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

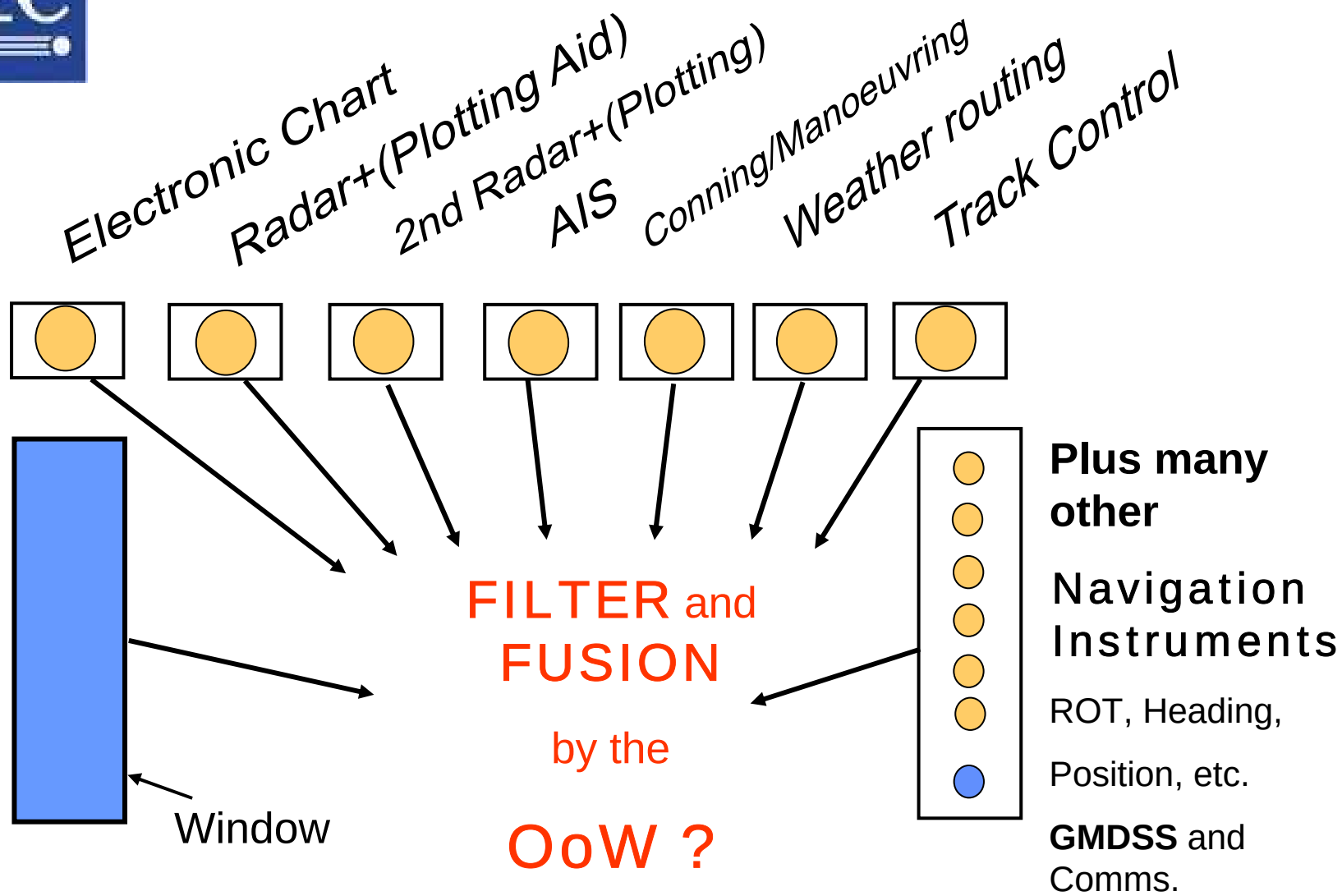
The Problems

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

