



MIA Specialist Group

Open Group meeting at WRRmod2021

Dr Ulf Jeppsson

Chair of MIA SG, Lund University, Sweden



LUND
UNIVERSITY



inspiring change



AGENDA



- Introduction
- Group organization and composition
- Activities
 - Associated YWP initiatives
 - Task Groups and Working Groups
 - Webinars
 - Conferences
 - Others
- Call for new management committee members

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MIA SPECIALIST GROUP



*“This group targets people from research, consulting companies, institutions and operators to think along **the use of models and computing tools to support the understanding, management and optimization of water systems.**”*

PRIORITIES

- Stimulate interaction and knowledge transfer in the domain of modelling and integrated assessment
- Interact with other IWA SGs and other academic/professional organisations

How to find us



Website: <http://iwa-mia.org/>



<https://iwa-connect.org>

GENERAL ACTIVITIES OF MIA MC



- Spread information of the Group's activities and developments
- Convene conferences and arrange workshops/webinars
- Initiate research and case studies, produce special papers
- Stimulate initiation and host Task Groups and Working Groups
- Interact and streamline activities with other IWA SGs, as well as with other academic and professional organisations
- Start SG-internal committees on specific emerging topics of interest
- Work for the benefit of our members, assist IWA HQ on issues

ORGANISING THE WORK WITHIN MIA



- Monthly electronic MC meetings (1 hour)
- Tri-monthly focused YWP meetings + mentoring
- Open MIA SG meeting at major conferences (1/yr)
- Closed MIA MC meeting at major conferences (1/yr)
- Short newsletter (generated from IWAconnect)
- Posting news on IWAconnect
- Manage open MIA website for non-IWA members
- Produce MIA part of IWA Global Trend Reports
- Close collaboration with IWA HQ, IWA SC2SG and IWA Learn

ORGANISING THE WORK WITHIN MIA



- Strong focus on TGs and WGs
- Organise conferences and workshops (IWA/MIA events)
- Organise workshops or sessions at non-IWA/MIA conferences (SETAC, IFAC)
- Organise webinars
- Create MIA visibility on social medias
- **Create friendships**
- **Remember face-to-face social activities**

AGENDA

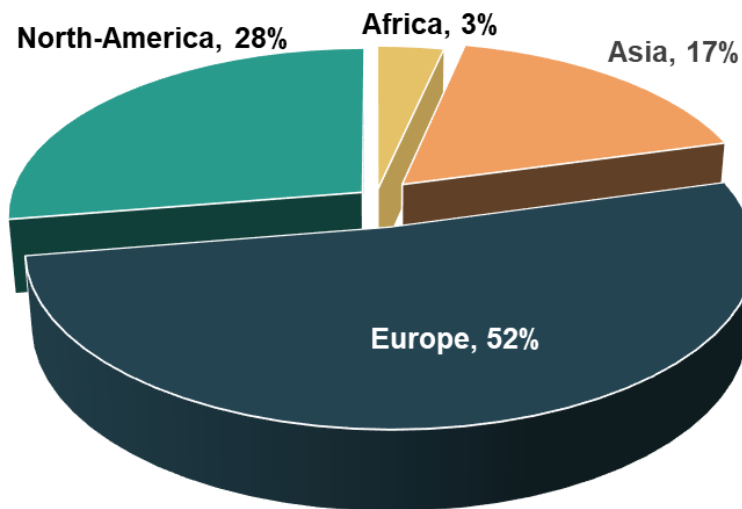


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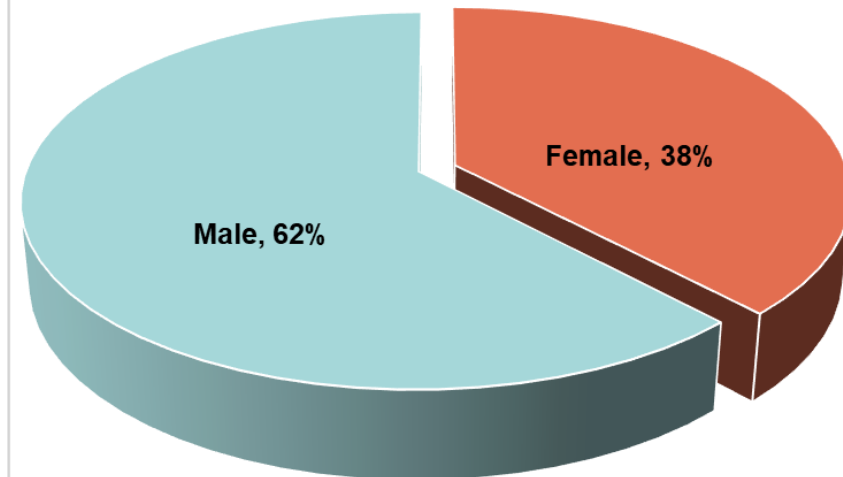
MIA MANAGEMENT COMMITTEE

