Water / Wastewater
Industry Division

Setting the Standard for Automation™

Calendar of WWID Events

18-19 June 2024 | London, England
ISA OT Cybersecurity Summit

30 Sept - 3 Oct 2024 | Charleston, SC, USA,
ISA Automation & Leadership Conference

In this Issue:

Newsletter
November 2023

Director's Welcome

Hassan Ajami, PE, CAP, PCI-Vertix.

Welcome to our 2023 Water & Wastewater Industries Division (WWID) newsletter.

We are well into the last quarter of 2023, this year is going by in a flash. It is an exciting time to be in the W/WW automation industry with a variety of activities going on due to both positive and negative drivers. Infrastructure as a whole is aging and utilities are taking the initiative to upgrade and improve their systems. Shifts in population density here in the USA are adding stress to existing systems that were not originally designed for high demands, leading to utilities rehabilitating existing facilities and adding new ones, while others are having to decommission or idle facilities due to lower demand. The always-present threat of cyber-attacks is also driving changes with Cybersecurity being the key topic at a majority of industry conferences and events.

On a separate but related topic, the globe as a whole is changing. This Summer's heat waves are being felt across continents with high temperature records being broken. Rain patterns in my home state of Michigan are unlike any I've experienced before with a dry Spring and short durations of very heavy rain in the Summer. Regardless of what is causing these changes, each year seems to be worse than the one before. The W/WW industry is taking notice of this trend and one of the main topics at this year's AWWA ACE conference was Water 2050 and their focus on Sustainability, Technology, Economics, Governance, and Social/Demographics as the 5 key drivers for the future. AWWA created think tanks to focus on each topic and they have released their …**(continued on page 2)**

Newsletter Editor's Welcome

Slawek Wolski,Ulteig

Welcome to the November 2023 edition of the ISA Water & Wastewater Industries Division (WWID) Newsletter. It has been a busy year, primarily due to the heavy reliance on automation and instrumentation in water treatment processes. Automation systems allow for process monitoring, device control, and system optimization, leading to increased efficiencies. In this issue, we focus on data transfer and artificial intelligence, both critical components of water and wastewater management. The seamless transfer of data is crucial for operational efficiency in this rapidly evolving industry. One of the featured articles, co-authored by Parth Bosmia, Associate Instrumentation and Control Engineer at R. V. Anderson Associates Limited in Toronto, and Ashish Soni, an OT Cybersecurity Enthusiast and registered Professional Engineer, explores various methods of transferring facility data.

In the second article, we delve into the world of water and wastewater automation, continual improvement, and innovation. Bob Loncar, a Principal System Integration Specialist at Ulteig Engineering, discusses the synergies between digital twin technology and Artificial Intelligence/Machine Learning (AI/ML) to streamline operations, reduce costs, and encourage innovative problem-solving.

It has been difficult to ignore recent climate change and the push towards smart grids, detecting leaks in existing infrastructure, and continuing efforts to manage water quality. The industry is changing and the rapid…**(continued on page 3)**

WWID Director's Message
(continued from Page 1)

… initial reports which can be found at awwa.org.

On the topic of conferences, the ISA WWID group was invited by AWWA to participate in the ACE conference as a Knowledge Partner. A big thank you to Manoj Yegnaraman for taking the lead on securing this partnership and navigating ISA and AWWA's requirements for establishing the knowledge partner agreement. We presented at the Innovation Pavilion on the ACE show floor on the topic of "The Journey of a Utility-Wide Control System Upgrade: Collaboration can do some amazing things!", a case study on the planning and design of a control system upgrade and the benefits of collaboration between the Owner, Engineer, and equipment supplier. The presentation was well-received and we look forward to participating in future ACE events.

We had two other partnership agreements for this year with WEF – Weftec 2023 in Chicago and the LIFT Challenge which culminates at Weftec. At Weftec's Innovation Pavilion, we presented "The Benefits of Using Open Platforms in Pump Applications." If you plan to attend Weftec, please stop by the Innovation Pavilion on Tuesday at 11:30. The LIFT challenge is an ongoing competition, and one of our long-term members is on the judging panel, the winner will be selected at Weftec.
With the reduction of in-person events and meetings, we are relying more on virtual platforms to keep members connected and updated. ISA Connect is the main platform that we use for updates, meeting information, technical discussions and papers/presentations. If you are not registered for Connect, please do so and join us in the WWID page. We have past presentations and recordings in our library with more planned for this year. We are open to volunteers who have case studies that they would like to present with in a live virtual setting or as a pre-recorded presentation. I'm a firm believer that collaboration between members is the key to the longevity of any organization.

I wish everyone the best and look forward to engaging with all of you virtually and in-person in the near future.

Regards,

Hassan Ajami, PE, CAP
Director, ISA WWID
Vice President / Lead Technical Officer PCI-Vertix
hajami@pci-vertix.com

Hassan has been involved in the Water/Wastewater industry for 20 years and has been an ISA Professional member for over 10 years.He is the Director for WWID, Conference CO-Chair for EWAC, and part of the ISA112 SCADA Systems Standard committee.

