2450)
Min Operation Depth m (ft)	1.5 (4.9)	2 (6.6)	2.5 (8.2)	0.75 (2.5)	4 (13.1)	5 (16.4)
Max Operation Depth m (ft)	25 (82)	25 (82)	25 (82)	25 (82)	50 (164)	100 (328)
Max Current Speed m/s (ft/s)	1.00 (3.3)	1.00 (3.3)	1.00 (3.3)	6 (19.7)	2.5 (8.2)	3 (9.8)
Max Current Speed (knots)	1.94	1.94	1.94	11.6	4.86	5.83
Max Additional Payload kg (lbs)	none	5 (11)	50 (110)	50 (110)	100 (220)	250 (551)
Real-time Data		X	X	X	X	X
Met Capable			X		X	X
Up-looking ADP					X	X
Down-looking ADP			X			X
Common Carrier Shipping	X					
Moorings and/or tackle	Light	Light	Light	Light	Medium	Heavy

# Environments Data Buoys : Local Customized Solutions

**Local assembly & integration**



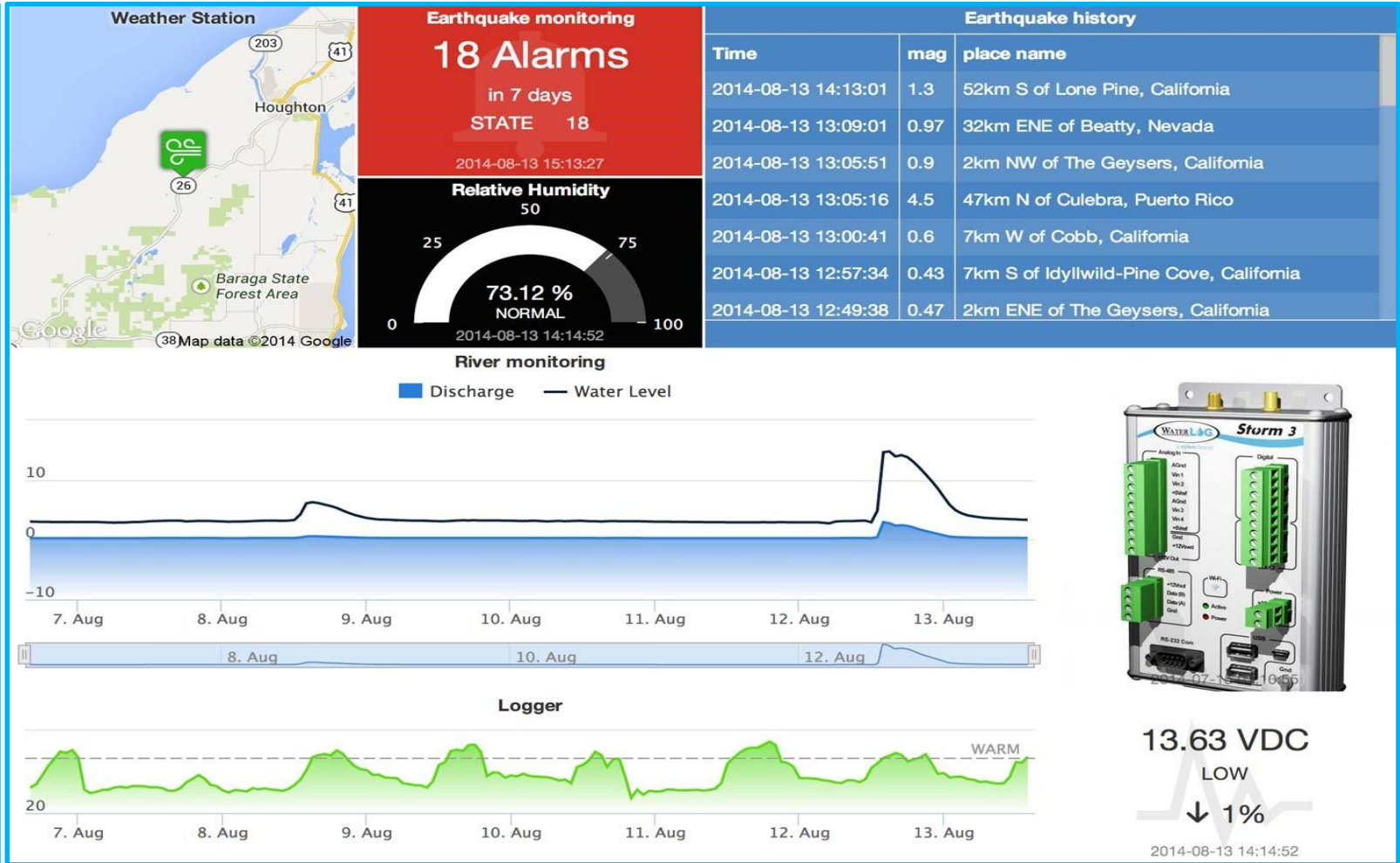
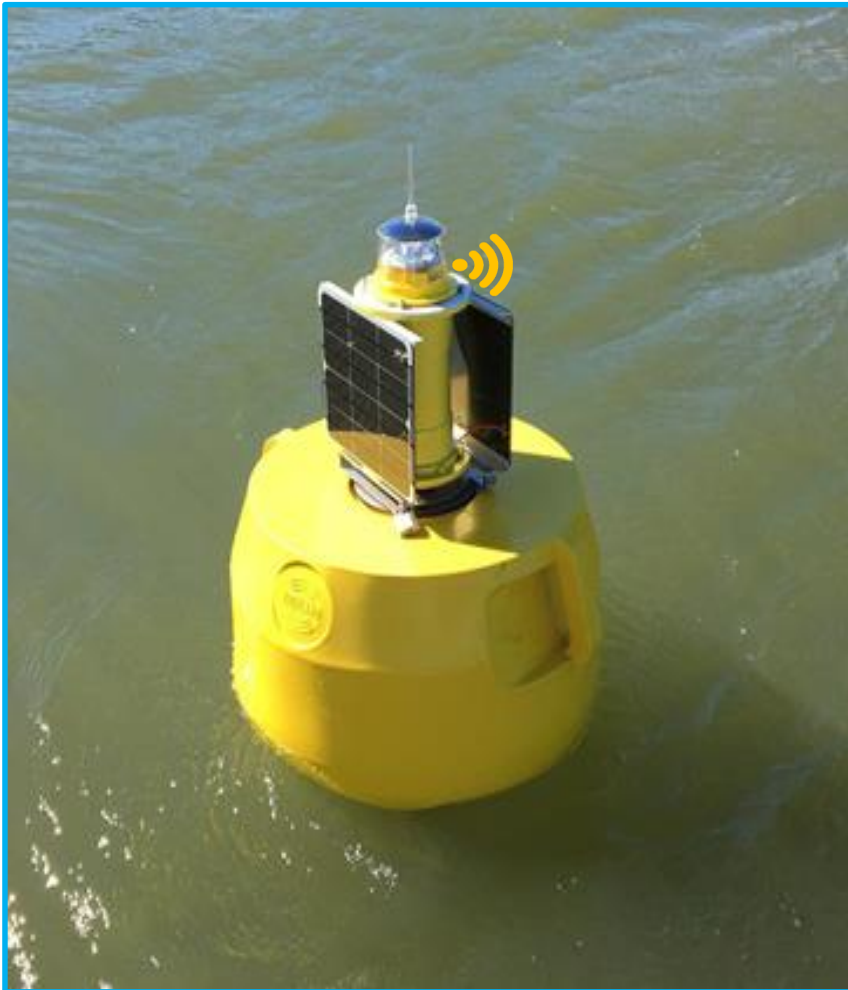
**Installation & Training**