- “Time is the enemy” – ALL SG WORK is VOLUNTARY!
- Dedicated MC members essential

MIA per country



MIA per gender



MIA MANAGEMENT COMMITTEE

- “Time is the enemy” – ALL SG WORK is VOLUNTARY!
- Dedicated MC members essential
- MC: 14 senior members (+ outgoing chair) & 14 **associated YWPs** working in teams

- **MC** more **ACTIVE** and **DYNAMIC**
- Higher work **CAPACITY**
- Create **OPPORTUNITIES** for YWPs

Across
12 Countries
21 Institutions



PHILOSOPHY ASSOCIATED YWPs



Active program to fully engage, mentor and involve YWPs

- Every “full” MC member teamed up with associated YWP
- Teams made up from different research groups
- Senior MC members take on mentoring role
 - Train YWPs in leadership
 - Actively involve them in MC activities
- Associated YWPs can grow into full members if place opens up
- This innovative approach has now been adopted by many other SGs

MANAGEMENT COMMITTEE

Associated YWPs

| | | |
|---------------------|---------------------------------------|----------------------|
| ❑ Lluís Corominas | (Webinar Coordinator) | Feiyi Li |
| ❑ Bruce Johnson | (Industrial Insight Officer) | Arifur Rahman |
| ❑ Kimberly Solon | (Administrative Coordinator) | Fanlin Meng |
| ❑ Giacomo Bellandi | (TG and WG Coordinator) | En Shi |
| ❑ Lina Belia | (Industrial insights officer) | Sina Borzooei |
| ❑ Lloyd Townley | (Conference and workshop Coordinator) | Sovanna Tik |
| ❑ Andreia Amaral | (IWA Connect Officer) | Gabriel Capson-Tojo |
| ❑ Domenico Santoro | (Industrial Insight Officer) | Gamze Kirim |
| ❑ Marie-Noelle Pons | (Webmaster) | Mahmudul Hasan |
| ❑ Peter Bach | (YWP Relations Officer) | Christoffer Wärff |
| ❑ Patrick Adadzi | (Engagement Officer) | Borja Valverde-Perez |
| ❑ Cristina Martin | (YWP Relations Officer) | Xueming Chen |
| ❑ Ingmar Nopens | (Outgoing chair) | |



Ulf Jeppsson
(Chair)

IEA, Lund University, Sweden

Associated YWP:

Saba Daneshgar



Elena Torfs
(Vice chair)

