



# HARMONISATION AND STANDARDISATION OF NAVIGATION SYSTEMS

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IMO

Develops Performance Standards

26 Resolutions for navigation equipment  
and systems

Carriage requirements to comply with  
performance standards





# TECHNICAL COMMITTEE 80

IMO Performance Standards give  
operational requirements

TC80 produces test standards

Long Association with IMO





# The Problems

Different Standards require different displays, different ages/states of technology

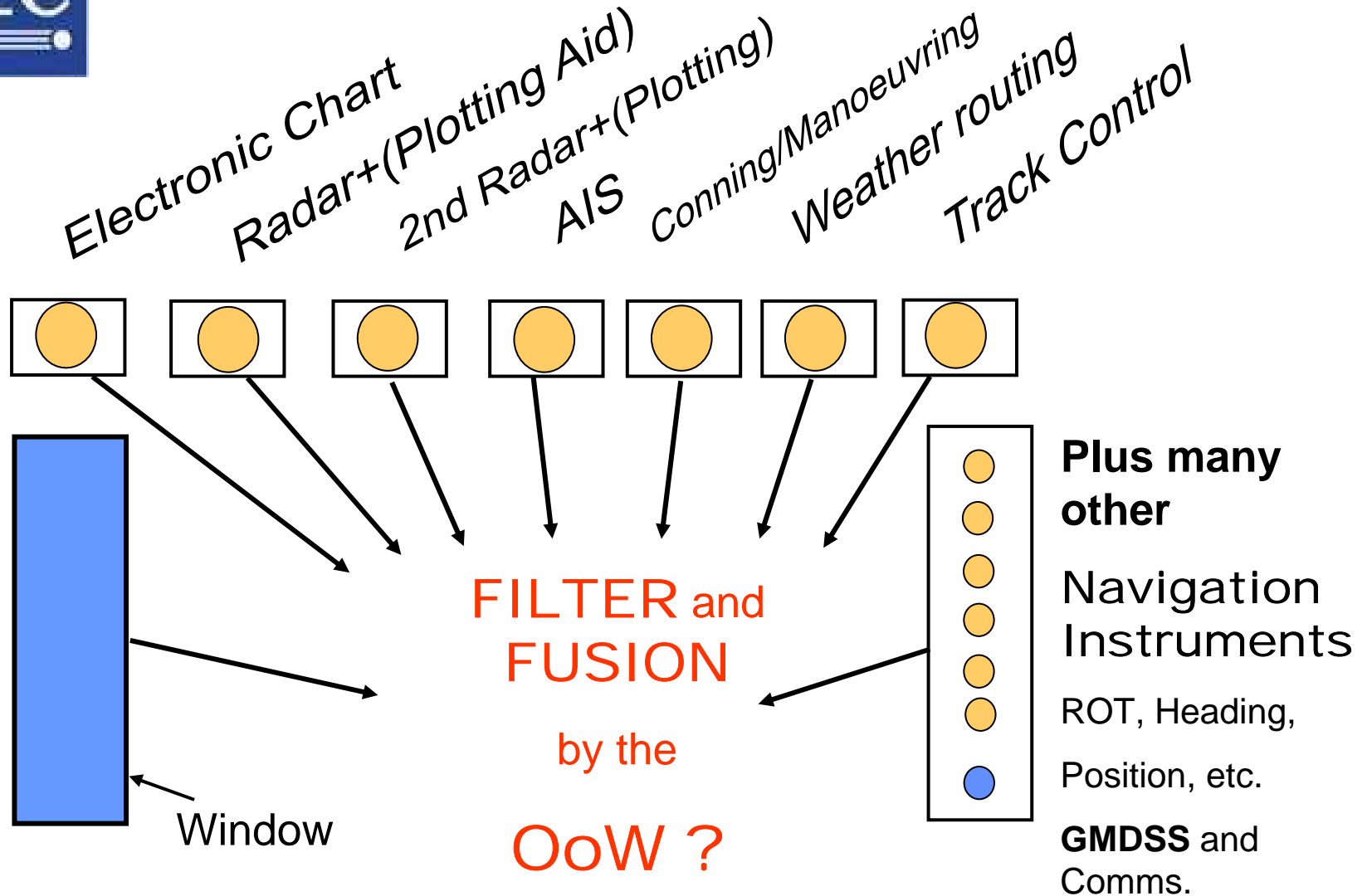
Definitions, terms, abbreviations, units, symbols and colours are not harmonised