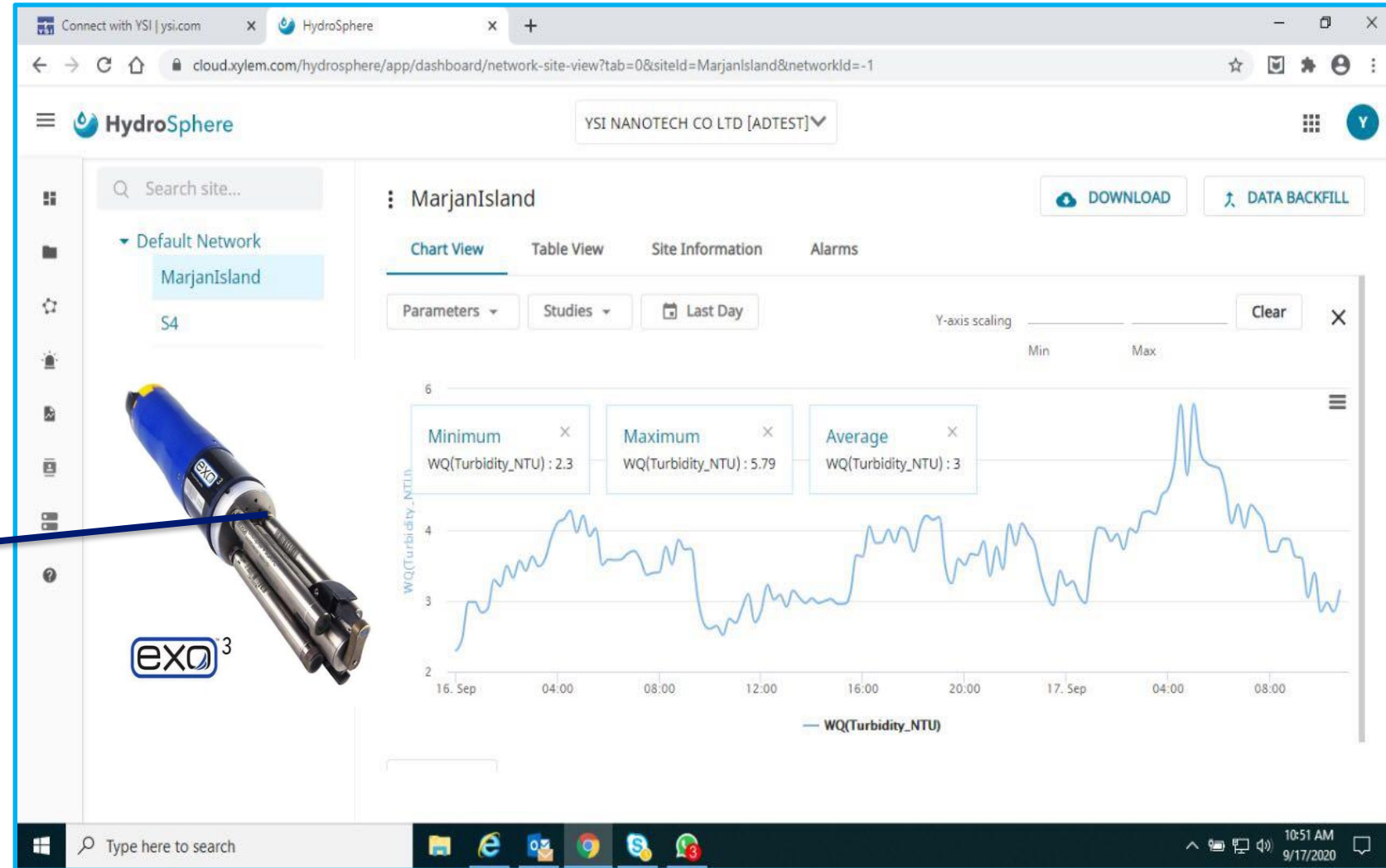
**Preventive Maintenance**



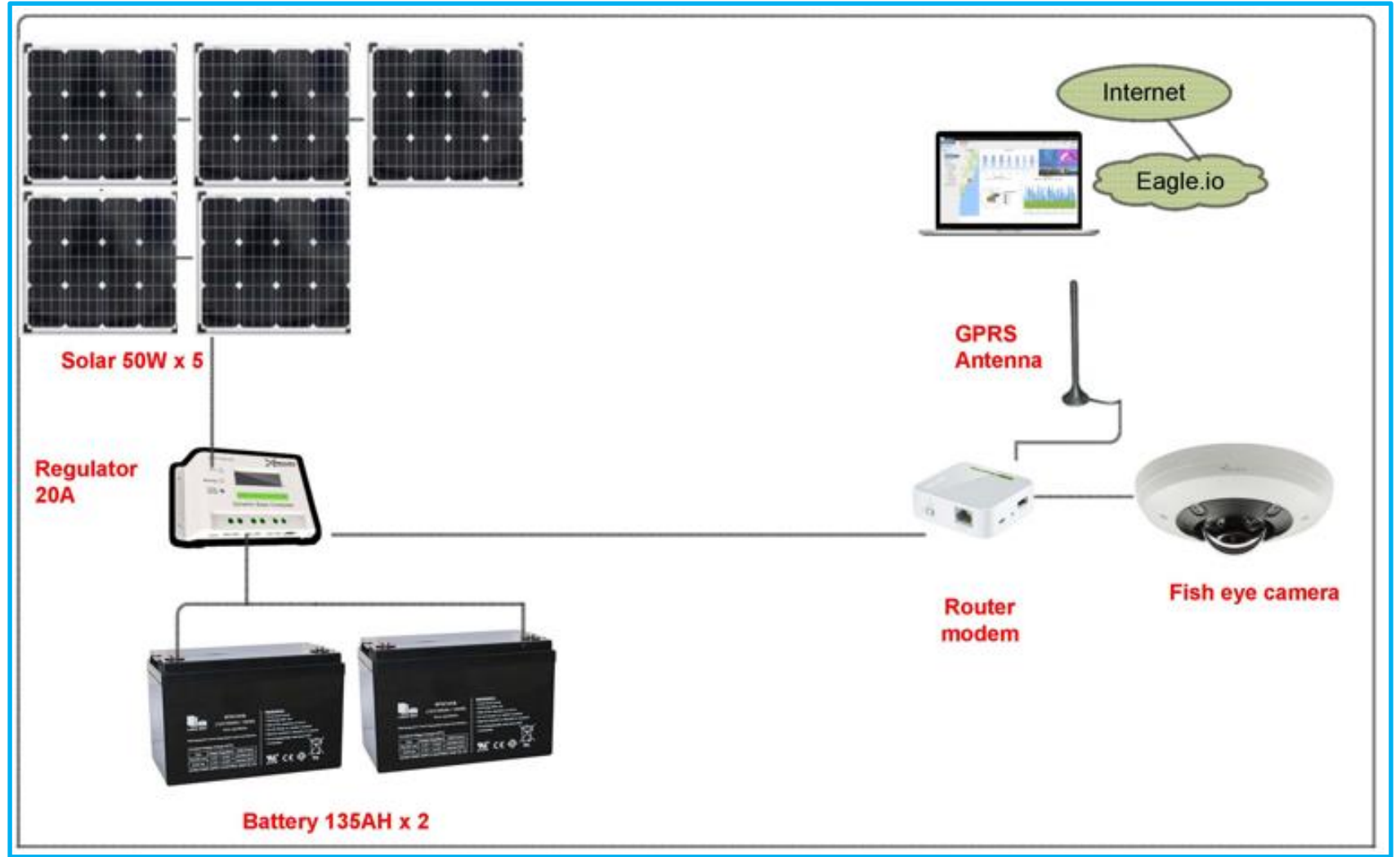
# DB600 - all-in-one Real Time Data Buoy



# Water Quality Monitoring Data Buoy



# Water Quality Monitoring Data Buoy with Vandalism Protection



# MOTUS Wave Buoy Solutions

## METEOROLOGICAL MEASUREMENTS

Wind, atmospheric pressure, air temperature, humidity.



## AIDS TO NAVIGATION

Radar reflector, Lanterns, E-NAVCON, RACON, AIS Transponders



## REAL-TIME DATA DELIVERY

GeoView, Storm Central, general interface to 3rd party data delivery solutions



## WAVE MEASUREMENTS

Wave direction, wave height, external or internal compass, correction for buoys made of magnetic material.



