

# Status of the EGC SafetyNET, Inmarsat Maritime Safety Services today and tomorrow

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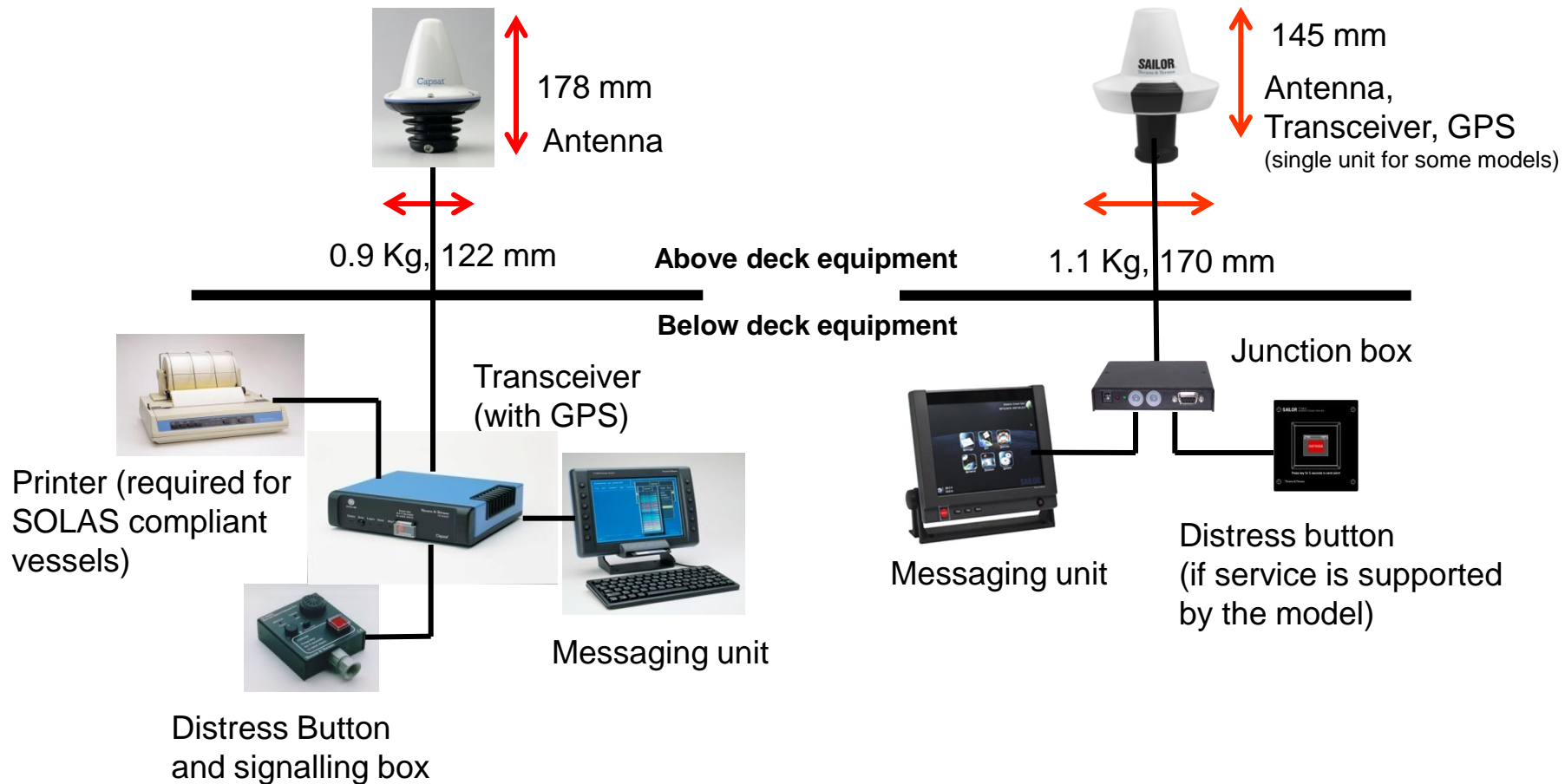


# The Core Maritime Safety Portfolio

- ➔ More than 246,000 maritime terminals in service
- ➔ More than 148,000 Inmarsat C/mini-C MESS
- ➔ “505” emergency service on FleetBroadband terminals – FB500, FB250 and FB150
- ➔ Distress and Urgency voice calls on T&T FB terminals
- ➔ Started MSDS project
- ➔ **GMDSS compliance**
  - Inmarsat C is the only conventional satellite system required by IMO SOLAS Convention, Chapter IV “Radiocommunications”.
  - Inmarsat B - will be closed down on 31 December 2014
  - Inmarsat Fleet F77 – voice distress with pre-emption and prioritisation in ship-to-shore and shore-to-ship direction
  - Plans for FB distress voice GMDSS approval