Hassan has a Bachelor of Science in Chemical Engineer from Wayne State University in Detroit, and a Masters of Science in Industrial Systems Engineering from the University of Michigan. He has been with PCI Vetrix since 2000 and is currently the Vice President and Lead Technical Officer.

Hassan is a registered Professional Engineer (PE) in 4 states and the District of Columbia. He is also a Certified Automation Professional (CAP).

Newsletter Editor's Welcome

(continued from Page 1)

…growth can be seen in the labor shortages. There is a growing need for better and improved systems across the industry. As a senior systems integrator, it is my responsibility to guide younger professionals, inspire new ideas, and encourage individuals to take ownership of their projects. This presents a fresh challenge in my day-to-day role, but it is the path forward that I and other senior integrators need to take.

Lastly, the finalist presentations and awards ceremony for the LIFT challenge was presented at WEFTEC 2023, on October 2, 2023. If you missed it the Water Research Foundation (WRF) and Water Environment Federation (WEF) joined forces to organize the LIFT Intelligent Water Systems Challenge. This challenge serves as a catalyst for the adoption of smart water technologies, aiming to spotlight the transformative power of intelligent water systems in leveraging data for informed decision-making within utilities. Adding a distinguished touch to the judging panel was Don Dickinson, representing the Water/Wastewater Industries Division (WWID) and serving as a judge for the Lift Challenge. Don Dickinson, in his role as the ISA Connect Chair, brought valuable insights and expertise to the evaluation process. Pictures from the event and the WWID group are seen in this issue.

I wish everyone a spectacular end of the November and and looking forward to getting the next issue out.

Warmest Regards,
Slawek Wolski, C. Tech
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Slawek Wolski is the Engineering Supervisor (Water/Wastewater) with Ulteig Engineering's Hamilton Ontario office. Ulteig Engineers is an employee-owned company with offices in Hamilton ON, Austin TX, Billing MT, Bismark ND, Boise ID, Cedar Rapids IA, Denver CO, Detroit Lakes MN, Sacramento CA, Sioux Falls SD, St. Paul MN, Williston ND, and head offices in Fargo ND. Slawek was an associate director with NLS Engineer, prior to it being acquired by Utleig in 2021. Slawek has also held senior positions with Grey Matter Systems, Hatch Mott MacDonald, Insyght Engineering, Sirron Systems, and The Walter Smith Co. Slawek and his wife live in Etobicoke, Ontario, Canada which is part of Canada's largest city: Toronto.

IN-PERSON EVENTS

2023 WEFTEC Conference and LIFT Intelligent Water Systems Challenge

Congratulations to the finalists of the 2023 IWS Challenge!

First Place: Regional Municipality of York, Canada | Leveraging Sanitary Sewer Flow and Rainfall Monitoring Data for System Intelligence

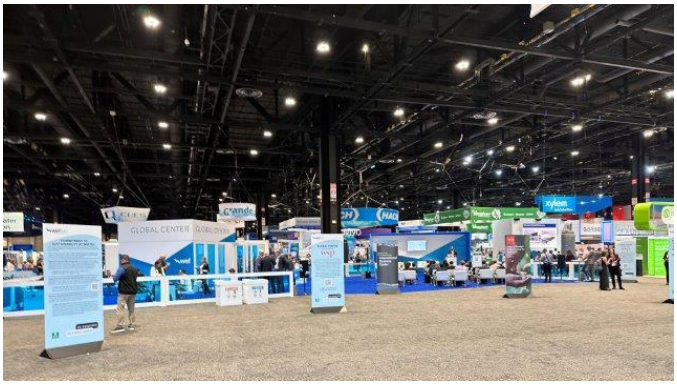
Second Place and Most Elegant Solution: Newport News Waterworks; Marathon Consulting | Optimizing System Flushing With a Smart Phone and a Real Time Model

Third Place: Region of Peel, Canada; CANN Forecast | Using Machine Learning to Optimize Infrastructure Investment for the Water Distribution Network

More about the challenge and award winners can be found here:

https://www.wef.org/topics/practice-areas/utility-management/intelligent-water-systems/lift-intelligent-water-systems-challenge/

Don Dickinson, representing the Water/Wastewater Industries Division (WWID) and serving as a judge for the challenge. And a small part of the WWID group met up and took some pictures together.



WEFTEC Tradeshow Floor

Don Dickinson – Presenting at the Innovation Pavilion for the LIFT Callenge

Don Dickinson – Presenting at the Innovation Pavilion for the LIFT Callenge

Left to Right – Hassan Ajami, Jason Hamlin, Slawek Wolski and Don Dickonson

Upcoming Webinars
From the WWID Program Committee

ISA conferences, webinars, and ISA Connect Live sessions cover a variety of topics in industrial automation by providing attendees with insight into key operational and business topics through online sessions, panels with live Q&A, exhibits, as well as networking and chat opportunities.

