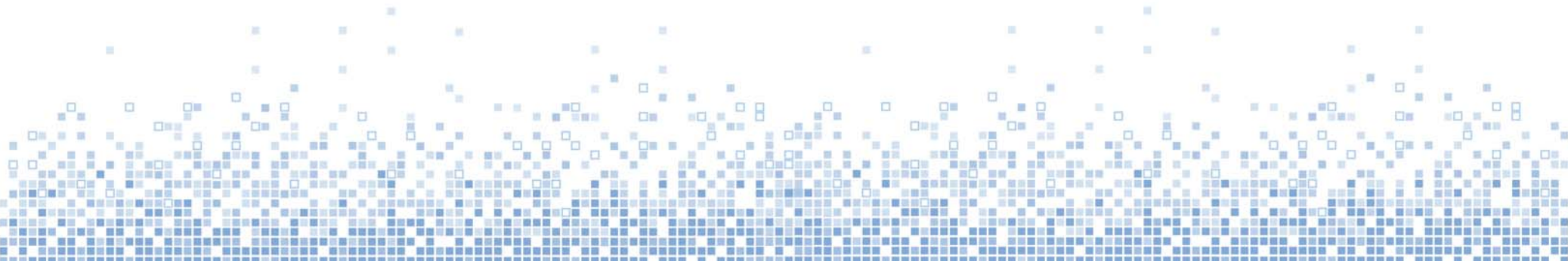


# The GLAs' e-Navigation Programme

Dr Sally Basker & Dr Nick Ward

Presented at CGSIC, 22<sup>nd</sup> September 2009



# Contents

- The General Lighthouse Authorities
- e-Navigation – Motivation and Overview
- Potential Applications
- The GLAs' activities



# The General Lighthouse Authorities



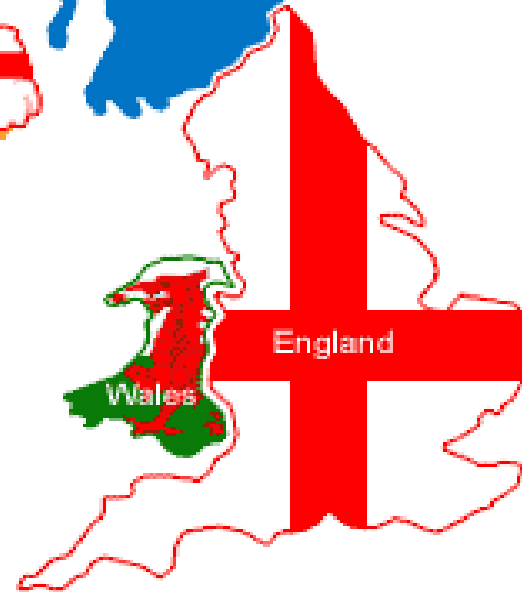
# The General Lighthouse Authorities of the United Kingdom and Ireland



Commissioners  
of Irish Lights



Northern  
Lighthouse  
board



Trinity  
House

The GLAs shared mission is the delivery of a reliable, efficient and cost effective AtoN service for the benefit and safety of all mariners