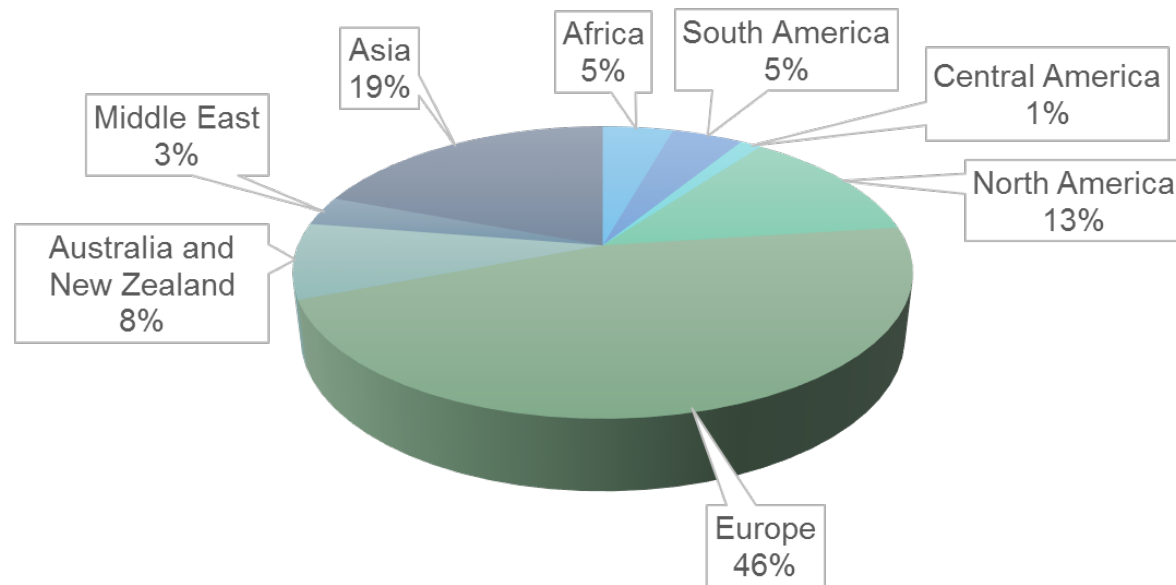
BIOMATH, Ugent, Belgium

Associated YWP:

Jing Chris Sun

MIA GROUP MEMBERS

- 1866 members (according to IWAconnect, August 21, 2021)



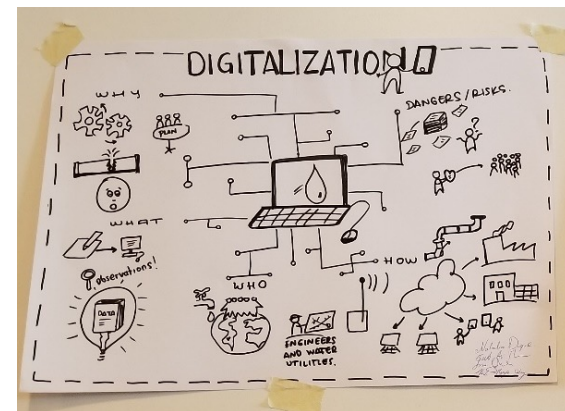
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INITIATIVES OF ASSOCIATED YWPs

- TG/WG liaisons: YWPs form direct link between MC and TG/WGs
- 3-monthly separate YWP meeting discussing ongoing activities and new initiatives + mentoring
- (Co-)organization of workshops
 - Integrated modelling workshop at YWP conference Toronto
 - YWP workshop at Watermatex 2019
 - YWP workshop at WRRmod2021



INITIATIVES OF ASSOCIATED YWPs



- **MIA INTERNAL YWP SEMINARS**
 - to present their background, current research and seek an opportunity for a potential collaboration
- **MIA SG NEWSLETTER**
 - Newsletter for MIA members once in 3 months through IWA-connect



- **SUPPORTING LOCAL YWP CHAPTERS**



- **NETWORKING EVENTS WITH IWA SPECIALIST GROUPS YWPs**

- In planning phase



- **YWP SEMINARS OPEN TO ALL YWPs**

- Seminars are being planned in the field of MIA and networking event

INITIATIVES OF ASSOCIATED YWPs

- Driving force behind organization of MIA webinars
- Identify collaborations with other SGs – road-map created through analysis of Global Trend Report
- Read more about the affiliated YWPs' activities in their [blog post!](#)



TASK GROUPS AND WORKING GROUPS



- MIA has a strong focus on TGs and WGs
- YWP liaisons to all TGs and WGs
- Request on our TGs: report on progress, update website etc
- Dedicated IWAconnect subpages for each TG and WG



MIA Specialist Group

Open group meeting at WRRmod2021

Dr Elena Torfs

Vice chair of MIA SG, new chair 2023



BIOMATH



inspiring change



TASK GROUPS AND WORKING GROUPS

Task Groups (TGs)

- Benchmarking of Control Strategies for WWTPs (BSM) and Good Modelling Practice (GMP) (**Finished**)
- Design and Operations Uncertainty (DOUT), chair Lina Belia – Liaison Christoffer Wärrff (**Finishing**)
- Generalised Physico-Chemical Modelling (PCM), chair Damien Batstone – Liaison Kimberly Solon (**Finishing**)
- Use of Modelling for Minimizing GHG Emissions from Wastewater Systems (GHG), chair Jose Porro – Liaison Xueming Chen (**Finishing**)
- Membrane Bioreactor Modelling and Control, chair Giorgio Mannina – Liaison Jing Sun
- Good Modelling Practice in Water Resource Recovery Systems, chair Patrick Dunlap – Liaison Kimberly Solon (**New**)

Working Groups (WGs)

- Integrated Urban Water Systems (IUWS), chair Peter Bach – Liaison Sovanna Tik
- Computational Fluid Dynamics (CFD), chair Julien Laurent – Liaison Gamze Kirim
- Life Cycle Analysis (LCA), chair Lluís Corominas – (**Finished**)
- Good Modelling Practice (GMP), chair Günter Langergraber

IDEAS for NEW TGs or WGs?