Benefit from experiences with renowned experts and presenters, hear firsthand about the latest technologies and trends, and gain the high-value, peer-reviewed technical content that will keep you and your skills on the cutting edge. Plus, take advantage of great exposure opportunities for yourself and/or your company's products and services.
Register at: https://www.isa.org/events-and-conferences

Upcoming Conferences

2024 ISA OT Cybersecurity Summit

18-19 June 2024 | London, England
Insights and understanding of how to use standards and conformance systems to keep operational technology (OT) safe and secure. This dual track conference will focus on intelligence evolution and IoT Cybersecurity. Details coming soon!

ISA Automation & Leadership Conference–USA

30 September - 3 October | Charleston, SC, USA
The ISA Automation & Leadership Conference (ALC) is the automation event of the year—combining ISA's leadership conference with the best technical presentations from its automation conference series into an unparalleled event experience. Details coming soon!

ISA Connect Live

Technical discussion and networking in a live, virtual setting

Connect Live with Smart Manufacturing and IIoT Division

Connectivity Connect Live

29 November 2023 | 10:00 a.m. ET
Register Now

Connect Live with Smart Manufacturing and IIoT Division

Digital Twin

27 December 2023 | 10:00 a.m. ET

Register Now

OnPoint

Division-led technical presentations for ISA members

OnPoint with Water & Wastewater Industries Division

The Journey of a Utility-Wide Control System Upgrade: Collaboration can do some amazing things!

1 November 2023 | 11 a.m. ET

Register Now

OnPoint with ISA Food & Pharmaceutical Industry

Real-Time Cleanroom Contamination Monitoring

9 November 2023 | 11 a.m. ET
Register Now

OnPoint with Chemical and Petroleum Industries Division

Applying Edge Analytics on Rotating Equipment for Predictive Maintenance

28 November 2023 | 5 p.m. ET
Register Now

OnPoint with Water & Wastewater Industries Division

Implementing A Controller With Embedded Webserver in a Rural Water Application

6 December 2023 | 12 p.m. ET
Register Now

TECHNICAL ARTICLES

The Value of Integrating Digital Twins with Artificial Intelligence/Machine Learning (AI/ML)

Bob Loncar, Principal System Integration Specialist, Ulteig Engineering

Water/wastewater automation professionals are always looking for ways to improve our processes. Let's look at the advantages of pulling together technologies – digital twin technology and AI/ML – to help us streamline operations, reduce costs and expand innovative problem-solving. Please refer to the accompanying diagram as it illustrates the points I will make.

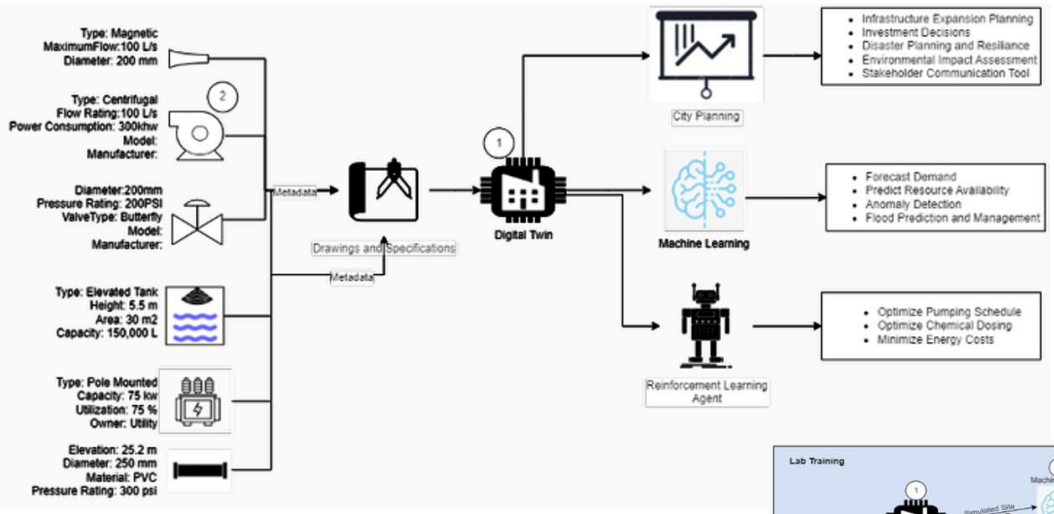


Figure 1 - Digital Twin in Water Applications

Digital twins **(1 on Figure 1)**, virtual replicas of real-world assets, processes, or systems, have become instrumental across numerous industries, notably within water and wastewater management and automation. The development of these digital twins significantly relies on CAD (Computer-Aided Design) drawings. These drawings along with specifications, supply the geometric, structural, electrical, and process related data, enabling the creation of accurate and comprehensive virtual models during the design phase.

Digital twins contain a wealth of information related to the physical systems they represent, going beyond what traditional CAD drawings capture. For instance, let's consider the example of a centrifugal pump **(2 on Figure 1)** at a water treatment facility.

