

WATER ECOSYSTEM

Allied ICT Finland

Pirkko Taskinen

OULUN YLIOPISTO AIF Water Ecosystem

1. Allied ICT Finland Water ecosystem

Water Ecosystem is co-operative community of ICT- and water industry companies, municipal waterworks, industries operating water processes, mines, research and environmental authorities.

We start by identifying the technology needs of our partners. Working together to solve the problems, testing the solutions in our testing platform and finding the opportunities on the domestic and international markets.

Water Ecosystem is also a place to introduce industry partners to each other and share their contact details.

2. Allied ICT Finland (AIF)

Allied ICT Finland (AIF) is a collaboration network of 11 research institutes, 5 cities, 10 business ecosystems, thousands of researchers and more than 1200 companies.

Digitalization creates vast possibilities for growth, but new ways of agility, investments and partnership models are needed in order to succeed. Finland must be in the vanguard of new technologies and business opportunities. Allied ICT Finland offers a new model of action and investment, which aims to create a billion euro R&D leap.

AIF ecosystems provide a unified interface to market leads, partnership, top knowledge and sales. Evolved from AIF projects, ecosystems form a concentrated pool of smart specialization, high technology assets and the latest knowledge for companies to co-operate and develop with each other and the other key players of the industry. The main goal of AIF ecosystems is to enable business growth and internationalization for Nordic companies.

AIF ecosystems: Analytics+, Arctic Drone Lab, AVR Ecosystem, CyberSec, Hilla Gaming Ecosystem, PrintoCent, SMACC, SuperIoT, Water Ecosystem, 5GTN

3. Water Ecosystem

Water scarcity, urbanization, changing demographics and operational efficiency are top issues for the global water industry sector. The impact of climate change amplifies the need to tackle these challenges. This situation poses a growing need to develop more efficient, environmental friendly and high quality for the operation and maintenance of industrial and municipal water processes. These requirements can only be met by integrating latest high-end technologies and innovations into new products and services.

The Water Ecosystem generates new high-end solutions to tackle these challenges. This is achieved by combining leading edge expertise and innovations from research fields, technologies, product development and commercialization.

The main driver for Water Ecosystem activities is the customer and customer requirements. The customers are the owners of the water processes in both industrial and water supply sectors. The aim is to initiate actions that create new services and solutions to the markets and create added value for the customers.

3.1. How we operate

The water ecosystem has three focus areas where it is actively operating aiming to create customer driven new solutions

- Municipal waterworks – drinking water, wastewater, water networks
- Industry - Pulp and paper industry, Metal surface industries, Chemical industries, Food industries
- Mining industry – water processes very close to the nature

Water ecosystem will facilitate workshops in the streams to kick-off solving the existing water challenges. The target to organize workshops around current topics is

- a. To share recent innovations and progress in different research fields, technologies, product development and commercialization, but also
- b. To enhance the understanding of customer requirements, business opportunities and challenges in the water and wastewater treatment processes
- c. To accelerate and promote networking between different stakeholders to e.g. to find business and research partners.

3.2. The role of Water Ecosystem

The Water Ecosystem will

- Act as neutral layer between end customers, measurement developers and vendors, automation companies, system integrators and environmental authorities
- Increase the co-operation of the participating companies, building consortiums and acting as a business quarterback; and
- Perform talent scouting and actively promoting research to business co-operation and communication

