WASH INNOVATION HUB

WASH POST

INK@WASH™ Innovation & New Knowledge in Water, Sanitation & Hygiene

Municipal Administration and Urban Development department (MA&UD), Government of Telangana State (GoTS) in partnership with the Administrative Staff College of India (ASCI) has established the WASH Innovation Hub (WIH), a game-changing initiative to promote innovations in Water, Sanitation, and Hygiene sectors (WASH) for India. The WIH is an ecosystem to continuously identify and nurture innovative WASH solutions and build the capacities of municipalities and other stakeholders to implement and sustain them.

WIH is pleased to present the fourth edition of WASH POST, a monthly newsletter that will keep you updated on activities and upcoming events of the WIH & developments in the WASH sector. This edition, brings you inspiring stories from innovators, opportunities for collaborating with ecosystem partners, internships, and employment opportunities in the sector. It also aims to engage with stalwarts of WASH, government officials, corporates, funders, and mentors to achieve health and environment outcomes.

WASH Innovation Hub to assist Uttarakhand Government achieve Sustainable Development Goals ahead of time

The WASH Innovation Hub (WIH) is set to make its impact felt in the state of Uttarakhand. Following a request from the Government of Uttarakhand, the WIH will hold a summit and exhibition in Dehradun and extend support to the government for accelerated implementation of disruptive solutions to solve complex civic problems.

The objective of the programme will be to promote circularity and help the state achieve Sustainable Development Goals (SDG) well ahead of time. The details of the summit will be announced at a later date.

As a precursor to the summit, Honourable Governor of Uttarakhand Gen (Retd) Gurmit Singh and other senior officials held an online meeting with the ASCI-WIH team. Prof. V. Srinivas Chary, Director – ASCI & CEO – WIH made a brief presentation on the learnings and success of INK@WASH summits hosted by WIH.

Uttarakhand has prioritised WASH as a critical area in its development agenda. Achieving SDG 6 is also the state's commitment and they have included it in the Uttarakhand Vision 2030.

The government is seeking practical and scalable innovations in the area of recycling plastic, water, waste management, sanitation, and hygiene.

Honourable Governor of Uttarakhand Gen (Retd) Gurmit Singh and other senior officials participating in an online meeting with ASCI team

It envisages universal coverage of safe and potable water and sanitation.

By replicating the WIH model in the state, the government is hopeful to fast-track solutions to address complexities in the WASH sector faced by urban local bodies.

Magnatree Ventures: Meet the water warriors who clean lakes and sewers using enzymes, probiotics

From cleaning polluted lakes to landfills, Magnatree Ventures does it all. The Australian-backed biotech company uses a unique bio-solution to clean polluted lakes, ponds, and more.

Based in Bengaluru, Magnatree Ventures is responsible for cleaning up polluted lakes in different parts of the country since its inception. Magnatree has successfully treated one lake in Mumbai and two in Hyderabad. They are currently treating two more lakes in Hyderabad and Pune, respectively.

"We offer an advanced probiotic treatment to remove contaminants from polluted lakes," explained Tejas Reddy, Director of Magnatree.

Before using enzymes and probiotics, the company conducts extensive research on the water quality, the amount of waste present, and more.

"We test samples and treat them accordingly. After treatment, levels of ammonia and other toxic elements are reduced to make water reusable," Tejas said.

The same technology is also used to clean sewers. The company has helped clean up drains in the KC Valley and other parts of Bengaluru at an affordable cost and in the shortest possible time.

"We can treat leachate from landfills with different treatment methods," said Tejas.

"With such high levels of contamination, the enzymes need more quantity and time to remove the impurities. A pump to 'agitate' the leachate so that the enzymes can mix and react more quickly, is also installed" explained Tejas.

The results show that wastewater or leachate treated with probiotics stays usable and needs no further treatment, Tejas adds.

This treatment reduces sludge and also improves BOD (Biological Oxygen Demand), COD (Chemical Oxygen Demand), TDS (Total Dissolved Solids), TSS (Total Suspended Solids), and pH.

Nitrates, phosphates, ammonia, turbidity, E. coli, E-Coli, etc. in polluted lakes, sewage and water bodies can also be treated with probiotics and additional natural extracts.

In addition, the company also treats the separated organic waste through photographic cultivation to eliminate the toxicity of the waste.

"The use of liquid organic fertilizer will enhance the beauty of the parks with long-lasting flowers and support the growth and maintenance of roadside plants and trees," explained Tejas.

