Editorial

"PiingÃ¢â‚¬Â¦Ã¢â‚¬Â¦.Zzzzz, Piing Ã¢â‚¬Â¦... Ying, Piing Ã¢â‚¬Â¦YiiinNG"Ã¢â‚¬Â¦ this was the sort of audio that made up my first experience of object detection back in the sixties, when we were surveying the entrance to Europoort/Rotterdam, an area with high sand dunes. The survey ship was equipped with a hand-operated QCU2 searchlight sonar for detection of obstructions, while an Ã¢â‚¬Ëœattack Ã¢â‚¬â„¢ recorder and a mechanical plotting-table helped to bring the ship up to scratch for least-depth and position determination for wire sweeping and/or diving for identification. The audios, a quite regular source of puzzlement, clearly brought home to me the problems of detecting and classifying objects from sonar-echo returns.
Technology has moved on since then - an understatement, when I consider the present performance of object-detection equipment (see for examples the features in this issue).
Electro/optic identification sensors are available for short-range identification by human operators. There are developments underway in computer-aided identification and automatic target recognition, for example in MCM applications. But because there is great variation in sonar returns originating from the various aspects of an object, improvements are needed to the imaging component of the detection and identification problem, while a tremendous amount of computation, is also required, be the data video or acoustic. So it still mostly falls to the human operator to classify and identify.
Progress is being made on Lidar signal processing for underwater object detection, and better use is being made of magnetic sensor capabilities. Not to mention the huge forward steps in software development: data reduction, analysis, fusion (of various sonar types, optical and magnetic sensor data) and so on. Without all of this the tremendous volumes of data now being generated could not be turned into the stunning pictures and functions that are now helping the operator to leave behind him many hardware developments.
Our economic life-lines: oil & gas pipelines and underwater infrastructure, transport (sea-lanes and ports involving MCM operations) and communication (submarine cables for internet) require periodic and effective object-detection and inspection, preferably automated for efficiency. These needs drive forward R & D.

However, in the face of all our technological advances, the bottle-nose dolphin with his broadband sonar echoes excels at identifying buried objects. Object detecting and identification equipment is becoming more and more miniaturised. It will soon be suitable for small and medium-sized AUVs - which may be considered artificial fish. This will take various sensors (acoustic, optic, magnetic) down close to objects in one mission, bringing together detection, classification and identification. The question remains whether we will manage to equal Nature, with her bio-sonar, Ã¢â‚¬Ëœcomputation Ã¢â‚¬â„¢ and physical skills as illustrated by the bottle-nose dolphin or, in air, the bat.

A change to the Hydro International team: Martsje Stelwagen, the editorial manager is leaving GITC. Thank you, Martsje, for your hard work on Hydro International and for your Ã¢â‚¬Ëœthinking along Ã¢â‚¬â„¢ with the editorial board; good luck for the next step in your life. Martsje is succeeded by Joost Boers: welcome to the team (see also page ..).

We also welcome Andrew Gerrard as a new member of the editorial board. Andrew Gerrard is a chartered surveyor holding a MSc in GIS from the University of Nottingham. He began surveying with consulting civil engineers on the construction of underground railways in Liverpool, before moving to East Anglia to work offshore. He sailed on hydrographic and engineering geophysical projects for ten years before taking a technical role onshore in data processing and chart production as a surveying department manager. Andrew Gerrard is presently chief surveyor with Gardline Marine Sciences Group.

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In closing, you may have noticed that Hydro International has begun an e-newsletter to enable us to inform you more frequently and in more detail than is possible via our printed magazine. If you are not on the list of subscribers, please let us know by e-mailing us at hydro-international@reedbusiness.nl

Enjoy reading,

Leeke van der Poel.