Holistic Water Management

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Water Availability

Is there a water shortage in the world?

Current World Population - 7.9 billion

Clean freshwater- Only 3% of earth's water is

fresh & non saline, of which only 31% is accessible.

1.1 billion people lack access to water &

2.7 billion experience water scarcity at least one month a year.

By 2025, two-thirds of the world's population

may be facing water shortages.

India ranks 13th for overall water stress in the world

Government striving for

Har Ghar Jal
Jal Jeevan Mission

Launched : 15th Aug 2019

Present Status

- Total rural households - 19.27 Crore
- Total Tap Water Connections – 8.99 Crores
- Upcoming Tap Connections – 10.28 Crores

अमृत 2.0
Atal Mission for Rejuvenation and Urban Transformation

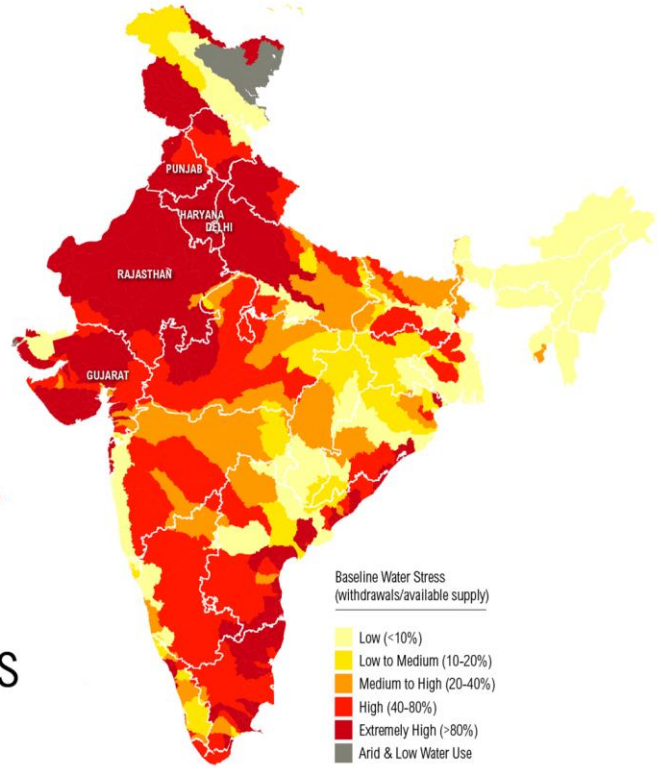
Launched: 1st oct 21

Focus Areas

- Rejuvenation of Water Bodies
- NRW Reduction to 20%
- Recycling and Reuse of Water at least 20% of Total Demand
- 24 x 7 Water Supply Scheme

Water Stress

54% of India Faces **High** to **Extremely High** Water Stress



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WORLD RESOURCES INSTITUTE

Why Water Stress ?

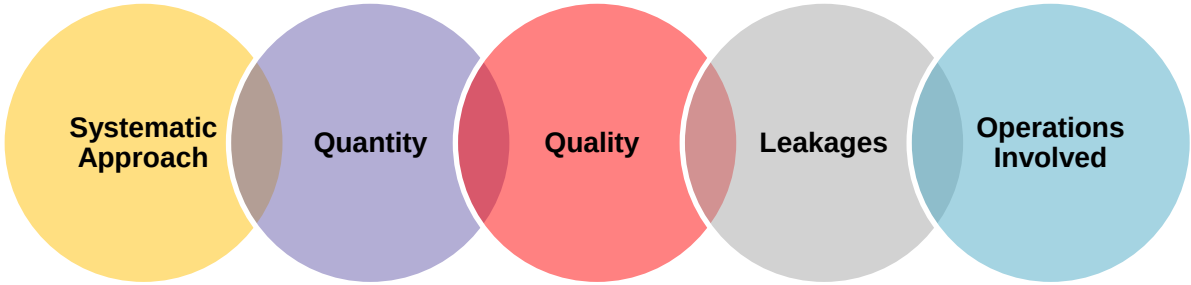
- Increasing population & hence the demand.
- Water exploitation from ground water reservoirs & resources.
- Lack of Investment in Water Infrastructure in the past
- Increasing water pollution.
- Lack of awareness on water harvesting

What can be done to alleviate water stress?

1. Holistic water management
2. Reduction in Non Revenue Water
3. Recycling of Grey Water
4. Technology enabling proactive measures