TG: Design and Operations Uncertainty

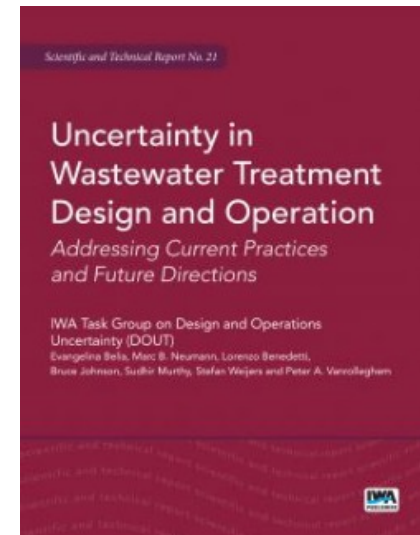
(**Chair:** Lina Belia – **Liaison:** Christoffer Wärff)

- **Goals:**

- Increase efficacy and transparency of wastewater infrastructure (design/operations) via the use of numerical simulation with statistical analysis

- **Activities**

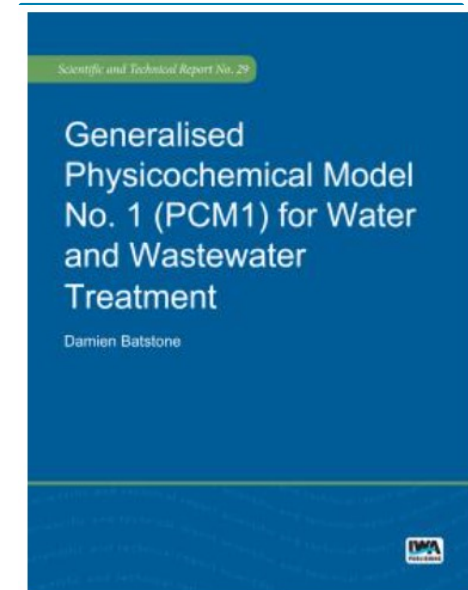
- Workshop during Watermatex 2019
- Webinar February 6, 2018
- STR in review process! To be published in fall 2021



TG: Generalized Physicochemical Framework

(**Chair:** Damien Batstone – **Liaison:** Kimberly Solon)

- **Goals:**
 - Develop a physicochemical framework with high predictive capacity that is usable across the range of unit operations by both modelers and end-users
- **Activities:**
 - STR in review process. Publication foreseen in fall 2021



TG: Modelling of GHG emissions

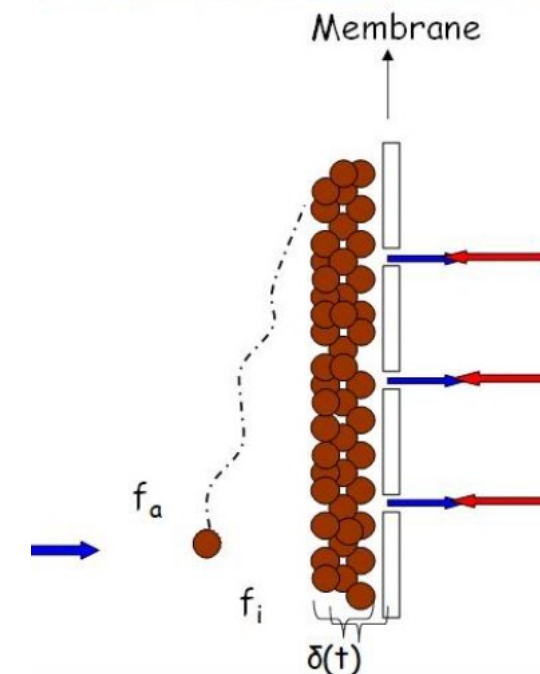
(Chair: Jose Porro – Liaison: Xueming Chen)