The integration of digital twins with Artificial Intelligence/Machine Learning (AI/ML) and reinforcement learning (RL) algorithms permits more informed decision-making, optimizes processes, and enhances system performance. Creating digital twins early in the stages of a project and using them alongside AI technologies enables municipalities to optimize operations, reduce costs, and stimulate innovation to meet the challenges of our evolving global landscape.

Example: Centrifugal pump at water treatment facility

While CAD drawings may provide dimensions and structural location, digital twins enhance this data by incorporating additional details critical for AI/ML and reinforcement learning applications. Such information includes power rating and consumption, manufacturer's pressure/flow curves, impeller size, elevation above sea level, and other performance-related parameters.

When it comes to employing digital twins in AI/ML applications, we need to understand that there are two separate environments. (Refer to Figure 2) In the Lab training environment, enriched metadata becomes a valuable resource and in the Deployed environment where predictive models and policies are used to provide optimized setpoints and predictive alarming to operations.

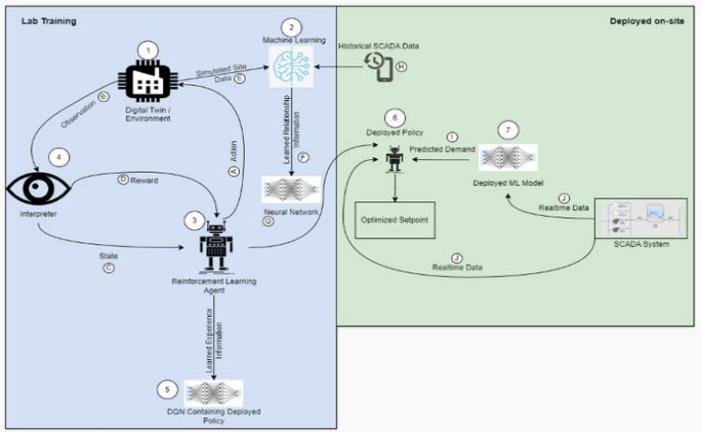


Figure 2 – Lab vs Deployed Environments

Let's focus our attention on the Lab training environment first. Machine learning algorithms **(2 on figure 2)** can leverage the digital twin to simulate real life pump behaviour and interact with an existing system before the project is even at the design phase. The simulated pump parameters like size and flow rate can be modified and the simulation can be re-run and analyzed to aid in sizing of pumps in order to meet the site demand requirements. The information gathered in the simulation can be used analyze pump performance and identify patterns or correlations between various factors.

ML predictive models can be trained using historical data from SCADA (Supervisory Control and Data Acquisition) **(H on Figure 2)** or via simulated data generated by the digital twin **(E on Figure 2)** which can also provide valuable insights for both future and existing sites.

In the case of existing sites with historical SCADA data, ML models can be trained on existing historical data to analyze patterns, identify correlations, and make predictions about system behaviour. This enables the detection of anomalies, the prediction of pump impeller failures, and the optimization of operational processes based on past performance. For example, the model can be used to predict future water demand and optimize the pump operation to minimize energy cost.

However, in scenarios where there is no historical data available for a future site, the digital twin becomes particularly valuable. By utilizing the virtual representation of the system, ML models can be trained and tested on data generated by the digital twin **(E on Figure 2)**. The relationships between the inputs and outputs **(F on Figure 2)** are stored in an Artificial Neural Network (ANN) **(G on Figure 2)**. In our pump station example the inputs are the height of the water storage facility (reservoir or water tower), the flow measurement in and out of the reservoir and the output is how many pumps to run. Each node in the network contains information about the relationships of the inputs and outputs as weights and biases. For instance, there is a relationship between the flow of water in and out of a reservoir and the reservoir's height.

The resulting model is deployed **(7 on Figure 2)** and can respond with predictions **(I on Figure 2)** about the environment given a set of inputs/outputs. This allows for the simulation of various operational scenarios, evaluation of system responses, and prediction of potential outcomes.

By training on data collected from digital twins, ML models can learn to predict pump behavior, detect anomalies, and optimize pump operation for improved efficiency and reliability. The integration of digital twins with AI/ML allows for advanced predictive maintenance strategies, where potential failures can be identified in advance, reducing downtime and enhancing asset performance.

Additional benefits with Reinforcement Learning

On the other hand, reinforcement learning can leverage digital twins to enable autonomous decision-making in real-time. By simulating the behavior of the water system through the digital twin, RL algorithms can safely interact with the virtual environment, learn from trial and error, and discover optimal control policies. For example, RL algorithms can determine the optimal pump schedules or valve settings based on the current state of the digital twin and desired system performance objectives. The RL Agent **(3)** takes an explorative Action **(A)** and the digital twin **(1)** sends observation data **(B)** to the Interpreter **(4)**. The interpreter evaluates sends information related to the state of the digital twin **(C)** and the reward function **(D).** The reward function is designed to indicate the effectiveness of the action taken based on the state of the environment. For example, the cost of pumping can be used as part of the reward function along with there being enough water to meet future demand. The feedback loop provided by the digital twin allows the RL algorithms to learn and refine decision-making policies, leading to improved control strategies. As the RL Agent learns, it stores these learned experiences (also known as transitions) in a Deep Q-Network (DQN) **(5)**. A DQN combines deep neural networks like in ML with the Q-Learning algorithm. The Q function represents the cumulative reward for each action/state. The RL Agent repeats the process of action-state-reward hundreds, thousands or even millions of times continually updating the DQN with what it has learned. Once training is complete, the DQN is deployed to site where simulated data is replaced with real-time data from the SCADA system and the deployed policy **(6)** can make recommendations on the appropriate action to take.