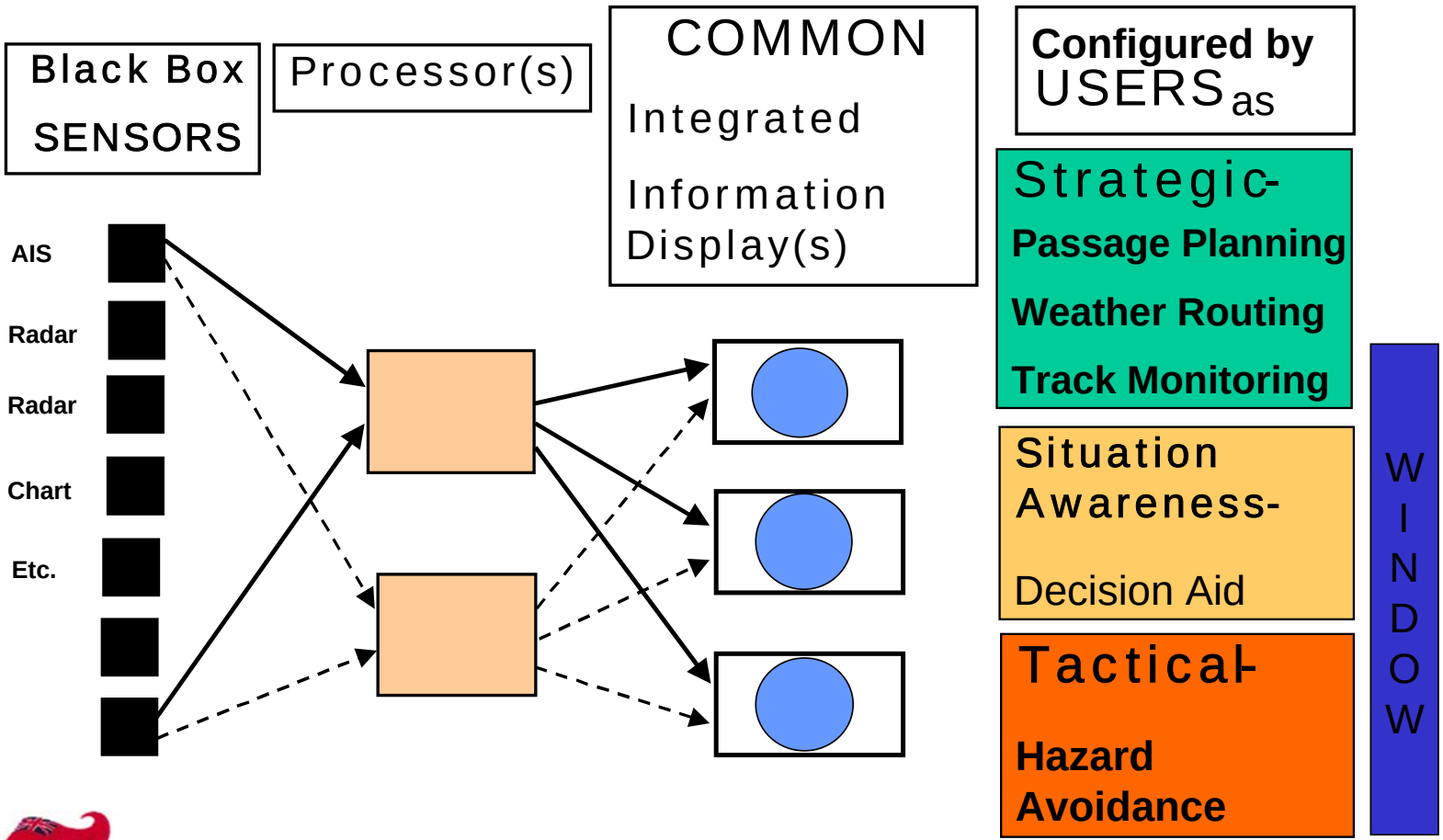
Definitions, terms, abbreviations, units, symbols and colours are not harmonised

