

# THE REASONS AND RESULTS OF CHANGES IN MARITIME NAVIGATION

**K.Czaplewski, J.Urbański, Z.Kopacz, W.Morgaś,**  
*The Institute of Navigation and Hydrography*  
*Naval University of Gdynia*





# INTRODUCTION

- Substance of maritime navigation
- The main reasons of the changes in maritime navigation
- Integration of the ship's navigation process and its results
- The growing necessity of supervising all human activities at sea
- Increase and differentiation of human activities at sea
- Main results of changes in maritime navigation

# **Maritime navigation**

**is the process of safe and efficient conduct the  
ship at sea**

## **Ship at sea**

**should be understood as surface, hovering or  
underwater; manned and unmanned; autonomous  
and remote-controlled ship, vessel, vehicle, craft,  
etc.**



# The Ship's Navigation Process

- consist of the series of navigational works, deeds, procedures, etc.
- is being performed in the sequence automatically or from the bridge of own ship, or from the distant place.



# The most important reasons of changes in maritime navigation:


- fast growing amount and kinds of human activities at sea ,
  - navigational activities
  - non-navigational activities





- **fast technological and scientific progress,**
  - very accurate and reliable global positioning systems,
  - very efficient and reliable telecommunication equipment and systems,
  - maritime GIS and VMS,
  - remote sensing equipment and systems,
  - technologies offered by the control and remote control engineering,



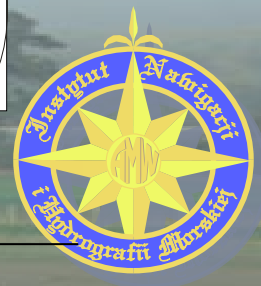
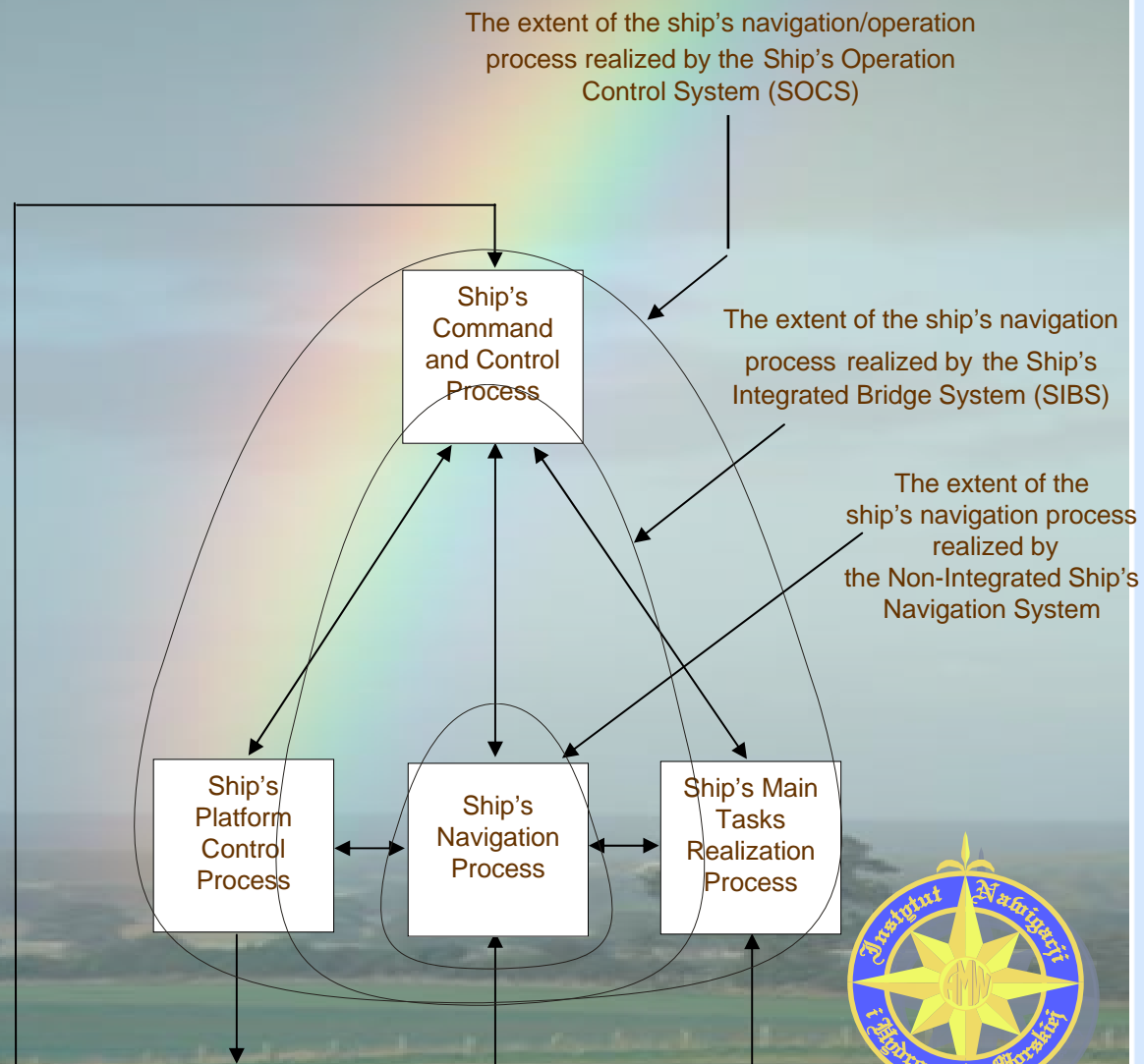
- 
- **the new kinds of dangers and threats,**
    - global threat of terrorist attacks,
    - growing danger of environmental pollution,
    - harmful and unlawful exploitation of sea resources, etc.;