While both AI/ML and reinforcement learning utilize digital twins to optimize water and wastewater systems, their approaches and objectives differ. AI/ML focuses on leveraging the data stored in digital twins to develop predictive models, detect anomalies, and optimize system performance. For example, using ML we can predict the water usage demand based on the day of the week, time of day, and weather or detect issues with power quality or equipment performance. On the other hand, reinforcement learning harnesses the virtual environment of the digital twin to enable learning through interaction and trial and error, leading to autonomous and optimized control strategies.

Both approaches contribute to enhancing water and wastewater management, and their specific methodologies and applications provide different capabilities for improved system optimization and decision-making.

About the Author:

Bob Loncar has 21 years experience in the process automation field with a focus on software integration/automation, algorithms, ML & AI. Experience with Azure, Google, AWS and IBM cloud offerings related to sensor data ingestion, conversion, historical storage and retrieval. Expert level understanding of SCADA platforms and their best use cases. Bob is a Principal System Integration Specialist at Ulteig..

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Different Ways to Transfer Facility Data

By Parth Bosmia and Ashish Soni

In today's world, especially in the water and wastewater industry, transferring data is essential and vital to facility operation. Many critical decisions are being made based on simple data transmitted by a sensor located remotely from the operations control room. The question is, how do you transfer the data, what is the value of the data and how much is to be spent to locate and power the sensor to obtain the data.
Let us look at the different ways data can be transferred from the sensor to the facility's control system:

1. Hardwired
2. Wireless

Is it feasible to install a 50 kilometres long cable from the plant if there is only a single sensor located in that area? The answer is likely not due to the value of the data being less than the cost to install the wiring. So, what are the options? The other option is to go with the leased telephone line, but it has become difficult to obtain a leased line from the service provider in today's era. The only available option is to go with wireless technologies.

Now, let us review the different options that are available in wireless technologies.

1. LAN (Bluetooth, WiFi)
2. Cellular (GSM/3G/LTE)
3. Low Power Wide Area Network Modulation with IoT

If the sensor is 10 meters away, one can think of using Bluetooth technology. Still, alternatively, one can think of using a hardwired cable for the signal as an option if the distance covered is only 10 meters.

Similarly, WiFi has a range of only about 50 meters, which is not a considerable distance and can be covered via hardwired cable in a more economical and reliable manner.

The third option is to install a GSM/3G/LTE network connection, in which the sensor includes a SIM card, similar to the SIM card in a cellular phone, to connect to the facility network and transfer data. However, this technology has some limitations because it consumes more power, so if the sensor is battery operated, then a frequent battery replacement would be required in addition to a monthly payment to the cellular service provider. The second limitation is that there has to be network coverage from the service provider where the sensor is physically located. But what if there is no network coverage in the area?

Consider the scenario as the sensor is battery operated and located in a remote location where operations and maintenance staff do not want to travel to replace the battery every few days. The solution is low power wide area network (WAN) modulation technology combined with the Internet of Things (IoT).

Refer to Figure 1 below, which provides a general overview of low-power WAN modulation technology.

This technology has the following limitations. As far as distance is concerned, this technology can cover a distance of approximately 100 to 150 kilometers. However, the limitation is the data transmission speed, which is around 50 kbps for a distance of 1 to 2 kilometers, and as the distance increases, the data transmission speed reduces proportionally. So, with this technology, it is not advisable to transfer images and videos, but a small packet of data/information such as pressure, temperature, humidity, etc., can easily be transferred. But the benefit of using this technology is that the battery replacement is not required for 3-6 years, depending on the data transmission rate set in the sensor. Line of sight is also advisable for a longer range, and there is no requirement of a license to use this technology.