## WATER QUALITY SENSORS

Dissolved Oxygen, pH, Temperature, Conductivity, Salinity, Turbidity, Chlorophyll, Blue-Green Algae and Hydrocarbons



## DATA MANAGEMENT

SmartGuard, Storm logger, 3rd party logger



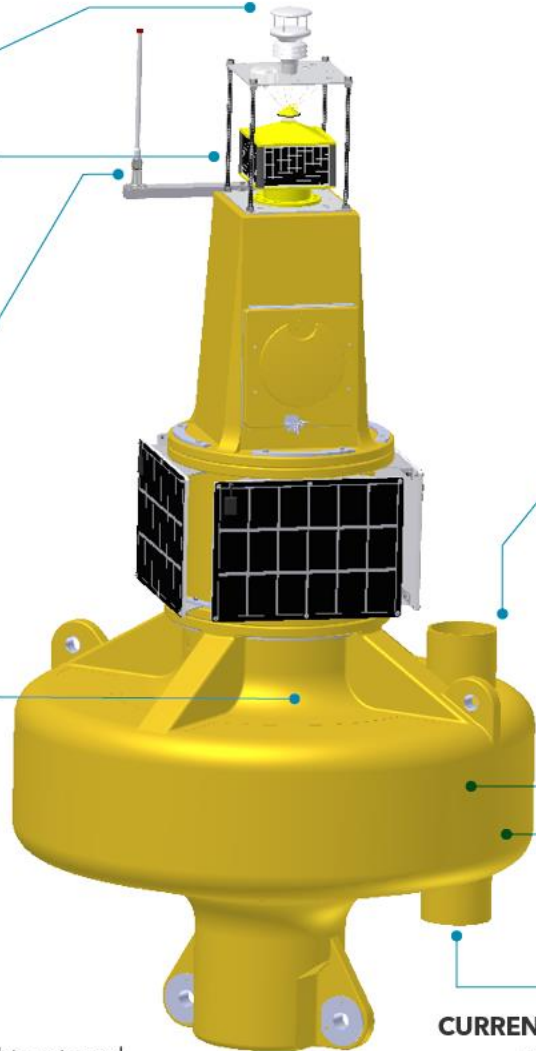
## TELEMETRY OPTIONS

2G/3G modem, AIS, VHF/UHF, radio, iridium, GOES



## CURRENT DIRECTION AND SPEED

Broadband Doppler Current Profiler, Z-pulse single point current sensor

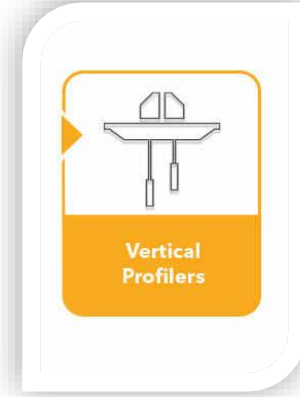
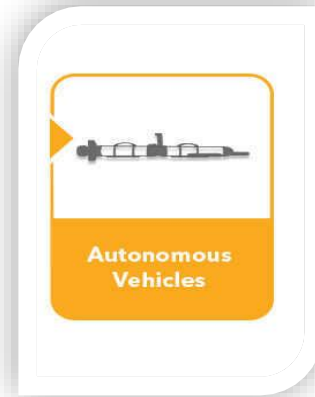
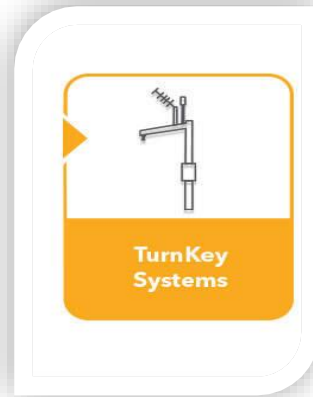




# Motus Wave Buoy



# Right System for you?



# Turnkey System



- Hydromet station
- IOT solutions for water level & quality monitoring
- Stormwater monitoring
- Floodwater Monitoring
- Surface water monitoring
- Ground water
- Drought monitoring

