Tentative schedule of the ICA2025

Sunday 29.06.2025			
09:00-12:30	**WS1: Future of ICA in the water sector,** Gustaf Olsson and team	**WS2: MetaCO-inspired workshop,** Oscar Samuelsson and MetaCO task group	
12:00-13:00	Lunch snacks		
13:00-16:00	**WS3: Cybersecurity in the water sector,** Christos Makropoulos and team	**WS4: Application of hybrid modeling in ICA,** Mariane Schneider, Jun-Jie Zhu, Sina Borzooei	**WS5: ML and AI in urban water management,** Zhiguo Yuan and team
Monday 30.06.2025			
08:30-09:00	Opening & welcome addresses		
09:00-09:30	**Keynote 1: ICA - long way to where we are today**. Gustaf Olsson. Professor emeritus, Lund University, Sweden		
09:30-10:00	**Keynote 2: ICA - the way forward,** Dragan Savic. Global Advisor Digital Sciences, KWR, Netherlands Professor of Hydroinformatics, University of Exeter, UK		
10:00-10:30	Coffee break		
10:30-12:30	**Session 1A: Asset managemensoftt** Comprehensive evaluation of real-time control strategies for urban drainage systems based on deep reinforcement learning. Huang, Z., Dong, X., China Select optimal treatment modes and priority villages for investments on rural sewage treatment in China. Meng, W., Hu, X., Jian, Q., Wang, W., Xia, X., Zhang, J., Jiang, J., China AI-Driven predictive maintenance for aeration systems in wastewater treatment: A hybrid and explainable AI framework. Voipan, D., Voipan, A., Barbu, M., Romania Investigation on improving accuracy of predicting filtered water turbidity in rapid sand filtration processes. Yamahara, H., Murayama, S., Yokoyama, S., Kanadani, M., Japan Simple optimisation solutions to control aeration in small WWTPs. Inizan, M., Moatamri, N., Davie, J., Sambardier, E., France Modeling ultra filtration systems for direct-to-potable reuse of wastewater. Ghanem, S., Villez, K., Melin, A., Mukherjee, S., Hering, A., Cath, T., United States	**Session 2A: Greener utilities** Metadata: challenges and opportunities to support decision making in the wastewater sector. Alferes Castano, J., Aguado, D., Ruano, M., Samuelsson, O., Plana, Q., Villez, K., Belgium, Spain, Sweden, USA Soft sensor enabled carbon source dosing and ozonation control at full-scale WWTPs. Wang, X., Chen, S., Bi, X., China Advancing decentralized water management through digital twin modeling and control of source-separated systems. Garrido Baserba, M., Rosso, D., Poch, M., Verdaguer, M., Jimenez, J., United States Advanced analysis of pressure data in a vacuum sewer system for operational assessment and utilisation. Schaefer, A., Oldenburg, M., Jordan, N., Rudolph-Schöpping, G., Germany Data-driven solutions transforming the wastewater sector: towards efficient and sustainable utilities. Alferes, J., Van Bauwel, F., Van Loo, M., Belgium Overcoming delays: Effective control strategies for bipolar membrane electrodialysis (BMED) in organic acid extraction. Herold, G., Marien, O., Schneider, M., Rabaey, K., Torfs, E., Belgium
12:30-13:30	Lunch		
13:30-15:10	**Session 3A: Risk management** Feedback controllers enable automated plant sizing. Samuelsson, O., Lindblom, E., Sweden Exploration of clustering methods for the HIAS process operation. Komulainen, T., Bommo, A., Jansen, K., Keprate, A., Norway	**Sesson 2B: Greener utilities** Modelling of a trickling filter bioreactor for ex-situ hydrogenotrophic methanation with gaseous effluent feedback. Ortiz-Ricárdez,F., Muñoz-Páez, K., Vargas-Casillas, A., Mexico Carbon negative emission approach with ICA technology - Proposal Of Sewerage Blue Carbon Scheme And Solutions. Embutsu, I., Sangu,	

