

IWA - New Developments in IT & Water Conference Programme



Conference Programme

2 – 3 NOVEMBER, 2016
TELFORD, UK



Supporting Organisations



Introduction

The Water Industry is an industry that is a large consumer of IT systems and a large producer of data. It has also infamously suffered from "Data Richness & Information Poverty," producing millions of pieces of data every day and in the majority, not being able to do much with the data that has been gathered.

However, the industry is changing at a rapid pace and pressures brought on by the need for greater efficiencies through population growth, a need for an ever cleaner product and phenomenon's such as climate change means there is a drive for the industry to do more for less and get "smarter" about the way that it operates.

In the 3rd edition of the International Water Association's New Developments in IT & Water the concept of the "Smarter" Water Industry will be addressed by openly discussing concepts such as the Value of Smart Systems, Modelling & Control and Decision Support Systems. We will also discuss some of the opportunities that the industry has with concepts such as the Internet of Things and Network Protocols and some of the risks that exists through the security of our IT & IC systems.

The New Developments in IT & Water Conference is also fortunate this year to be co-locating with the Water, Wastewater & Environmental Management Conference and so gives attendees the opportunity to not only discuss the data, information management & control systems but also to see all of the new developments in instrumentation systems.

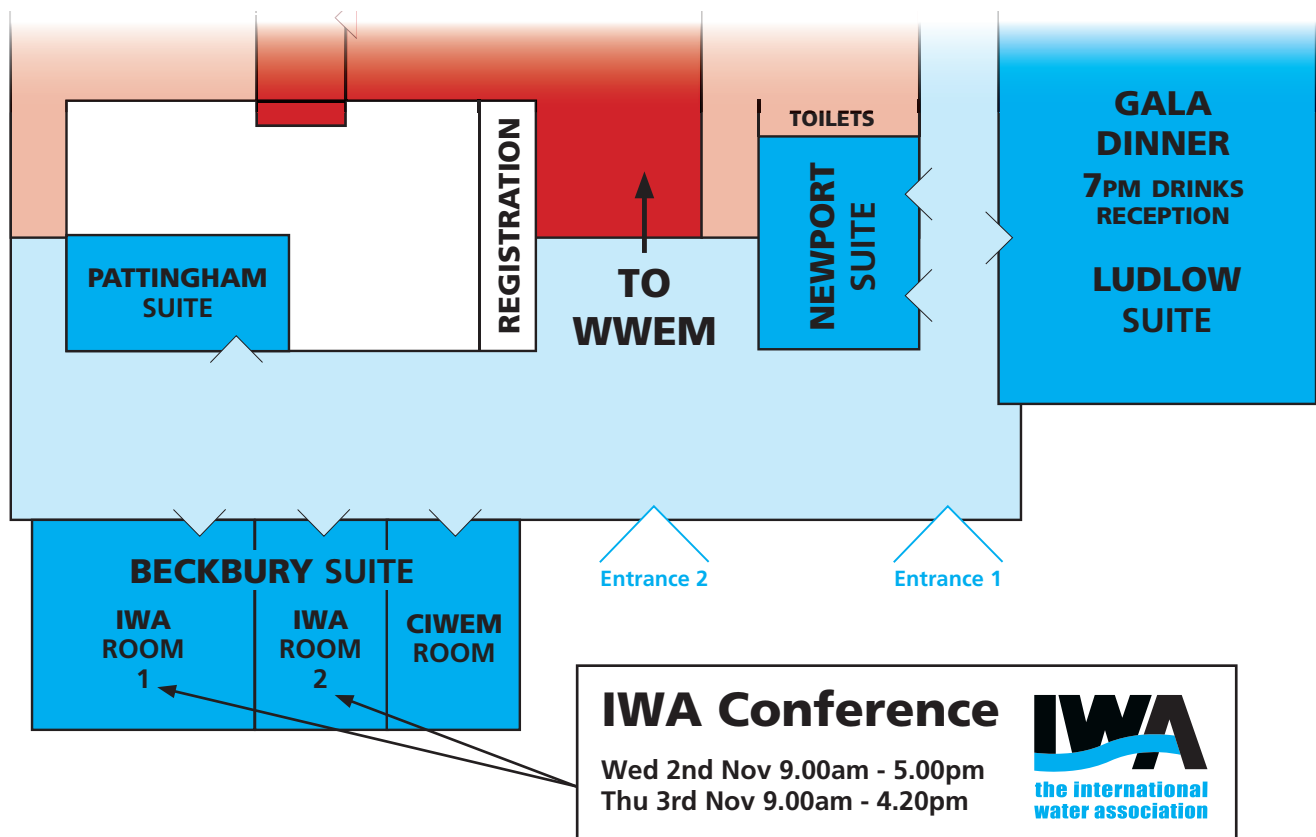
I hope to see everyone at the IWA New Developments in IT & Water Conference between 2nd – 3rd November