- Goals:
 - Understand the processes that are responsible for the major contributions to GHG emissions from WWTPs and sewer systems
 - Translate this knowledge into mathematical models
- Activities:
 - Development of an N₂O Field Measurements Guide
 - Open webinar on Sept. 21, 2021
 - STR under preparation. Publication foreseen during 2022

TG: MBR modelling and control

(Chair: Giorgio Mannina – Liaison: Jing Sun)

- Goals:
 - Propose standardized criteria to integrate biological, filtration and energy models for modelling of MBR-based systems.
 - Set-up a database that can be used for plant-wide modelling, control and optimization of MBR-based systems.
- Activities
 - Workshops during UDM 2018, Watermatex 2019 and WRRmod2021
 - Special session during 9th IWA-MTC conference 2019



TG: Good Modelling Practice in Water Resource Recovery Systems



(Chair: Patrick Dunlap – Liaison: Kimberly Solon)

- Goals:
 - Evaluate the adoption of the previous STR.
 - Assess the state of WRRF modelling practice (broadening the focus of the first GMP Task Group, e.g., focus on plant-wide modelling)
 - Provide practitioners with updated and extended guidance to meet new challenges of the industry (e.g., from wastewater treatment to resource recovery systems).
- Activities
 - Start of preparation of STR (review, update, development of new chapters)
 - New

WG: Integrated Urban Water Systems

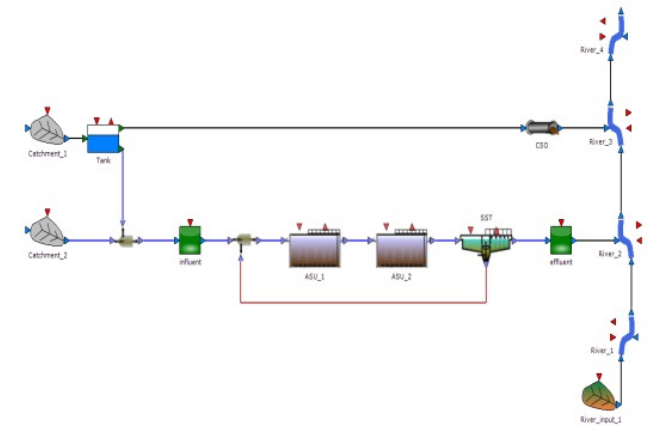
(Chair: Peter Bach – Liaison: Sovanna Tik)

■ Goals:

- Integration of models of all components of the water cycle in urban areas including the nutrients and energy cycles

■ Activities:

- Creation of an IWA *WaterWiki* group and a LinkedIn Group for dissemination
- Webinar September 26, 2017
- Organization of workshops in Watermatex2015, Urban Drainage 2015, YWP Conference 2019, WRRmod2021
- *Upcoming:* White paper on barriers to integrated modelling



IWA MIUWS Working Group

[MENU](#)

About MIUWS

[Home](#) » [About MIUWS](#)

Both policy makers and industry are increasingly realizing the necessity to adopt an integrated approach to water management. In Europe, this is clearly stated in the Water Framework Directive, and by the recent funding of large research projects on that topic (e.g. PREPARED, SANITAS, TRUST). In North America, recent activities confirm this direction, e.g. the USEPA's Integrated Planning and Permitting Initiative and integrated planning framework, two new WERF Research Challenges: "Linking Contaminant Sources to Receiving Water Impacts" and "Sustainable Integrated Water Management". Other areas in the world are already following closely. IWA has launched the "Cities of the Future" programme, which has strong integration components.

Website:

<http://miuws.org/index.php/sample-page/>

WG: Computational Fluid Dynamics

(Chair: Julien Laurent – Liaison: Gamze Kirim)

■ Goals:

- Develop guidance documents and hands-on training for good modelling practice in CFD for wastewater treatment modelling
- Consensus building on state-of-the-art knowledge gaps and future needs

■ Activities:

- Workshop during Watermatex2019, WRRmod2018 and WEFTEC 2017
- Webinar February 5, 2019
- Scientific and technical report in preparation
- Position paper in preparation