Holistic Water Management

- Case Study 1 - Holistic Water Management



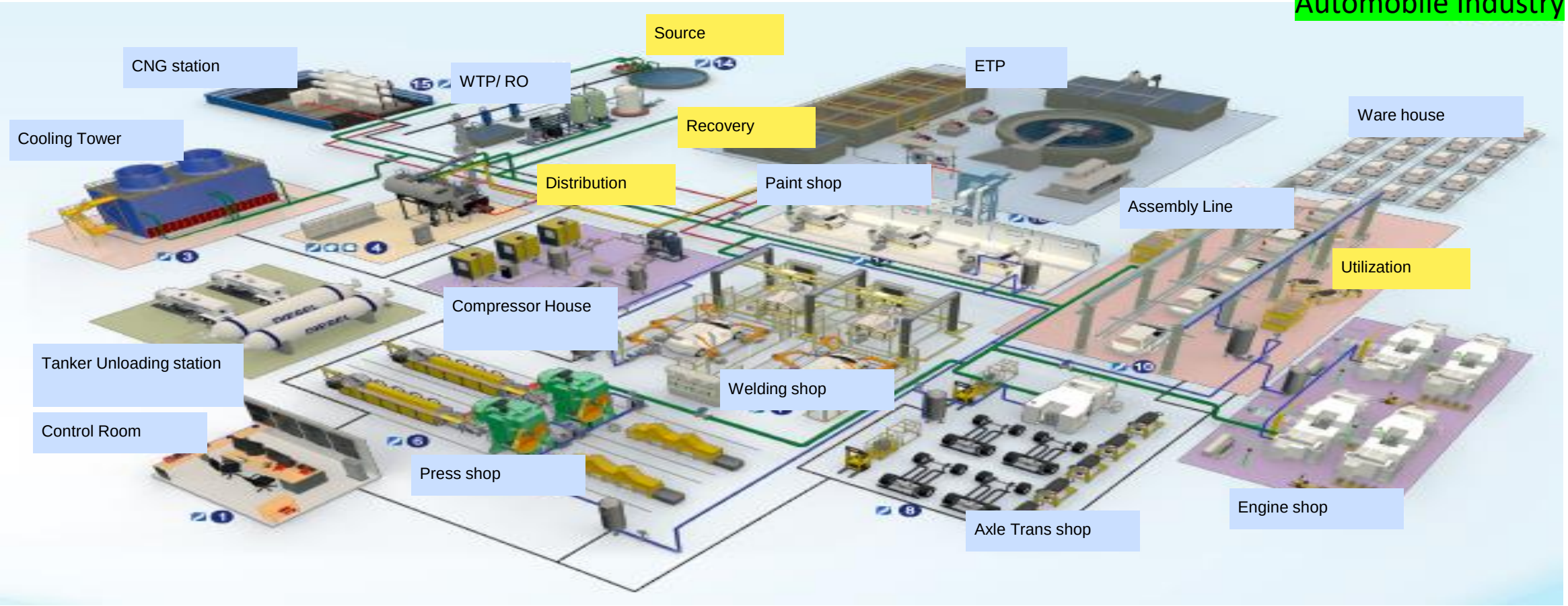
A 75-year-old Automobile major have challenges

- over capacity,
- old leaking infrastructure,
- low accountability

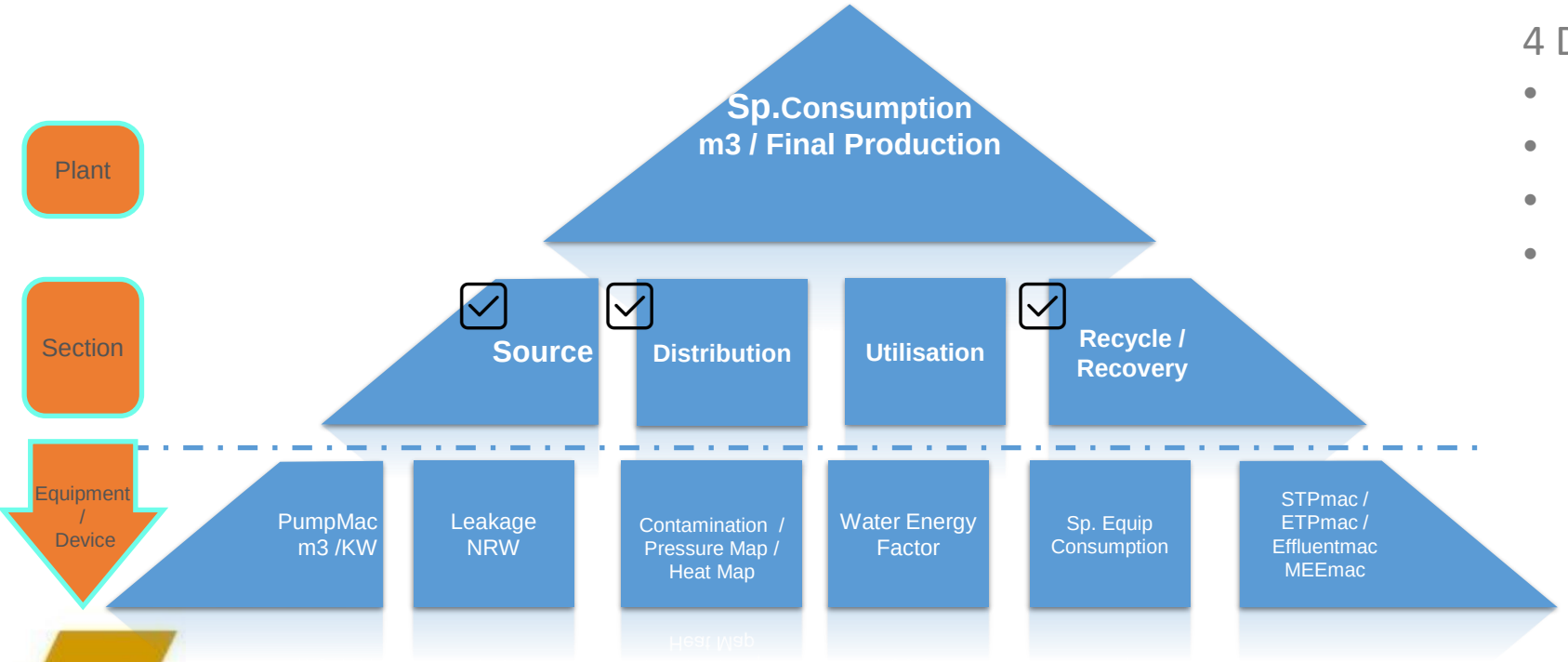
tasked to reduce the Water Footprint of the facility