- **enhancement of the operational and economical efficiency of all kinds of human activities at sea**
  - steady desire and demand of ...







# Reasons of fast growing necessity of supervising many human activities at sea

- growing necessity of monitoring and assisting the ships traffic in congested and confined areas,
- necessity to diminish or even eliminate the threat of huge environmental pollution
- necessity of prevention of all terrorist activities and attacks on the whole maritime infrastructure and on all the maritime industries



# The supervising the human activities at sea is and will be realized by the following systems:

- ships traffic monitoring and assisting systems; these are: Ships Reporting Systems (SRS), Vessel Traffic Systems (VTS); Automatic Information Systems (AIS),
- community vessel traffic, monitoring and information system (EU directive),
- Long Range Identification and Tracking System (LRIT).



# Kinds of human activities at sea

- the standard activities
  - safe and efficient transport of goods and people at sea
- not-navigational activities
  - the sea exploration, naval warfare, protection activities, not transporting activities



**The precondition of realization of all kinds of human activity at sea is ensuring for it the navigational safety, according to:**

- **the International Convention for “Safety of Life at Sea (SOLAS 74)**
- **the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW 78/95)**
- **other international requirements**



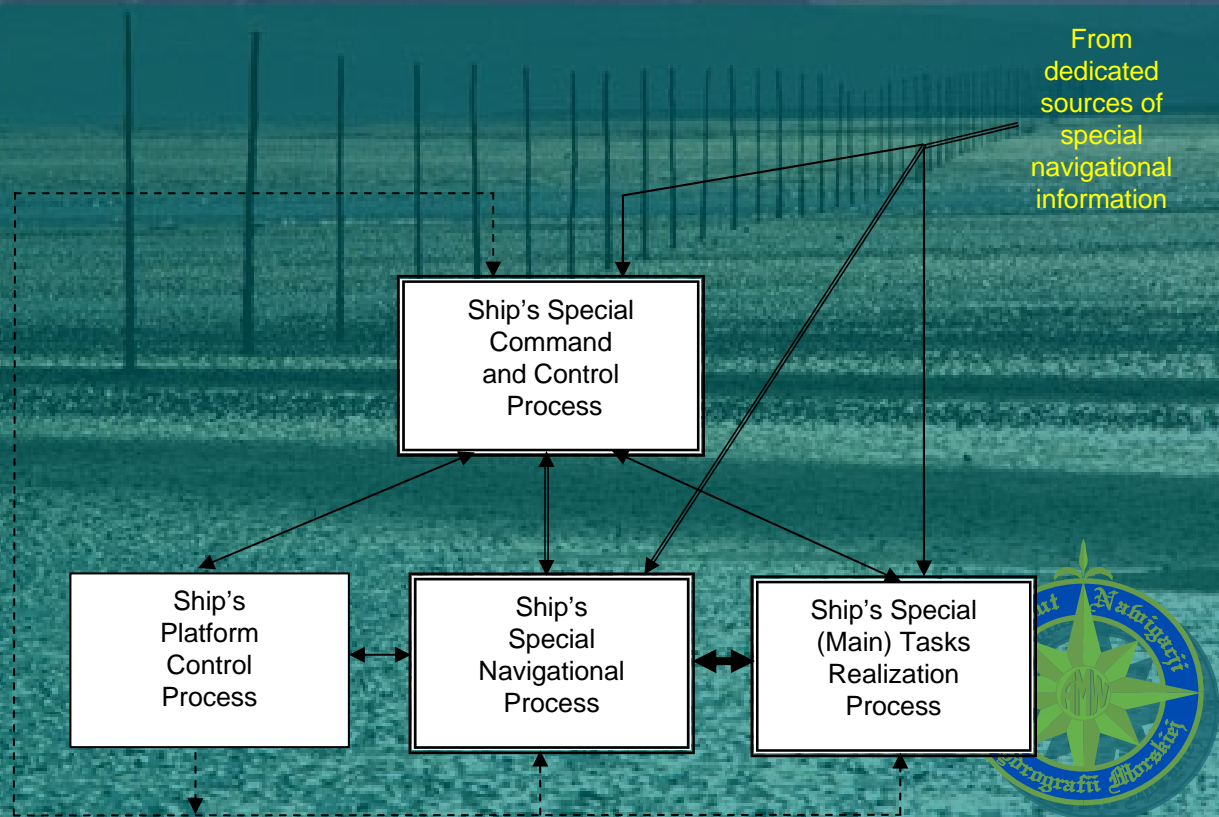


**For the realization of special activities requirements, there are needed:**

- **additional special navigational information**
- **adapting the standard ships' navigation process to realization of special task**