# Automatic Tide & Weather Station

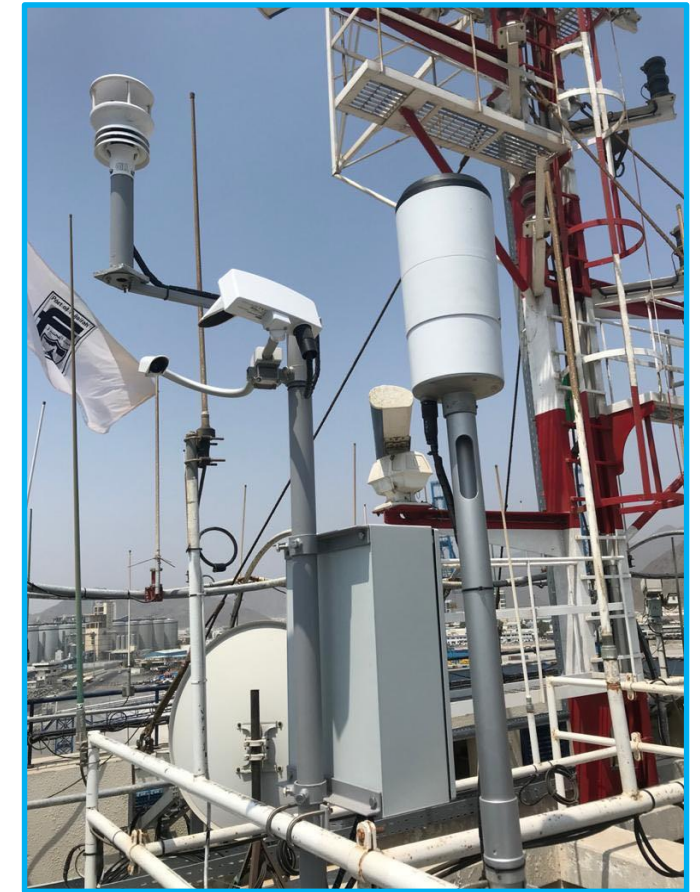
**Tide Station  
Pressure Sensor**



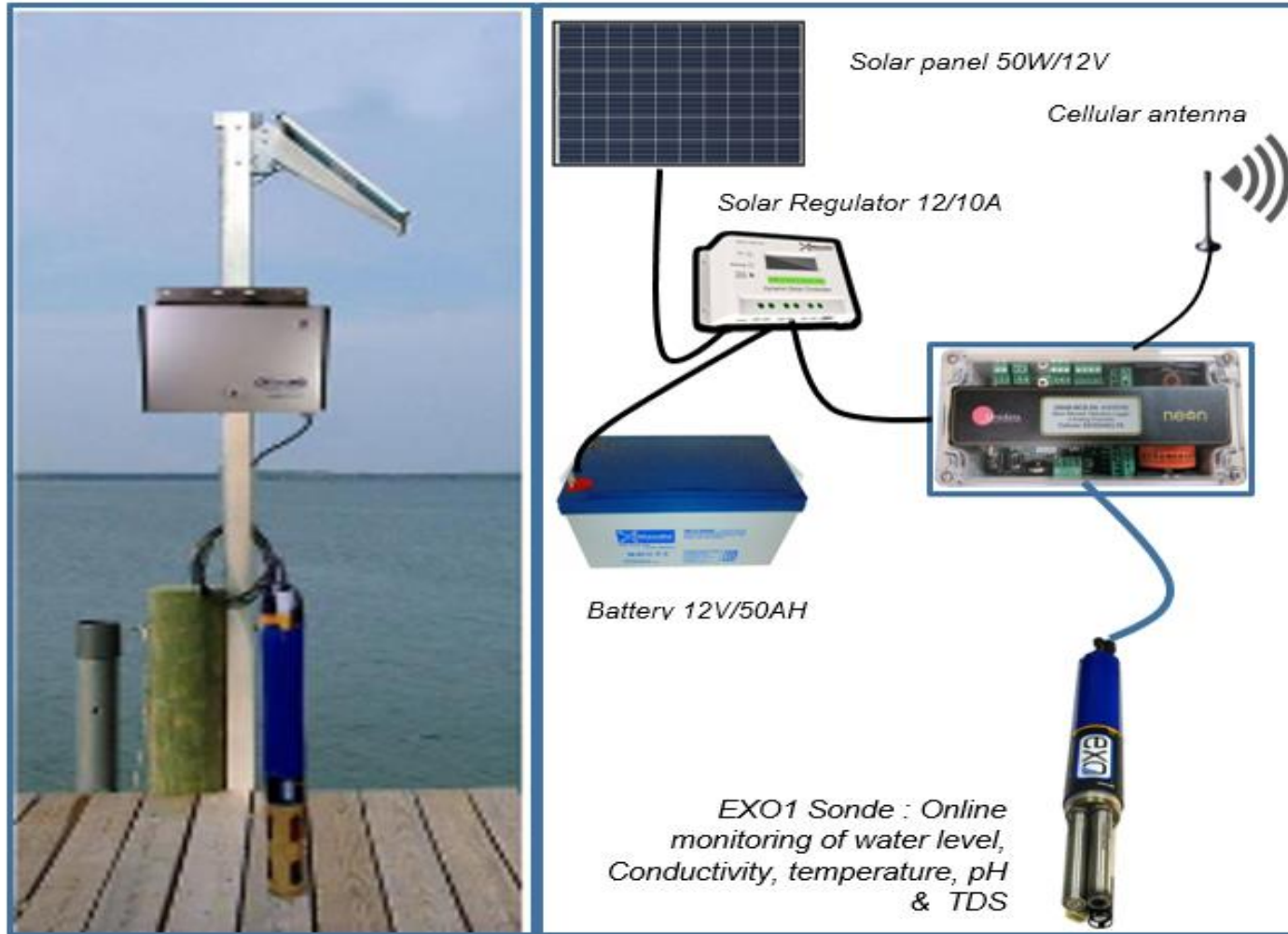
**Tide Station  
Radar Level Sensor**



**Weather Monitoring  
Station**



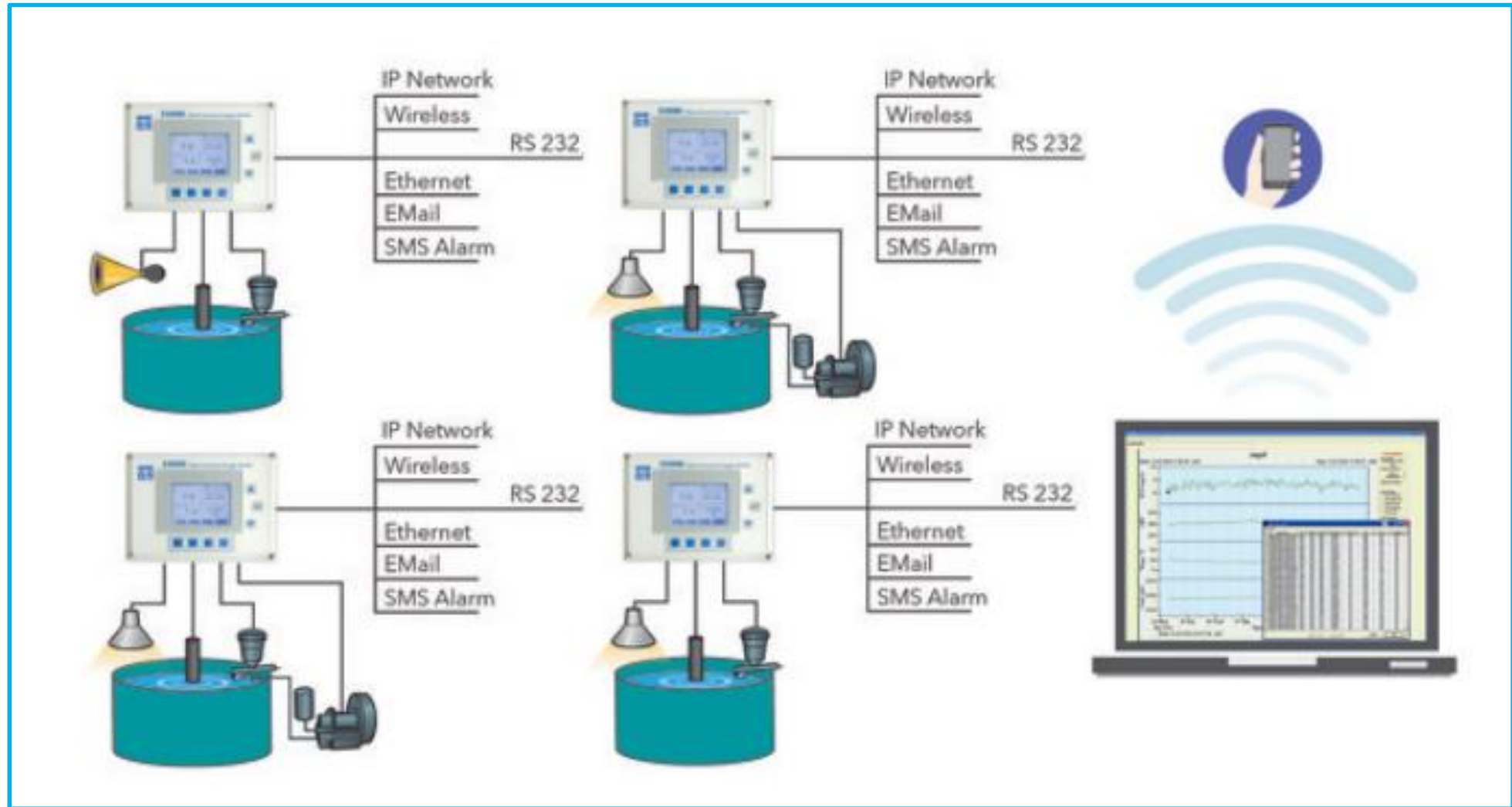
# IOT Solution : Level & TDS Online Monitoring System