Oliver Grievson

Water Industry Process Automation & Control



Telford International Centre



Keynote Speakers



Bas Boorsma, Director Internet of Everything & City Digitization North Europe, Cisco

Room 1 - Wednesday 2nd November – 9.00am

Bas Boorsma currently serves as Cisco's Internet of Everything leader in North Europe. In this role he orchestrates Cisco's regional efforts that allow for the digitization of Cisco customer operations, partner operations and Cisco itself. Bas has a rich background as a City Digitization specialist. In that capacity he has managed a portfolio of smart city endeavours globally. Bas has coordinated and overseen the implementation of innovative projects and programs that address the ways we work, live, consume, play, learn and deliver within the context of cities. Typical innovations delivered or currently being worked on include Smart Light, Smart mobility solutions, Street Digitization, City Digital Platform, Digital Ceiling, Smart Work Centers, Learning Hubs, Smart Ports, high end broadband deployment as well as the architectures and service models that will help drive the digitization of society at large.



Pernille Ingildsen Chief of Projects and Planning Kalundborg Supply A / S

Room 1 - Thursday 3rd November – 9.00am

Pernille Ingildsen recently published the book "Smart Water Utility, Complexity made Simple" together with Professor Gustaf Olsson. Making utilities smart has been her vocation for most of her career, spanning positions at utilities as manager of operations, manager of engineering as well as work in product companies Grundfos and Danfoss as well as a consulting engineer.

Pernille took her Ph.D. in Lund University in 2001 where she worked with some of the newest nutrient sensors applying them for online control and optimization of nitrogen and phosphorous removal processes in full-scale plants.

Today, she works in Kalundborg utility, a Danish progressive water utility with a strategic direction of making a big leap forward in sustainability. Her basic claim is that in order to become truly sustainable, you need to take wise decisions that take all aspects into account. This is only possible in "smart" utilities where there is a deep understanding and learning based on data and thorough analysis.

A basic model suggested in the book is a measure-analyse-decide ladder, which is a basic structure from which it is possible to understand the idea of "Smart Water Utilities" (SWU) and a framework to discuss improvements from. Simply put, what SWU's do better than other is that they measure more, they analyse more and they take better decisions based on the knowledge extracted from this. By this process, SWU's will outperform other utilities by having this focus in strategic, tactical, operational and automatic decisions – as well as in situations of unplanned events.

The development is a slow and difficult yet necessary process for all water utilities – it is simply a process of learning and becoming better, which the sector need to succeed in, not only from a utility performance point of view, but possibly even more so from a local and global sustainability point of view.



