

HYDRO INTERNATIONAL INTERVIEWS SALEM E. MASRY

30 Years of Success



Dr Salem E. Masry, president and chief executive officer of CARIS, accepted to be interviewed by Hydro international on the occasion of the 30th anniversary of his enterprise.

Dr Masry, a cake was cut on the occasion of the 30th anniversary of CARIS in its booth during the 4th Extraordinary International Hydrographic Conference in Monaco last June. Can you tell the readers a little about your career and how you had the idea of creating an enterprise that helps hydrographic institutions to manage the data they collect?

My interest and work in hydrography started around 1976 when I was working as a professor at, as it was called then, the Department of Surveying Engineering at the University of New Brunswick, Canada. I was approached by the Canadian Hydrographic Service (CHS) to provide technical advice for its work on automated cartography. I then became involved with a research project to implement an integrated system for mapping and charting Canadian coastal waters using two-media photogrammetry, LiDAR and an inertial system (to determine the position and altitude of the aerial platform).

This work pointed to the need for a software application to integrate digital mapping and charting, and this led to the birth of CARIS in 1979.

So, CARIS has been designed and built to cater to hydrographic requirements from the start rather than as an afterthought. With the creation of more charts in digital form came the realisation of the need for managing these data. I recall several discussions with our customers in the early 1980s on how this might be achieved. The computer hardware technology at the time simply did not provide the capacity or the speed to accommodate the corresponding volumes of data. That came, as we know, at a much later date as the technology evolved.

CARIS offers a number of solutions for hydrographic data management. Can you tell us which of them is the most popular and why?

CARIS has developed various products for the ping-to-chart management of hydrographic data. The first product in the workflow, and the most popular, is HIPS and SIPS for processing bathymetric measurements from sonar and LiDAR sources. First released in the early 1990s, it allows users to quickly determine how good the data are. One of our clients once said publicly, "HIPS and SIPS makes you tell the truth."

Bathy DataBase is a more recent addition to our software suite. As multi-beam sonar has grown in popularity, so too have the densities of soundings that they record. Bathy DataBase has been purposely designed to address the market need for an efficient solution to manage these data sets containing billions of soundings, often several terabytes in size.

Finally, our Hydrographic Production Database (HPD) system is an advanced database solution, which offers an integrated suite of products that manage complex spatial and attribute data seamlessly. HPD is attractive to users because its "one feature, one time" characteristic allows for a wide range of products to be efficiently created from the same source.

We have noticed that CARIS has added, to its traditional task of data management, the tools for generating S-57 data that lead the production of electronic navigational charts (ENCs). Can you tell us about the history of the development of those tools?

In the mid 1980s, CHS and CARIS worked on electronic chart test-beds to determine what impact electronic charting would have on hydrographic chart production and content demands. The results from these experiments provided input for the development of ECDIS performance standards and the need for a common exchange format. CARIS tested DX87 and

DX90, and worked closely with hydrographic office partners in the development of S-57.

We were also directly involved in the development of the S-52 presentation library. In the early 1990s, we had a product called Object Manager that ran on Unix platforms and later we launched Hydrographic Object Manager on Windows. Today, we continue to offer desktop and enterprise S-57 ENC, Additional Military Layer (AML), DNC, and Inland ENC and MIO production through S-57 Composer and HPD. Further, we are closely involved in the development of the S-100 standard.

The International Hydrographic Organization (IHO) looks favourably towards co-operation with the industry. In which way does CARIS co-operate with the IHO as an organisation and with its Member States?

Participation and strategic co-operation with the global operations of the IHO, national hydrographic offices and private customers is paramount.

For this reason, we consistently participate in IHO committee working groups such as Transfer Standard Maintenance and Application Development, Digital Information Portrayal, Standardization of Nautical Publications, and virtually all of the regional hydrographic commissions.