A lake in Bengaluru

Editor Speaks

Prof. V. Srinivas Chary, Director, ASCI & CEO, WIH

I am pleased to introduce the fourth edition of WASH POST, a repository of inspiring innovations. It is encouraging to see several state governments embracing innovations in advancing SBM 2.0 and Amrut 2.0 programmes. The openness and trust in startups is a welcome change.

As you must have noticed in the lead story of this edition, we are excited about our partnership with the Uttarakhand government to assist them in hosting a WASH innovation summit. The state government has prioritised WASH as a critical area in its development agenda.

The Ministry of Housing and Urban Affairs (MoHUA), under AMRUT 2.0 launched the 'India Water Pitch-Pilot Scale Start-up Challenge'. This challenge aims to promote startups that can provide innovative, workable, and scalable technology and business solutions to address urban water and wastewater management problems. The Ministry has shortlisted seventy-six startups to pilot in various cities.

These changes across the nation bring us closer to achieving clean water and sanitation for all, furthering our SDG commitments well ahead of time.

This edition highlights various innovations, from cleaning polluted lakes with a bio-solution to IoT-driven water conservation, rainwater harvesting, recycling wastewater using nanotechnology, and more. We hope these innovations will leave you inspired. We look forward to hearing your feedback on the WASH Post.

Scan here to view WIH website

Innovator Talks

This Gujarat-based startup's plug-and-play filter product offers solutions for rainwater harvesting

Rainwater harvesting is a great way to save, reuse and recycle water in India. However, it takes an immense amount of space and cost to set up, and maintain.

NeeRain, a Gujarat-based startup has come up with plug-and-play filter products for rainwater harvesting that comes at an affordable price and requires no labour work.

"We aimed to make rainwater harvesting as easy and affordable as possible. Even a house of built-up area of 500 square feet, should be able to retain rainwater," said Akash Varia, Founder of NeeRain.

NeeRain, is a GoI-approved young start-up, incubated at CrAdLE, EDII Gandhinagar backed by the Department of Science and Technology, Government of India.

The quality of rainwater is often an issue of concern. NeeRain's products are fitted with two filters that removes the physical impurities from rainwater. One is a non-clogging V-wire filter which removes impurities up to 500 Micron and the second filter is a Polymeric Filter – 200 Micron.

NeeRain has helped save nearly 30 crore liters of water in India. They have installed more than 2000 filters in various parts of the country. Their patented filters have also been bought by many people in the US, Africa, Nepal, and other countries.

The simplicity of rainwater harvesting system is the sole intention behind making it manageable and cost effective. Any one with a non-technical background can easily maintain the systems.

NeeRain filters can be fitted on rooftops of any household for houses with tiled or slant roofs, gutter pipes are fitted which direct the water to the filtration unit. "We can also design and

install the products in such a way that the rainwater, post filtration is sent directly into a borewell," Akash explained.

NeeRain also focuses on developing more affordable filters for smaller households.

KarIoT's smart tech initiative revolutionizes water conservation

Technology has come in handy to monitor the quality and quantity of water in storage tanks on a real-time basis.

Thanks to KarIoT, the startup is striving to revolutionize water conservation through smart technology.

Basically an IoT (Internet of Things), KarIoT records the quality and quantity of water in storage tanks. It also helps in remedying non-water revenue losses.

"We equip a certain place with multiple censors, from pH to chlorine and more. All the levels of water in a tank can be monitored live on the KarIot app," informed Aravind Natarajan, founder of KarIoT.

"Earlier there was no track of non-remedified water loss. Now, with the help of our tracking system, the loss can be checked and looked into," Aravind said.

KarIoT is IoT-enabled that collects data from physical sensors via the cloud and uses Artificial Intelligence to remotely monitor, operate, predict, and provide reports for analysis via mobile and web dashboards. From the acquired data, KarIoT can trigger alerts, predict consumption, forecast future requirements, reduce energy consumption, etc.

