



## S-Mode

AND THE BRIDGE DISPLAY OF THE FUTURE

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S-Mode



# Background

- ***Guidelines on Standardized Modes of Operation, S-Mode***  
IMO e-navigation deliverable, 2018-2019
- Original concept: navigation equipment reverts to a fully standardized independent mode of operation on button press
- *Why required?* Variations in equipment design across manufacturers leads to confusion for users and lengthy/ expensive familiarization process.

# Informal Correspondence Group

- Beginning 2016, an informal group of Member States and NGOs took on development of draft S-Mode Guidelines (Australia, Republic of Korea, BIMCO, CIRM, Nautical Institute, IEC, InterManager, IAIN, etc.)
- Numerous international meetings and workshops held since April 2016 (Australia, Korea, London) to develop the proposal.

# CIRM's view on S-Mode

- Valid goals behind S-Mode can be met through practical approach that does not constrain user or manufacturer
- Fully standardized mode of operation is constraining and unnecessary
- Last year we agreed to develop S-Mode proposal as technical baseline of the S-Mode Guidelines.



# Overview of the CIRM S-Mode proposal

Drafted by CIRM S-Mode Working Group...





Four appendices contain practical requirements covering:

- Standard & user settings
- Terminology, abbreviations, icons (Hot Keys & Shortcuts)
- Logical grouping of related information
- Access requirements for essential information and functions

# Purpose of the CIRM S-Mode proposal

- Provides requirements to **reduce variation** in navigation systems and equipment by **increasing standardization of system design**, helping to provide users with timely access to essential information and functions that support safe navigation
- Will contribute towards **minimising familiarisation requirements** for navigation equipment and systems, enabling users **to locate and interpret information and react decisively**

# Appendix 1 – Navigation-related terminology and icons of functions (Hot Keys & Shortcuts)

Explanation	Term	Abbreviation	Icon (Hot Key)
To select Radar mode (for example as required by INS)	Radar	RADAR	
To select Conning display mode (for example as required by INS)	Conning	CONN	
To select CAM-HMI as defined in Bridge Alert Management (BAM) (for example as required by INS)	CAM-HMI	CAM	 <p data-bbox="1854 1046 1913 1075">OR</p> 



# Appendix 2 – Logical grouping of information (“essential information blocks”)

## Essential information blocks

### Navigation (Own ship information)

COG: <value / sensor status> <unit> | <sensor source>

SOG: <value / sensor status> <unit> | <sensor source>

HDG: <value / sensor status> <unit> | <sensor source>

STW: <value / sensor status> <unit> | <sensor source>

<LAT value> | <LON value> | <sensor source> | < sensor accuracy>

### Date and Time

<Date> | <Time> | <Time Zone>

### Route

To WPT: <WPT name>

BRG to WPT/BRG to WOL/Leg Course: <bearing>

DIST to WPT/DIST to WOL: <distance>

TTG: <time>

XTD: <value>

Radius: <value>

Next leg course: <value>

## Appendix 3 – List of functions that must be accessible by single or simple operator action

Function	Equipment	Access
Select ECDIS Standard Display	ECDIS	Single operator action
Remove radar (image and tracked target), AIS and other navigational information overlaid over the ENC chart.	ECDIS	Single operator action
Select route monitoring display covering own ship's position	ECDIS	Single operator action
Select default ECDIS settings	ECDIS	Single operator action
Present AIS filter criteria	ECDIS	Single operator action
Present excluded MSI coverage areas and message categories	ECDIS	Single operator action
Present date (or date range) of date dependent ENC objects	ECDIS	Single operator action
Select AIS target information	ECDIS	Simple operator action
Remove chart data	Radar	Single operator action
Reset VRM origin	Radar/ECDIS	Simple operator action
Reset EBL origin	Radar/ECDIS	Simple operator action
Reset ERBL origin	Radar	Simple operator action

## Appendix 4 – Standard & User Settings

### Radar standard settings

The table below lists the standard settings for Radar.

Function	Setting
Band	X-band, if selectable
Gain and anti-clutter functions (Sea, Rain)	Automatically optimized, where provided or
Tuning	Automatically optimized where provided or
Range	6 NM
Fixed range rings	Off
VRMs	One VRM on, 0.25NM
EBLs	One EBL on
Parallel index lines	Off or last setting, if applied
Display mode of the radar picture	True motion, north-up
Stabilization Sea/Ground	Ground (SOG, COG)
Off-centring	Appropriate look-ahead
Target trails	On, 6 minute (same as vector)
Past positions	Off
Radar target tracking	Continued

# Scope of the CIRM S-Mode proposal

- Applies to navigation equipment across manufacturers
- Based on concept of “always-on” standardization
- Provides flexibility for system user and designer, ensuring varied/evolving user needs can be met through innovation
- We believe this alternative approach better meets the needs of mariners both now and into the future.

# User evaluation

- CIRM proposal provisionally accepted - subject to user testing!
- During 2018 the proposal will be evaluated by mariners
- Test plan includes interviews, surveys, card-sorting exercises, web-based simulators, etc.
- Results will be used to improve/refine the CIRM proposal.



# Update: Workshop on User Testing – yesterday!





# Next steps for the draft Guidelines

- NCSR 5 will consider the first draft S-Mode Guidelines in February
- User evaluation to continue, feedback to be compiled
- S-Mode Guidelines will be updated and improved using feedback
- NCSR 6 (2019) will consider and finalise S-Mode Guidelines
- MSC to consider and (hopefully!) approve the Guidelines in 2019

*....then manufacturers can begin to implement the Guidelines!*

# Bridge Display of the Future

Thoughts of CIRM Members

**Longer-term developments**



# What will the bridge displays of the future look like?

How will digital information from shore be displayed to the navigator?

What will be the evolution process of equipment made by CIRM members?

How will this affect the services provided by shore authorities?

## How will digital information from shore be displayed to the navigator?

*In future, systems and data will become more integrated*

*Situational awareness displays will evolve and improve*

*Integration requires a change in thinking about how we display data*

*Autonomous shipping will influence the future design of bridge displays*

*Integration of data sources will be transparent for the bridge team*

## What will be the evolution process of equipment made by CIRM members?

*We need to expand our conception of the term 'manufacturers'*

*Systems need to be able to integrate in a variety of ship ecosystems*

*There will be great opportunities for innovation of back-of-bridge displays*

*Manufacturers must ensure human factors are considered during design*

*Systems will evolve in response to integration*

How will this affect the services provided by shore authorities?

*Shore authorities need to be aware that more data will be required*

*Increased pressure on data volume, coverage and quality*

*Shore data will be collected in a shipboard database and distributed*



## Closing thoughts

Changes are coming to how information is displayed on the ship's bridge

S-Mode and other e-Nav developments will impact in the short-term

CIRM members may disagree on specifics of longer-term developments, but there are large areas of consensus in their opinions

The situation is ripe for innovation... and the future is bright!



Thank you

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