# Inmarsat C and Inmarsat mini-C maritime terminals (with Distress capability)



**Note: No power supply is shown for both configurations**

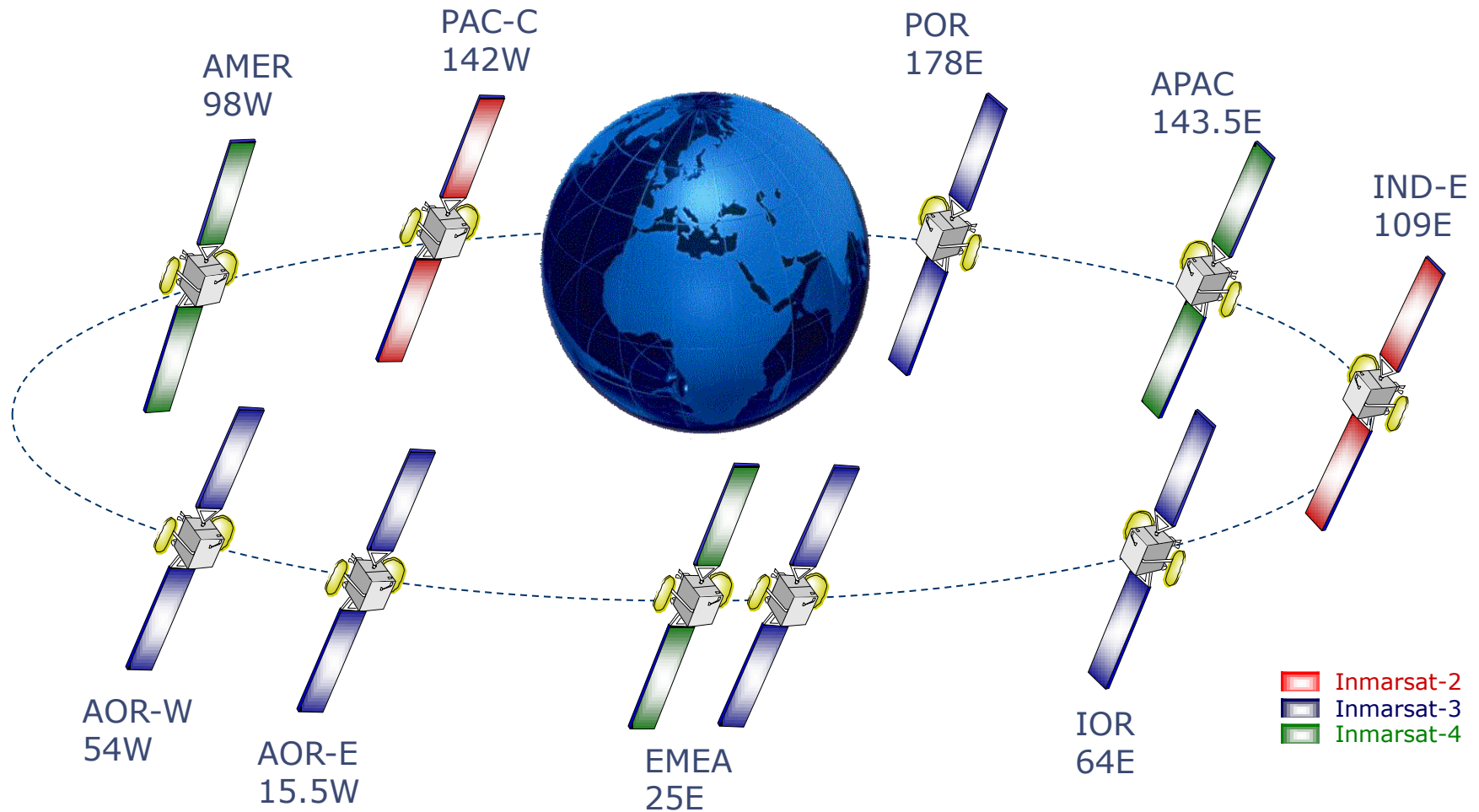
# Inmarsat C/Mini-C characteristics and services



Antenna Messaging unit Transceiver (with GPS) Distress button Printer

- ➔ Global coverage (between 76° North and 76° South under 5° and above antenna elevation angle)
- ➔ Store and Forward communication system (ship-to-shore, shore-to-ship and ship-to-ship)
  - messages delivered to e-mail, telex, fax (text, one way only), another mobile, SAC
- ➔ Non-stabilised omnidirectional antenna, small size and weight
- ➔ Some mini-C models are approved for GMDSS and support Distress Calling and EGC functions
- ➔ More than 90000 Maritime Inmarsat C and 58,000 Inmarsat mini-C SESs
- ➔ Main part of the GMDSS satellite equipment – required by SOLAS Convention, Chapter IV
  - Distress Calling - distress alerting and distress priority messaging
  - Enhanced Group Calling (EGC) EGC SafetyNET and EGC FleetNET
  - Ship Security Alerting service (SSAS)
  - Data reporting and polling service (position monitoring, tracking, LRIT)