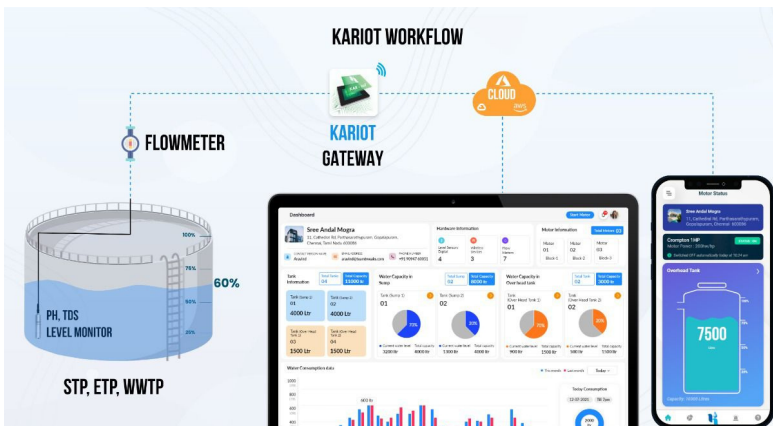
A robust dashboard is provided to every village/ GP / block/ division/ sub-division/ district and state official level etc, with a common centralized application to follow a standardized format for data transmission with security protocols.

The IoT helps the water industry to attain its goals and unites all the systems including rain water, treatment plants, utility companies, etc. From high-rise buildings to industries to wastewater plants, KarIoT can be used anywhere.

IoT technology stands at its peak position and till now, no other technology has replaced it. This has provided transparency, real-time monitoring, automation of human power.

"You can monitor, analyze and get the reports of various information of water flow, pressure, and flow rate in the different pipelines across the world and in case there is any leakage, the connected devices raise an alarm immediately," Aravind explains.

It can be integrated even in remote locations with limitations to a power source.



Innovator Talks

JK Nanosolutions: Award-winning startup uses nanotechnology to recycle wastewater and reduce water pollution

An award-winning start-up has successfully treated and reused more than 100 million liters of water using nanotechnology.

JK Nanosolutions' is involved in the development and deployment of cutting-edge nanotechnology-based products for the rapid, single-step, low-cost treatment and recycling of wastewater, industrial effluents, sewage water, etc.

Under their unique initiative, JK Nanosolutions releases nanoparticles into polluted water bodies. "These instantly combine with pollutants present in the water bodies resulting in the formation of sludge.

The sludge settles at the bottom of a water body or a tank," said Kiruba Daniel, the startup founder.

Further, the sludge can be cleared using a pump and it can be used as organic manure in farming, gardening, etc. The resultant water is fully free of pollutants, he adds.

"The product has been implemented in state and central government PSU's, and private industries. An entire lake of Nanakramguda in Hyderabad, Telangana, and Shivapura, near Peenya, Bengaluru has been treated successfully under the CSR initiative of Phoenix Group and Tata Trust," Daniel said.

After treatment, the product (nano coagulant and nano polymer) becomes bigger microlevel particles and acts as micronutrients for plants. Three dhobi-ghats (Open air Laundromat) of Bengaluru have started utilizing nanotechnology-based products for the treatment and reusing of detergent wash water.

JK Nanosolutions has won Elevate 100 award from the Karnataka government in 2017, the Dev Tech Award from DFID, the Government of India, and the British High Commission, B

esides, it has won Tata Social Enterprise Challenge Award from IIM Calcutta, Design Impact Award by Tata Trust and Titan Ltd (2018), and Best Startup Award POI expo from Vice President of India (2020).

Saving every drop of water: How a landlord's concern prompted an Artificial Intelligence-based water management solution

When Neerovel founder Subramanyam Kosuri was living in a four-storeyed apartment, the landlord would always meticulously check the water levels in the overhead tank before refilling. This inspired him to create a product that helps in water management.

Neerovel is a DIY installable FIT-FORGET kind of wireless water management solution. It is a smart electronic product, built to help people living in apartments & villas monitor water levels and to save water from overflow/leak. The device

The device automatically measures water tank levels with precision with the help of Artificial Intelligence.

"Currently, available solutions only alert when the tank is full/empty and have primitive wiring solutions that do not provide accurate water levels or water usage statistics, nor enable the user to control devices or motors easily," Subramanyam explained.

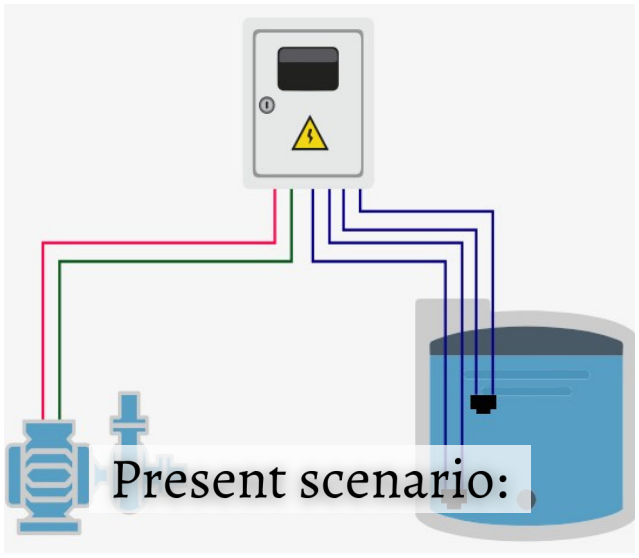
"Our device measures water tank level from time to time, analyzes the data and can schedule auto on/off motor/ valves. Users can track water usage patterns and prevent leaks and overflows," he added.