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

Current 'Stand-alone' Concept



INTEGRATED INFORMATION DISPLAYS



NavStans

Maritime and Coastguard Agency

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


IEC

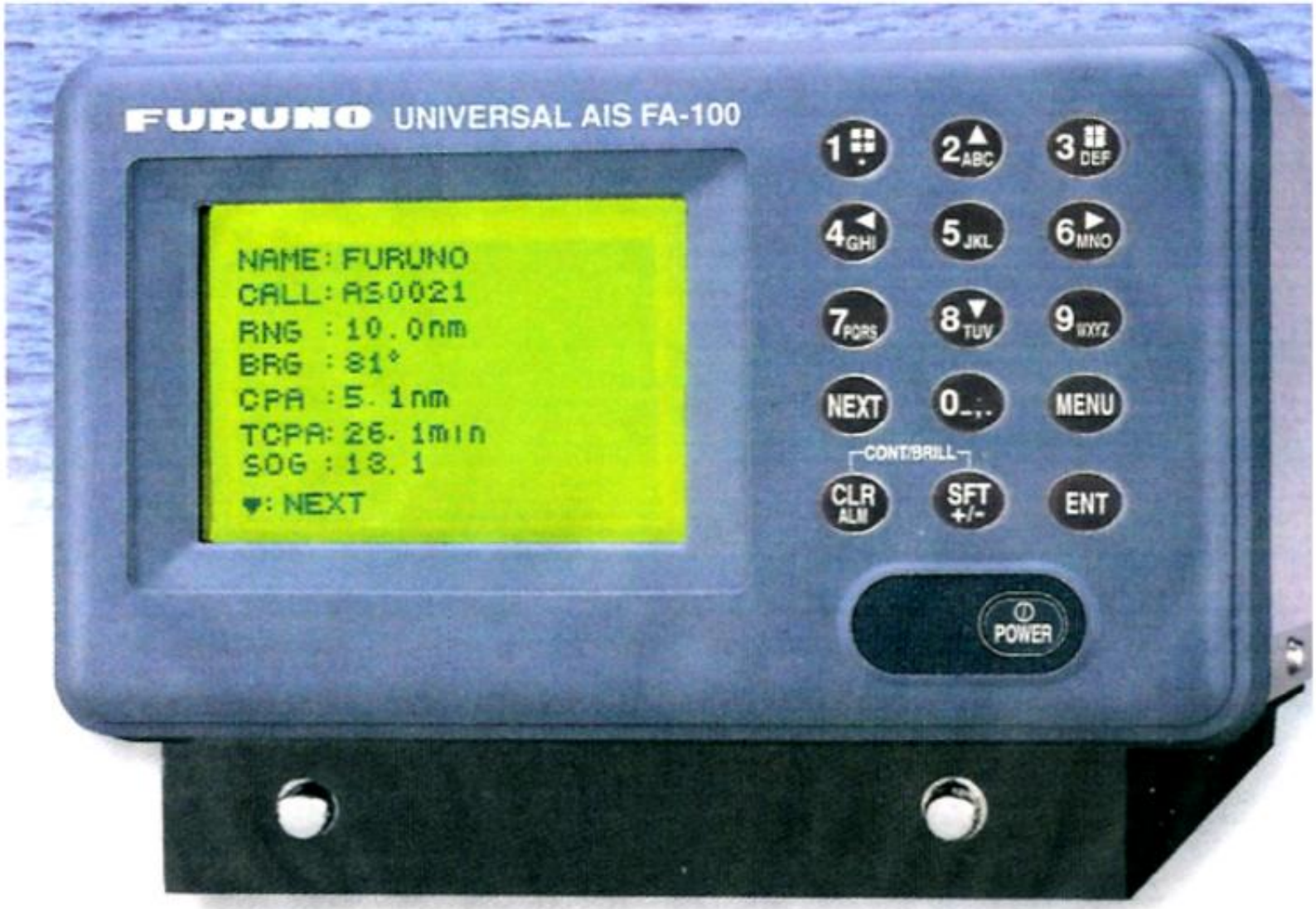
INS – NAV 49

- 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)


FURUNO UNIVERSAL AIS FA-100
NAME: FURUNO
CALL: AS0021
RNG : 10.0nm
BRG : 81°
CPA : 5.1nm
TCPA: 26.1min
SOG : 13.1
♥: NEXT
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
NEXT
0
MENU
CONT/BRILL
CLR ALM
SFT +/-
ENT
POWER