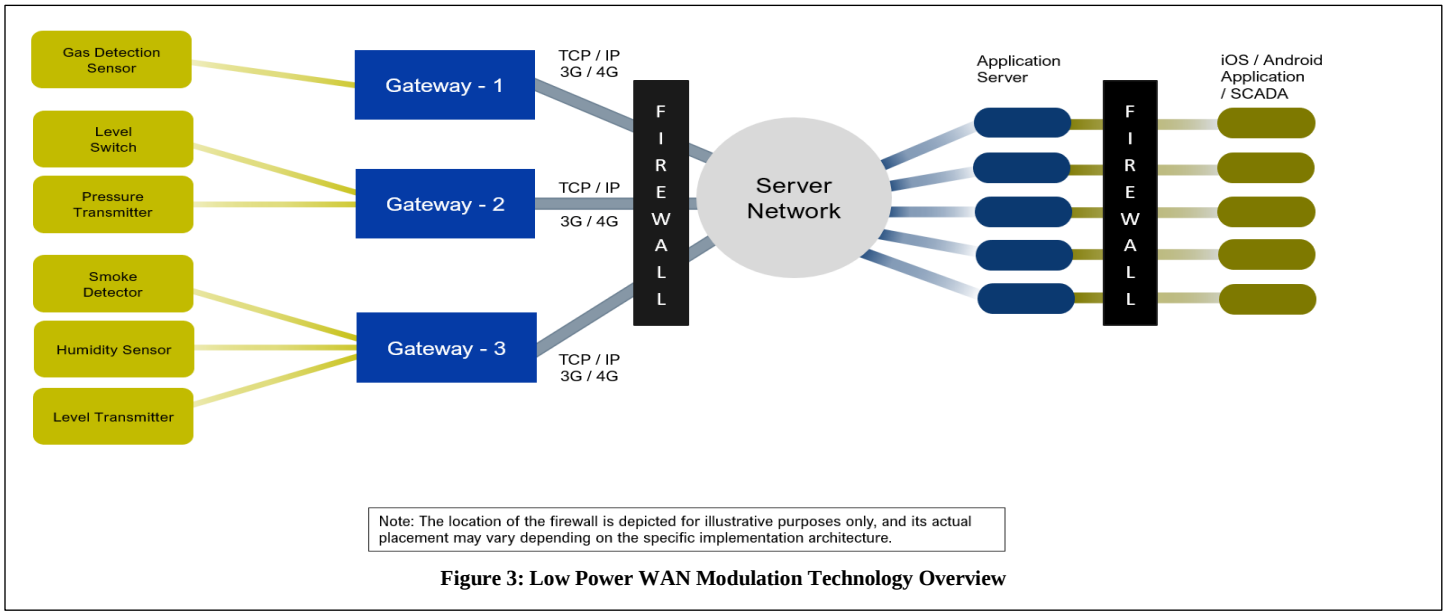

Figure 3: Low Power WAN Modulation Technology Overview

Link Budget:

A link budget is an accounting of all of the power gains and losses that a communication signal experiences in a telecommunication system, from a transmitter through a communication medium such as radio waves, cable, waveguide to the receiver.

See the below equation:

(Strength of a signal received at the receiver end) = (the power that transmitter can deliver) + (Gain of both antennas) – (Any loss during the data transfer)

The higher the link budget, the better. Also, the loss of data transfer is directly proportional to the frequency at which the data is transmitted. Higher the frequency, the greater the data loss, and hence less distance the data could be transferred to the receiver, which means the lesser the frequency, the greater the distance that can be set between transmitter and receiver.
Refer to Figure 2 graph that compares different technology in terms of bandwidth (which means the data transfer rate) vs the distance/range.

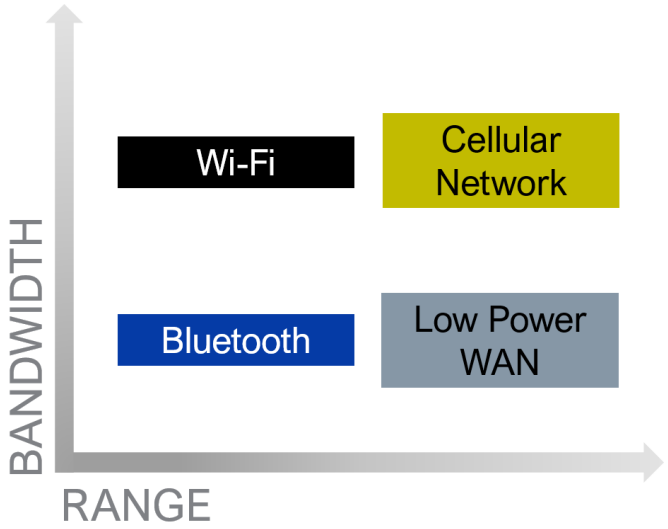

Figure 4: Bandwidth versus Range Comparison

Table 1: Comparison:

LAN	Cellular	Low Power WAN
Short Range	Long Range High Power	Long Range Low Power
Good for:	Good for:	Good for:
Mobile	Long range	Long range
In-home	High data rate	Long battery life
Short range	Coverage	Resistant to Noise
		Low cost
Not good for:	Not good for:	Not good for:
Battery life	Battery life	High data rate
Long range	Monthly cost	
Example:	Example:	Example:
Bluetooth, Wi-Fi	3G, LTE, GSM	LoRaWAN® by Semtech

Conclusion:

It depends on different factors (listed below) as to which technology is the best for the selected application.
1. Finance
2. Distance
3. Transmission Speed
4. Size of the Data
5. Link Budget
6. Criticality of Data

The user may choose from the available technology (listed below) after considering the above various factors for the data transfer.
1. Hardwired
2. Telephone Line
3. Bluetooth
4. WiFi
5. Cellular
6. Low Power WAN

Cybersecurity Consideration for this solution:

Ensuring cybersecurity for OT (Operational Technology) systems, like SCADA, is crucial due to the rising digitization and interconnectivity to maintain operational availability.