Future need to merge/fuse data and need for indication of integrity/accuracy of information



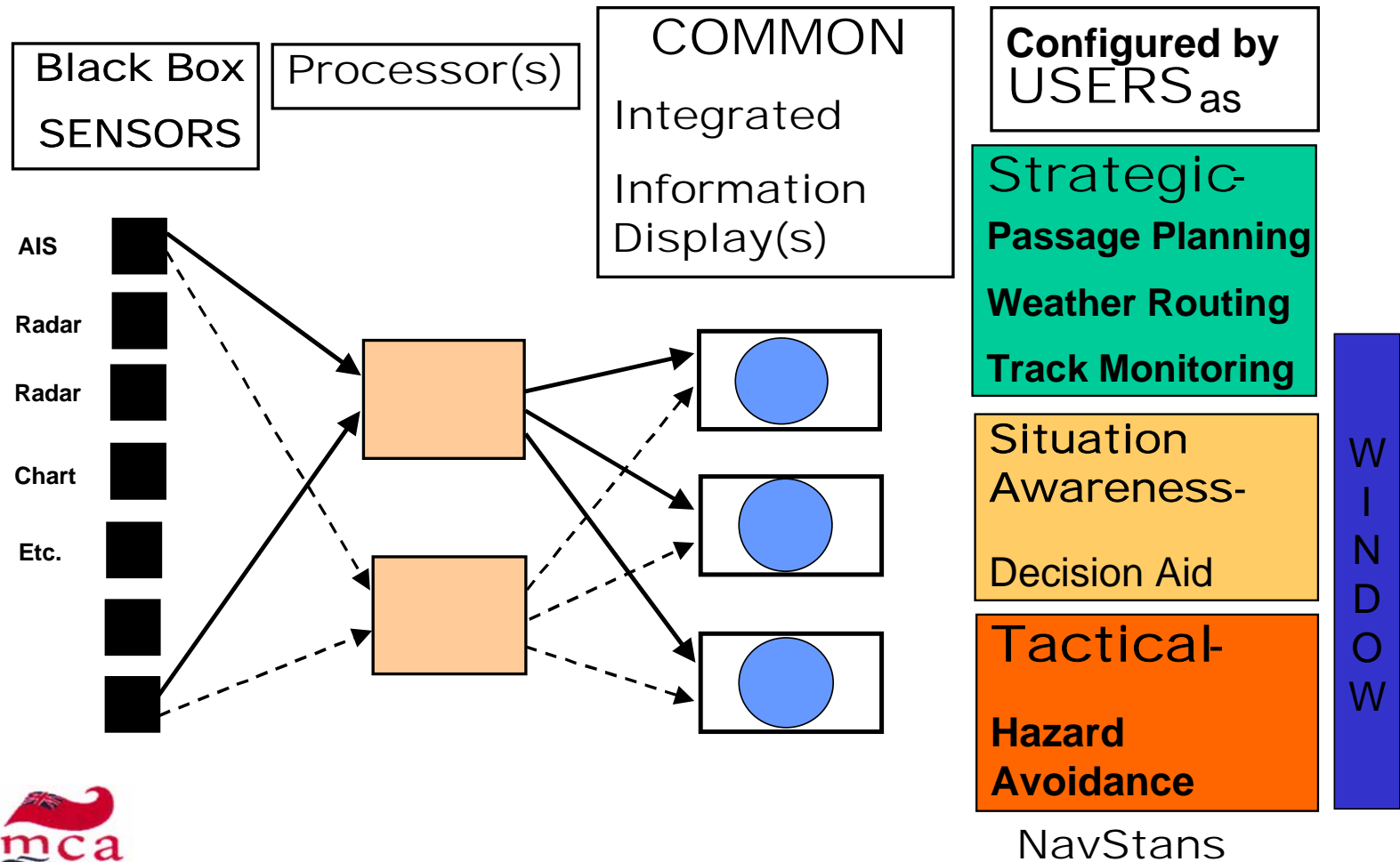


## Current 'Stand-alone' Concept





# INTEGRATED INFORMATION DISPLAYS







# IMO Sub-Committee on Safety of Navigation

## NAV 48 – July 2002

- Guidelines for the Operation of IBS
- AIS installation guidelines

## NAV 49 – July 2003

- Shipborne navigational displays
- Performance standards for radar
- Performance standards for INS