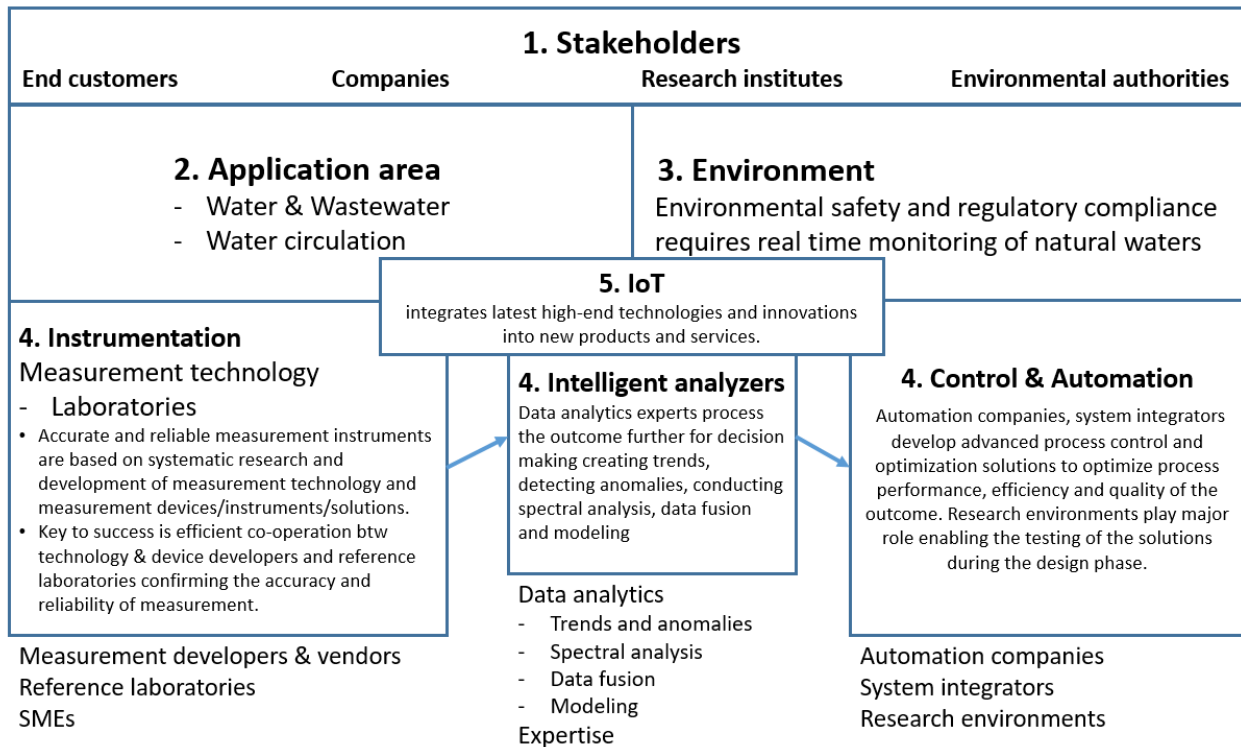
The Water Ecosystem will offer for companies:

- Latest high-end ICT and automation expertise
- Expertise in critical measurement solutions
- Scalable business ideas and opportunities
- Partnerships & Joint Business Cases
- Expanded market visibility
- Shared R&D Environments

4. Innovations to tackle the water challenges

Water Ecosystem strengthens, accelerates and solidifies the co-operation between end users, companies, research institutes and environmental authorities. The outcome is successful, market demand driven end-to-end solutions for international markets. This is achieved by combining the expertise and innovations from different research fields, technologies, product development and commercialization. The scope covers water, wastewater, water use & circulation and natural water systems related activities.

Allied ICT Finland Water Ecosystem
White paper



In the picture:

1. Stakeholders - Members of Water Ecosystem: End customers, Companies, Research institutes, Environmental authorities
2. Application areas – Focus areas: Water, Wastewater, Water circulation
3. Environment - regulations: How to adapt the innovations to environmental safety and regulatory requirements
4. Instrumentation, Intelligent Analyzers, Control & Automation: New solutions to solve water problems
5. IoT: Integration of the latest high-end technologies into new products and services to solve water problems

The primary purpose of instrumentation, control and automation (ICA) in water and wastewater treatment processes is to allow for efficient operation in terms of fulfilling standards while maintaining operational and capital costs as low as possible.

The main driving forces for ICA are most often related to:

- stricter water quality standards
- economic incentives
- reduce energy consumption and/or increase energy production
- increased plant complexity (co-ordination of processes and loops, monitoring etc.)
- new treatment concepts – e.g. more compact plants, water reuse
- new and cheaper technical solutions – e.g. computers, communications

5. INDUSTRY PARTNERS



Allwatec provides services for pipeline cleaning, proof testing, disinfection, locating pipes, pipe leaks and pressure pipes.

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Aquator Oy operates in the field of process filtration and water treatment. Company provides answers for the industrial process problems related to the water or fluid quality.

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Buildie is a documentation application for water supply construction and renovation that is used by dozens of water plants in Finland. Buildie enables better work quality control and real-time communication on site. Through its own activities, Buildie strives to develop the industry's documentation practices and to improve the quality of construction in Finland.

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CARBONS

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cloudasset

Cloud Asset is a Cloud Computing and Big Data technology startup whose mission is to help customers adopt cloud capabilities at the heart of their operational strategy through a set of vertical industry use-case specific solution stacks. Cloud Asset's project portfolio includes utilization and development of IoT, Big Data, analytics, visualisation, streaming, and storage technologies and solutions in financial, cleantech, security, environment, and healthcare sectors.

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Creoir designs and develops wireless devices such as smartphones, smart speakers, wearables and IoT solutions to our clients globally. We offer product development services including industrial design, hardware and software development, manufacturing, after sales and cloud services.

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Provide vendor independent automated water consumption measurement and monitoring solutions, control of sewage and storm water, and monitoring the condition of the district heating network.