Neerovel is a mission-mode startup that embarked on a journey to save 2 billion liters of water by 2023 by creating water-conscious societies with its innovative products and services.

Their device is the first customizable and scalable design that can be worked wirelessly. "All one would need to do is fit the device under the overhead water tank," Subramanyam said.

There are two models- one which requires wifi connectivity and the other that can work without it. Users can choose and customize models according to their requirements. They can also analyze water for each %, and schedule timings at the click of a button through a mobile app.

Users can reduce water/power bills, auto on/off the motor valves and keep track of their water consumption.



Innovator Talks

Clean toilets: 'Wenalytics' integrates sensors and smart devices to automate utilities for hygiene

Clean and safe sanitation is the most crucial component of ensuring inclusive and sustainable human development.

SBM (Swachh Bharat Mission) has made major strides to accelerate the country's efforts to achieve universal sanitation coverage and attain the goals of SDG 6 pertaining to clean water & sanitation. Under SBM-U nearly 62.5 lakhs of IHHL (individual household latrine) and 10 lakhs of CTs (community toilets) have been constructed across the country.

While it is important to make sanitation accessible by constructing toilets, it is equally important to do maintain these facilities. Unclean toilets are a source of diseases. Often people get deterred from using the facilities because of the foul smell and poor maintenance. Technological intervention is required to address this public health issue.

Wenalytics is one such start-up that provides the necessary solutions by deploying and integrating sensors and smart devices in any built environment to measure, control, and automate all utilities thereby lengthening asset life & saving17-42% in operating costs. Their toilet monitoring system equipped with sensors can estimate the footfall, water loss as well odor levels. It also comes with RFID (Radio Frequency IDentification) sensors to monitor supervisory activity as well as keep track of cleaning cycles along with a feedback button for customer satisfaction.

With the support of WIH, they are implementing their solutions across 10 community toilets in Warangal, Telangana.

The data generated is robust which helped to identify pain points within the utilities and gave actionable insights. Their solution effectively optimizes human resources & creates a sense of accountability for effective service delivery.

'India Water Pitch-Pilot-Scale Start-up Challenge' : MoHUA

Ministry of Housing & Urban Affairs (MoHUA) has launched the "India Water Pitch-Pilot-Scale Start-up Challenge" for identifying and promoting innovative, proven, and potential environment-friendly technologies as solutions to urban sanitation and water problems.

New and emerging technologies resulting from the thriving start-up ecosystem in India are providing breakthrough solutions to some of the most critical challenges. This ecosystem needs to be harnessed for achieving the objectives of the Atal Mission for Rejuvenation and Urban Transformation 2.0 (AMRUT 2.0).

MoHUA has empanelled ASCI to conduct the technical evaluation for the applicants under the AMRUT Challenge. 222 start-ups participated of which 76 start-ups have been shortlisted after intense 2 day screening by an expert committee chaired by Prof. V. Srinivas Chary, Director ASCI & CEO – WASH Innovation Hub.

These start-ups have been mapped with 38 cities across 16 states. A city nodal officer has been appointed to each start-up who will support them by providing suitable opportunities & sites for testing & demonstrating their solution.

A financial anchor of Rs. 20 lakh in three tranches will be provided to these winners on fulfilling certain conditions of work as per their project proposal. Mentorship support and scaling up of solutions in partnership with industries & urban local bodies to these shortlisted start-ups will also be facilitated by MoHUA.

'Jal Jeevan Hai': SmartTerra's AI-powered tools help reduce non-revenue water losses, detect tampered meters

SmartTerra has embarked on a journey to help the utilities reduce water losses, improve revenue, and ensure round-the-clock service.

This stems from the fact that most of utilities do not effectively use collected data to reduce high non-revenue water loss. Multiple data and other factors need to be analyzed to minimize non-revenue water loss.

Nonrevenue water is "lost" before it reaches the customer. SmartTerra has models that help track losses.