	Monitoring and control system for the enrichment stage in the production of polyhydroxyalkanoates. Ríos, A., Sandoval, V., Robles, A., Borrás, L., Ruano, M., Spain Purification resistance index: a new water quality assessment method toward drinking water production. Jiang, J., Zhang, X., Wen, G., China The importance of secondary integral windup protection for controlling biological systems. Rieger, L., Schraa, O., Gagnon, A., Papukchiev, U., Canada	Y., Kageyama, K., Sumikura, M., Nishida, Y., Yamanoi, I., Tanaka, H., Kuwae, T., Japan Mitigating nitrous oxide emissions in a full-scale industrial activated sludge reactor using advanced aeration control. Lei, T., Whale-Obrero, J., Larsen, S., Kjellberg, K., Gernaey, K., Flores-Alsina,X., Denmark Balancing energy recovery and greenhouse gas emissions in wastewater treatment with model-assisted analysis. Li, K., Duan, H., Wang, S., Wu, Z., Wardrop, P., Lloyd, J., Christy, N., Ye, L., Australia Real-time digital twin for high-strength co-digestion: model-based decision support in a large biogas facility. Garrido Baserba, M.,Jimenez, J., United States
15:10-15:30	Coffee break	
15:30-17:30	**Session 3B: Risk management** Causal vs. computer vision-based risk models for assessing microbiology-driven solids separation problems in WRRFs. Borzooei, S., Scabini, L., Zhu, J., Daneshgar, S., Deblieck, L., Broeck, E., Bruno, O., Nopens, I., Torfs,E., Sweden, Brazil, USA, Belgium, Canada Fault-tolerant control of an advanced nitrogen removal plant: A data pipeline from raw signal to reliable action. Mohebali, S., Vanrolleghem, P., Canada Evaluation of self-cleaning pH electrodes in factories. Komi, T., Nishio, Y., Muroga, T., Hashimoto, T., Ishihara, A., Japan Novel analysis of microplastics using infrared hyperspectral imaging and machine learning. Kim, S., Kanarkard, W., Kim, H., Kang, S., South Korea Turbinator, a noncontact sensor advancing sewer surveillance through real-time monitoring, ai and predictive maintenance. Galfi, H., Wilhelmsson, J., Wanemark, J., Andrén, J., Folkelind, O., Rahmberg, M., Englund, A., Sweden Advancing energy efficiency and carbon management through digital twin modelling. Freedman, D., Almaraz, N., Sanford, R., Gaszynski, C., Sørensen, H., Garrido-Baserba, M., Jimenez, J. USA, Denmark	**Session 4A: Performance optimisation** Assessing control concepts In a full-scale partial nitration-anammox granular reactor treating reject water. Flores-Alsina, X., Vangsgaard, A., Uri-Carreno, N., Nielsen, P., Gernaey,K. , Denmark Sustainable real time optimization of energy and chemical consumption in COD & phosphorous removing MBBR plant. Thomsen, H., Kózka, A., Amlien, A., Denmark, Norway An open-source platform for deploying operational digital twins in water resource recovery facilities. Nair, A., Hykkerud, A., Kaluarachchi, C., Norway, Sri Lanka Automated control performance monitoring and automated tuning with alarm-based adjustments. Sadeghassadi, M., Owerdieck, C., Fraser, T., Lander, P., Cash, C., Radke, C., Hübner, C., Canada, USA, Germany Data-driven modelling for filtration process in AnMBR technology. Sandoval García, V., Ruano García, M., Robles Martínez, A., Spain An ontology-driven multi-agent system for decision support in decentralized water management. Latinis, A., Daneshgar, S., Torfs, E., Nopens, I., Belgium, Canada
17:30	Closure Day 1	
19:00-22:00	Conference dinner, Høymagasinet, Myntgata 7, Oslo	

Tuesday 01.07.2025		