Our model creates partnerships with our clients through a total package approach that adds value to each of our products, services and customer support. Through our extensive interaction at the international level, and with our customers on a day-to-day basis for their support, we are very aware of customer needs, and we aim to provide solutions that deliver high returns on investment and second-to-none customer support.

CARIS has developed software called LOTS that may assist Coastal States to prepare their claim for the extension of their continental shelf limits. What is CARIS' relationship with the UN Commission that examines these claims?

The Commission on the Limits of the Continental Shelf (CLCS) uses many software programmes in its work; however, it is impartial and cannot privilege one software vendor over another. CARIS LOTS is specially developed to comply with UNCLOS and the Scientific and Technical Guidelines of the CLCS and, because of its very specialised nature, was provided to the CLCS to assist it in its work. To date, 60 Coastal States have acquired LOTS for Law of the Sea work.

On the CARIS website, the announcement appears of a hydro-seminar in La Reunion alongside the Southern Africa and Islands Hydrographic Commission (SAIHC). Can you tell us in which other ways CARIS contributes to the efforts of the IHO in technical co-operation with developing countries?

CARIS contributes strongly to the efforts of the IHO in technical co-operation and through capacity building events that we sponsor or take part in. We participate regularly in the IHO regional hydrographic commission as contributors to the work of the committees, such as our seminar at the SAIHC in La Reunion, and another we are planning to participate in for the MesoAmerican Caribbean Sea Hydrographic Commission in Barbados.

In other areas, CARIS actively supports hydrography and nautical cartography in developing countries where our business model includes proposing programmes that build capacity and technical co-operation.

How does CARIS contribute to the hydrographic and nautical cartography courses that are held around the world? Do you have any general suggestions to ameliorate the standard syllabus (as established by the International Advisory Board of FIG, ICA and IHO) of those courses?

Because of the dictated membership of those bodies, CARIS cannot take a direct role in influencing the standard syllabus.

We do have an indirect effect, however, in that we are very deeply involved in providing support to the community in three ways: education, training and outreach.

More than 60 universities and academic institutions currently take part in our Academic Partnership Program. Our model is to provide our software and technical expertise to universities for their instruction and research. In return, we receive the benefits of the interaction with bright young students who often find unique solutions and applications for our software.

We have very active training and consulting programmes in hydrography and cartography. Last year, we presented over 120 courses in about 60 countries. This direct interaction with users allows us to have dialogue that results in training and course improvements.

Our outreach comes in the form of capacity building events that we sponsor or take part in. We participate regularly in IHO regional hydrographic commission events where we conduct workshops and educational sessions.

Over the last 30 years we have seen tremendous changes in hydrographic data acquisition and processing techniques. What is the vision of CARIS for future development of hydrographic data management and charting?

Hydrographic data are now finding their way into the hands of geographic information experts for further analysis and integration with other data sets. This trend highlights the critical need to maintain quality controls for traceability and data discovery of the hydrographic data collected.

The incorporation of the CARIS Spatial Archive (CSAR) Framework into many of our products delivers functionality that will assist with the storage and management of the associated metadata. When a bathymetric gridded surface or a point cloud is created, there are several attributes such as the surface extents, grid resolution, creation software and date that are automatically populated into the CSAR file.

This technology ensures the persistence of data standards and metadata throughout workflows. It enables data holders to share data using web distribution programs such as CARIS Spatial Fusion Enterprise and to integrate it into a marine spatial data infrastructure (MSDI) for discovery.

Our unique approach to data standards and metadata management will allow the hydrographic community to easily share its specialised data with the ever-expanding GIS world.

Hydrography is a field that may be recommended to young people: have you any message to put to them?

Our oceans present an exciting frontier for young people, yet so much remains unexplored. We are all connected to the oceans no matter where we live. They are the birthplace of weather and climate systems, highways of commerce, buffers for national security, a reservoir of natural resources, recreational havens and much more.

Wherever a young person's passions lie - be they with the environment, shipping, biology, oil and gas, meteorology, geography, etc. - a career path towards the oceans promises to be an exciting and rewarding one.