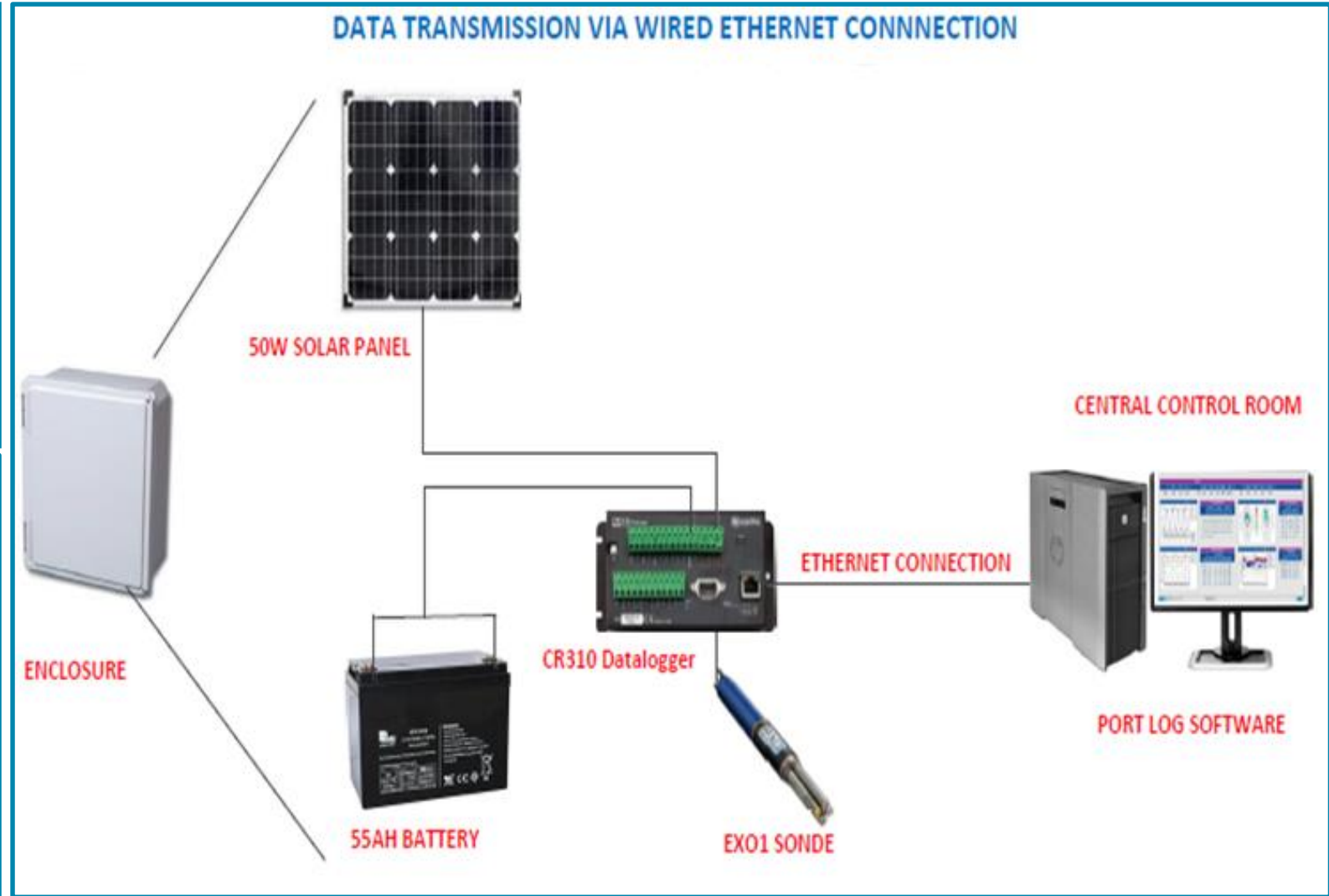
## NEON server software

- Real time monitoring of water level & TDS data
- Support both push (SFTP, FTP, email & Web Services) & pull (SOAP and REST) Web services to delivery data to 3rd party systems.
- Can be deployed in the client premise on physical or virtual server