Day 1

Wednesday 2nd November 2016

Room 1

Time		Speaker	Presentation	Affiliation	Country
09:00	09:40	Bas Boorsma	Keynote: A Digitized Society – Trends, Fundamentals, Impact	CISCO Systems	the Netherlands
09:40	11:00	"Session 1 - The Value of Smart Systems (Room 1)"			
09:40	10:00	Ajay Nair	The Practical Application of the Internet of Things : Delivering tangible benefits on the road towards a disruptive digital water utility	Accenture	UK
10:00	10:20	Alan Cunningham	Demonstrating value in self learning Intelligent Event Detection Systems	Servelec Technologies	UK
10:20	10:40	Antonio Sanchez Zaplana	Real Time Water Demand Forecast with Big Data: Alicante experience	Aguas de Alicante	Spain
10:40	11:00	Question & Answer Session			
11:20	13:00	"Session 3 - Modelling & Control - Potable Water Systems (Room 1)"			
11:20	11:40	Ana Sancho	Water and environmental monitoring: how IoT is changing these markets	Libelium	Spain
11:40	12:00	Cyrille Lemoine	Securing Drinking Water Network against accidental or voluntary contamination	Veolia	France
12:00	12:20	Amanda Scott	Improved Jar Testing Optimization with Organics Monitoring	General Electric	USA
12:20	12:40	Mathieu Lepot	Benchmark of outlier detection methods for spectral data	TU Delft	the Netherlands
12:40	13:00	Question & Answer Session			
13:00	14:00	Lunch, Networking & Exhibition			
14:00	15:20	"Session 5 - Data & the Network (Room 1)"			
14:00	14:20	George Heywood	Applying UK best practice Asset Management Optimisation to the International Water Sector	Servelec Technologies	UK
14:20	14:40	Mike Everest	Challenges of integrating 'Big Data' with water industry operational data. Includes a Case Study using real time rainfall data	Meniscus Systems Ltd	UK
14:00	15:00	Taleb Odeh	Modelling a complicated hydrogeological system: The case study of Wadi Zerka Ma'in - north east of Dead Sea	The Hashemite University - Arid Lands Academy	Jordan
15:00	15:20	Question & Answer Session			
15:40	17:00	"Session 7 - Decision Support Systems (Room 1)"			
15:40	16:00	Lars Larsson	Life cycle cost benefits with Cloud based systems for sewer networks	Xylem	Sweden
16:00	16:20	Chaim Kolominskas	Valuing the financial benefits of decision support systems for environmental management - Case studies from rapid response and proactive odour management in wastewater treatment	Pacific Environment	UK
16:20	16:40	Wolfram Franke	Secured network technology for controlled dosage systems in sewage application	Yara International ASA	UK
16:40	17:00	Question & Answer Session with Close			

Full speaker biographies are available at: www.wwem.uk.com/iwa-conference-programme/

Day 1

Wednesday 2nd November 2016



Room 2

Time		Speaker	Presentation	Affiliation	Country
09:40	11:00	"Session 2 - Modelling & Control - Wastewater Systems I (Room 2)"			
09:40	10:00	Heli Gong	Neural Networks for Wastewater Treatment Process - A Review	University of Calgary	Canada
10:00	10:20	Le Hong Quan	Experimental Design For Wwtp Data Evaluation By Setting Up Linear Mass Balances	Ghent university	Belgium
10:20	10:40	Jin Liu	Statistical modelling AD for process optimization and bench-marking - A case study of E. coli inactivation across all Thames Water conventional sewage sludge treatment sites	Imperial College London	UK
10:40	11:00	Question & Answer Session			
11:00	11:20	Coffee, Networking & Exhibition			
11:20	13:00	"Session 4 - Modelling & Control - Wastewater Systems II (Room 2)"			
11:20	11:40	Andrew Thornton	The Evolution of Real Time Control (RTC) systems for the Application to Wastewater Treatment Processes	Hach	UK
11:40	12:00	Stefan Abelin	Intelligent Wastewater Pumping - A Technological Breakthrough	Xylem Global Services	Sweden
12:00	12:20	Michael Dooley	Advanced Control and Optimisation of the Activated Sludge Process	Strathkelvin Instruments	UK
12:20	12:40	Simon Mazier	Frugal Engineering, or optimisation not instrumentation	Perceptive Engineering	UK
12:40	13:00	Question & Answer Session			
13:00	14:00	Lunch, Networking & Exhibition			
14:00	15:20	"Session 6 - Modelling & Control - Wastewater Systems III (Room 2)"			
14:00	14:20	Juan Antonio Baeza Labat	Integration of N2O emissions in the ASM2d model	Brunel University London	UK
14:20	14:40	Jose Porro	Measurements and modelling for developing AI-based DO control for mitigating N2O emissions from WWTPs	Lequia Research Group	Spain
14:40	15:00	Mohamed S. Zaghoul	Biological Processes Modeling for Simulation and Control of Aerobic Granulation Advanced Wastewater Treatment Method	University of Calgary	Canada
15:00	15:20	Question & Answer Session			
15:20	15:40	Coffee, Networking & Exhibition			
15:40	17:00	"Session 8 - Internet of Things (Room 2)"			
15:40	16:00	Jez Palmer & Stephen Beadle	The Industrial Internet of Things: An Evolution to a Smart Connected Enterprise	Schneider Electric	UK
16:00	16:20	Annemarie Mink	Mobile Crowd Participation as a Research and Monitoring Tool in Small-Scale Piped Water Supply	Delft University of Technology	the Netherlands
16:20	16:40	Thomas Schildknecht	Sensor 2 Web: How to get sensor data onto the cloud	Schildknecht AG	Germany
16:40	17:00	Question & Answer Session			