WG: Life Cycle Analysis

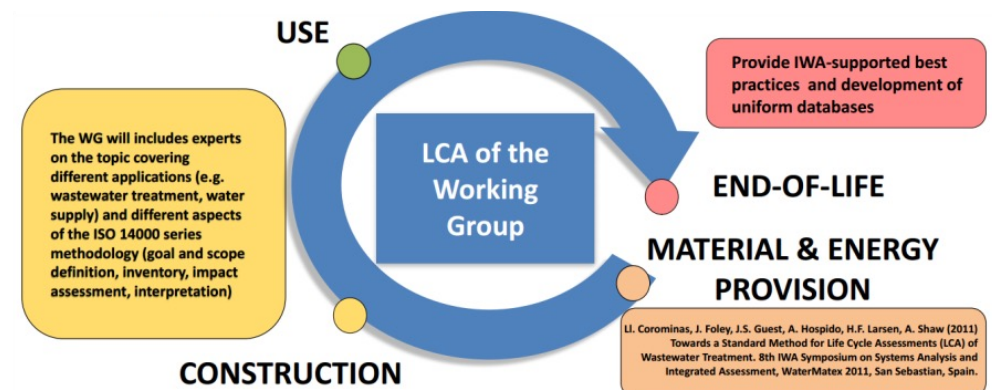
(Chair: Lluís Corominas – Liaison: En Shi)

■ Goals:

- To facilitate the exchange of ideas and develop consensual methodologies, in order to promote better use of LCA in the urban water systems

□ Activities:

- Workshop during Watermatex 2019
- Published white paper on “Life cycle assessment applied to wastewater treatment: An operational guide”
- **Finished**



WG: Good Modelling Practice

(Chair: Günter Langergraber)

■ Goals:

- Create a new Task Group on Good Modelling Practice with a wider perspective (outside AS system)
- Recruit members for such a TG and transfer knowledge
- Continue to provide courses etc. on Good Modelling Practice

□ Activities:

- Goals achieved
- New

MIA WEBINARS VIA IWA_LEARN



1. **Overcoming data issues and barriers to integrated modelling in practice**
– September 26, 2017 – 225 registered attendees
2. **Modelling resource recovery: state of the art and future challenges** –
February 6, 2018 – 461 registered attendees (an IWA record at the time)
3. **New advanced in advanced biological phosphorous removal** – July 9,
2018 – 250 registered attendees
4. **Computational Fluid Dynamics: Applications and good modelling
practice** – February 5, 2019 – 380 registered attendees
5. ***Wastewater Disinfection Modelling*** – October 24, 2019 – (392 attendees)
6. ***Advanced Oxidation Process Modelling*** – November 14, 2019 (452
attendees)
7. ***Hybrid Models in Wastewater: Merging mechanistic with data-driven*** –
November 10, 2020 (419 attendees)

MIA UPCOMING WEBINARS



1. **Advancements on N₂O modelling in water resource recovery facilities – September 21, 2021**
2. **In preparation : Modelling wastewater treatment resilience for improved decision making and resource recovery – October/November 2021**

UPCOMING WEBINARS – REGISTER NOW!

The poster is for a webinar titled 'Advancements on N2O Modelling in Water Resource Recovery Facilities'. It features the IWA logo and the text 'MODELLING AND INTEGRATED ASSESSMENT' in the top left. The date '21 SEPTEMBER 2021' and time '10:00 AM CET' are in the top right. The main title is in large, bold, black font. Below the title, the word 'Speakers' is in blue. There are five circular portraits of the speakers: Ulf Jeppsson (Lund University), Liu Ye (University of Queensland), Mathieu Sperandio (INSA Toulouse), Eveline Volcke (Ghent University), and Saba Daneshgar (Ghent University). At the bottom, a note states: 'The webinar is going to be recorded and shared on the MIA SG Youtube channel afterward.'

IWA MODELLING AND
the international water association INTEGRATED ASSESSMENT

21 SEPTEMBER 2021
10:00 AM CET

IWA Specialist Group on Modelling and Integrated Assessment Webinar Series

**Advancements on N2O Modelling
in Water Resource Recovery Facilities**

Speakers


Ulf Jeppsson
Lund University


Liu Ye
University of Queensland


Mathieu Sperandio
INSA Toulouse


Eveline Volcke
Ghent University


Saba Daneshgar
Ghent University

☐ The webinar is going to be recorded and shared on the MIA SG Youtube channel afterward.