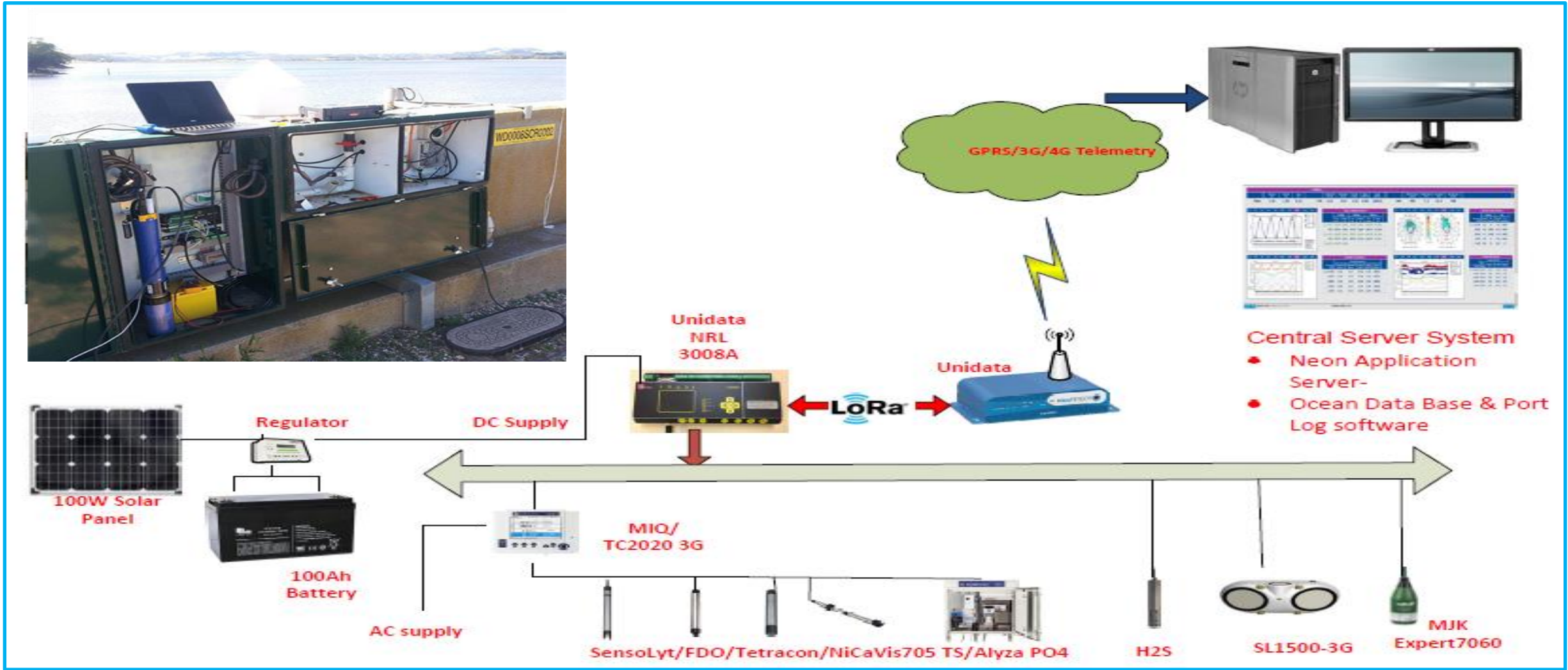
# Aquaculture Monitoring



# Remote Water Quality Monitoring : Process Application

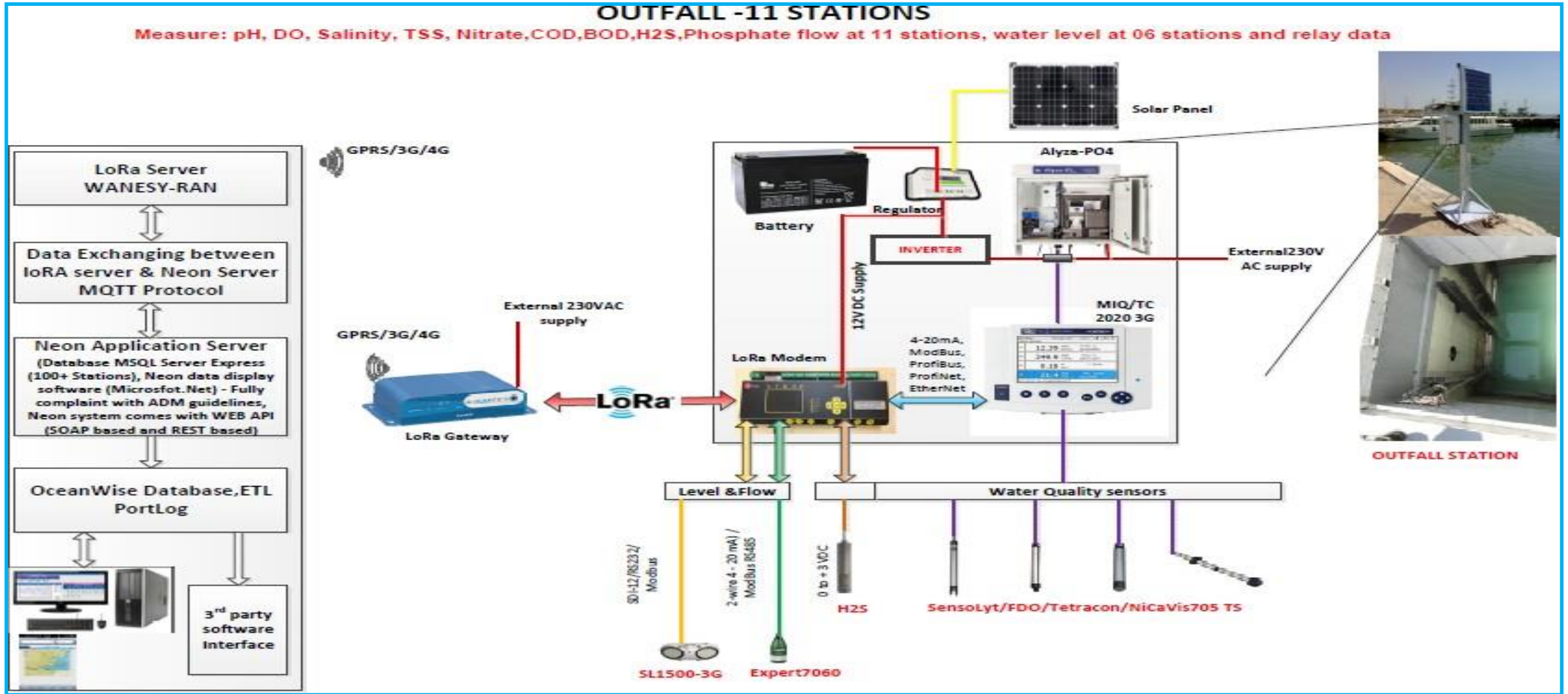


# Remote Water Quality Monitoring : Waste-water Application





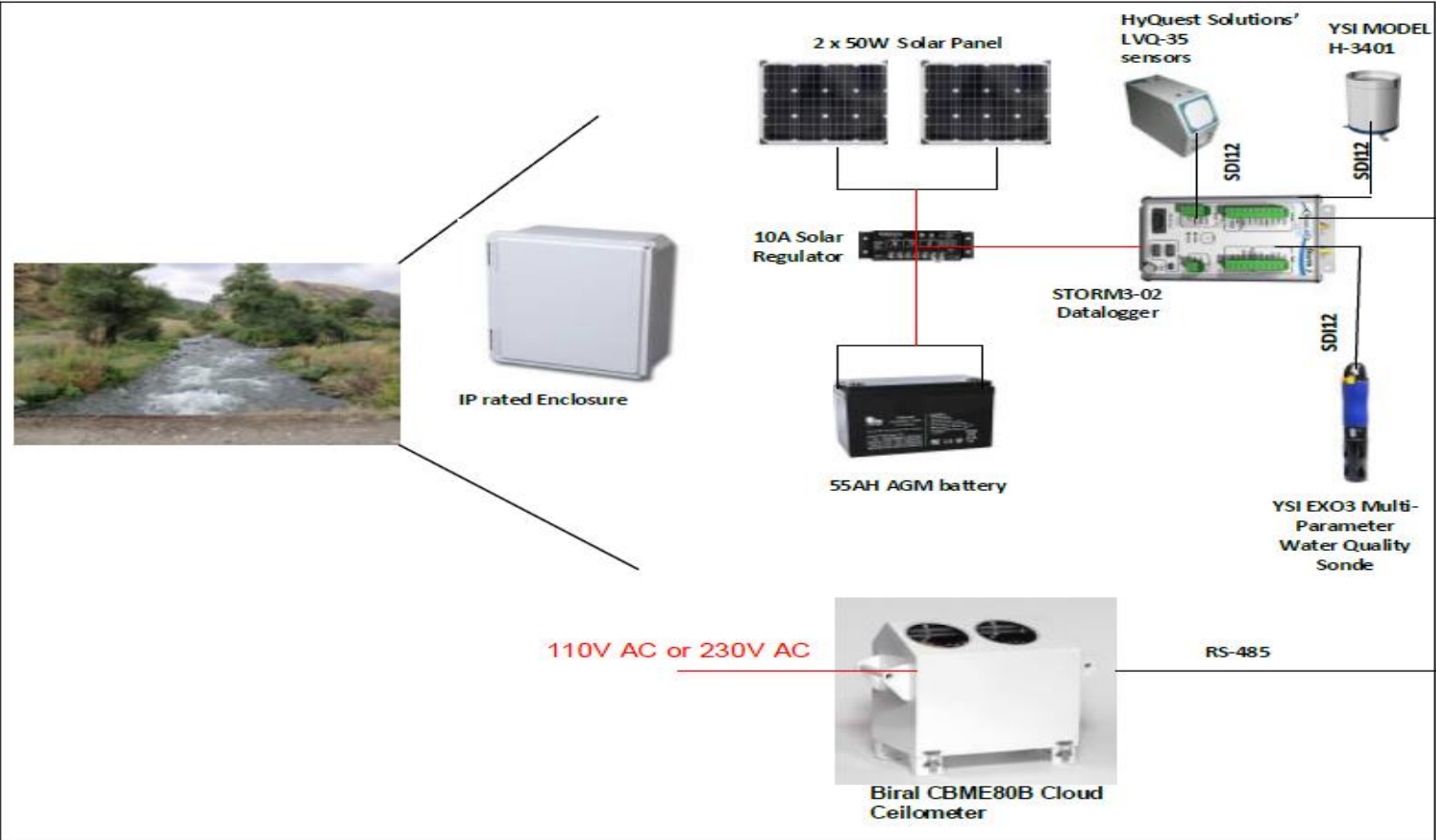
# Stormwater Monitoring



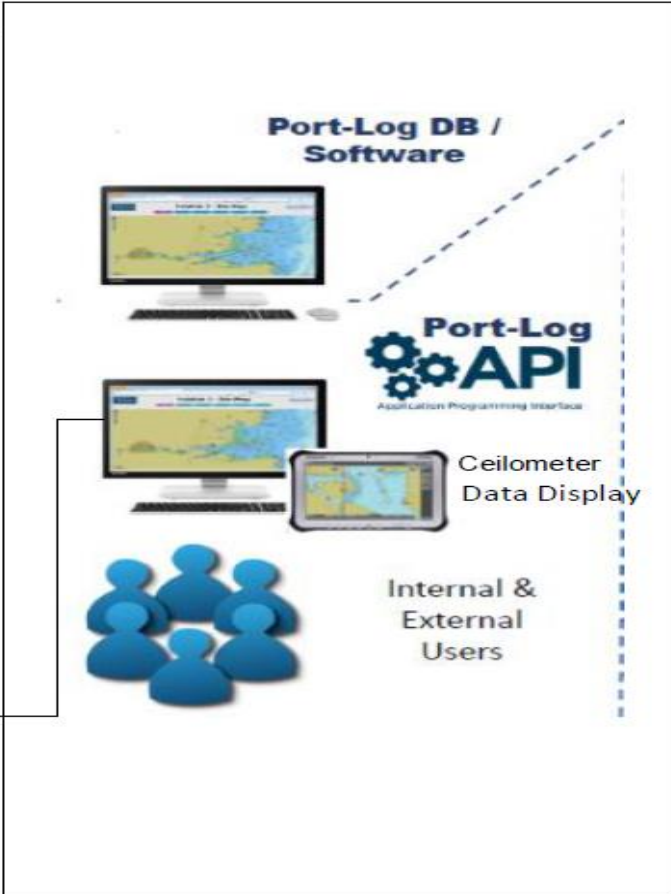
# Flood Monitoring Solution

## HYDRO-MET STATION

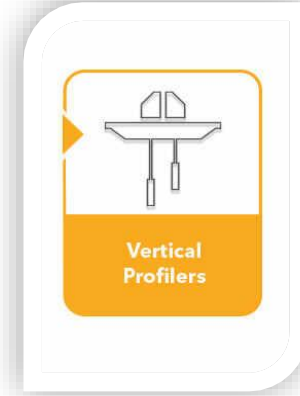
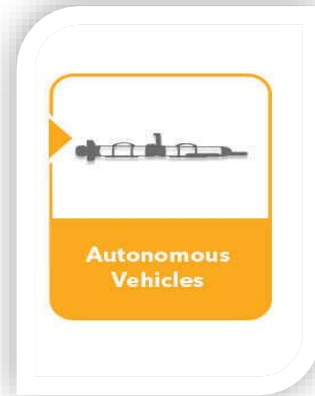
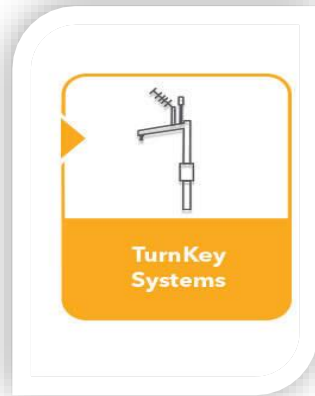
### Hydro-Met Station