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Day 2

Thursday 3rd November 2016



Room 1

Time		Speaker	Presentation	Affiliation	Country
09:00	09:40	Pernille Ingildsen	Keynote - Smart Water Utilities: Complexity Made Simple	Kalundborg	Denmark
09:40	11:00	"Session 9 - Data for Water Management (Room 1)"			
09:40	10:00	Elizabeth Wambui Mwangi	Reducing Non-Revenue Water as a management decision	Nairobi City Water and Sewerage Company	Kenya
10:00	10:20	Graham Symmonds	Using Data for Utility Survival in an Environment of Mandated Conservation	FATHOM	USA
10:20	10:40	Mike Teller	How Big Data and a Vision Created a Smart Water Utility	Schneider Electric, Anglian Water	UK
10:40	11:00	Question & Answer Session			
11:20	13:00	"Session 11 - Sensing & Analysis in Wastewater (Room 1)"			
11:20	11:40	Giacomo Bellandi	Image analysis procedure to derive bubble size distributions for better understanding of the oxygen transfer mechanism	DICEA University of Florence	Italy
11:40	12:00	Kris Villez	Batch Settling Curve Registration via Shape Constrained Spline-based Image Analysis	Eawag	Switzerland
12:00	12:20	Christian Thuerlimann	Nitrite sensing in urine nitrification reactor with in-situ UV-Vis spectrometry	Eawag	Switzerland
12:20	12:40	Question & Answer Session			
12:40	14:00	Lunch, Networking & Exhibition			
14:00	16:00	Workshops			
14:00	15:00	Workshop 1 - The Smart Water Industry			

Room 2

Time		Speaker	Presentation	Affiliation	Country
09:40	11:00	"Session 10 - Cyber Security (Room 2)"			
09:40	10:00	Barry Searle	The Evolving Cyber Threat to Utilities and Effectively Mitigating the Risks	Intqual-Pro	UK
10:00	10:20	Thomas Hammond	Mitigating Risk Through Cyber Security in the Water Industry	Siemens Data Service	UK
10:20	10:40	Nick McLauchlan	How Safe are you?	Z-Tech Control Systems	UK
10:40	11:00	Liam Stimpson	How Anglian Water delivered a high impact and low cost Cyber Security Awareness Programme	Information Security Analysts - Anglian Water Services Ltd	UK
11:00	11:20	Coffee, Networking & Exhibition			
11:20	13:00	"Session 12 - Communications Protocols (Room 2)"			
11:20	11:40	Stuart Combella	WITS - The Next Generation	WITS PSA	UK
11:40	12:00	Brian Back	Critical Network of Things	Radio Data Networks	UK
12:00	12:20	Laurie Reynolds	Water 4.0, servitisation of water management through open data standards and Internet of Things	AquamatiX Ltd.	UK
12:20	12:40	Question & Answer Session			
12:40	14:00	Lunch, Networking & Exhibition			
14:00	16:00	Workshops			
14:00	16:00	Workshop 2 - Making Water Smarter			
16:00	16:20	Closing Remarks			

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Workshop 1

2pm on Thursday 3rd November (Room 1)

The Smart Wastewater Industry

How do we make the Smart Wastewater Industry “Business as Usual?”