08:30-10:10	**Session 5A: Water quality monitoring** Use of long-term continuous dissolved oxygen to describe the effects of combined sewer overflows. Njapou Mawa, P., Mouchel, J., Escoffier, N., Mougin, J., France The dissolved oxygen ramp is immoral, but there is hope. Schneider, M., Torfs, E., Carbajal, J., Belgium, Canada, Switzerland Liquid H2S on-line measurement for better sewer systems insights. Inizan, M., Ainsworth, S., Barreto, L., France Classification of waste sludge dry matter content through texture analysis. Dasbasi, M., Basturk, I., Hocaoglu, S., Aydoner, C., Yaydemir, A., Ozturk, S., Hocaoglu, A., Türkiye, Norway A Simple in-situ biofouling analyses in desalination plants. Vigneswaran, S., Jeong, S., Nguyen, T., Kandasamy, J., Ratnaweera, H., Australia, South Korea, Norway	**Session 4B: Performance optimization** Soft-sensing of oxygen and N2O gas mass-transfer using biomass particle characteristics. Bakos, V., Qiu, Y., Nagy-Göde, P., Plosz, B.G., United Kingdom, Norway Potential of unmaintained sensors for continuous monitoring of aerated lagoons. Razeh, L., Lessard, P., Vanrolleghem, P., Canada Tailoring advanced aeration control for a WRRF. Sanford, R., Weiland, T., Gallaspy, B., Andreasen, P., Engelmann, A., United States Reinforcement Learning Boosting Aeration Control. Wambecq, T., Amerlinck, Y., De Bock, B., Belgium Development of aeration control method to achieve balancing between nitrogen removal and energy efficiency. Ueda, R., Yoshida, W., Hayashi, Y., Imamura, E., Kimoto, I., Hon, J., Japan
10:10-10:40	Coffee break	
10:40-12:20	**Session 5B: Water quality monitoring** A fault detection framework for imbalanced data distribution using benchmark simulation model no. 2-M. Ramin, P., Zadkarami, M., Safavi, A., Ramin, E., Jeppsson, U., Gernaey, K., Flores-Alsina, X., Denmark, Iran, Sweden Explainable AI for aquatic environmental intelligence: SHAP-enhanced LSTM using high-frequency water quality data. Karahan, S., Verwaeren, J., Alferes, J., Vandenbruwaene, W., Belgium Real-time phosphorus control: a hybrid model-based framework for WRRF optimization. Pizzi, E., Fratini ,C., Mishra, A., Lauritzen, B., Mikkelsen, P., Skogestad, S., Valverde, B., Vezzaro,L., Denmark, Norway metEAUdata: a framework for automatic metadata generation for environmental time series pre-processing. Therrien, J., Vanrolleghem, P., Canada A data-pipeline for autocalibration of soft sensors: a case study from a Norwegian WRRF. Hykkerud, A., Kaluarachchi, C., Yavorska, V., Ratnaweera, H., Sri Lanka, Norway	**Session 4C: Performance optimization** Automated influent data generation for digital twin applications. Wärff, C., Samuelsson, O., Aydin, H., Arnell, M., Jeppsson, U. , Sweden Automated real-time smart dose control for disinfection: digital twin implementation based on integral contact time. Jang, E., Mitobe, S., Cornfoot, E.,Manoli, K., Walton, J., Santoro, D., Canada Minimizing specific energy consumption using Digital Twins. Melin, A., Ghanem, S., Rezaei, N., Tarroja, B., Villez, K., Rosso, D., United States The use of Digital Twins to empower WWTP operators minimizing the energy footprint and greenhouse gas emission. Sorensen, H., Danielsen, T., Polesel, F., Denmark An Ontology-based Digital Architechture And Modelling Ecosystem For Water-fit-for-reuse Applications. Daneshgar, S., Latinis, A., Alferes, J., Ayman, S., Seuntjens, P., Van Winckel, T., Spiller, M., Vlaeminck, S., Nopens, I., Torfs, E., Belgium
12:20-13:20	Lunch	
13:20-15:00	**Session 5C: Water quality monitoring**	**Session 4D: Performance optimization**

