

Sensor to Cloud: Setting the stage for the dynamic future of hydrospatial products and services

Hamilton Travis¹, Barbeau Julien¹

¹Teledyne CARIS, Canada
Travis.hamilton@teledyne.com
Julien.barbeau@teledyne.com

Hydrography and nautical cartography are undergoing a great transformation. Increased volumes of data from more sensors, remote operations, eNavigation and demand for increased ROI from survey projects are just a few of the trends which have pushed the rapid change to traditional methods and products. These trends have even resulted in the emergence of the more comprehensive term 'hydrospatial' to describe the expanding scope of technologies products and users which play a role in the community.

One initiative pushing hydrography into new territory is Seabed 2030, There has been consensus in the industry that this task cannot be achieved using traditional methods. New technologies need to be developed and introduced with particular focus on autonomy and automation for all stages of the hydrospatial pipeline. Artificial Intelligence has also played huge roles in the journey towards automation. Processing now generally occurs onboard the vessel, and/or is transmitted to a cloud environment. This speeds up turnaround times from acquisition to results and allows for real time assessment of collected data.

Over nearly three decades, the hydrographic industry has become well acquainted with the S-57 standard and Electronic Navigational Charts (ENC's) 'the paper chart of the future'. While S-57 has been instrumental in the adoption of ENC's it does have one major flaw. It was designed and implemented specifically for the needs of ENC's and is not well suited for developing other digital products that would benefit the maritime community. This brings us to S-100, which will evolve the existing standard to cater for new user community requirements. S-100 aims to provide a more dynamic implementation, which would allow improvements and adjustments to the content as needed over time.

Teledyne CARIS products have developed over time with focus on the 'Ping to Chart' mentality. Taking data collected from a sonar ping and processing it through to final products, traditionally being charts (whether paper or digital). The needs of the community have expanded to commonly accept new sensors such as lidar and SDB, and evolved from product centric to data centric workflows. The CARIS software stack and workflows have also evolved to a 'Sensor to Cloud' mentality by leveraging AI and cloud technology trends to help bring hydrography into the new hydrospatial era. Much of this evolution has been achieved through close collaboration with key customers. This paper will present case-studies from current projects which showcase the tools, techniques and technology underpinning the Sensor to Cloud workflow, and elaborate on how these new capabilities bring value to players in the hydrospatial community.