

Development of maritime law is determined by technological progress in shipping. From antiquity to the eighteenth century, these regulations were set on by the unchanged wooden construction of human or wind-powered ships. As a consequence, the principles of maritime law for centuries have not undergone significant changes. Those principles have focused on private law and protection of carriers' interests, the rules sharing the risks associated with sea travel, and the threats of the sea. It was referred to as shipping law. Besides clear advantages, technological development in shipping brings new risks and catastrophic threat for environment. That has led to transformation of the axiology of maritime law from strictly merchant to the one that takes into account the common good, that is the safety of people and the marine environment. The prospect of unmanned ship sailing and, later, exploitation of fully autonomous ships, will constitute a maritime revolution, similar to – or even more significant than – introduction of steam engines and, subsequently, combustion engines.

Since the twentieth century, national maritime legislation has been losing its importance. The organization that has the mandate to introduce global regulations is the International Maritime Organization (IMO). From the beginning of its activity, IMO has tried to balance the requirements of maritime safety with shipping opportunities resulting from technological development. The issue of how the technical standards of ship safety and the IMO regulatory approach will correspond to the practical possibilities resulting from technological development is one of the critical questions regarding the rules for the operation of autonomous ships and future development of maritime law.

Possibilities for the exploitation of autonomous ships have been for several years the subject of scientific debate and work of the most influential organizations dealing with shipping issues. Unmanned ships, defined a few years back as part of the future, are already operating in national navigation in several countries around the world. Taking into account the possible different level of vessel's autonomy and as a consequence - different level of human control over its operations, a concern arises whether ships with different level of human control require different legal solutions or not.

Moreover, problem of liability requires an in-depth research. Lack of human interference in the operation of autonomous systems should be seen as a reason for shifting towards a strict liability regime instead of liability based on fault. It will be examined whether, in light of new risks created by the emergence of autonomous vessels, specifically those that are operated without human element (pre-programmed or operated by AI) a change of policy is justified in selected areas of civil liability (f. ex. product liability). Exposure to liability of new figures, like remote operator or programmer of autonomous vessel, will also be examined.

The main goal of the project is not limited merely to indicating specific amendments to the current maritime conventions. It intends to define a broader regulatory context. The research will analyze changes adopted in the IMO regulatory approach to technological solution. Those changes are expressed by a departure from approach based on collected experience constituting main regulatory criterion which has been dominant for years. A shift to probabilistic approach based on formal safety assessment criteria has taken place. Assessment of above regulatory change will allow to determine optimal regulatory model for the operation of autonomous vessels. The regulatory challenges which flow from automatization of vessel's operation are different and vary depending on the level of human control over the its navigation. As a consequence different regulatory approaches may be required for automated vessels, whose navigation is subject to human decision-making at any stage - whether a human being is physically present on the ship or steering the ship remotely or in relation to fully autonomous ships, the exploitation of which involves no human factor in making navigation decisions. The project will include both scenarios for regulating the principles of autonomous ships operation. The first focuses on remote human participation in ship navigation decisions, whereas the second determines the rules for the operation of fully autonomous vessels, in which decision-making becomes the domain of the ship's operating system. The important goal of the project is also to adopt the current state of the art in ethics in Artificial Intelligence (AI) to shipping reality. The AI technologies, as autonomous cars and ships are becoming a reality and they will be taking autonomous navigational decisions. The question is raised whether the decision of the AI will align with human goals (the trolley dilemma for example). Therefore, it is important to include the ethical issues into the future regulatory framework.