# Integrated Bridge Systems (IBS)

Support two or more of:

- Passage execution
- Communications
- Machinery control
- Cargo control
- Safety and security





# Integrated Navigation Systems (INS)

Combine navigational aids to provide added functions:

- INS(A) Minimum functions
- INS(B) Information for avoiding hazards
- INS(C) Automatic control functions









## INS – NAV 49

Functional description of route planning  
and route monitoring

Clarification between INS and external  
components such as heading/track  
control

Clear definition of the HMI

Clearer definition of alarm handling





# Automatic Identification System (AIS)

Provides information about a ship to other ships and shore stations:

Display currently limited to the Minimum Keyboard Display (MKD)









## IMO - Radar review of performance standards

Minimum range and range discrimination

Detection of SARTs and Racons

Target detection including clutter

Probability of detection and false alarm rate

Hazard and acceptable risk of interference

Maximum range of radar





## Proposal to NAV 49 Draft Standards

Better recognition of mariners needs

Combines and harmonises all current standards

More demanding radar performance  
requirements

Embraces new technology

Recognises new display and INS standards

Meets ITU requirements for emissions





# Display harmonisation:

Display and Interaction Objects

Multifunction displays

Co-location, merging, processing, fusion of graphical information and

Indication of quality, status, integrity and accuracy of information.





## IMO Specification:

Take account of appropriate IMO  
Resolutions

Take account of IMO Decisions on the  
Human Element

Take account of appropriate decisions of  
the IHO





## Working Group 13

Met 7 times to date

Members from 10 national standards  
committees

Experts from other IEC Working Groups

Experts from IHO, IALA, RTCM and IMO





## WORK TO DATE

Identify conflicts in Standards

Study harmonisation of display of objects

Develop a draft IMO performance standard  
for presentation of navigational  
information

Start standard IEC 62288





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12  
2  
RM N UP  
TRANSMIT  
X-BAND

AIS  
ACT  
D ACT  
SEA MAN  
RAIN MAN  
TRACK OFF  
TRAILS 0.5min  
PROC PROC 1  
ENH OFF



CURSOR ( AIS ACT )  
TRUE 211.3 °  
5.724 nm  
REL 211.3 °  
N 50°43.031'  
W 001°06.842'

OS STAB GND  
HDG 000.0 °  
SPEED 12.0 kts  
2AXIG GND  
COG 000.0 °  
SOG 12.0 kts

ARPA STAB GND  
VECTOR R 10 min  
LIMIT 2.0 nm 15 min  
PAST POSN R OFF  
GUARD ZONE 1 2

AIS ID  
NAME  
CALL SIGN  
MMSI  
COG °  
SOG kts  
CPA nm  
TCPA min  
BRG °  
RANGE nm  
HDG °  
ROT °/min  
POSN

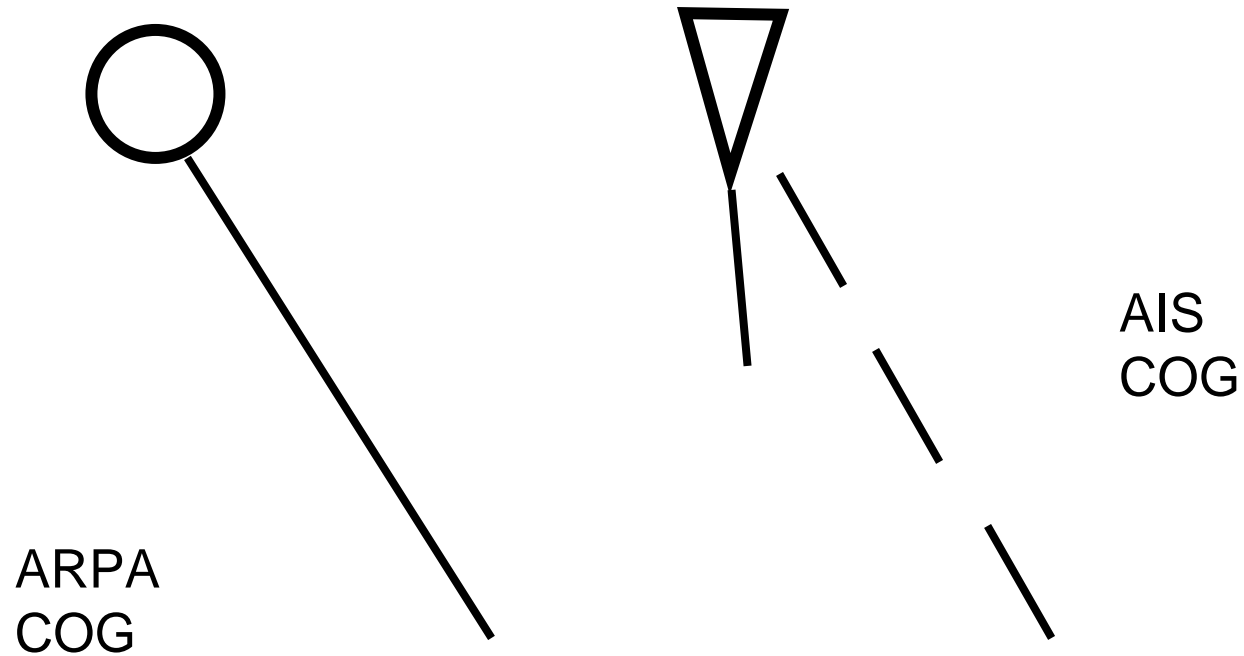
DISPLAY INFO  
NAV  
PIN  
No Alarm  
L 2003/04/03 22:48  
OWN N 50°47.94'  
GPS W 001°02.15'