Holistic Water Management

Automobile Industry



Holistic Water Management



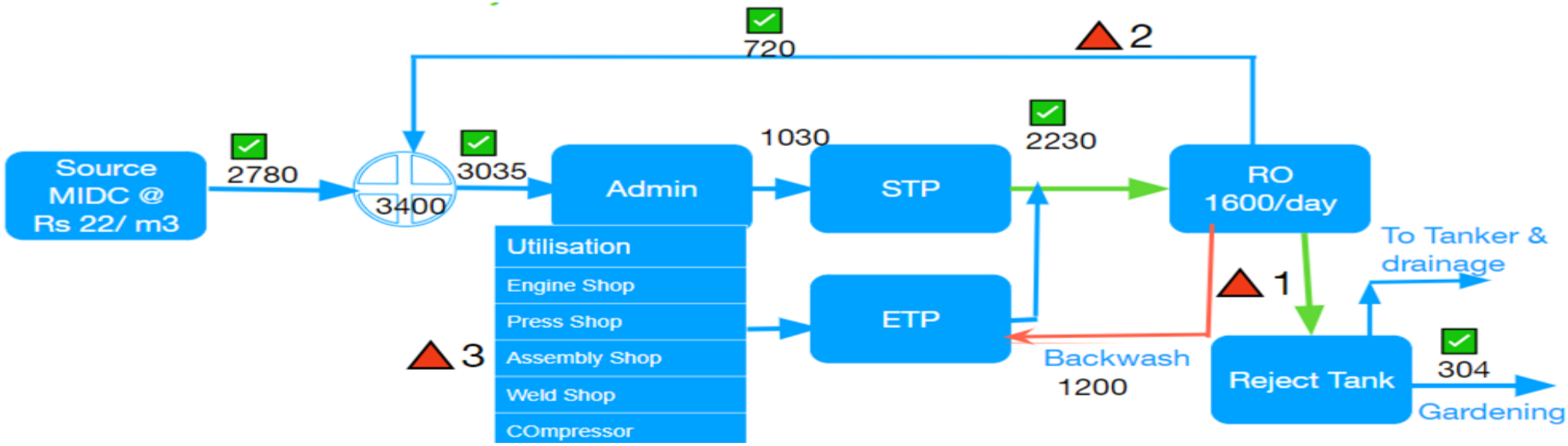
4 Dimensional approach

- Quantity
- Quality
- Leakage
- Operations Involved to get there`

A Systematic top-down approach

Focused on benefits while conserving water in a Sustained manner

Holistic Water Management



Key Areas of Improvement

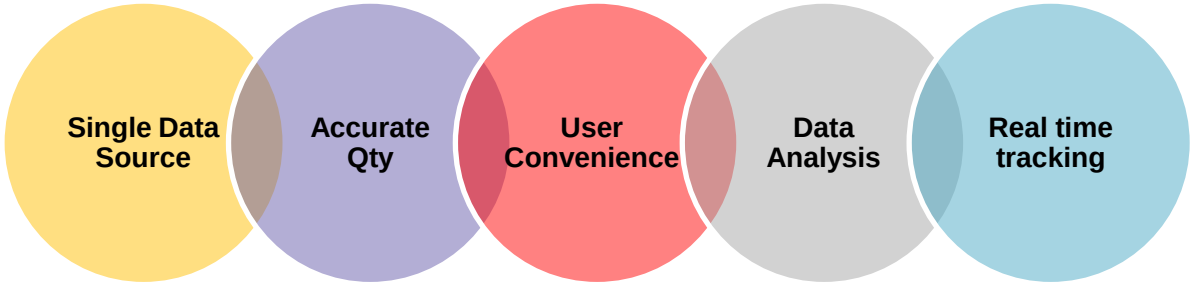
- RO Plant
- Pipe Leakages
- Utilization
- Energy Benchmarking

Unaccounted Water :
From 1200m3 → 1000 m3 /day in 2 months.