The ISA/IEC 62443 standard series, jointly developed by the International Electrotechnical Commission (IEC) and the International Society of Automation (ISA), offers a comprehensive framework for robust cybersecurity practices in industrial automation and control systems (IACS). It provides guidelines and best practices to mitigate cybersecurity risks, protect critical infrastructure, and maintain SCADA system integrity and availability.

The initial step in OT (SCADA) cybersecurity planning is a comprehensive risk assessment. This involves identifying potential threats, vulnerabilities, and consequences within the system. By using the IEC/ISA62443 standard's risk assessment methodology, water and wastewater treatment facilities can effectively evaluate and prioritize security measures. The detailed procedure in IEC/ISA62443-3-2 helps identify Security Level – Target (SL-T), Security Level - Capability (SL-C) of the controls, and Security Level - Achieved (SL -A) through deployed security controls to mitigate risks.
To ensure effective OT (SCADA) system security, it's vital to create a comprehensive inventory of all network-connected assets, including hardware, software, and communication devices. The IEC/ISA62443 standard recommends classifying these assets based on their criticality and potential impact on the facility's operation. This enables facilities to allocate appropriate security measures and resources, prioritizing protection for the most critical assets.

The IEC/ISA62443 standard highlights the importance of zones and conduits in designing secure OT (SCADA) systems. Zones represent logical or physical groupings of assets with similar security needs, while conduits are the paths through which data is exchanged between zones. Implementing these zones and

conduits enables compartmentalization, reducing the potential impact of cyber-attacks on the overall system.

The IEC/ISA62443 standard guides the development and implementation of strong security policies and procedures. These policies should address risk management, access control, incident response, patch management, and employee training. Adherence to these policies ensures consistent and effective cybersecurity practices across the organization.

Maintaining a proactive cybersecurity approach is crucial. The IEC/ISA62443 standard advises continuous monitoring of SCADA systems to promptly detect and respond to potential threats and vulnerabilities. Additionally, implementing measures like permitting communication only from authorized IP addresses, device token authentication, restricting communication to specific ports and protocols, and conducting regular audits and assessments can enhance the resilience of OT (SCADA) systems' cybersecurity posture.

Securing Low Power WAN modulation technology combined with IoT in wastewater treatment plants is crucial for maintaining operational integrity and protecting critical infrastructure. By using the ISA/IEC 62443 cybersecurity standard series, plants can establish robust cybersecurity measures, ensuring safe and reliable operation amid evolving IoT and WAN modulation technologies.

About the Authors:

Ashish Soni, P.Eng. is an OT cybersecurity enthusiast with diverse background in consulting, engineering, designing and commissioning of ICS/OT systems for different sectors across globe. Ashish is a P.Eng in good standing with APEGA and EGBC, holds ISA62443 cybersecurity expert badge, coupled with an MBA in supply chain management and engineering in Instrumentation and controls. He is deeply passionate about securing critical infrastructure and protecting associated supply chains from cyber threats.
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Parth Bosmia, P.Eng., a seasoned professional with 15 years of diverse detailed design expertise spanning industries like petrochemicals, pharmaceuticals, oil & gas refining, and water/wastewater, boasts an impressive career with esteemed organizations including Tata Consulting Engineers, Jacobs Engineering, and his current role at R V Anderson Associates Limited as an Associate Instrumentation and Control Engineer. His expertise includes working on InTools software, performing calculations in various software for designing instruments (such as orifices, control valves, thermowell, and pressure safety valves), basic PLC programming, preparing P&IDs and tenders, designing network architecture, designing control panels and proficient in commissioning activities
parth.bosmia@gmail.com

Get Involved with ISA!

By Marty Bince ISA President, EECOL Electric

Can you guess how many volunteers it takes to operate the ISA Society? See the answer at the end of this blog post.

Volunteering is Resoundingly Rewarding

Volunteering with ISA provides an opportunity to contribute to our mission and create a better world through automation, all while accentuating your resume with an esteemed ISA committee. Volunteers can contribute to and lead/manage a committee, section, division, or Society leadership group, as well as provide guidance on operating our 100+ sections, 16 divisions, or 100+ student sections.

Automation impacts the basics of our every day—including food and clean water production, the safe extraction of essential minerals, and manufacturing items we need in a sustainable way while simultaneously safely helping humanity live comfortably. Automation professionals have come together to selflessly give their time to create that better world. This important workload is made much lighter by the gracious efforts of thousands of volunteers the world over.

Want Management or Project Management Experience? Volunteer for ISA!

For a young professional, it can be frustrating to reach the hierarchy and become a manager or project manager. You need management or project management experience to become a manager. To get management experience, you need an opportunity to be a manager or a project manager.

Does this sound like a hamster wheel you've been on?

Volunteer organizations have projects and groups to manage.

By contributing to a committee and then advancing to the committee chair, you will be able add impressive leadership to your resume. A committee may need a task or project completed, which provides the project management experience you may draw on.