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Digita Oy digitizes the water sector by providing water supply companies with the various solutions listed below:

- Remote water clearing
- Surface measurements (droppings, groundwater, tanks, waterways, water pools, etc.)
- Detection of leaks
- Storm water, drains, sewage
- Levels of wells & tanks
- Groundwater level, water level

Digita uses LoRaWAN as an IoT technology.
Digita is a member of LoRa Alliance.

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EHP Environment EnMonCon – environmental monitoring concept. We redesign our customers' monitoring program based on reliable online measurements in critical monitoring points, which reduces the need for manual sampling in total. This way our concept offers significant savings in total monitoring costs, when compared to a heavy traditional monitoring program based on manual sampling.

Information status of the environment allows know exactly environmental load, optimize processes and with the help of our early-warning system, to prevent serious environmental accidents from happening. In EnMonCon, environmental data from different sources are directed to a central data management system where it can be easily analyzed it. Map-based views, automatically updated graphs and tailored reports are available.

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Filterit is a company specializing in industrial and municipal filtration solutions, UV disinfection and water treatment. Our long-term experience and know-how create the foundation for secure solutions. Our solutions are the leading manufacturers in the industry.

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Fluidit is a mixture of water engineering professionals and top-class software developers. We are experienced in smart water solutions focusing on water distribution and wastewater collection systems. We have developed our own hydraulic modeling software and it is available to utilities, consultants and universities. We also provide consulting services for general network planning and analysis as well as high expertise solutions.

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Grundfos is one of the world's leading pump manufacturers, producing about 16-million units a year. Its main production lines are pumps for heating and air conditioning and centrifugal pumps for Grundfos supplies a full line of equipment and solutions designed specifically for water utility applications. Grundfos is at the forefront in promoting and facilitating energy efficiency and sustainable technology, ensuring that water supply and wastewater facilities meet future challenges and regulations.

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HyXo Oy is Finnish family owned company with 50 years of experience in water treatment processes, products, process and laboratory measurements and services. We drive circular economy solutions in water treatment sector, and for that, we develop solution for minimizing water consumption, and raw material and end product losses, and improving recycling and recovery of side streams. Digitalization and efficient data utilization are necessary for optimal management of integrated water systems, and thus vital parts of our solutions. Maintenance has also significant impact on efficient and reliable operation, and with our strong service organization, we are able to broaden our ownership of water treatment processes.

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Kemira offers wide range of chemicals and chemical based solutions to water treatment. Main chemicals are iron and aluminium salts and polymers, but we offer also pH adjustment chemicals, biocides, defoamers and antiscalants to water treatment applications. Kemira has also recently launched digital Kemconnect® applications that can be utilized in chemical storing, sludge dewatering and phosphorus removal.

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We are specialized in network information management and geographical information management solutions and related professional services.

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KL-Lämpö Oy specializes in water treatment products and services, which boost energy efficiency. Our solutions help optimize the quality, efficiency and reliability of water treatment processes in industrial, municipal and energy plants as well as building maintenance services.

The main purpose of our water treatment services is to control corrosion levels and to prevent scale and deposits. Our operations are based on high-quality water analyses and research activities conducted in our own laboratory.

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Yhdessä vastuullista vesitekniiikkaa

Oy Lining Ab specializes in technical solutions for clean and waste water lines and plants. Our over 60-year activities are based on accountability, innovativeness and profitability. Quality products, service and high quality workmanship have been our trademark throughout our business.

Products that are installed in demanding conditions will have to function properly for over 50 years. Oy Lining Ab is part of the Indutrade Group, which operates in 31 different countries on four continents.

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Masinotek is developing and supplying software based technologies, systems and services for industry, energy, water supply plants and for environmental research.

Masinotek's products include measurement and identification systems for remote monitoring, maintenance systems, water management for electronic logbooks, environmental monitoring systems, internet based laboratory monitoring systems, snapshots, remote monitoring systems and previous systems inventory services.

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Onninen provides a comprehensive selection of products and service packages to contractors, industry, infrastructure building and retail dealers. We are a strong partner for business customers and network, efficient logistics and multichannel customer experience. We have operated in the sector since 1913. We have around 1,200 employees in Finland and our sales network consists of 51 Onninen Express stores around the country.

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Optoseven real-time, high quality liquid analyzer allows continuous operation and reliable measurements in different kind of applications, such as wastewater, clean water and natural water without manual cleaning or any other typical maintenance operation.

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Outotec provides leading technologies and services for the sustainable use of Earth's natural resources. As the global leader in minerals and metals processing technology, we have developed many breakthrough technologies over the decades for our customers in metals and mining industry. We also provide innovative solutions for industrial water treatment, the utilization of alternative energy sources and the chemical industry. Outotec shares are listed on NASDAQ Helsinki.