# Statutory Service

**Emergency  
Response**

*Mark wrecks and remove if necessary*

**Prevention**

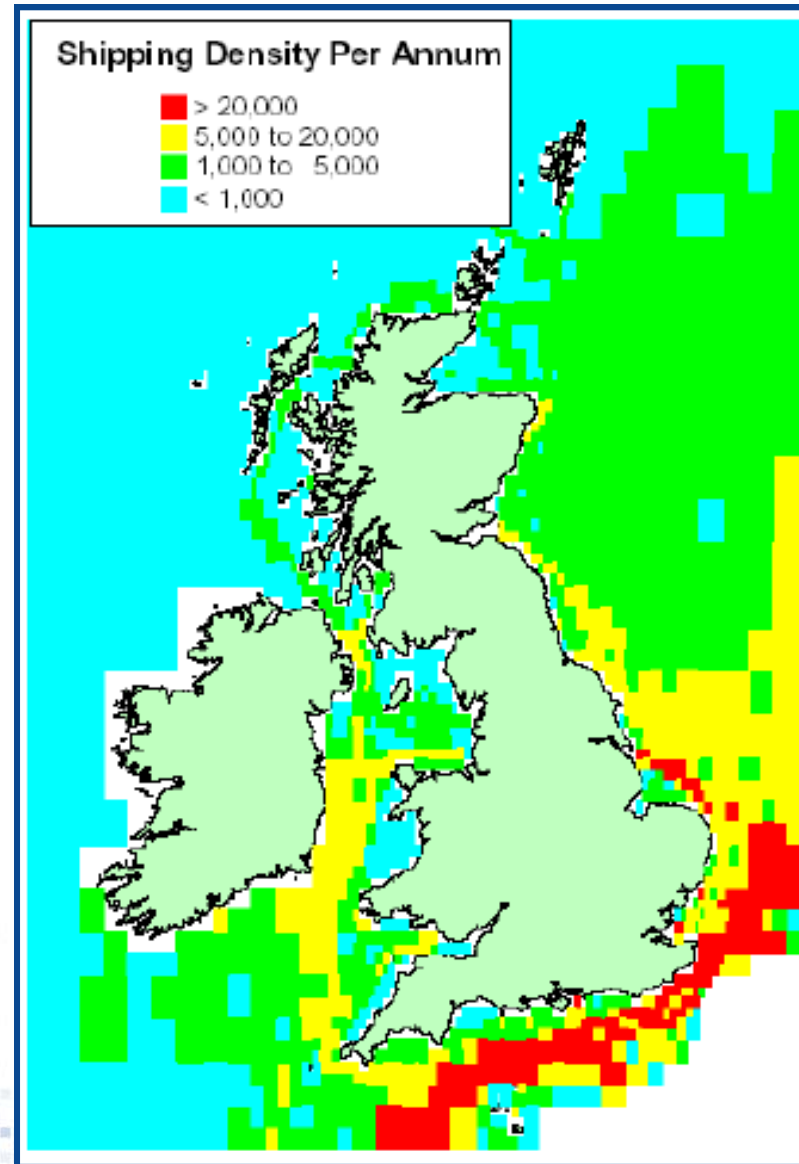
*Provide aids for general navigation*

**Inspection**

*Superintendence and management of all  
aids to navigation*



# A uniquely challenging environment

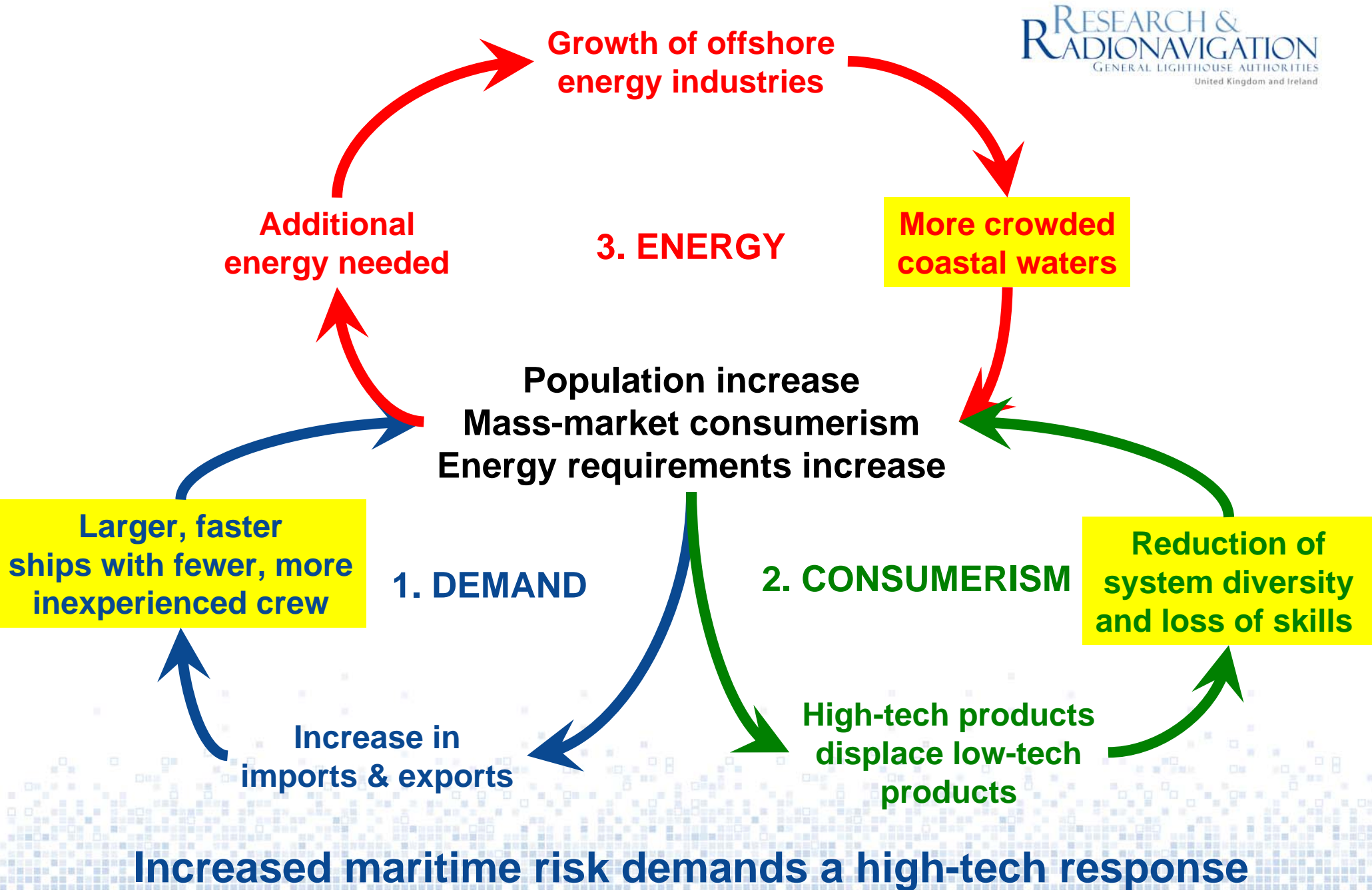


Source: DfT