### Central Acquisition System

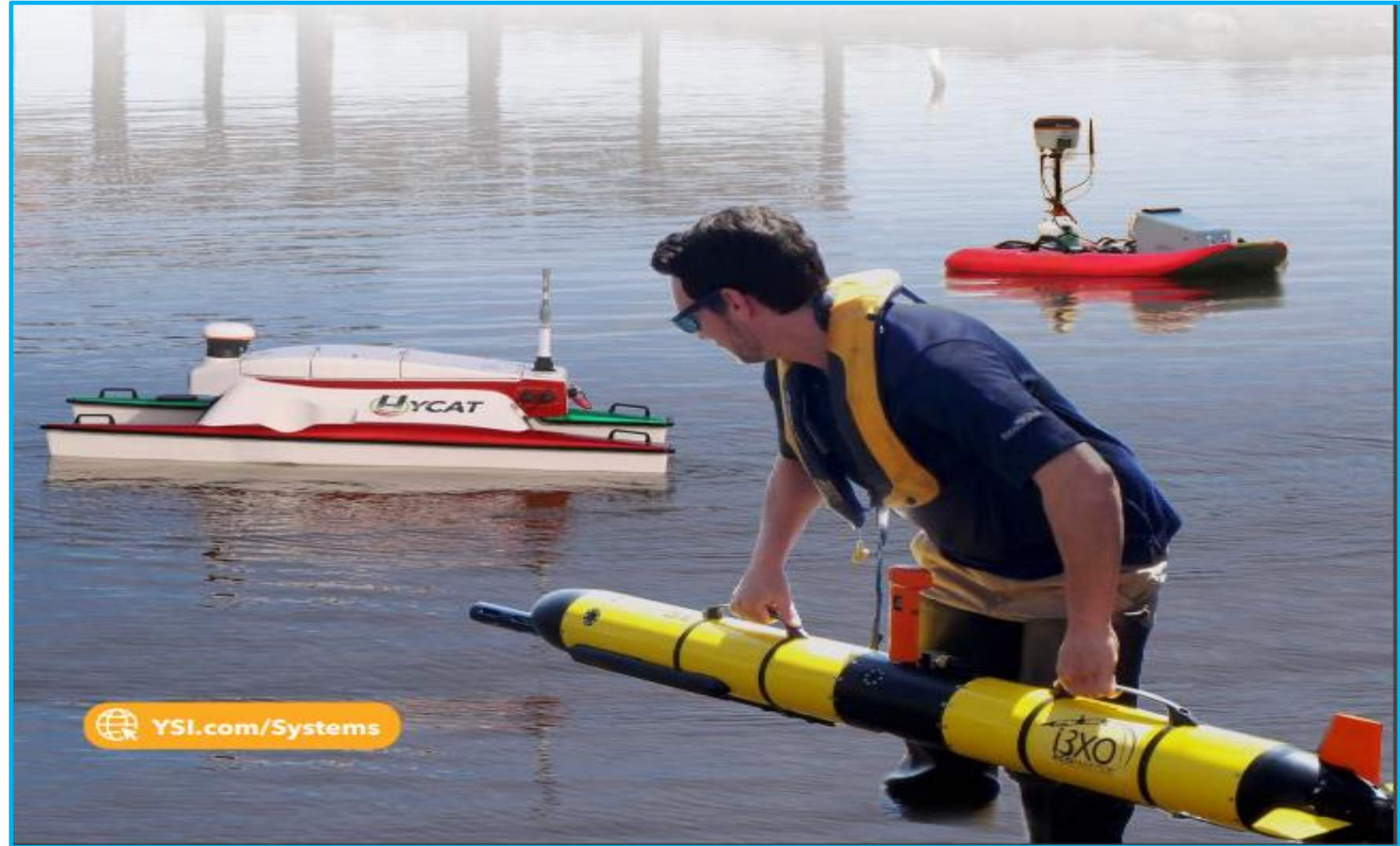


# Right System for you?



# Why Would You Use a Vehicle Platform?

- Data Quantity
- Data Quality
- Mission Control
- Safety



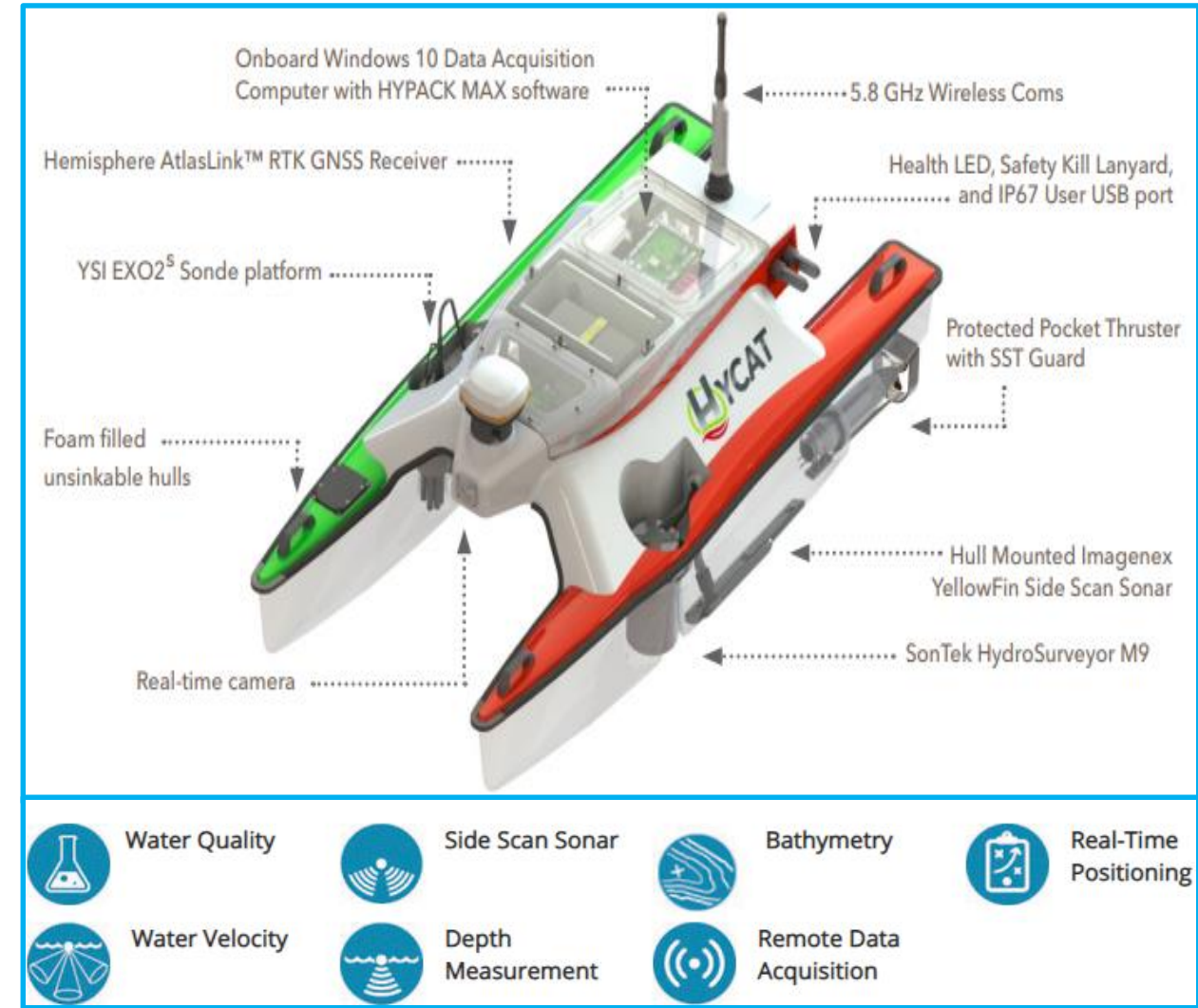
# rQPOD : Cost-Effective, Flexible and Innovative Surveying Tool



- Enjoy safe, remote-controlled surveying.
- The rQPOD installed on a floating platform, transforms it into a motorized vehicle
- Package : SonTek RiverSurveyor-M9/S5 and HydroSurveyor-M9.
- Lightweight, portable and is ready to go wherever you need it.
- Affordable solution discharge measurements hydrographic surveys.
- Provide both bathymetric mapping and velocity profiling, and includes HYPACK MAX® software.

# HYCAT : Multiple Sensors, One Complete Solution

- Unique Autonomous Surface Vehicle (ASV).
- Foam-filled unsinkable catamaran hull.
- Most sensor-rich platform available: YSI EXO2s, SonTek HydroSurveyor M9, Side Scan sonar in one system!.
- Fits into most trucks and SUVs,
- Deploy by two people anywhere you can carry it.
- Data are viewed in real time on shore.
- Field-swappable Li-ion battery keeps you operating all day.
- Includes HYPACK MAX software for full data analysis.