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Allied ICT Finland Water Ecosystem
White paper



Owatec Group Oy is a water and environmental company that provides solutions for water and waste treatment. In addition to processing technology, Owatec projects for companies, industry and service companies.

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PehuTec can design a complete IoT solution for you, or parts of it. We have expertise in designing sensors, selecting/implementing data transfer technologies and building cloud services (customer's own or PehuCloud). The IoT system control and data analysis can be implemented using a mobile app (Android/iOS), a web browser, or both.

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Pipelife Finland Oy is Finland's leading company in manufacturing and marketing HVAC products. The company's product portfolio includes plastic piping and grout products for house, municipal and drying technology and electrical and cable protection and environmental products.

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PollenTech provides services for embedded software design and development as well as system design, development and integration. Our employees have long history on embedded SW on world-class companies from mobile devices and mobile systems industry. This gives us a strong background to meet requirements from customers to create high quality solutions for their products. We can support clients having needs on any layer of the embedded SW stack; from kernel to applications; on any operating system; from different RTOSes to Android; and on any domain; including but not limited to; IoT, mobile, consumer electronics, industrial and automotive. PollenTech can help customers on HW & SW platform transition or upgrade, driver development and protocol stack integration thus accelerating time to revenue for both the silicon vendor and the device manufacturer by making on-time delivery of the high quality SW.

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Probot is a high-tech company in the field of robotics and automation. We have built a skilled team to design and implement traditional automation and modern robotics to various fields of business. Our specialties include robot software, system integration of collaborative- and industrial robots, machine building and modernization of PLC-logistics.

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Ramboll delivers a wide range of water-related counselling; from early phase strategic analyses and project scoping to designing and implementing infrastructure solutions.

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SATEL radio modems are used widely for the remote control and monitoring of waterworks and sewage processing plants. Since these installations are often in remote places or cover a large area, the data network needs to be flexible, easy to extend and above all reliable.

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Water treatment plant electrification and automation: design, implementation, systems integration, product development, maintenance services and maintenance.

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Streamsave is designed for monitoring water and energy consumption. The selfpowered measuring device is easy to install to any water or other liquid outlets in and other industry, gardens and greenhouses.

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Today's cities have an unavoidable impact on the environment, but adverse effects can be minimised. Sweco's water and environmental specialists work with reducing harmful emissions, recycling waste offer solutions that reduce climate impact and adapt society to a changed climate.

Sweco assists its customers in all issues concerning water acquisition and treatment as well as wastewater pumping and handling.

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Tecalemit Flow's product portfolio includes valves, pumps, process automation field equipment, instrumentation and process equipment.
The company's strength lies in the knowledgeable staff and the leading equipment manufacturers in its field.

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Wireless transfer of remote data, data analysis and creation of the necessary controls.
Remote reading of water meters and detection of possible leaks.

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Teollisuuden Vesi (Industrial Water Ltd.) is a Finnish water treatment service company with special expertise in process microbiology. We treat water to meet industrial applications and discharge for sewage. We develop methods for more efficient water recycling to value every single droplet of clean water.

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Trimble Energy & Public Administration develops software solutions for energy distribution, public administration and water supply industries. The business area offers its customers high quality process support tools from design to construction, operation and maintenance, as well as applications for building high quality customer service solutions.

For water supply companies, we develop software solutions for managing the water and sewerage network and performing water management tasks from design to construction, operation, maintenance and customer service. Spatial data functionality is utilized through business processes.

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UROS brings end-to-end global IoT solutions for an array of industries and needs. When it comes to global connectivity, remote connectivity management, or smart process management and optimization, UROS delivers robust solutions tailored to the customers' needs of Municipal Water, Pulp and Paper, Food and Beverage and Metal and Mining.

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VRT Finland provides pioneering solutions for underwater inspections and utilisation of 3D data with multibeam sonar and laser scan inspections. Our service offers a combined view of the condition of under and above water structures, in addition to seabed with interpreted 3D data delivered to you online.

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Waterix develops and manufactures device for the treatment of municipal and industrial sewage and process water-cooling with an eye on the eco-friendliness of the products.

Waterix's key products are AIRIT® surface aerators, MIXIT® mixers, DENIT combination devices and COOLIT® coolers.

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For over several decades Wihurin Technical Trade has been known as an expert in the field and as a reliable partner. Technical Shop offers its customers a comprehensive service package ranging from high quality products to skilled after-sales service.

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WRM-Systems offers GWP SERVICE - environmental information management system for collecting observations of water, analyzing and transmitting information to authorities.

GWP Service user interface can be customized for customer's needs.

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Xylem is a leading water technology company committed to "solving water" by creating innovative and smart technology solutions to meet the world's water, wastewater and energy needs. In a world of ever-growing challenges, Xylem delivers innovative water technology solutions.

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