<https://www.eventbrite.ca/e/advancements-on-n2o-modelling-in-water-resource-recovery-facilities-tickets-163686527811>

JOIN US TO CONTRIBUTE WEBINARS WITH YOUR IDEAS

- You are invited: workshop organizers, speakers, expertise...
- Any topics related to water modelling, simulation, optimization...
- Collaborate with us webinars@iwa-mia.org for your webinar proposal

CONFERENCES

- WRRmod conference series ([WRRmod2021](#), [WRRmod2023](#), [WRRmod2024](#))
- Watermatex conference series ([Watermatex2023](#))
- NEW: Proceedings and poster publications available on IWAconnect from most MIA conferences from 2000 and onwards



PROCEEDINGS ON IWA_CONNECT



Publications

- [WRRmod2018, Québec, Canada](#)
- [WWTmod2016, Annecy, France](#)
- [WWTmod2014, Spa, Belgium](#)
- [WWTmod2012, Québec, Canada](#)
- [WWTmod2010, Québec, Canada](#)
- [WWTmod2008, Québec, Canada](#)
- [Watermatex2019, Copenhagen, Denmark](#)
- [Watermatex2015, Queensland, Australia](#)
- [Watermatex2011, San Sebastian, Spain](#)
- [Watermatex2007, Washington DC, USA](#)
- [Watermatex2004, Beijing, China](#)
- [Watermatex2000, Ghent, Belgium](#)
- [ICA2017, Québec, Canada](#)
- [ICA2013, Narbonne, France](#)
- [ICA2009, Cairns, Australia](#)
- [ICA2001, Malmo, Sweden](#)
- [FICWTM2017, Palermo, Italy](#)
- [AutMoNet2007, Ghent, Belgium](#)
- [AutMoNet2004, Vienna, Austria](#)
- [AutMoNet2002, Vienna, Austria](#)
- [IT&Water2012, Amsterdam, The Netherlands](#)

