



MASS Nav PT Work package 2-6 report template

Member State: USA

WP2: Identify and report what test bed activities are happening in each member state's region and which degree of autonomy is predominantly used.

USA is working on mostly on autonomy levels 1-3. Testing at level 4 is closely monitored and navigation is mostly pre-planned and autonomy is more with regards to COLREGs decisions during voyage.

Commercial test activities include tug boat operations (Kirby and Foss) and small (20 meter) cargo vessel (First Harvest Navigation). All are using autonomy levels 1-2. Commercial, civilian government, and commercial testing at autonomy levels 3-4 is being conducted with small boats or purpose-built uncrewed vehicles that do not meet the definition of MASS.

WP3: Report on what data MASS operators and MASS navigation systems are using today in each member state's region.

Navigation planning was primarily done external to autonomous vessels using currently available data (DNC/ENC).

The MASS navigation systems vary in the ability to integrate and process navigation inputs, including AIS, radar, cameras, and ENC data. At the most fundamental level the inputs are displayed for the MASS operator. Some MASS navigation systems have the ability to process the data to alert the operator of potential conflicts or recommend navigational manoeuvres. The capabilities exist for the MASS navigation systems to execute navigation decisions, but they have not been implemented in MASS test bed activities.

Have any data limitations been identified?

Currently no data limitations have been identified or communicated.

WP4: Report what navigational data each member states' regulators (e.g. MCA in the UK) are specifying should be used for MASS navigation in either trials or operations of MASS.

US Coast Guard / Federal Regulators are in early stages of developing regulations and there are currently no regulations that explicitly state requirements for MASS or other autonomous marine vehicles. Local Coast Guard authorities have monitored test bed activities and provided ad hoc approval.

The US Coast Guard has established the Autonomous Policy Council to coordinate MASS activities across districts. The council will evaluate domestic laws and regulations with the results of the IMO Maritime Safety Committee's Regulatory Scoping Exercise for the use of MASS (MSC.1/Circ. 1638), determine manning and credentialing requirements, conduct risk assessment, and develop project development and compliance tools to help incorporate MASS in the marine transportation system.

Additional federal government level coordination is conducted through the US Committee on the Marine Transportation System (CMTS).

<https://www.federalregister.gov/documents/2020/08/11/2020-17496/request-for-information-on-integration-of-automated-and-autonomous-commercial-vessels-and-vessel>

WP5: To what degree are member states Hydrographic Offices involved in MASS trials or operations and what data are they currently providing.

Some test vessels for proof of concept. Navigation data was not specifically designed / requested for trials.

NOAA has not been involved in the commercial MASS trails. The navigation data used are the published ENCs. NOAA has conducted testing and operational demonstrations of small autonomous vehicles, not meeting the definition of MASS, which have incorporated ENC data into the operator display and autonomy decision making.

Have any data limitations been identified?

No data limitations have been identified or communicated.

WP6: Report on what trailing has been done with new navigation standards (e.g. S100) for MASS, or what research into machine readable data has been carried out in each member state's region.

None