DAY1  
PANEL  
FUNC OFF  
EBL2  
VRM1 2.00 nm  
VRM2 nm





# AIS/ARPA Symbology







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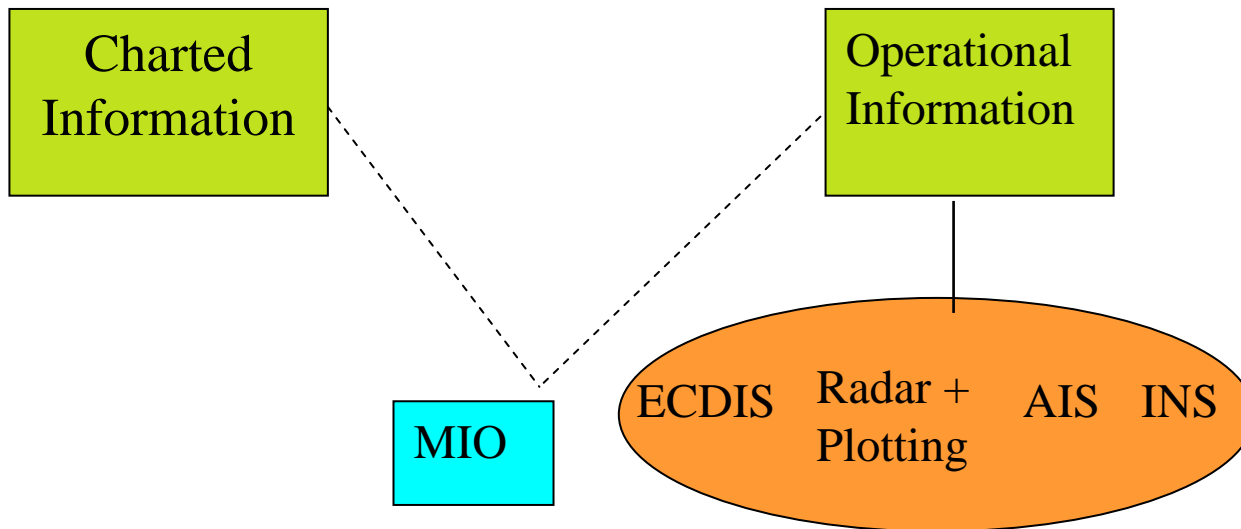
Start standard IEC 62288





# PRESENTATION OF NAVIGATIONAL INFORMATION

*To be harmonised*







# Annex B of IEC 62288

Standard terms and abbreviations

Symbols





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# Draft IMO performance standard – Presentation of Navigation Related Information

## Principles:

Conform with IMO general requirements

Support IMO performance standards

Conform with IEC 62288

Present information consistently irrespective of  
source





## Draft IMO performance standard – Presentation of Navigation Related Information (Continued)

Additionally:

Permit composite presentations appropriate to  
specific navigation tasks providing:

- The source of the information is defined
- Conflicting or confusing combinations are avoided
- For chart information the screen area should be at least 270 x 270mm





# WORK TO DATE

Identify conflicts in Standards

Study harmonisation of display of objects

Develop a draft IMO performance standard  
for presentation of navigational  
information