OTHER

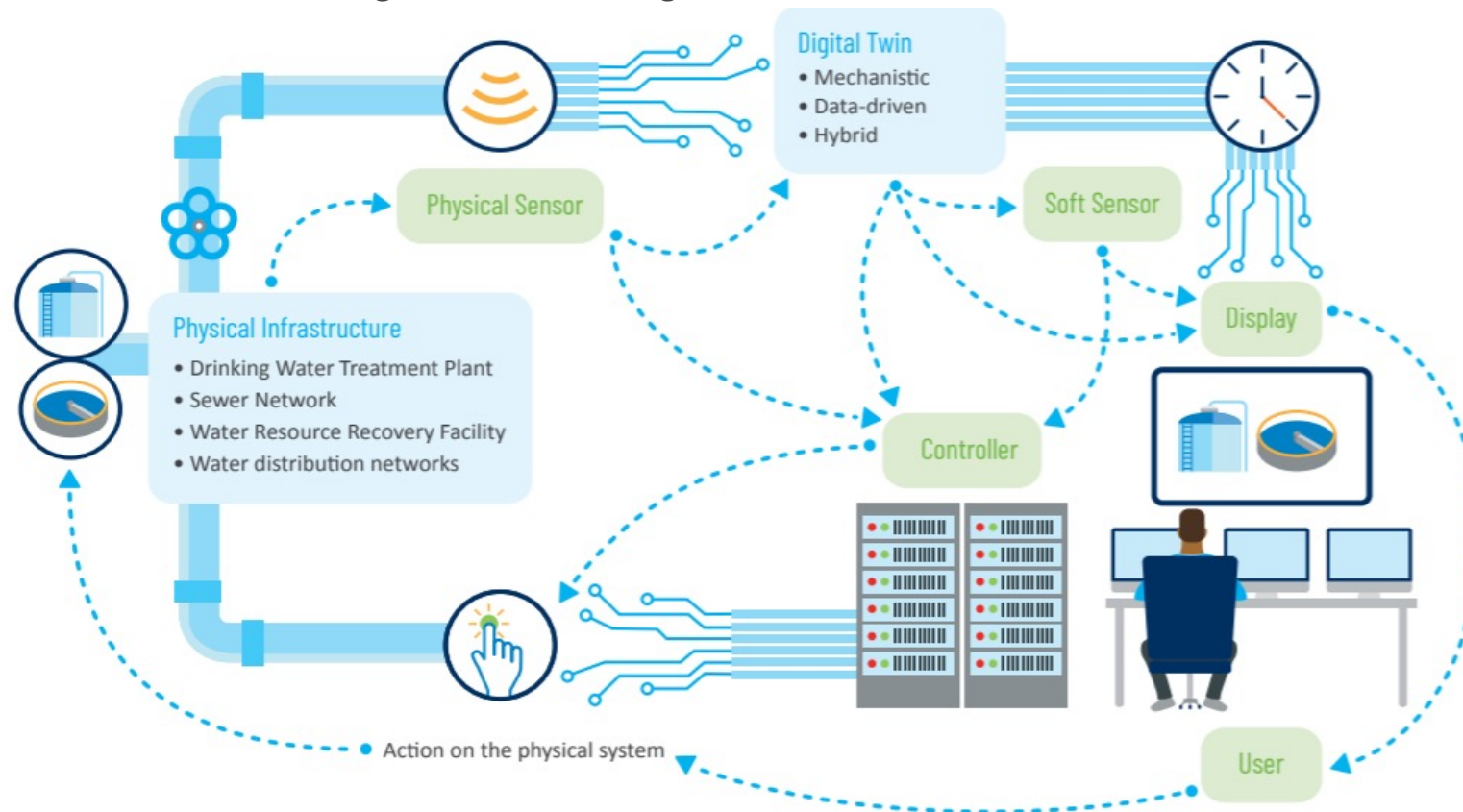


- Steering committee member to [IWA digital water program](#)
- IWA Global Trend Report 2020(**2022**): Emerging topics in modelling and integrated assessment
- Yearly summary of MIA activities on our web sites

WHITE PAPER

■ DIGITAL WATER: OPERATIONAL DIGITAL TWINS IN THE URBAN WATER SECTOR

— Part of the IWA Digital Water Programme



- <https://iwa-network.org/publications/operational-digital-twins-in-the-urban-water-sector-case-studies/>

PUBLISHED ARTICLE ON WRRF's OPERATIONAL CHALLENGES DURING COVID-19



▪ MIA SG MC MEMBERS – TEAM WORK

- Published a perspective article in *Water Environment Research*
- A collaboration between YWPs & EWPs within the MIA SG MC members

▪ HIGHLIGHTS OF THE ARTICLE

- Focuses on WRRFs operational challenges during COVID-19
- Benefits of automation & digitalization for WRRF operations during pandemic
- Highlights emergency responses, resiliency & mitigation strategies

YWP COAUTHORS



Arifur Rahman



Gamze Kirim



Mahmudul Hasan



Sina Borzooei

EWP COAUTHORS



Evangelia Belia



Domenico Santoro



Bruce Johnson

Wiley Online Library



PERSPECTIVE | Free Access

Digital solutions for continued operation of WRRFs during pandemics and other interruptions

Arifur Rahman Evangelia Belia, Gamze Kirim, Mahmudul Hasan, Sina Borzooei, Domenico Santoro, Bruce Johnson

First published: 28 July 2021 | <https://doi.org/10.1002/wer.1615>

<https://onlinelibrary.wiley.com/doi/abs/10.1002/wer.1615>

SOCIAL MEDIA



- Follow the Modelling and Integrated Assessment Specialist Group on



<https://iwa-connect.org/group/modelling-and-integrated-assessment-mia/timeline>



<https://www.linkedin.com/company/iwa-mia-specialist-group-on-modelling-and-integrated-assessment>



https://twitter.com/iwa_mia_sg

to get informed about our latest events, publications and news!

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| | | |
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| <input type="checkbox"/> Bruce Johnson | (Industrial Insight Officer) | Arifur Rahman |
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(Vice chair)

BIOMATH, Ugent, Belgium

Associated YWP:
Jing Chris Sun

CALL FOR NEW MC MEMBERS



- **Call for applications is soon open!**
 - Full MC members
 - Associated YWP members
- **Application:** [Instructions](#) soon on IWAconnect
- **Selection:** Electronic voting by full MC members
- **Evaluation:** Feedback survey organized after 1 year to evaluate YWPs experience with respect to mentoring, collaboration, activities, learning aspect, communication...

FINAL REMARKS



- These slides available on WRRmod2021 Whova conference centre and IWAconnect (MIA) and MIA open web site
- Next MIA Open Group meeting at WWC&E2022 (Copenhagen, Denmark, 11-15 Sept. 2022)



for your attention!

Questions and comments!