# e-Navigation – Motivation and Overview









Probe slams errors that led to  
Riverdance grounding  
3 September 2009



Naphtha tanker collision  
raises safety fears over  
Malacca Strait. Search  
continues for survivors as  
explosions rock vessel  
following collision with bulker  
20 August 2009



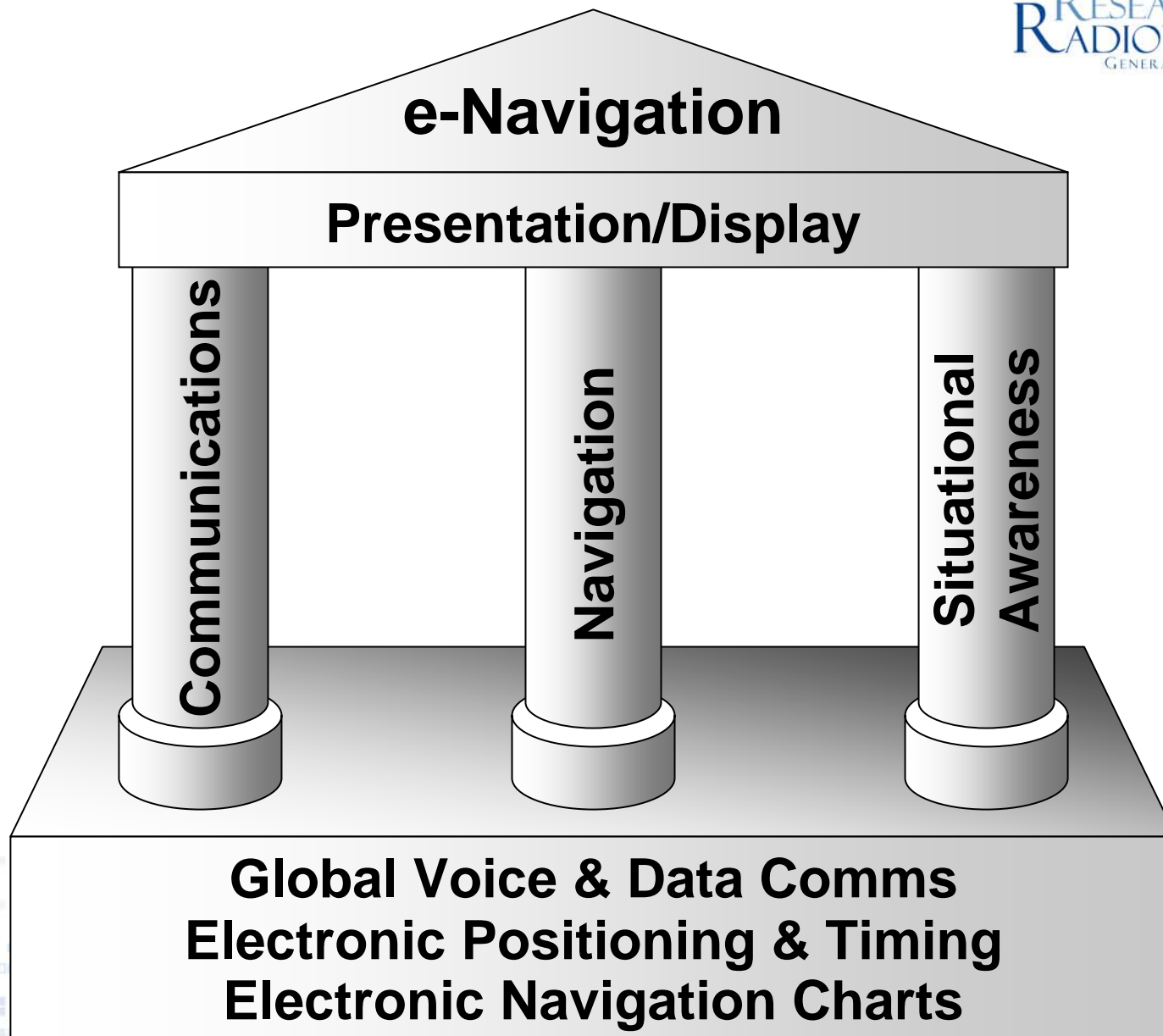
Holey ship Damaged boxship  
Nikita arrives home  
2 September 2009

