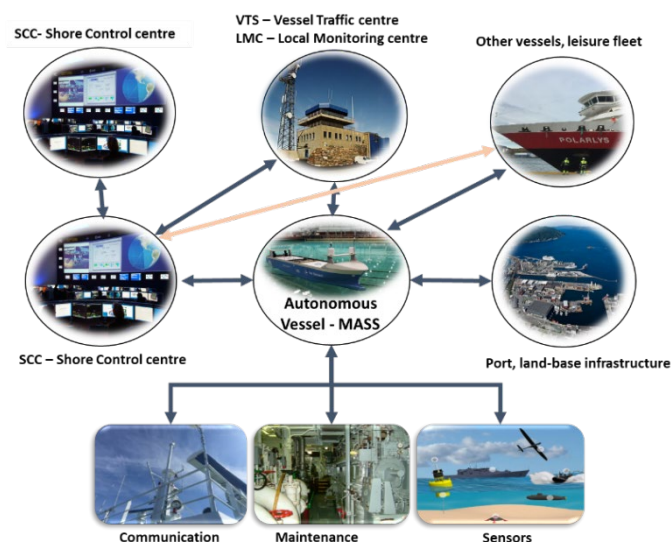




## Integrated Maritime Autonomous Transport Systems

*The IMAT project will develop and test land-based sensors, communication systems and control systems used as a support to autonomous vessels navigation and operation. The technological infrastructure will be able to provide the transportation systems with increased sensor redundancy and will be an integrated part of the shore-based control centres, which shall ensure safe and efficient operation. A reliable infrastructure is crucial for a safe implementation of maritime autonomous transport systems. The main objective of the IMAT project is to define, develop, adapt and test the land-based sensor infrastructure.*



## Background

There is an increasing interest in autonomous transportation systems. According to the Norwegian government's national transportation plan, one goal is to be able to transfer more cargo onto keel, that requires innovation. The MarOff, Maritim21, Hav21 and "den Poliske Plattformen" programs all agree that autonomous vessels are promising means for success. Water transport must be competitive with land-based transport regards to price, efficiency and regularity, at the same time it should have an environmental gain according to the UN Sustainable Goals. Autonomous transportation systems are one of the means of transferring cargo from truck to ship, but it must be documented that an autonomous transport operation can be carried out effectively, safely and with enough barriers against errors.

The IMAT project will develop and test land-based sensors, communication systems and control systems used as a means of support to autonomous vessels. The technological infrastructure will be able to provide the transportation systems with increased sensor redundancy and it will be an integrated part to the transport system, that will ensure safe and *effective* operation. A transportation system consists of various control centres (SCC – Shore Control Centre, LMC – Local Monitoring Centre), traffic centres (VTS – Vessel Traffic Service), the implemented technological infrastructure and of course the MASS vessel. Thus, the interaction between technologies, organizations and humans is essential within the project.

The IMAT project is managed by SINTEF Ocean. Kongsberg Seatex is the project owner with Kongsberg Norcontrol, Massterly and NTNU as project partners. The project runs for three years and had its kick-off April 2019. The Norwegian Coastal Administration, the Norwegian Maritime Authority and Trondheim Port Authority contribute into the reference group. The IMAT project will use the Trondheimsfjorden test area for autonomous ships for the test activities. The project is funded by The Research Council of Norway via the MarOff II program. The total expenditure is NOK 18 million, which includes *in-kind* contribution from the industry partners in the project.

## Project focus areas

- Verification and integration of land-based sensor data with sensor data from autonomous vessels.
- Adaptation of land-based surveillance technology for detection of solutions for data fusion and automatic transfer of navigation data between infrastructure installations, control centres and vessels.
- Ensure the human-in-the loop when implementing new technology.
- Standardization of messages, interaction procedures, robust technology for digital information exchange between the systems and parties.
- Development of new guidelines for interaction, new regulations and standards for information exchange.

## For more information contact

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