Deployment :
Only 14 holistic sensors at key locations

Reduction in NRW

- Case Study 2 - Industrial Cluster

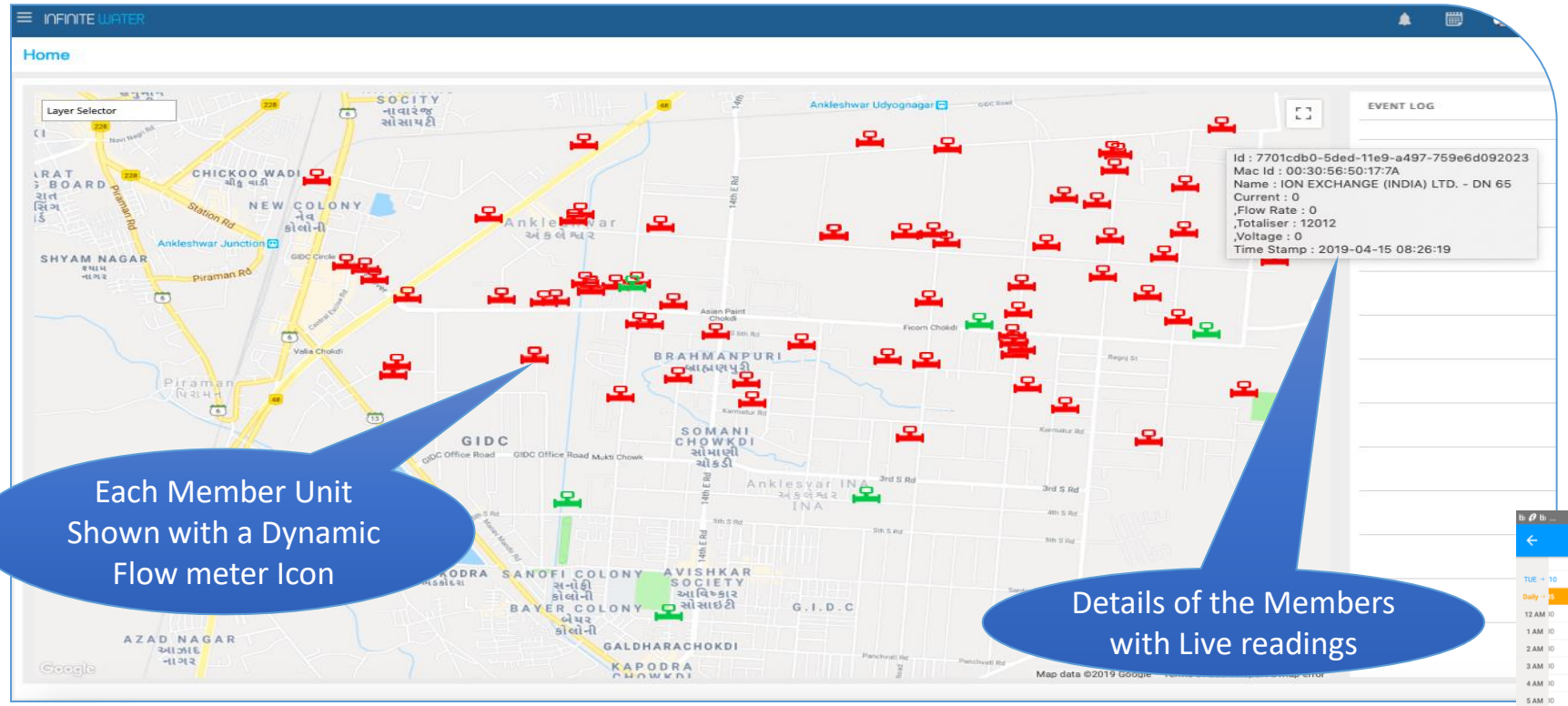


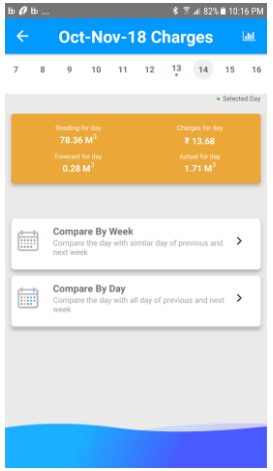
Industrial cluster facing challenges on Water Management

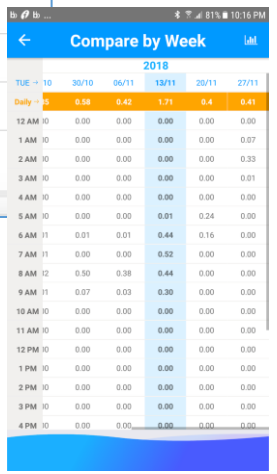
- Water Theft,
- old leaking infrastructure,
- Awareness on water conservation

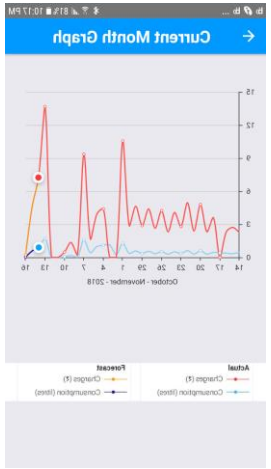
tasked to reduce the Water intake in 1 year

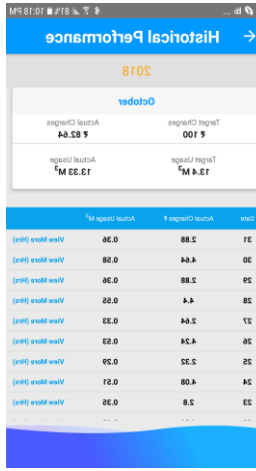
Reduction in NRW (Non Revenue Water)