# e-Navigation objectives

- Facilitate safe and secure navigation of vessels
- Facilitate communications, including data exchange between vessels and shore.
- Integrate and present information onboard and ashore that maximises navigation safety benefits and minimizes any risk of confusion
- Facilitate global coverage with consistent standards and interoperability.



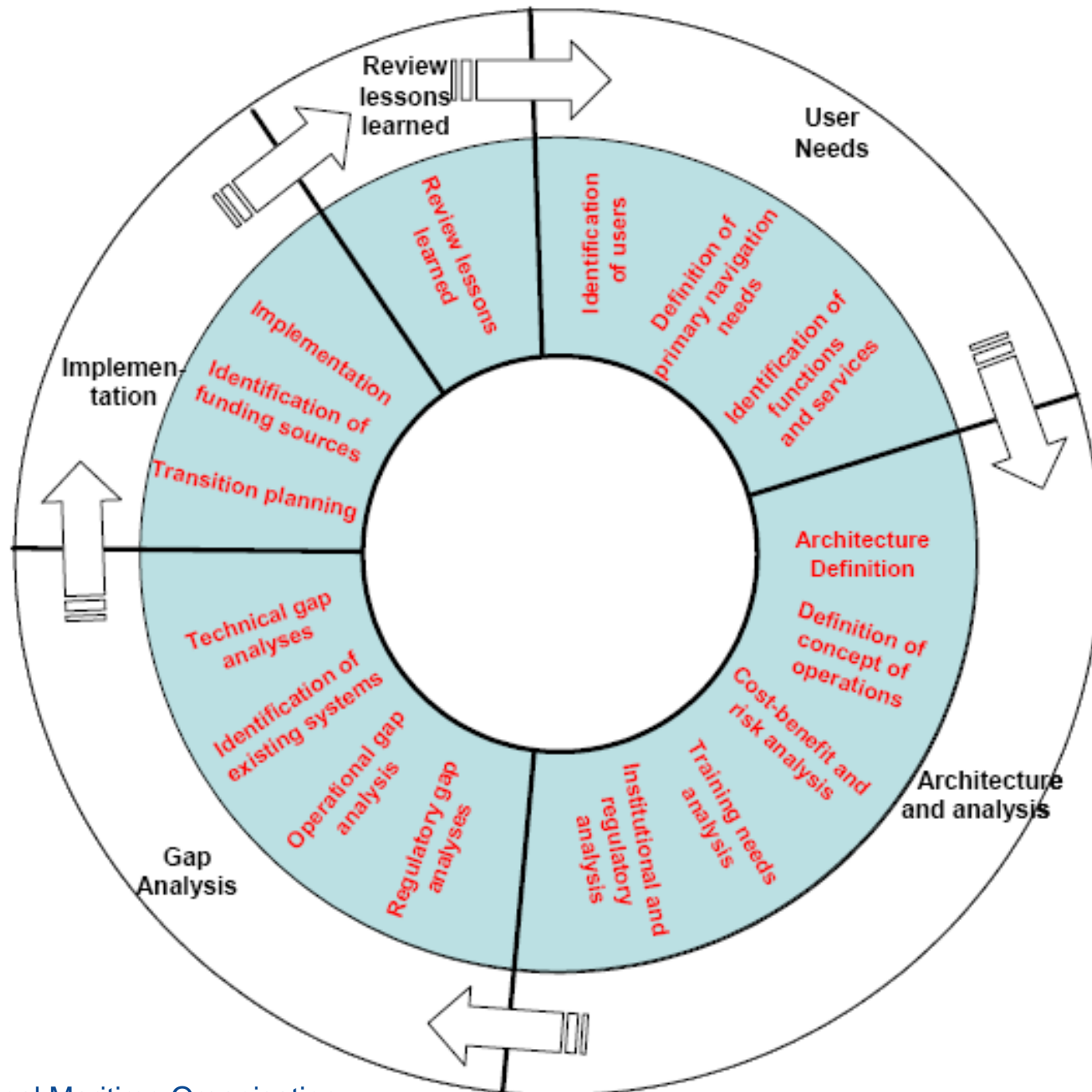
e-Navigation is the harmonised collection, integration, exchange, presentation and analysis of maritime information onboard and ashore by electronic means to enhance berth to berth navigation and related services, for safety and security at sea and protection of the marine environment





