

HYDROGRAPHISCHE NACHRICHTEN

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Depth measurement per

crowdsourcing. Damn it!



HYDRO 22 in Monaco

A personal perspective

An article by RUDOLF METZLER

After a two-year forced break due to the Corona pandemic, numerous hydrographers came together at the HYDRO conference in Monaco in December 2022. The event was organised by the francophone hydrographic society AFHy on behalf of the International Federation of Hydrographic Societies (IFHS). Our author, whose professional work revolves around hydrographic applications, attended a HYDRO conference for the first time.

HYDRO 22 | Monaco | Industrial Internet of Things – IIoT
HYDRO 22 | Monaco | Industrielles Internet der Dinge – IIoT

Nach zwei Jahren Zwangspause wegen der Corona-Pandemie kamen im Dezember 2022 zahlreiche Hydrographinnen und Hydrographen bei der HYDRO-Konferenz in Monaco zusammen. Die Veranstaltung wurde im Namen der International Federation of Hydrographic Societies (IFHS) von der frankofonen hydrographischen Gesellschaft (AFHy) organisiert. Unser Autor, dessen berufliche Arbeit sich um hydrographische Anwendungen dreht, nahm zum ersten Mal an einer HYDRO-Konferenz teil.

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I never thought I would find myself at a hydrographic conference in Monaco, but here I am. And let me tell you, it's been an adventure. As I arrived, I was surprised to learn that the small principality has a long-standing history in hydrography. Despite its reputation as a luxurious destination for the privileged, I discovered that Monaco is highly invested in ocean science and a sustainable ecosystem.

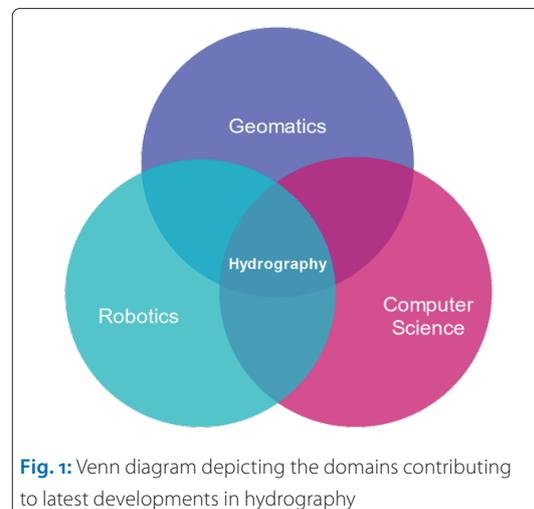
The conference took place at the picturesque Grimaldi Forum, hosted by the Francophone Hydrographic Society (AFHy), providing a comfortable and welcoming environment for the international and diverse group of attendees. The ice-breaker event held prior to the conference provided a valuable opportunity for attendees to net-

work and establish connections with fellow hydrographic experts. Hence, the conversations covered a wide range of topics, reaching from current and prospective international hydrographic standards over environmental monitoring to military applications, while enjoying the taste of sparkling language enhancers.

The starting point was an overview of the current developments and challenges in hydrography. Ensuring navigational safety, protecting the ecosystem during ongoing climate change and the importance of securing subsea communication cables are crucial aspects of hydrography that were brought to light during the first sessions. Frankly, I was quite surprised to realise how little I was aware about the aspect of security vulnerability of the latter topic. It connected the dots from the conversations I had the night before and gave me a deeper understanding of the fascinating community and movements driving the field forward.

If you ever find yourself in Monaco after a long day, on a mission to find a cheap place to grab a bite to eat in the evening, don't be surprised if instead of a bistro serving croissants, you stumble upon extravagant sports cars parked unexpectedly in a boutique between a row of small art galleries and real estate offices. Nothing special in a Monégasque way of life, I suppose.

But jokes aside. In addition to the need to adapt education to the demands of the interdisciplinary, high-tech field of hydrography (see Fig. 1), the conference also highlighted the development of



cutting-edge technology for autonomous vehicles in the context of Industrial Internet of Things (IIoT), made possible even on the high seas by Starlink. A representative from a USV vendor presented an analogy during the conference, drawing a comparison between their work to that of universities, stating that »our company doesn't focus on researching highly advanced solutions, performing like a Formula 1 racing team, but rather on manufacturing autonomous vessels that meet the specific needs of our clients« pointing out that research is as important as industry in paving the road towards new technologies, with an anecdote about the famous Monte-Carlo racing circuit next to which the conference took place.

New insights into computational methods with mathematical and statistical models for bathymetric surveying were also presented. Satellite-derived bathymetry showed its advancements in on-demand surveying next to hydrospatial sensor analysis, airborne or underwater, to enhance the acquisition of seafloor data. The variety of acquisition methods leads to different kind, quality and size of data. Therefore, automation plays an important role in analysing this data, with Machine Learning providing decision support and processing vast amounts of data, yielding the demand of an efficient representation using techniques like the Discrete Global Grid System (DGGs).

Overall, the conference reinforced the notion that hydrography is undergoing a paradigm shift driven by digital automation and interconnectivity, reminiscent of the early days of the automotive industry where new technology and ways of thinking were not fully understood or embraced. The conference highlighted the domain-agnostic nature of automation, which can make various aspects of hydrographic services more efficient and

accessible, such as data processing, quality assessment, decision-making, spatial data representation and emphasised the crucial role that interconnectivity plays in achieving ambitious projects such as Seabed 2030 leveraging the idea of crowdsourcing and frameworks like the European Marine Observation and Data Network (EMODnet). Moreover, it was acknowledged that unfortunately a significant number of women leave the hydrographic domain due to pregnancy and family life, as surveying campaigns on a survey vessel often require long periods of time and are not family friendly. However, with the help of automation and interconnectivity, there is a great chance that it would be possible for them to return and work remotely, thereby increasing diversity and making the field more attractive to others by shaping the field of hydrography into a high-tech direction.

For me personally, HYDRO 22 demonstrated the scale-invariance of applied IIoT, which already works across multiple independent domains, meaning that the same method working for a fraction of a digital system is applicable for an entire fleet of digital systems, i.e. autonomous ships. It is an intriguing moment in time, which should motivate companies to re-evaluate their view on existing technology and perhaps try out new approaches to their niche by taking a leap of faith and a glance at their systems from another point of view.

I would like to use this format to express my gratitude to my colleague Peter Dugge for supporting me throughout my journey and keeping the bar of motivation high, to Bhaswar Goswami (Wayfair GmbH) for teaching me a lot about scalable systems and David Vincentelli (AFHy) for inviting me to the conference. I am already looking forward to the next one in Genoa. //