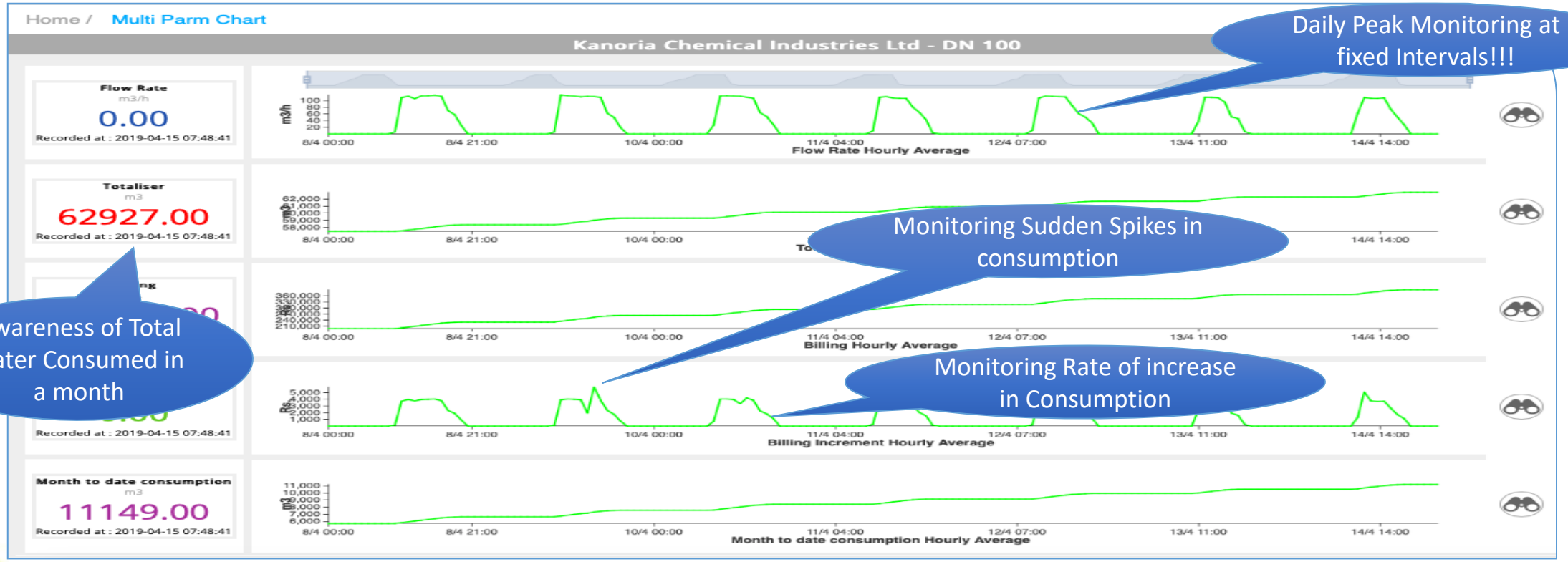






Single source of data shared transparently to all stake holder enabling all their tasks at their convenience right from Monitoring to realization!!!

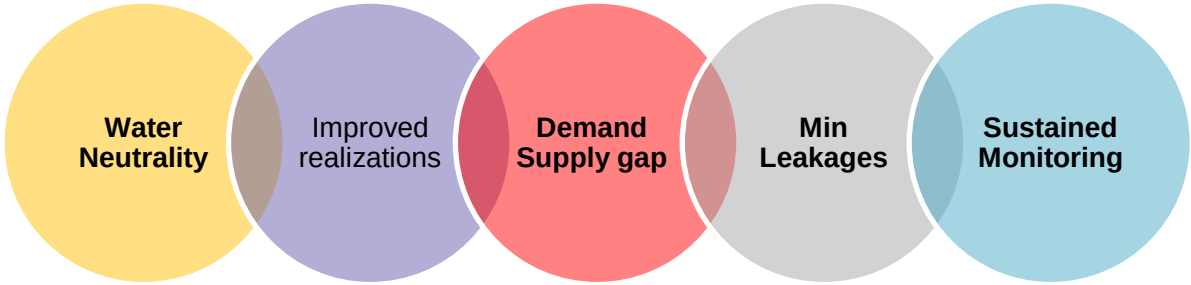
Reduction in NRW (Non Revenue Water)



Result :
Project ROI within 6 months with 20% Increase in Accounted water

Recycling Grey water

- Case Study 3 - Industrial Corridor



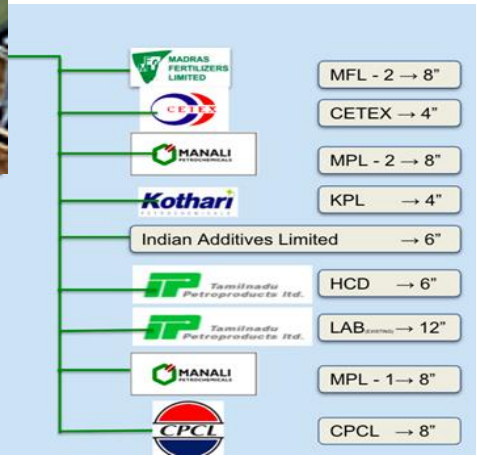
A water scarce Industrial corridor in South is

- Unable to serve the water demand,
- Untreated water of industry creating pollution,
- High costs for the tertiary water treatment

tasked to increase water availability in 1 year

Recycling Grey Water

