

# **Developing an E-navigation Mindset**

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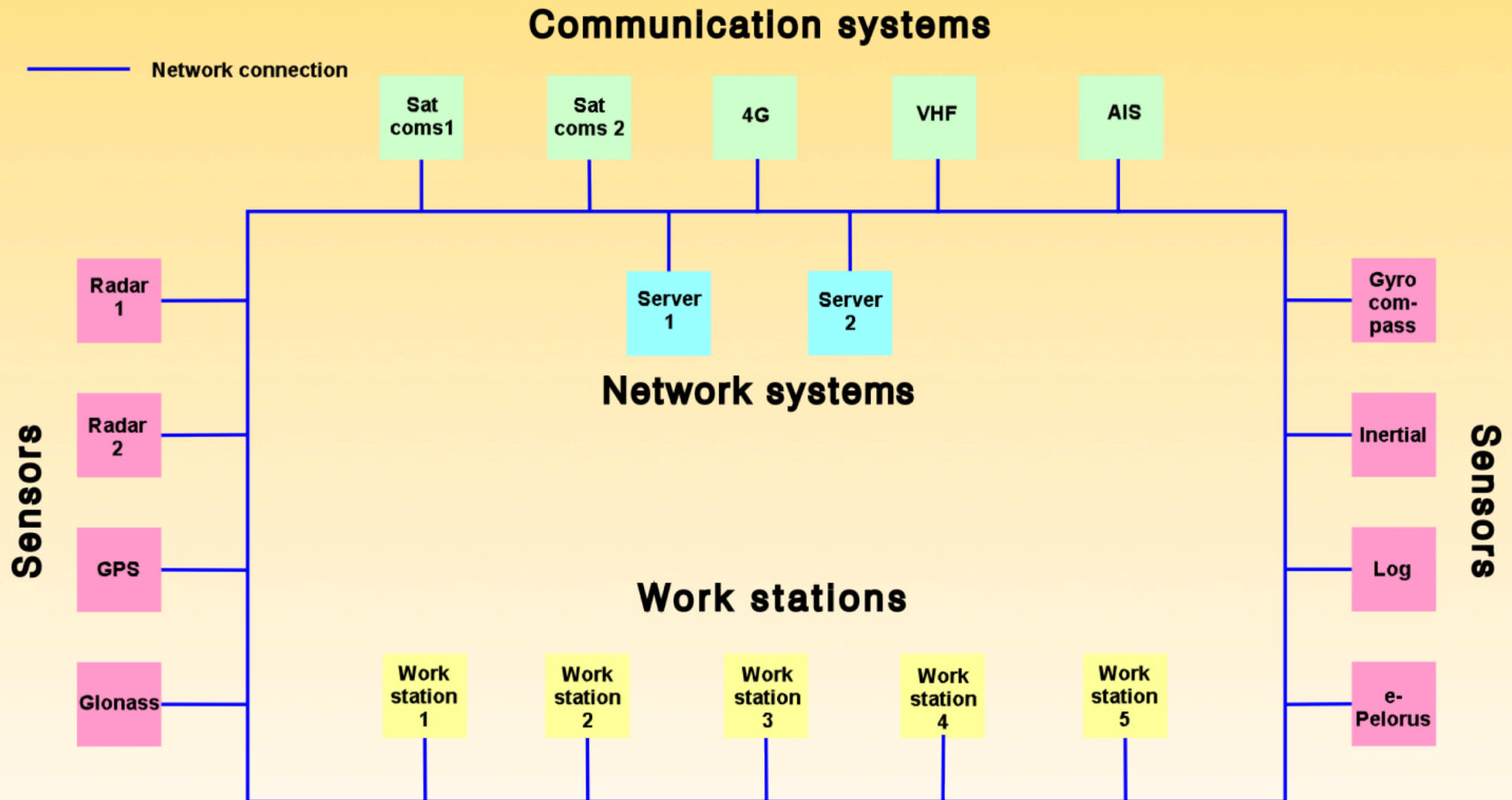
**Chairman of the Technical Committee  
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# What really is e-navigation?

- It's a highly coordinated workframe
  - reflecting a networked 21<sup>st</sup> century
- It merges communications with navigation and other functions
- It concentrates on:
  - making available high integrity information
    - From shore sources, eg ports, HOs, coastguards
    - From shipborne and remote navigation related sensors
  - simplifying reporting
  - optimising the human machine interface
  - maximising the respective strengths of humans and machines
  - minimising the respective weaknesses of humans and machines
  - increasing the safety, efficiency and environmental compatibility of shipping

**We have had electronic navigation for years**  
**E-navigation is very different**

# E-navigation: possible onboard structure



# E-navigation workstations

Have numerous uses and need to be strategically sited.

Example functionality:

- Voice and text communications (satellite and terrestrial)
- Display of conventional navigational functions, including radar and ECDIS
- Integrated intelligent alarms
- Display of e-navigation applications, eg
  - Positional integrity monitoring
  - Voyage planning optimisation
  - Digital MSI

Bridge practices will need to evolve to regularise the use of workstation based bridges

# Towards a fully 'work-stationed' bridge



# Potentially two levels of 'applications'

## Level 1

- Meets detailed IMO requirements for statutory fit equipment, eg ECDIS, radar, INS
  - Standard type approval
  - Slowly changing requirements
  - More standardised user interface to be decided in e-nav (S-mode?)

## Level 2

- Meets critical but minimum IMO requirements
  - Simplified type approval
  - Allows innovation and fast evolution
  - Optional purchases so would be necessarily be directed at companies
  - Fully supported with training, such as onboard packages



# Possible e-navigation implementation plan

- Initial retrofit – a single(?) ‘e-navigation capable display’
  - Needs consideration for backup in the event of equipment failure
  - Needs to allow ‘light weight’ options to enable sensible retrofit onto smaller bridges
- Includes IMO-standard integrated navigation functionality:
  - Uses both existing and new navigation sensors
  - Increases positional integrity
  - Gives obvious company/user benefits
- Allows running of approved e-navigation apps, eg:
  - Electronic voyage planning (eg development of UKHO E-Navigator)
  - Voyage optimisation tools
  - MSI display
  - Possible connection to some communications facilities, eg satellite
- Facility to download routes to ECDIS for final checking

# Implementation plan advantages

- Allows relatively easy, fast and 'low-cost' retrofits
- Immediate benefit to operators and users of ECDIS-fitted ships
  - Route optimisation and resultant fuel savings
  - Total replacement of paper navigation and its costs
  - Increased integrity of basic navigational data
- Initially voluntary fit based on its true commercial advantages
- Maybe compulsory retrofit when coastal States want to make use of the enhanced reporting facilities of e-navigation
- Provides firm basis for new builds perhaps with a relatively fast compulsory-fit programme
  - Mainstream technology concept permits avenues for bridge cost reduction on all new build navigational and comms equipment, compared to existing technology, despite increased functionality
- Allows existing services and equipment to operate in parallel