"Our AI-powered analytics platform provides an up-to-date prioritized list of degraded or tampered meters. It also lists customers using illegal means, network elements with leaks or bursts, and network elements predicted to fail. It also explores opportunities for revenue improvement," said Giridharan Sengiah, VP, Partnerships.

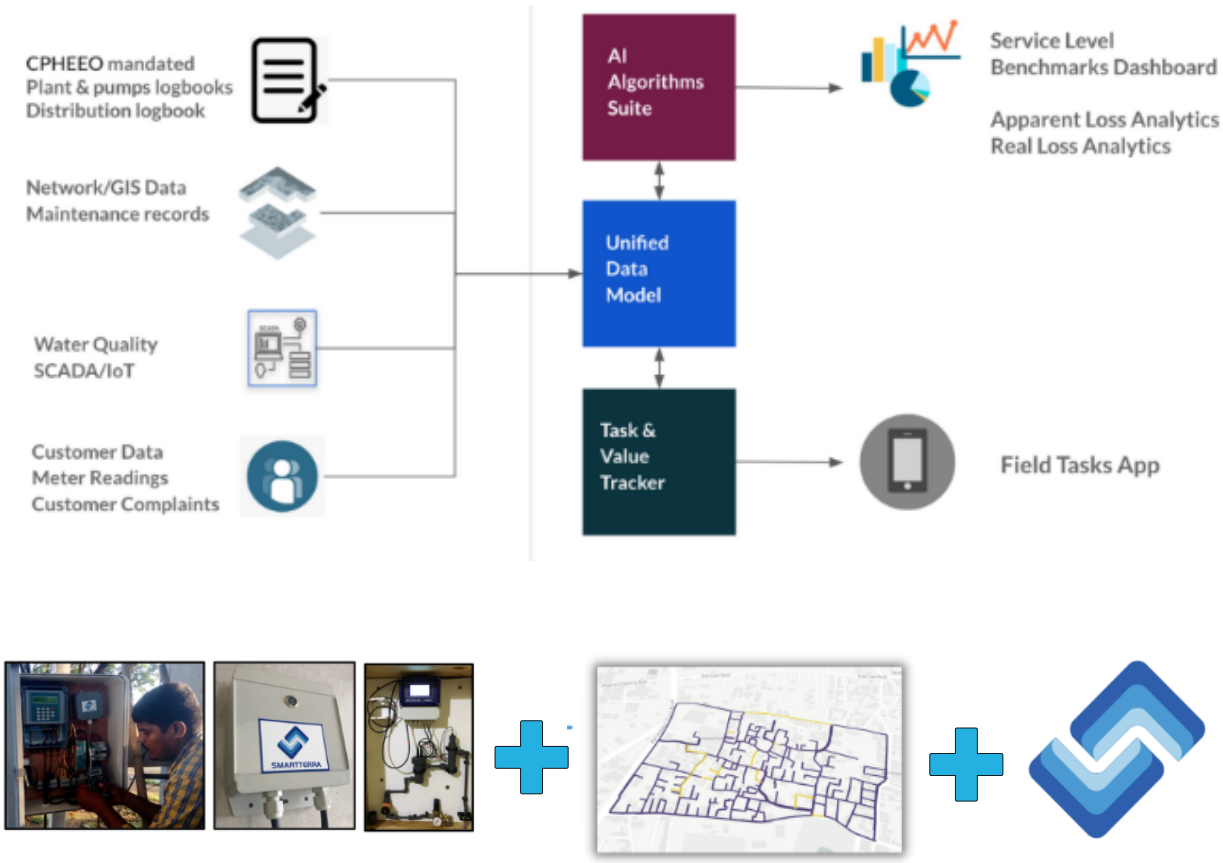
SmartTerra's analytics provides a combined analysis of high-speed IoT data with manually collected data. It has two models - MeterCity and NetCity.

MeterCity is a model that is focused on apparent losses.

"A ranked list of suspect meters, suspect connections, ranked areas with suspect illegal connections, revenue analysis and forecasts are provided by the product," Giridharan explained.

NetCity model focuses on physical and real water loss. "This model's analytics prioritizes providing pre-localized leaky pipes by performing AI-driven Hydraulic Calibration. It also provides a list of pipes (likely to fail) by performing AI-driven driven condition-monitoring of network and maintenance data," he added.

SmartTerra also provides codified water-utility operations expertise. The product is accessible and affordable as it does not need any additional sensors.



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