**Start standard IEC 62288**





# IEC 62288

Technical details of displays and  
processing of information

Harmonised list of definitions

Harmonised list of Abbreviations and Units

Harmonised list of symbols and colours

Harmonised list of controls





## NAV 49

NAV 49/4 would not solve the problem of conflicts and inconsistencies

NAV 49/4/1 should be an IMO document

Provision should be made to display NAVTEX information





## NAV 49 – New performance standards

Take precedence

Include details of display arrangements

Ideally apply to all bridge displays not just navigational displays

Publish harmonised terms and symbols as a SN/Circ





## Next Steps

Develop draft performance standards for  
radar – IMO correspondence group

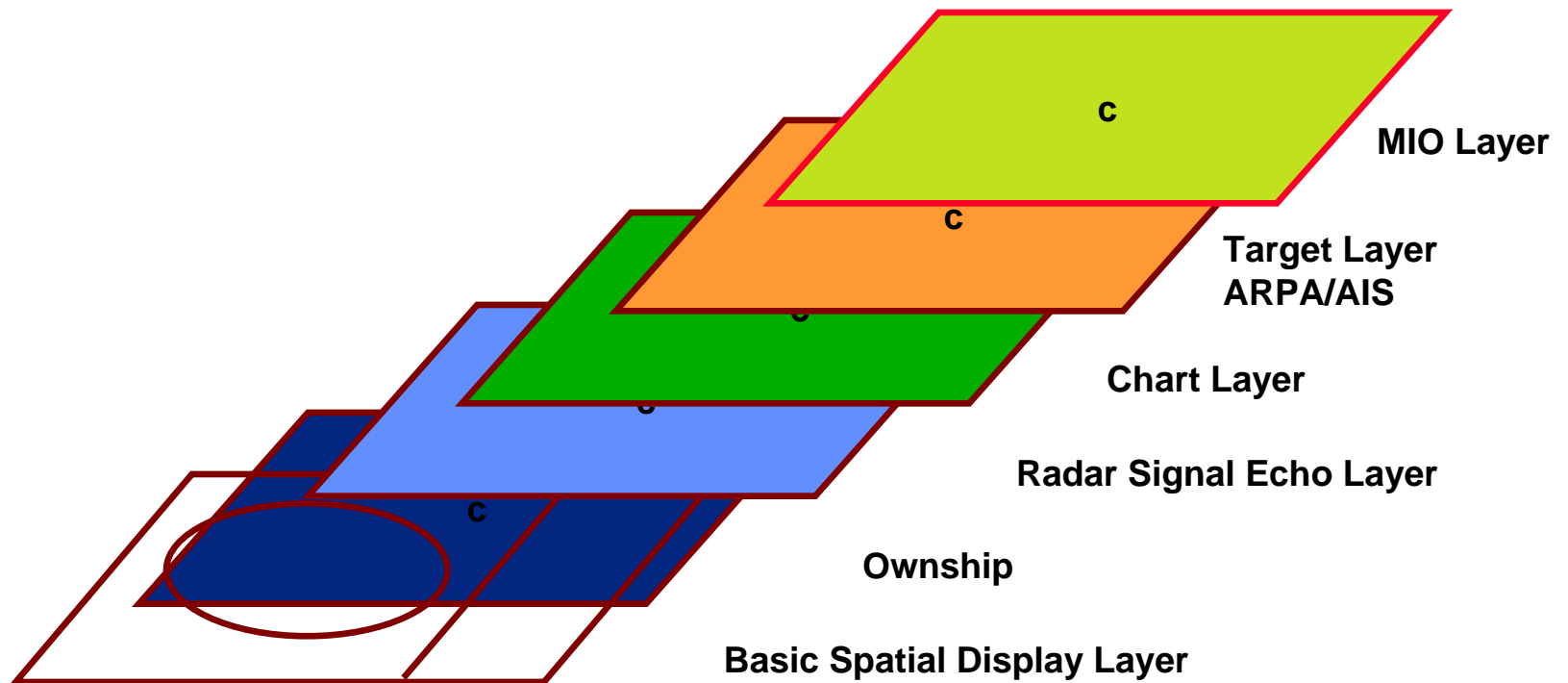
Develop draft performance standards for  
displays – IMO correspondence group

Develop IEC 62288 to a stage for public  
comment





# DISPLAYS derived from Layers of Information







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