The collection of wastewater, its subsequent treatment and its return to the environment is a complicated and expensive process that threatens to get even more complicated in the future with industry drivers such as ever decreasing permit limits, population growth and climate change amongst others with the chief driver to make the industry more efficient and to reduce the costs of what we do as an industry.

The industry has heard if we have better control of our networks and convert our treatment plants into resource recovery factories producing water, bio-solids, nutrients, plastics and whatever else amongst other things then there is a chance to exploit the value of wastewater.

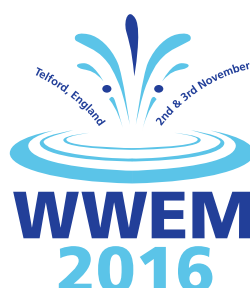
Meanwhile the wastewater side of the industry has been described as being “data rich/information poor.” The knowledge of what is happening in the field is not always complete because monitoring is either not there or can be there but be of poor quality.

With the advent of the “Smart Wastewater Industry” we have seen the development of a plethora of solutions mainly focused on the wastewater treatment works with instrumentation and system based control systems which not only save money by increasing the operational efficiency but can also report back on lost opportunities.

The industry is also starting to look towards the wastewater collection network with event duration monitoring examining the performance of Combined Sewer Overflows and also more intelligent systems providing in the very least some sort of active system control and allowing network operators to make informed decisions by not only giving them information of what is happening but what will happen in the next few hours.

In this workshop, a panel of experts, will actively discuss with the gathered audience what it will take to bring these innovations to not only the wastewater treatment works but the holistic wastewater collection and resource recovery system. This is in order to not only to address future pressures but to do so in the most efficient manner and how to turn the Smart Wastewater Industry into something that is “Business as Usual.”

This workshop will be chaired by Oliver Grievson who is a member of the management committee of the ICA Specialsit Group of the International Water Association. He is also the Group Manager of the Water Industry Process Automation & Control Group and a Director of both the Sensors for Water Interest Group and Wastewater Education 501 (c) 3.



Panel Members



Oliver Grievson, who will be chairing the panel, is a member of the IWA ICA Specialist Group on ICA amongst other things. He is an instrumentation specialist dealing with flow monitoring in his day job. He also runs the Water Industry Process Automation & Control Group where he regularly & openly discusses the Smart Water Industry and its use in the modern water industry.



Pernille Ingildsen is the Chief of Projects & Planning for Kalundborg utility, a Danish progressive water utility with a strategic direction of making a big leap forward in sustainability. Her basic claim is that in order to become truly sustainable, you need to take wise decisions that take all aspects into account. This is only possible in "smart" utilities where there is a deep understanding and learning based on data and thorough analysis.



Andy Thornton is the Head of Project Development for Hach Lange in Northern Europe. He is technical specialist in the use of instrumentation & control systems in process engineering to optimise treatment plant performance. Since earning his PhD from Cranfield University and Thames Water he has worked on countless projects with MWH, Veolia and Hach to improve the way that we operate and control wastewater treatment systems.



Ajay Nair is the senior manager for analytics at Accenture Digital. His two passions are data analytics and the water industry and drawing upon his 20 years of personal experience in the water sector, his skills as a chemical engineer coupled with the unrivalled capabilities of Accenture technology, his aim is to be able to use the digital era to help the water industry provide unparalleled levels of customer service whilst protecting and improving the environment and precious water resources throughout the globe.



Mike Everest is the managing Director of Meniscus Systems which is a business that is dedicated to delivering real time business analytics and metrics using two core platforms with data displayed via a range of interactive dashboard solutions specialising in Water and Wastewater networks, Data Visualization, Smart Cities & Big Data analytics.



Simon Mazier works for the specialist engineering company Perceptive Engineering who specialise in the control of industrial treatment works including those in the wastewater industry by using the data that is being collected on the works by the different parts of the process using, amongst other techniques, multivariate process control.



