

Kongsberg Coordinates EU-funded Project to Enable Autonomous Navigation in Close Proximity



'Hull to Hull' (H2H), an EU-funded research project established to develop technical solutions for safer navigation in close proximity to other stationary or moving vessels and objects, is in its Concept Definition phase. It will move on to the Technology Adaption and Integrations Work Package (WP03) this summer.

H2H was established in November 2017 to develop solutions using the European Global Navigation Satellite System (EGNSS), EGNOS and Galileo, that can enhance safety in busy waters and during close manoeuvring, helping mariners to take the correct navigation decisions and creating the fundamental conditions for autonomous vessel navigation. H2H aims to create a system that will allow proximity zones to be set for own vessels as well as neighbouring objects, with high precision and high integrity.

Vessel location and orientation

H2H focuses on solutions for measuring the location and orientation of a vessel and creating a 3D digital twin representing the vessel's hull, which is linked to a coordinate system, e.g. WGS84. This data can then be used as an input to an autonomy controller. H2H will also support manual navigation, providing reliable input for the captain or navigator to make better informed decisions. This could potentially be achieved by e.g., displaying the digital twin on the ECDIS or other display systems.

The project is coordinated by Kongsberg Seatex, a subsidiary of Kongsberg Maritime, developing solutions for maritime sensing and connectivity. Expert project partners include SINTEF Ocean and SINTEF Digital for broad research-based expertise; KU Leuven, a leading European university and expert on inland waterways navigation; and Mampaey Offshore Industries, a Dutch company specialised in towing, berthing and mooring systems.

Nine work packages

H2H is divided into nine work packages, of which four are led by Kongsberg Seatex. The pilot system will be developed in WP03, where the main objective is to define precise sensors and communication systems, and develop an integrated solution based on the best available technology. The solution will be implemented using protocols and 3D models described in the concept. The project will also research specific needs related to auto-mooring and inland waterways, perform lab testing of various sensors and technologies and develop test scenarios for demonstrations scheduled for 2019 and 2020 in Norway's Trondheimsfjorden, in Rotterdam harbour and inland waterways in Belgium.

"We will implement the pilot system that will form the basis for all three demonstrations. This includes integration of sensors, building 3D models, and implementation of relative GNSS and communications protocols," said Per Erik Kvam, Project Manager, Kongsberg Seatex. "We are also responsible for providing the pilot system, and for the integration and installation for the Trondheimsfjorden demonstration, where we will show how we can control the location of the hull on two vessels involved in a simultaneous operation."