# Ship's navigation process adapted to realization of special ship's tasks



# Conclusion

S:



- the ship's navigation process is being transformed stepwise into the ship's operation process,
- the fast growing amount and kinds of special human activities at sea resulted in coming into being the special ship's navigation process.
- the growing necessity of supervising all the human activities realized at sea results in growing dependency of the ship's navigation process upon a lot of coastal systems

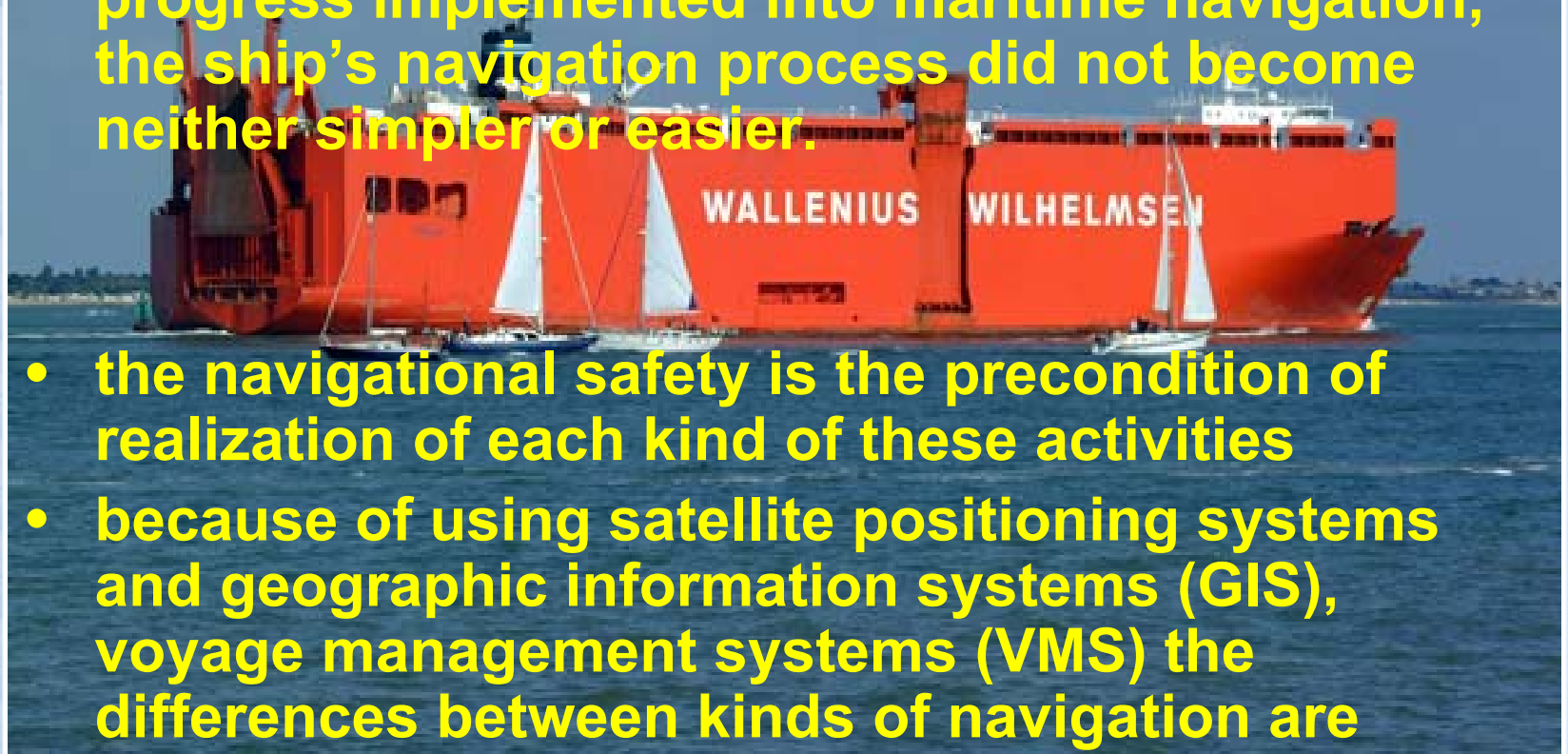


# Conclusion

S:



- despite the huge scientific and technological progress implemented into maritime navigation, the ship's navigation process did not become neither simpler or easier.
- the navigational safety is the precondition of realization of each kind of these activities
- because of using satellite positioning systems and geographic information systems (GIS), voyage management systems (VMS) the differences between kinds of navigation are steadily disappearing





**Thank you for your attention**