# e-Navigation concept







# Potential Applications



# Virtual Aids-to-Navigation

- New concept - mariner made aware of an incident or hazard by virtual marks presented on electronic display
- Can provide timely warning of an incident before physical aids are deployed
- Requires use of Automatic Identification System to send virtual AtoN information to the vessel for display



# Collision Avoidance in e-Navigation

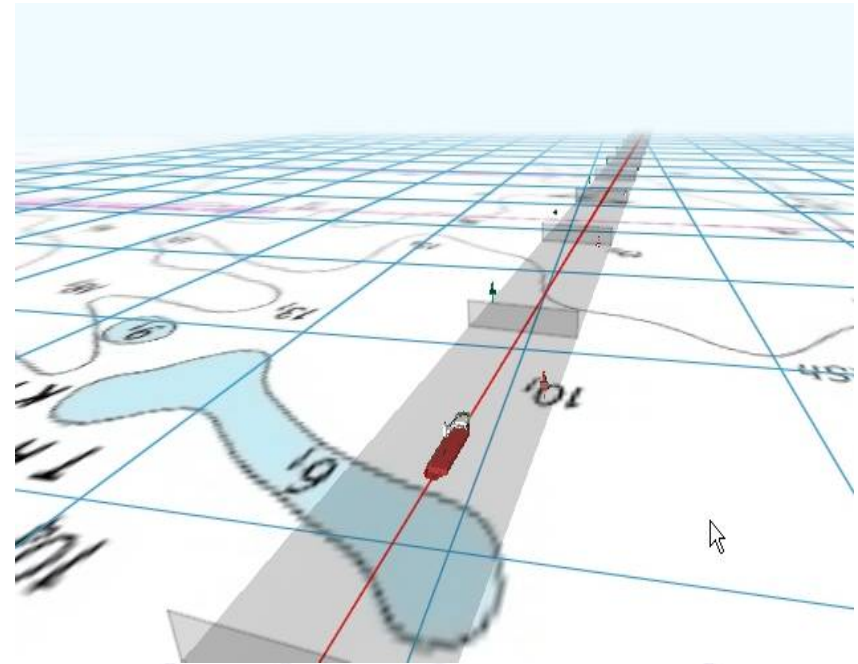


- Collision avoidance is a primary concern for all classes of vessel
- The majority of collisions and groundings are due to human error
- Use of existing and new vessel sensors in a standardised, integrated e-Navigation system, will improve situational awareness and provide decision support



# Navigation information systems & passage planning

- e-Navigation should enable the mariner to access more, relevant information
- Information will need to be organised and presented clearly
- Standardised, interoperable and unambiguous presentation
- Processing and presentation systems with particular attention to HMI, to avoid overload



# The GLAs' activities



# Implementation of the GLAs' elements

- Driven by the GLA Marine Aids to Navigation Strategy, the GLA Radio Navigation Plan and the GLA Visual Aids to Navigation Plan
- Use of a structured systems engineering approach
  - Prototyping including test-beds
  - Requirements capture and management
  - Design
  - Development
  - Verification, Validation and Testing
  - Deployment
  - Operations



# High-level tasks

- Supporting the UK Government and the IMO in e-Navigation development and standardisation
- Ensuring that Recommendations and standards are developed
- Investigating what AtoN information the GLAs may need to provide for e-Navigation to work correctly
- Assessing additional benefits e-Navigation may bring to the GLAs
- Demonstrating the feasibility and potential of e-Navigation applications
- Establishing procedures and structures for the realisation of e-Navigation applications
- Investigating how multiple systems can be integrated on the bridge in respect to system availability and integrity
- Informing the user about their purpose and benefits of the applications

# R&RNAV Programme

- Virtual Aids to Navigation
- DGPS recapitalisation support and operational verification
- Development of a real-time GNSS / eLoran / DGNSS monitoring system
- Development of Enhanced Loran
- Technology assessment
  - New technology radar
  - Shoal monitoring using earth observation
- Business case development