Background: With the aim of reducing freshwater consumption , CMWSSB setup a tertiary water treatment by RO for reuse for industries in Manali corridor. Treated water is distributed piped through a total length of 28 kms & supplied to 9 major water industries.
Leakages in the line was a major deterrent
Bridging the demand supply gap achieving water neutrality



Earlier :

- Unaccounted water to the tune of 8-10%
- Challenge of data collection from remote areas.

Approach :

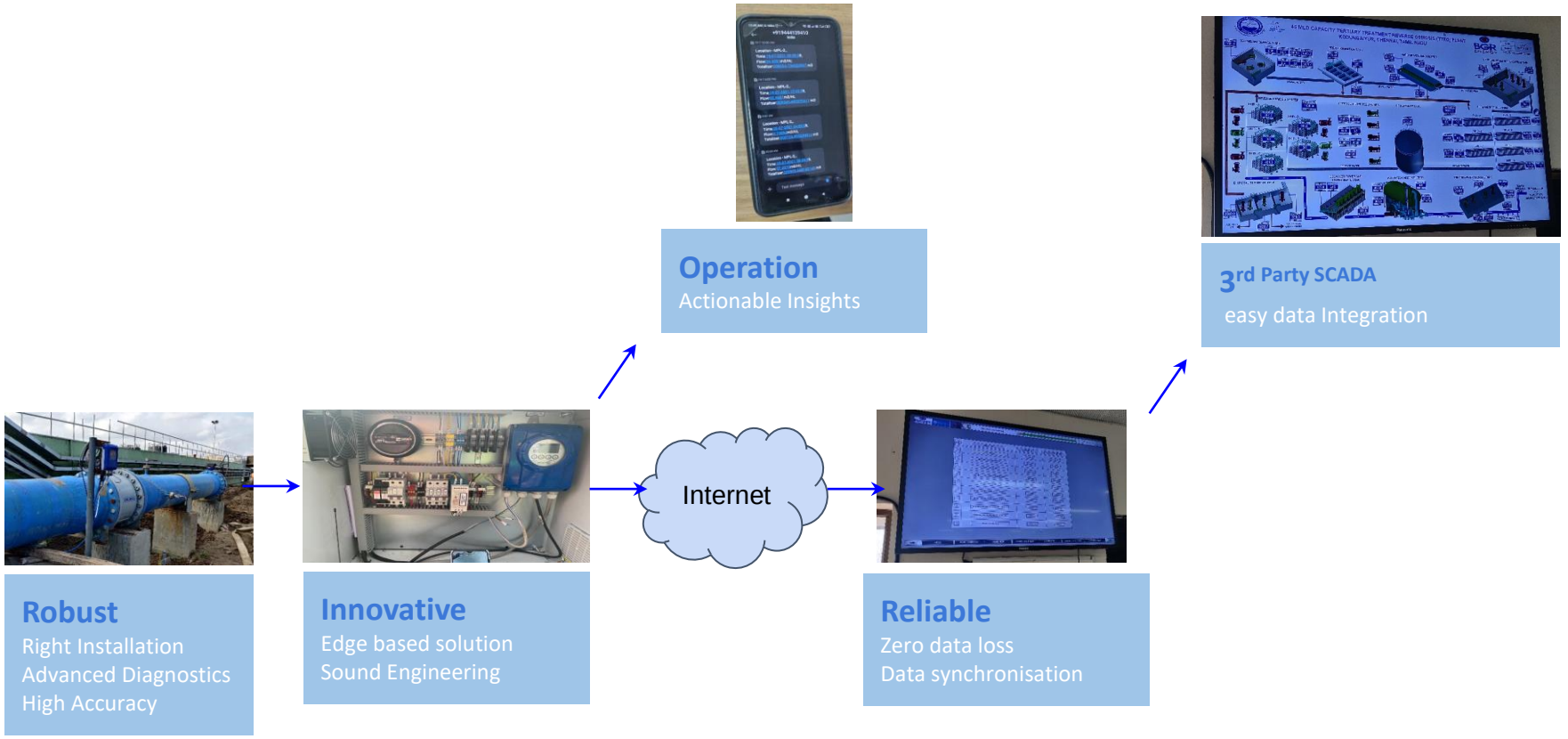
- Complete survey of the network done ,
- Right meter size selection & Installation
- Good engineering practices for Zero data loss
- POC for validation done on an existing flow meter