Many section leadership tracks (secretary, treasurer, vice-chair, section chair) that provide you the experience to create an agenda, lead a meeting, and even execute the projects that the section may have. Similarly, divisions and other ISA committees have needs and roles that can be filled by young professionals.

Volunteer as a Mentor for a Young Professional

Consider becoming a mentor – either on your own or through ISA Mentor. As a mentor, you offer career guidance and professional development advice, as well as discussing technical requirements and project situations. Having an hour-long coffee every few months is not overly time -consuming, but certainly goes a long way to demystifying this complex industry. Paying it forward is always beneficial to all!
Check out the mentor program for young professionals that ISA has created!

What Volunteer Opportunities are Available to Me?

As a volunteer, your technical expertise is key to the robust thought leadership reputation that ISA has in the market. I encourage you to write a blog, contribute an article to *InTech*, and even author a book!

You could also consider becoming an instructor for ISA's industry-leading training courses. Whether teaching the course or helping to develop its content, volunteers provide the expertise for our training and certification programs, as they have a deep understanding of their technology or industries and can provide the background for ISA training and certifications.

Training provides the educational foundation to improve our careers, our companies, and our planet. Certifications developed and evaluated by our members help prove that a practitioner has the skills to develop and engineer automation systems. The contributions these volunteers have made ensure that ISA offers the highest quality education and training services, and that we continue to enjoy our well-earned reputation as the home for automation and industrial cybersecurity training.

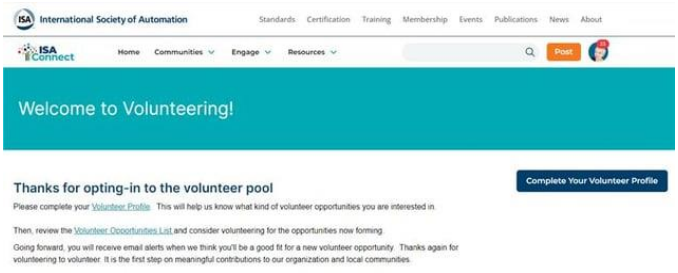
Volunteers Have Day Jobs- and a Life

Your limited time that you choose to spend with us between work, family and life does not go unnoticed. If you do not have a vast abundance of time to spend volunteering with us, even a few hours per month goes a long way.

ISA depends on professional staff for the day-to-day, month-to-month, year-over-year consistent organizational plate spinning that a professional society needs. Managing standards, certification and training, business and IT (Information Technology) system management, event management, marketing, and membership services —all of these require leadership and professional management. But they also require technical expertise, and that is where our ISA volunteers can make a tremendous impact working in partnership with the Society's staff team.

The Volunteer Portal

The volunteer portal provides a central home for ISA leaders to post positions and act as a match maker with some volunteers that are looking for a way to contribute. Leaders have posted their requirements on the portal, like a job portal. Volunteers can browse, apply, and be accepted across the abundance of committees that need your input and support. Opt into the volunteer portal and create your volunteer profile today!
Click here to opt into the volunteer pool - opting in will allow you to receive email invitations to apply for new opportunities that match your interests and qualifications. You have a toggle at the top of your volunteer profile if you wish to opt out at any time.



Complete your volunteer profile. Add your time commitment preferences to the *Ways to Get Involved* and select your *Areas of Expertise*. The more information you supply, the easier it is to invite you to apply for future opportunities that align with your interests and qualifications. Set your privacy settings to what information you want to share with colleagues and peers.

Open Opportunities

The full list of global volunteer roles is available through the Volunteer Opportunities List. Apply for the roles that interest you.

Some 3,500 members volunteer their time for the benefit of the Society, and ISA is exceedingly grateful for your time, commitment, and ideas. We hope you're inspired and consider contributing to any time commitment you have the bandwidth for to help ISA create a better world through automation.

Marty Bince is an industry leading sales and automation professional, and management consultant. Currently Automation Business Development Manager with EECOL Electric, Marty has a demonstrated history of technical acumen and experience in many industrial and manufacturing settings, including as a former business owner of an industrial automation software distributor. He has experience with many facets of oil & gas extraction / production / transportation, manufacturing, mining, food processing, water/wastewater, manufacturing and clean tech. Marty has been a member of the International Society of Automation (ISA) Executive Board since 2017 and is ISA President for the 2023 term.

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About the ISA Water/Wastewater Industries Division

The ISA Water / Wastewater Industry Division (WWID) is concerned with all aspects of instrumentation and automated control related to commercial and public systems associated with water and wastewater management. Membership in the WWID provides the latest news and information relating to instrumentation and control systems in water and wastewater management, including water processing and distribution, as well as wastewater collection and treatment. The division actively supports ISA conferences and events that provide presentations and published proceedings of interest to the municipal water/wastewater sector. The division also publishes a quarterly newsletter and has a scholarship program to encourage young people to pursue careers in the water/wastewater automation, instrumentation and SCADA field. For more information see www.isa.org/wwid/ and www.isawaterwastewater.com