	Fluorescence sensor enabled real-time control of UV and ozone doses during advanced oxidation processes (AOPs). Marino, L., Gagliano, E., Santoro, D., Roccaro, P., Italy, Canada Near real-time control of disinfection by-products in a full-scale distribution system through fluorescence sensors. Marino, L., Beretsou, V., Maragkou, E., Charalambous, S., Neokleous, N., Papaioakeim, P., Elia, E., Agapiou, A., Roccaro, P., Fatta-Kassinos, D., Italy, Cyprus Monitoring of SUVA in drinking water treatment to optimize chemical usage and minimize DBP Formation. Verdonk, B.,Malkov, V., Springer, M., Netherlands, Germany, USA Monitoring Of Organic Matter During Water Treatment Processes Using A Continuous EEM Monitor. Kawaguchi, Y., Kojima, R., Kosaka, K., Japan Fourier transform near-infrared spectroscopy for estimating moisture content in waste sludge. Hocaoglu, S., Gulcan, H., Ozdemir, I., Bozcelik, B., Basturk, I., Meegoda, C, Ratnaweera, H., Maletskyi, Z., Türkiye, Norway	Intelligent judgement of coagulation performance based on settling velocities calculated by floc images. Yamamura, H., Akeyama, R., Nemoto, Y., Kakuda, T., Japan Automation of coagulant dosage optimisation in drinking water treatment plants. Daraei, H., Bertone, E., Stewart, R., Van Leeuwen, J., Australia Optimal coagulant dosage control scheme using flocculation image sensor and robust extremum seeking. Yamanaka, O., Onishi, Y., Hirano, M., Arimura, R., Kanadani, M., Japan Hybrid sedimentation models integrating microbial images of activated sludge. Verhaeghe, L., Verwaeren, J., Torfs, E., Belgium Predicting initial trans-membrane pressure for optimized operations in UF unit using Random Forest. Mukherjee, S., Villez, K., Melin, A., Ghanem, S., Cath, T., Hering, A., United States
15:00-15:20	Coffee break	
15:20-16:40	**Session 5D: Water quality monitoring** Development of alternative method for PFAS detection. Yavorska, V., Cuprys, A., Li, F., Ratnaweera, H., Norway Opportunities and challenges of interoperable open data sharing for decision support in the water domain. Abdelfatah, A., Alferes, J., Colpaert, P., Belgium Application of artificial intelligence with daily operational management data at sewage treatment plants for more energy. Nishimura, F., Hidaka, T., Chun, P., Japan Classification of waste sludge dry matter content through texture analysis for estimating failures. Karatas, E., Gulcan, H., Aydoner, C., Hocaoglu, S., Basturk, I., Meegoda, C., Ratnaweera, H., Maletskyi, Z., Hocaoglu, A., Türkiye	**Session 4E: Performance optimization** Developing soft-sensors for a Digital Twin to mitigate GHG emissions at the Viikinmäki WWTP. Haimi,H., Kiran, A., Larsson, T., Blomberg, K., Elvander, F., Petäjä, E., Awaitey, A., Sahlstedt, K., Mikola, A., Finland A new mathematical model for IFAS-MBBR wastewater treatment plants: calibration on an experimental pilot plant. Mannina, G., Cosenza, A., Italy Plantwide control and multi-objective optimization for sustainable wastewater treatment plants. Baumann, P., Wolf, C., Henneke, L., Stricker, M., Mergelmeyer, M., Mehrani, M., Pirsing, A., Germany Computational Fluid Dynamics-based hybrid model for dissolved oxygen prediction in a full-scale wastewater plant. Ukkonen, P., Mulas, M., Mikola, A., Finland, Brazil
16:40	Closure Day 2	
18:00-19:30	Conference dinner, Høymagasinet, Myntgata 7, Oslo	

Wednesday 02.07.2025		