User Benefits (Now scenario)

- Unaccounted water reduced to less then **2%**
- Improvement in realization by **5%**

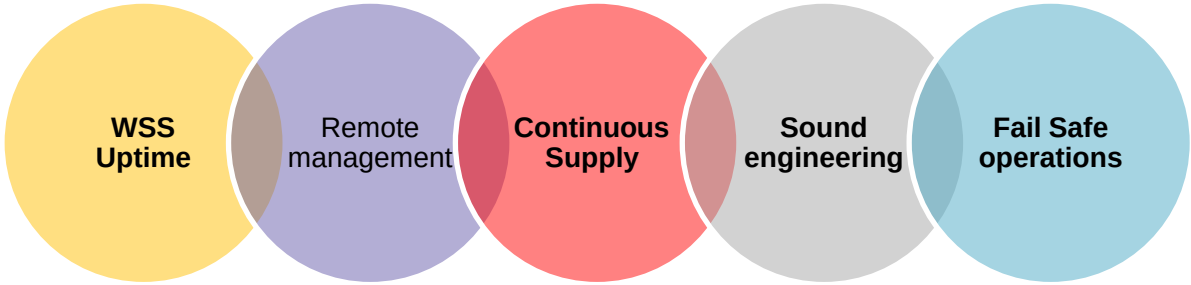
Recycling Grey Water

- Actual Site Photographs



Proactive Measures

- Case Study 4.1 - Rural water supply scheme

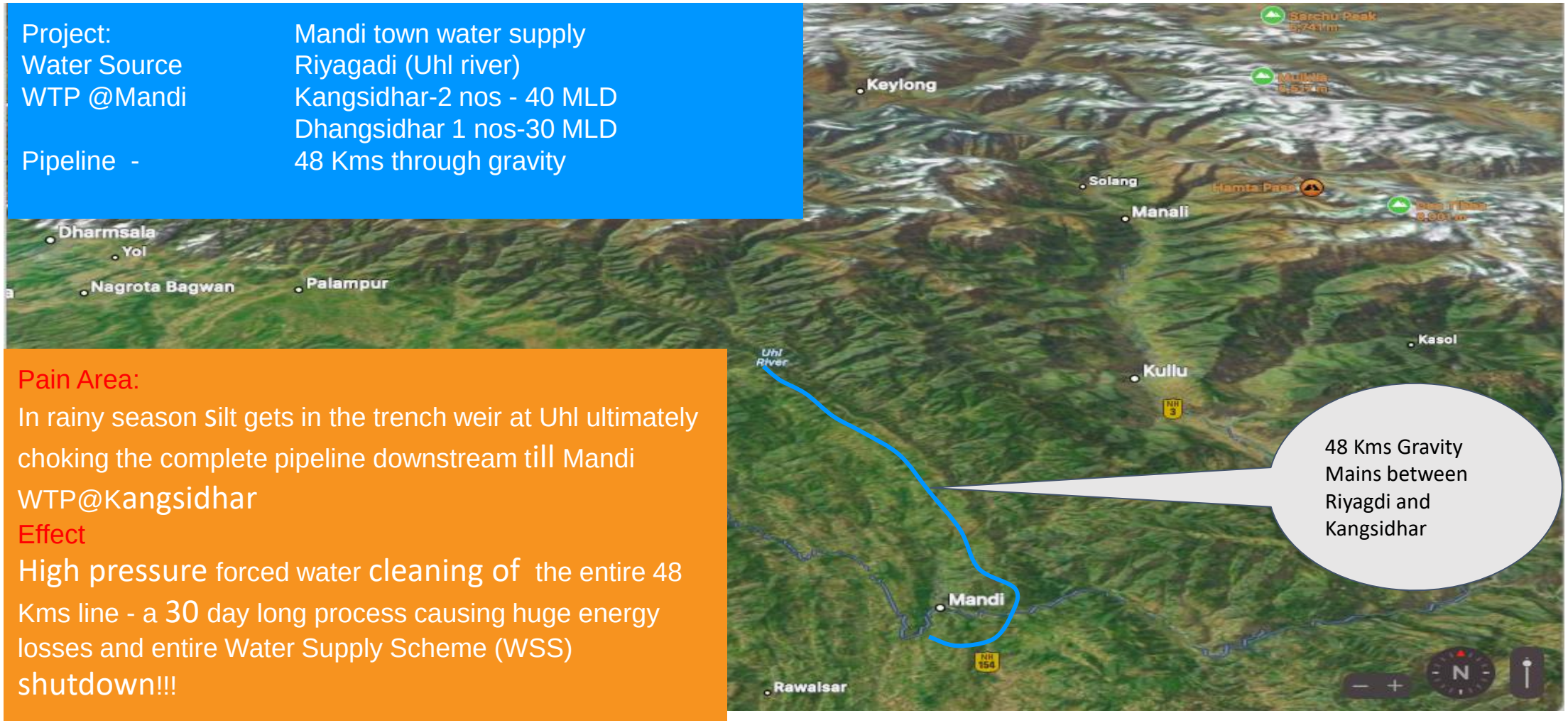


A water rich rural Himalayan town faced challenges

- Meeting the ever-increasing water demand,
- Avoiding downtime in the challenging weather conditions,
- Physical access to the geographically vast terrain.

Proactive Operations

Project:	Mandi town water supply
Water Source	Riyagadi (Uhl river)
WTP @Mandi	Kangsidhar-2 nos - 40 MLD
	Dhangsidhar 1 nos-30 MLD
Pipeline -	48 Kms through gravity



Pain Area:

In rainy season silt gets in the trench weir at Uhl ultimately choking the complete pipeline downstream till Mandi WTP@Kangsidhar

Effect

High pressure forced water cleaning of the entire 48 Kms line - a 30 day long process causing huge energy losses and entire Water Supply Scheme (WSS) shutdown!!!

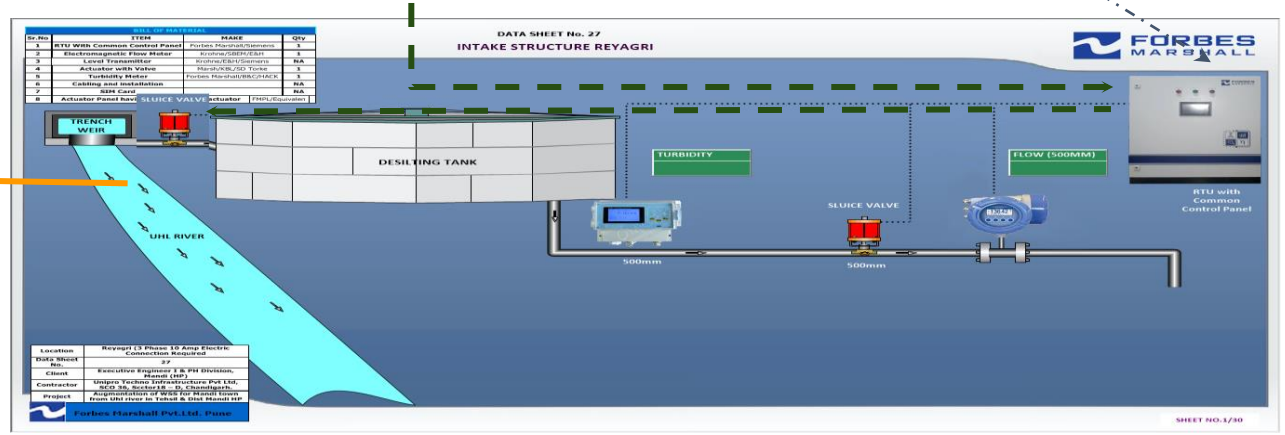
Proactive Operation

Remote Device management facilitating Fail safe operations

Since commissioning
3 times the system have saved the pipeline from choking during excessive rains in last two months!!!

