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# FAMILIARITY WITH MARINE NAVIGATION AND PILOTING SYSTEM AND ASSESSMENT OF ITS MAIN COMPONENTS IN MARINE OPERATIONS

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## Introduction

Despite continuing efforts to improve operational safety, major shipping accidents involving all categories of vessels continue to occur.

Marine navigation and piloting system is a key to enhance maritime safety and a large-scale sociotechnical system comprised of several subsystems: navigation and pilotage tasks, technology, vessel and waterways systems, human systems, and organizational cultures and structures. (Fig. 1)

The article first describes pilotage, the environment within which the marine navigation and piloting system operates, and the difficulties that changes in this environment have generated.

Then the main components of the system, the ability of the system to conduct planning, operations, management, administration, and implications of those findings are discussed and assessed.

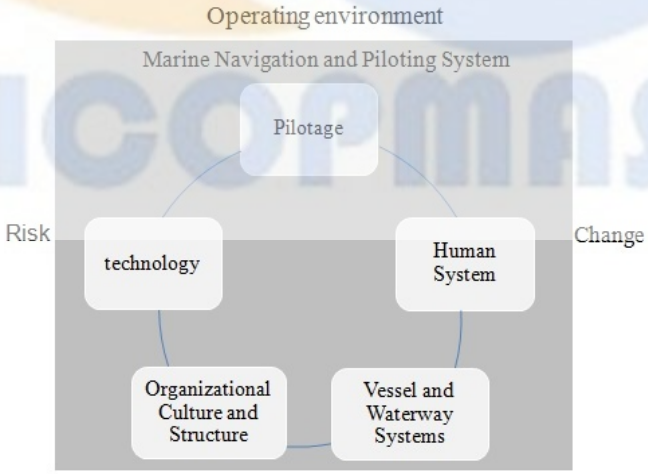


**Fig. 1) Main component of the marine navigation and piloting system**

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## Pilotage

Since the early days of marine navigation, vessels entering or leaving port, or navigating other hazardous waters, have been guided by pilots possessing a thorough knowledge of local currents, tides and other conditions. [1]

The skill and care of the pilot are vitally important for the safe passage of vessels, for the safety of lives and cargo, and as means to protect the port and the marine environment.

Pilotage requires a diverse mix of navigation and ship handling skills. [2]

## Vessel and waterway systems

These systems interact when vessels arrive, depart, or transit a port area.Vessel systems are comprised of steering and propulsion systems, traditional navigation equipment…

Waterway systems are comprised of natural and man-made navigation channels and aids to navigation which are installed in the channels. Lights and buoys, and vessel traffic services (VTS) are included. [3]

## Human systems

The safety performance of the marine navigation and piloting system depends on effective human performance. The factor influence human proficiency and performance are organizational cultures and structures, professional development, and applications of technology. [4]

Navigation and shiphandling skills, judgment, and decision-making capabilities of individuals involved in piloting a vessel are critical and fundamental.

## Conclusion

The marine navigation and piloting system could be enhanced through specific improvements in marine pilotage and waterways management, and through maritime research and development. In particular, requirements and standards for pilotage of vessels, pilot development, and pilotage administration across the world need to be addressed.

Timely international action is needed to improve:

- The quality, integrity, and consistency of pilot development programs
- The accountability of pilotage systems and individual pilots, by closing gaps in official oversight

Fundamental to improving safety in marine navigation and pilotage is attention to human performance, new technology, and vessel traffic services (VTS).

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