08:30-10:00	**Session 6A: Flash presentations** Leveraging proactive asset management of water distribution systems in northern province of Sri Lanka. Masanad, E., Sri Lanka Model-based cooperative control of a simulated urban drainage network. Wang, Y., Haugen, F., Norway Critical issues in estimating water losses with the algorithms from IWA Good Practices (EU Reference Document). Ceseri, G., Italy Decontamination of hazardous medical wastewater via combined solar driven photocatalytic processes. Tsoumachidou, S., Mitrousi, E., Berberidou, C., Poulios, I., Greece Overview of ICA in Brazilian WWTPs. de Medeiros, G., de Farias, F.P., de Sousa, D.R., Mulas, M., Brazil Water quality monitoring challenges during the war in Ukraine: New contminents and approaches to their detection. Kyrii, S., Kosogina, I., Shahnovsky, A., Hutsul, H., Dontsova, T., Ukraine Enahancing benchmark simultion models with industry components: Progress towards What-if simulation. Ferraro, A., Gàmiz, J., Barbu, M., Vicaeio, J., Vilanova, R., Spain AI optimization insights from a modern 21st century water treatment plant. Yangali-Quintanilla, V., Dominiak-Marek, D., Denmark Model predictive reinforcement learning control based on liquid neural networks for global plant-wide control of a WRRF. Gomez Cortes, C., Solon, K., Ramin, P., Flores-Alsina, X., Huusom, J., Külahci, M., Torfs, E., Belgium, Denmark, Canada Integrating instrumentation, control, and automation towards sustainable and energy-neutral water treatment in utilities. Masanad, E., Sri Lanka Prediction of Heavy Metal Adsorption Performance by Biochar Based on Machine Learning. Wang,S., Wang, X. China	**Session 6B: Flash presentations** Sensor fault characteristics and fault detection in wastewater treatment plants: Current status and trend analysis. Chen, S.,Wang, X., Bi, X., China A novel UV-Vis online sensor with modeling approach for real-time monitoring of pharmaceuticals in water. Li, F., Wang, X., Zhu, M., Ratnaweera, H., Norway, China Unlocking insights from smart automated aeration tests. Maenhout, W., Wambecq, T., Vanhoof, P., Belgium Research on the performance improvement of coagulant dosing prediction models based on ERA5 data. Li, D., Han, M., Shi, X., Liu, Q., Zhou. F., Xie, R. , China Approximation formula-embedded neural network model incorporating operator expertise for a flocculant dosage estimation. Watanabe, A., Sangu, Y., Embutsu, I., Sakimura, S., Yokoi, H., Nakamura, N., Japan Membrane fouling: How data-driven approaches enhance monitoring & control strategies? Arembage, A., Roghani, B., Berube, P., Liland, K., Maletskyi, Z., Ratnaweera, D., Ritigala, T., Norway, Sri Lanka EWatLink: Smart advanced real-time control of activated sludge process aeration at Bastogne WWTP. Abunama, T., Belgium Control of an up-flow anaerobic sludge blanket reactor treating blackwater. Maciel, F., Medeiros, J., Markert, C., Mulas, M., Boiocchi, R., Brazil, Italy Impact of data dimensionality reduction with autoencoders in wastewater treatment denitrification processes. Voipan, A., Voipan, D., Barbu, M., Romania Design of a Digital Twin for stress scenarios of WWTP. Pankow, N., Krause, S., Schaum, C., Germany Effluent quality vs energy consumption in a temperature based control strategy for wastewater treatment plants. Revollar Chávez, S., Meneses, M., Sánchez, L., Vilanova, R., Vega, P., Francisco, M., Spain
10:00-10:20	Coffee break	
10:20-10:50	**Keynote 3: The future needs for ICA in utilities: challenges and opportunities.** Pernille Ingildsen, CEO Odsherred Utility, Denmark	
10:50-11:20	**Keynote 4: Towards the 15th ICA.** Peter Vanrolleghem. Professor and Canada Research Chair on Water Quality Modeling at Université Laval, Canada.	
11:20-11:30	Closure of the ICA2025	
11:30-12:30	Lunch	
12:30-16:00	**Excursion 1:** VEAS, Oslo's largest WWTP	**Excursion 2: Oslo's 2nd largest WWTP**
15:30-16:00	Return to Radisson Scandinavia hotel	