Michael Dooley is a chartered Mechanical Engineer with 24 years experience in Process Equipment Design, Operation and Maintenance. He has been Managing Director and part owner of Strathkelvin Instruments Limited and is considered one of the foremost experts in Biological Wastewater treatment in the UK and Ireland. He regularly consults for companies such as Calachem, Northern Ireland Water, Veolia, Scottish Water and many others.

Workshop 2

2pm on Thursday 3rd November (Room 2)

Making Water Smarter

Workshop 2 is being led by the Smart Water Networks Forum (SWAN) the leading global organisation in the Smart Water field. The Workshop will concentrate on looking at the latest end to end integrated solutions for the water industry including the use of Smart Water Systems to limit the losses from the potable water network from non-revenue water.

It will feature practical case-studies from water companies and their experiences in instigating Smart Water Solutions within the operational environment and seeing the benefits that they have reaped from operating more efficiently and minimising the potential losses from their distribution systems

There will also be a discussion on the latest topic in the Potable Water Industry with resilience planning within the Water Industry which has been identified as one of the key risks that the industry faces. The UK government recently published a report stating that

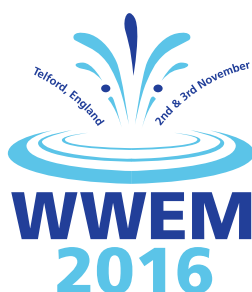
"Climate change and population growth are putting increasing pressure on the water sector in England. The sector needs to adapt to ensure that it can continue to meet the needs of people, businesses and the environment to secure the long-term resilience of the sector, helping to deliver a cleaner, healthier environment, benefiting people and the economy."

Lastly the workshop will enable those present to engage leading industry experts in the Smart Water Industry and the future of Water & IT.

This workshop is being chaired by Jim Southworth who is internationally experienced in both executive and operational management of water utilities and has 40 years' experience in the sector. From 1976 to 1992 Jim was based in the UK working for North West Water, one of the largest UK water utilities and specialised in major project delivery and operational management.

North West Water became United Utilities and since 1992 Jim was based overseas with responsibility for major water utility projects. Positions included: President of United Utilities Canada, Head of Technical Services US Water (New Jersey), CEO of Sofiyska Voda Sofia, Bulgaria, Chairman of the Supervisory Board Tallinna Vesi, Estonia and Managing Director of Emaar Utilities, Dubai.

Jim was International Business Development Director for United Utilities based in Abu Dhabi until 2010 when he set up an independent consultancy. Jim now assists major corporations and other clients with international bid submissions, operational technical support, utility due diligence and transaction advisory services with clients in Sub Saharan Africa, Europe, Japan, Middle East and North America.



About the Supporting Organisations

International Water Association

The International Water Association is a world-leading organisation which brings together the global experts in all aspects of water and how it impacts on the way we live. IWA members and staff are situated in 130 countries worldwide, forming the largest international network of water professionals working towards a water wise world.

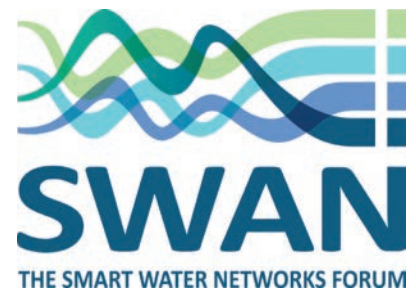
The programmes of work that it promotes develop research and projects focused on solutions for water and wastewater management; it organises world-class events that bring the latest science, technology and best practice to the water sector at large; it works to place water on the global political agenda and to influence best practice in regulation and policy making; and provides services to IWA's global membership.



Smart Water Networks Forum (SWAN)

The Smart Water Networks Forum (SWAN) is the leading global hub for the smart water sector, accelerating the awareness and adoption of data-driven technologies in water and wastewater networks worldwide. A non-profit organisation, SWAN brings together key players in the water sector to collaborate and share knowledge while offering access to cutting-edge research, global networking opportunities, and the ability to pro-actively influence the future of the water industry.

The SWAN Forum has also recently developed a North American Alliance as well as having active working groups on Smart Water Network Architecture and Smart Water Network Interoperability.



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