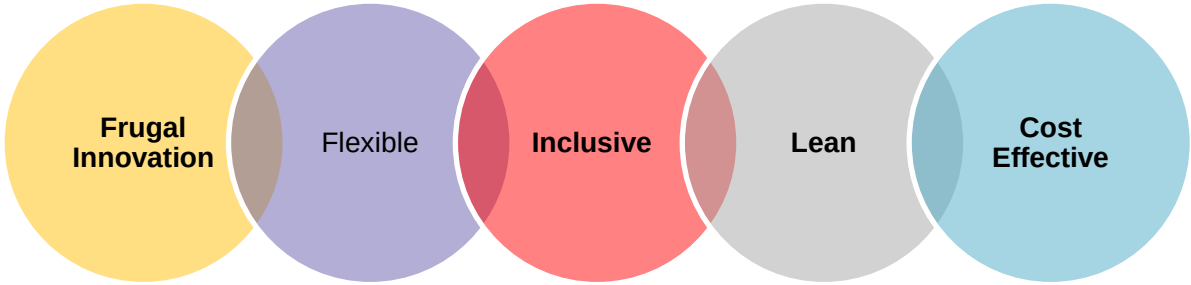
RTU at Mandi

Communication between RTU for safety interlock



Proactive Life Cycle Mgmt

- Case Study 4.2 - Jal Jeevan Mission water supply scheme



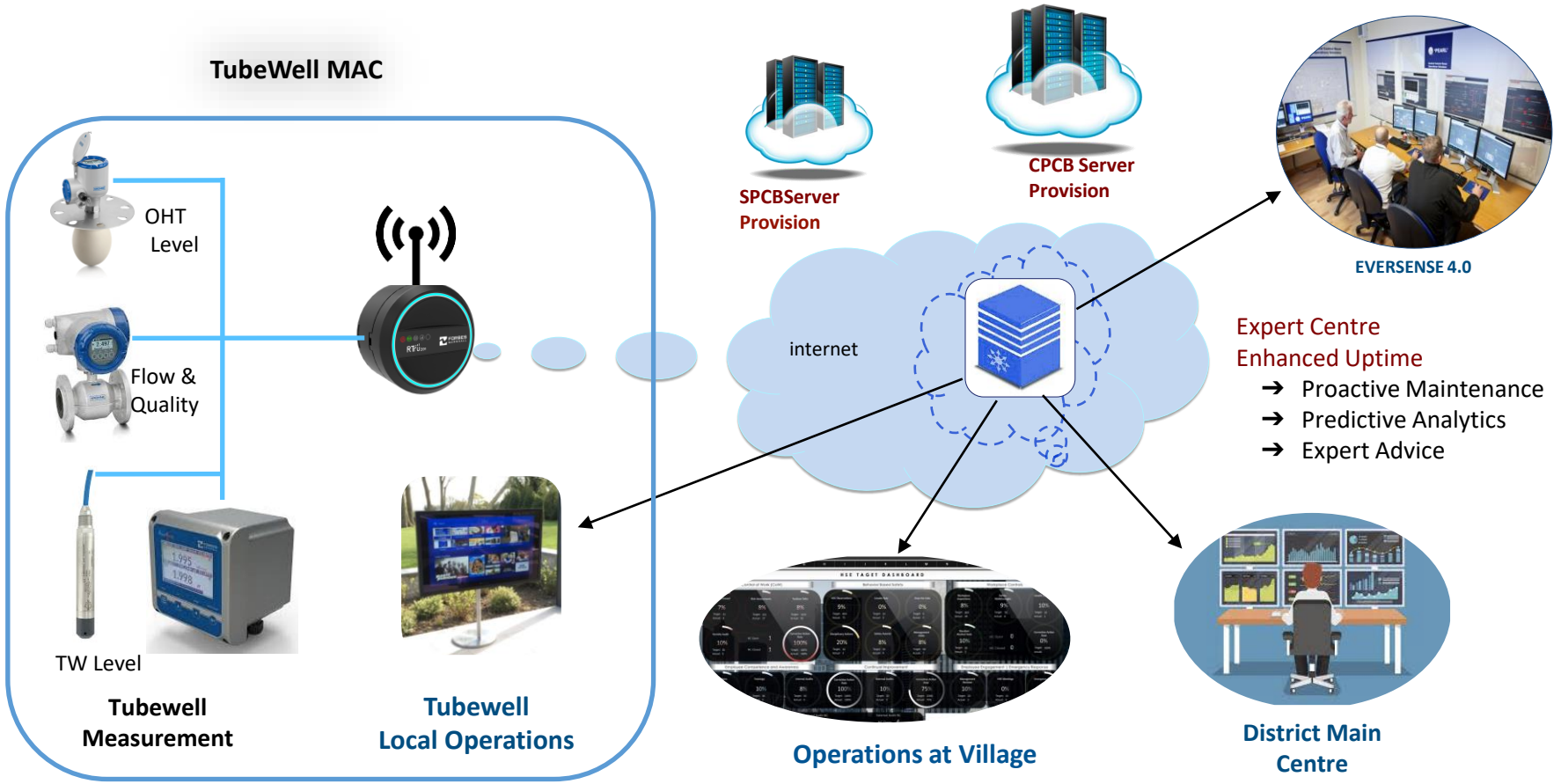
A rural Village in Bihar is tasked with regulating water from 2000 Tubewells

- Meeting the ever-increasing water demand with minimal support staff
- Involvement of local village, gram-panchyant & district for an Integrated for managing water table while providing water supply
- Physical access to the geographically distributed

Tubewell Water Mgmt

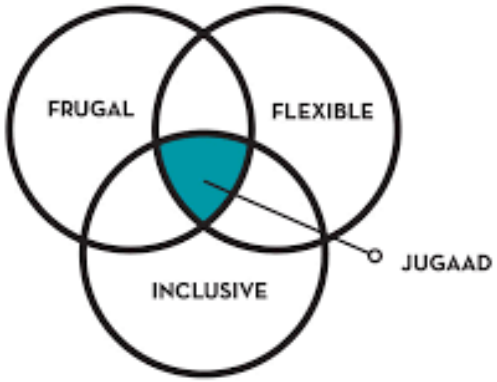
Benefits for the Solution:

- Integrated – Control, Supervise , Asset mgmt.
- SMART prediction on water extraction and its treating needs
- Failsafe Remote managed operations
- Proactive maintenance



A Single device enabling interaction with 4 different levels of users
Possible at 1/10th Infrastructure compared to the traditional methods

Recycling Grey Water



Key features of the solution:
1: Unique Building blocks which are reliable , flexible and scalable for easy deployment
2: Covering all aspects of Extraction /treatment/ Supply /maintenance
3: Unique engagement with the Manufacturer through out the Project operation life cycle help deliver Productivity at lowest cost.

Expected Results:
Lowest life cycle management for the entire Water supply scheme
Data Anlaytics generating multiple Actionable Information at multiple levels

Holistic Water Management

Key Takeaways:

- Digitalization is an important “tool” for addressing key challenges in managing Water as a scarce resource
- Coupled with Process knowledge generates “tangible user Benefits” there by creating the “Buy In” for the change
- Knowing “what NOT to do” is a key

Thank You

For discussions/suggestions/queries email: www.indiasmartgrid.org
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Links/References (If any)

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