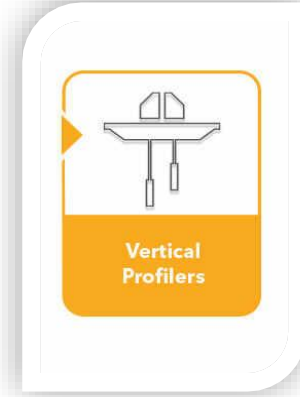
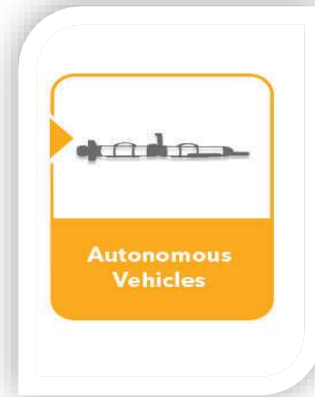
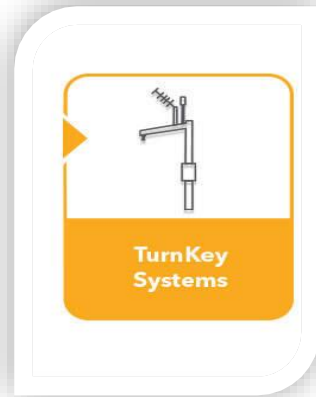


# i3XO EcoMapper : Survey-Grade Autonomous Underwater Vehicle



- Latest in water quality and Autonomous Underwater Vehicle combined into one robust monitoring platform.
- One-person deployable system.
- Intuitive point and click mission planning (user defined or predefined patterns).
- Geo-referenced data.
- \*Up to 8 water quality parameters (\*4 sensor ports - using EXO1 Multiparameter Sonde).
- Bottom mapping and water column profiling.
- Operating depth of up to 100 meters.
- Complete wide-area surveys without the use of a boat

# Right System for you?

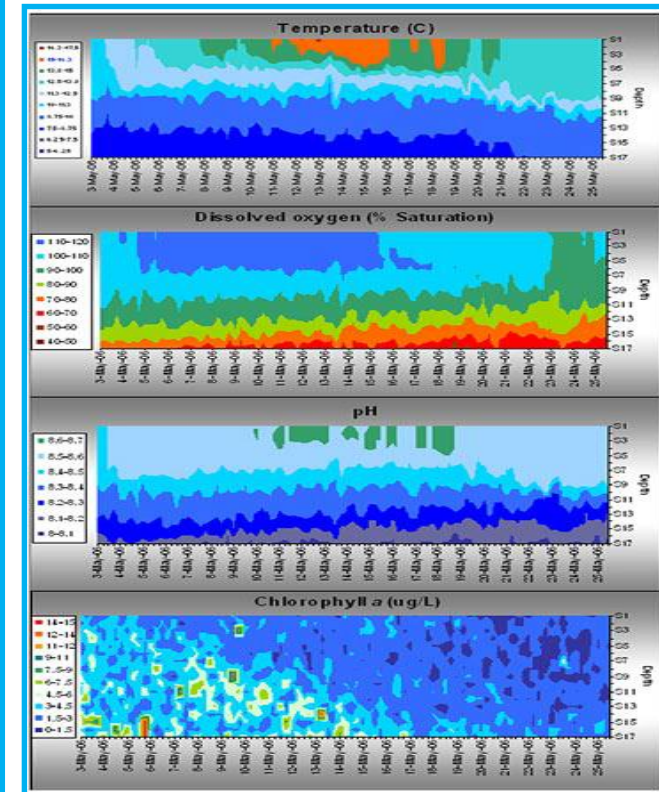
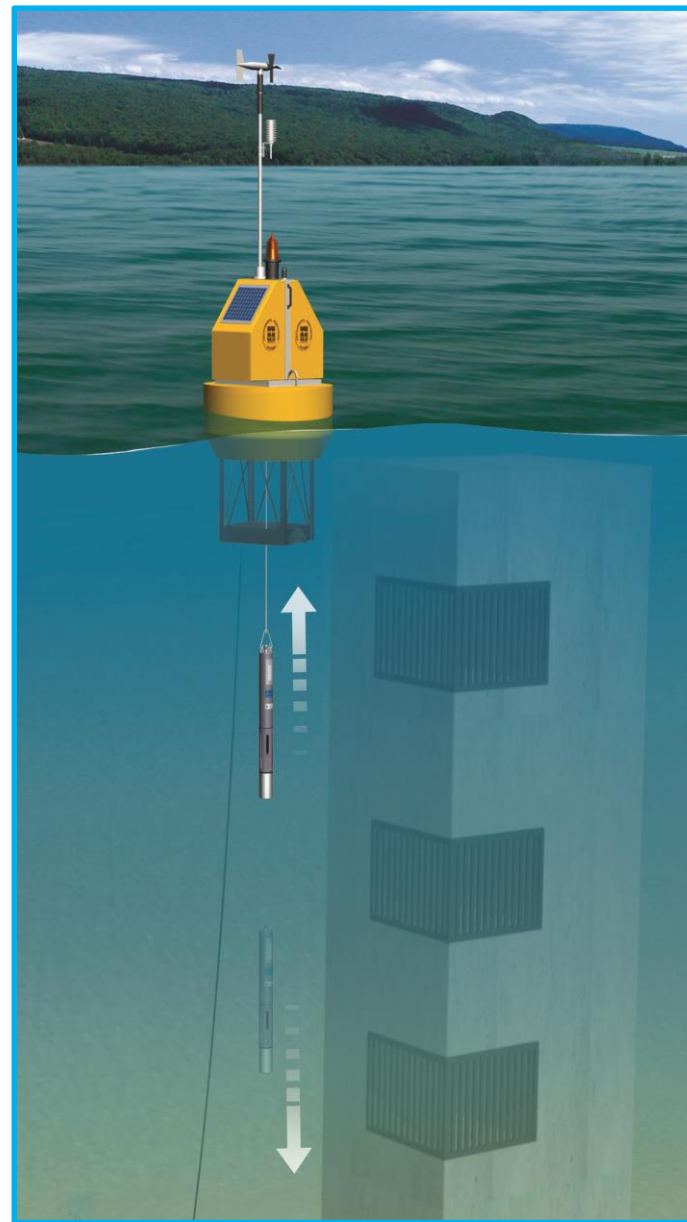




# Why Profiling?

**Profiling provides the BEST assessment of water via:**

- Complete time series monitoring of physical, chemical, and biological parameters.
- Sampling at different depths allows you to monitor an entire water column.
- See the impact of the physical environment on water resources.
- Capture events otherwise missed by manual profiling.



# Vertical Profiling Systems

**Fixed Vertical Profiler System**



**Pontoon Vertical Profiling System**



**Buoy Vertical Profiling System**



# Fixed Vertical Profiler System



**Fixed Profiling System provides reliable, fully-automated data collection:**

- Mountable on a dam, pier, piling, or other stationary location.
- User-programmable sample intervals with wireless transmission options.
- Program to move up and down the water column at regular intervals.
- Water treatment managers can view the data in real time.

# Pontoon Vertical Profiling System

- Ideal for Ponds, Lakes, Reservoirs, and Certain Coastal Applications.
- offers user-programmable sample intervals.
- Optional depth sounder which automatically compensates for varying water levels from tides, reservoir levels, etc.
- Profiles up and down and parks at any depth.
- Redundant error recovery logic detects unexpected activity and recovers automatically.



# Buoy Vertical Profiling System



- Designed for Coastal Applications or High Energy Environments.
- offers user-programmable sample intervals.
- Optional depth sounder which automatically compensates for varying water levels from tides, reservoir levels, etc.
- Profiles up and down and parks at any depth.
- Redundant error recovery logic detects unexpected activity and recovers automatically.
- Drinking Water Reservoirs: water quality, homeland security, Research: upwelling events, open water, General Monitoring: lakes, rivers, estuaries, bays

# Questions?

## CONTACT US

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**Environmental  
Monitoring  
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