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

WORK TO DATE

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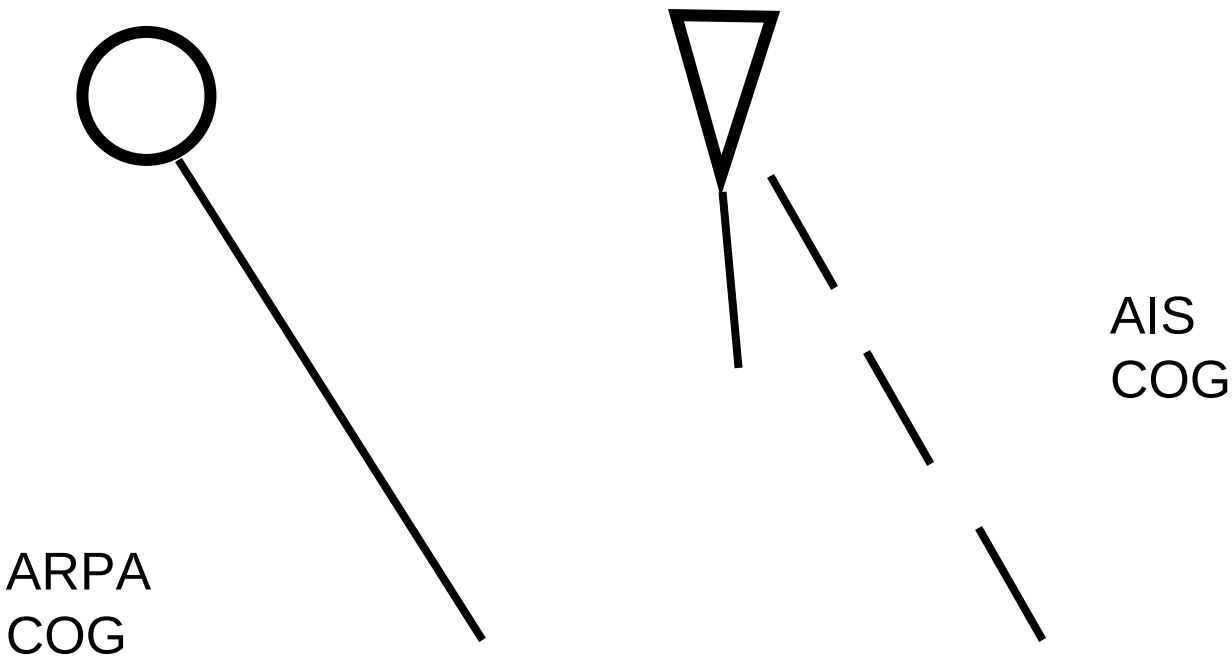
12
SLAVE
SP
RM N UP
TRANSMIT
X-BAND
CURSOR (AIS ACT)
TRUE 211.3 °
5.724nm
REL 211.3 °
N 50°43.031'
W001°06.842'
OS STAB GND
HDG 000.0 °
SPEED 12.0 kts
2AXG GND
COG 000.0 °
SOG 12.0 kts
ARPA STAB GND
VECTOR R 10 min
LIMIT
2.0 nm 15 min
PAST POSN R OFF
GUARD ZONE 1 2
CPA RING
AIS3
AIS ID
NAME
CALL SIGN
MMSI
COG °
SOG kts
CPA nm
TCPA min
BRG °
RANGE nm
HDG °
ROT °/min
POSN
AIS
ACT
D ACT
SEA MAN
RAIN MAN
TRACK OFF
TRAILS 0.5min
PROC PROC1
ENH OFF
DAY1
PANEL
FUNC OFF
EBL2
VRM1 2.00nm
VRM2 nm
DISPLAY INFO
NAV
PIN
No Alarm
L 2003/04/03 22:48
OWN N 50°47.94'
GPS W001°02.15'

AIS/ARPA Symbology



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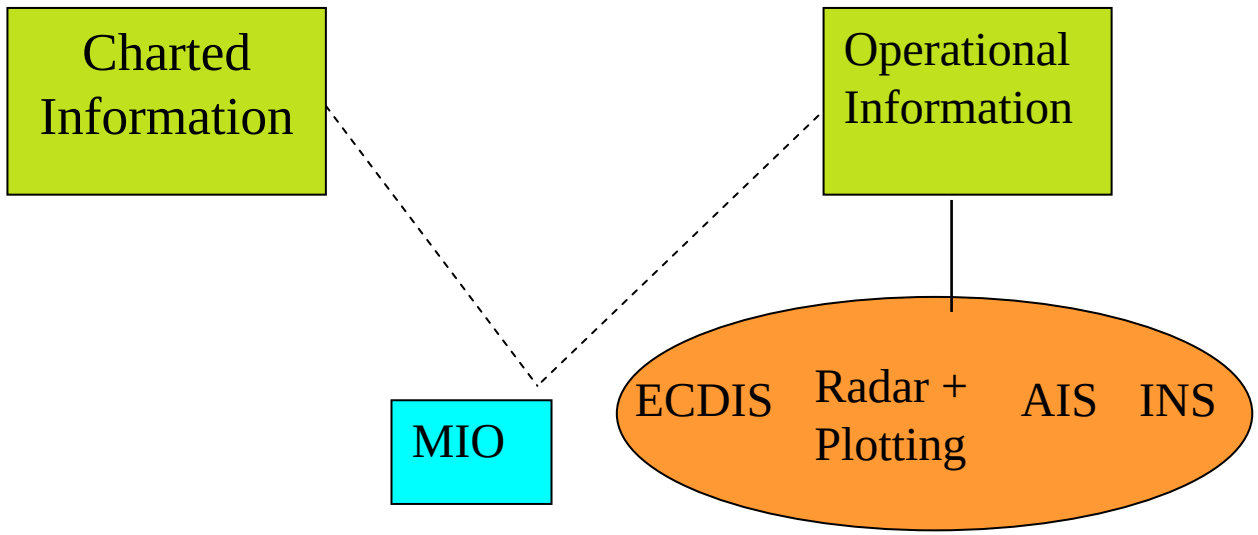
PRESENTATION OF NAVIGATIONAL INFORMATION

To be harmonised



Annex B of IEC 62288

Standard terms and abbreviations

Symbols

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

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

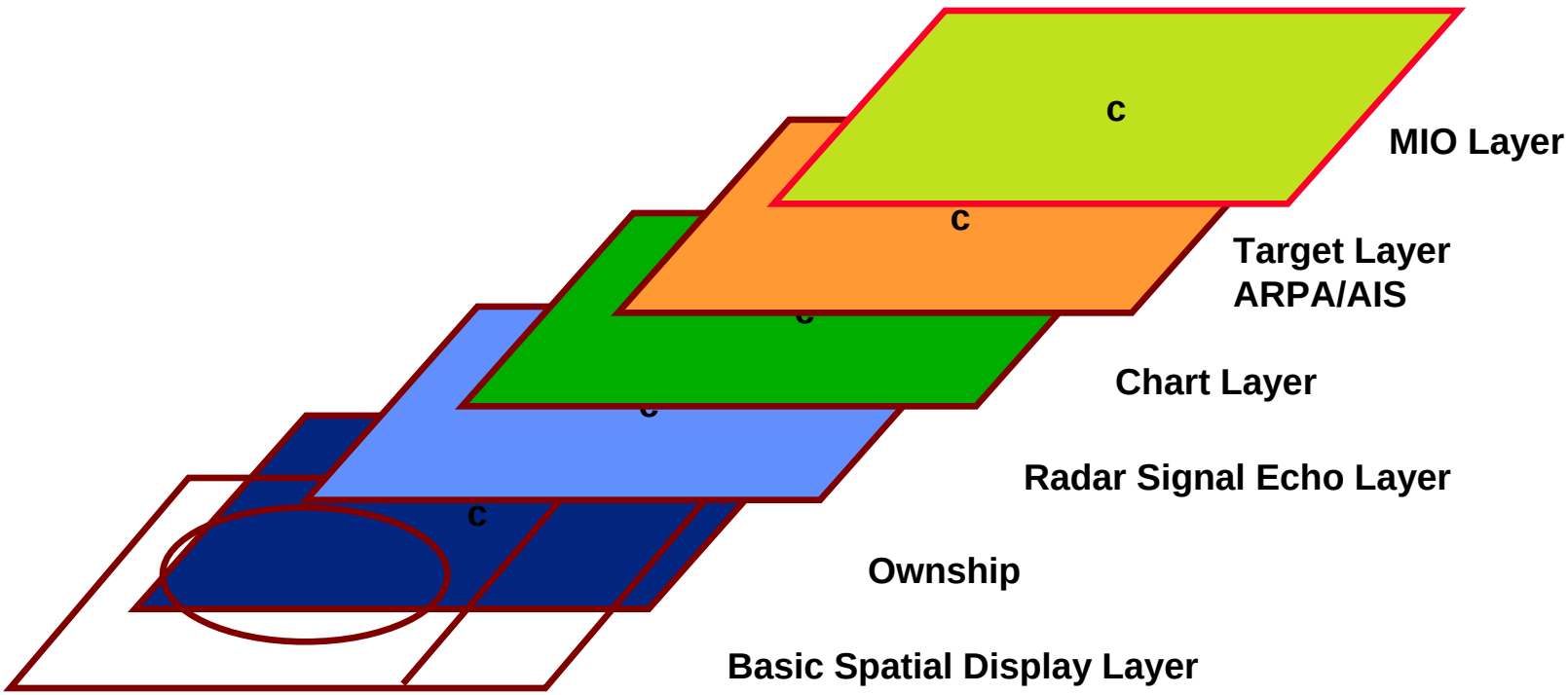
Next Steps

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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