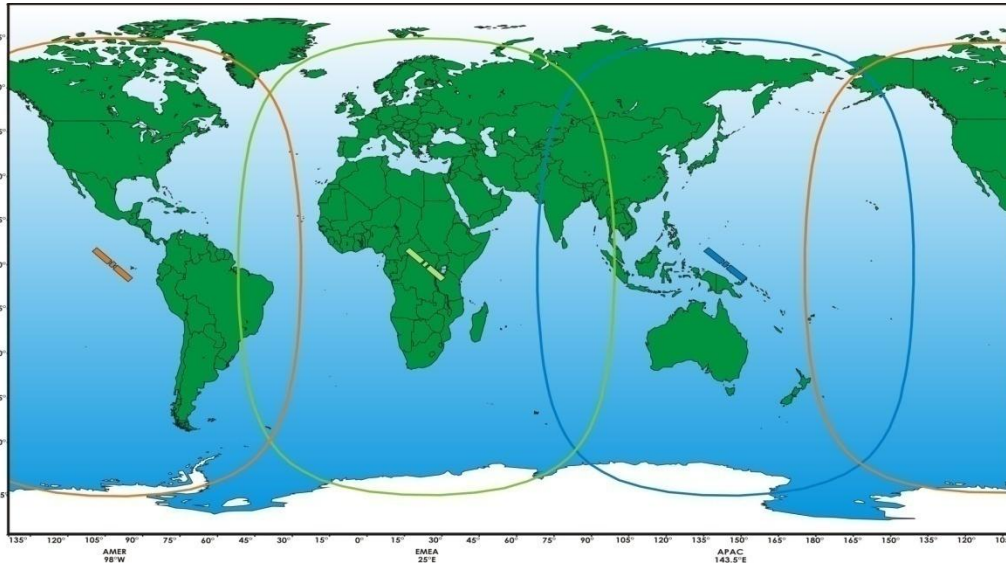
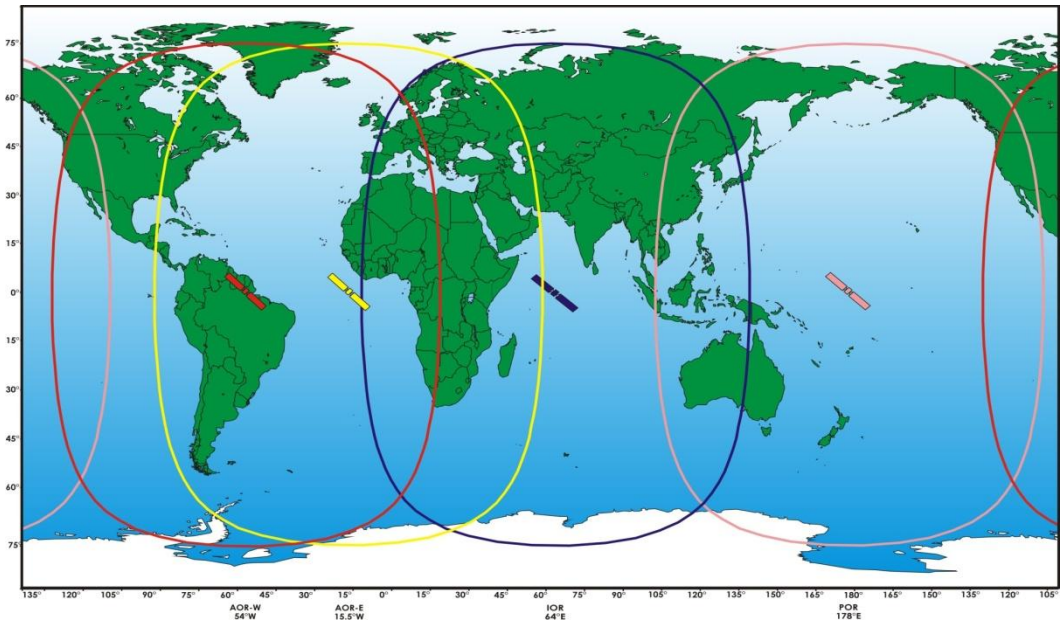
# Inmarsat's Satellite Constellation



# Inmarsat's I-3 Primary Satellite Constellation

Four ocean regions for Existing and Evolved services incl. GMDSS

AOR-E  
AOR-W  
IOR  
POR



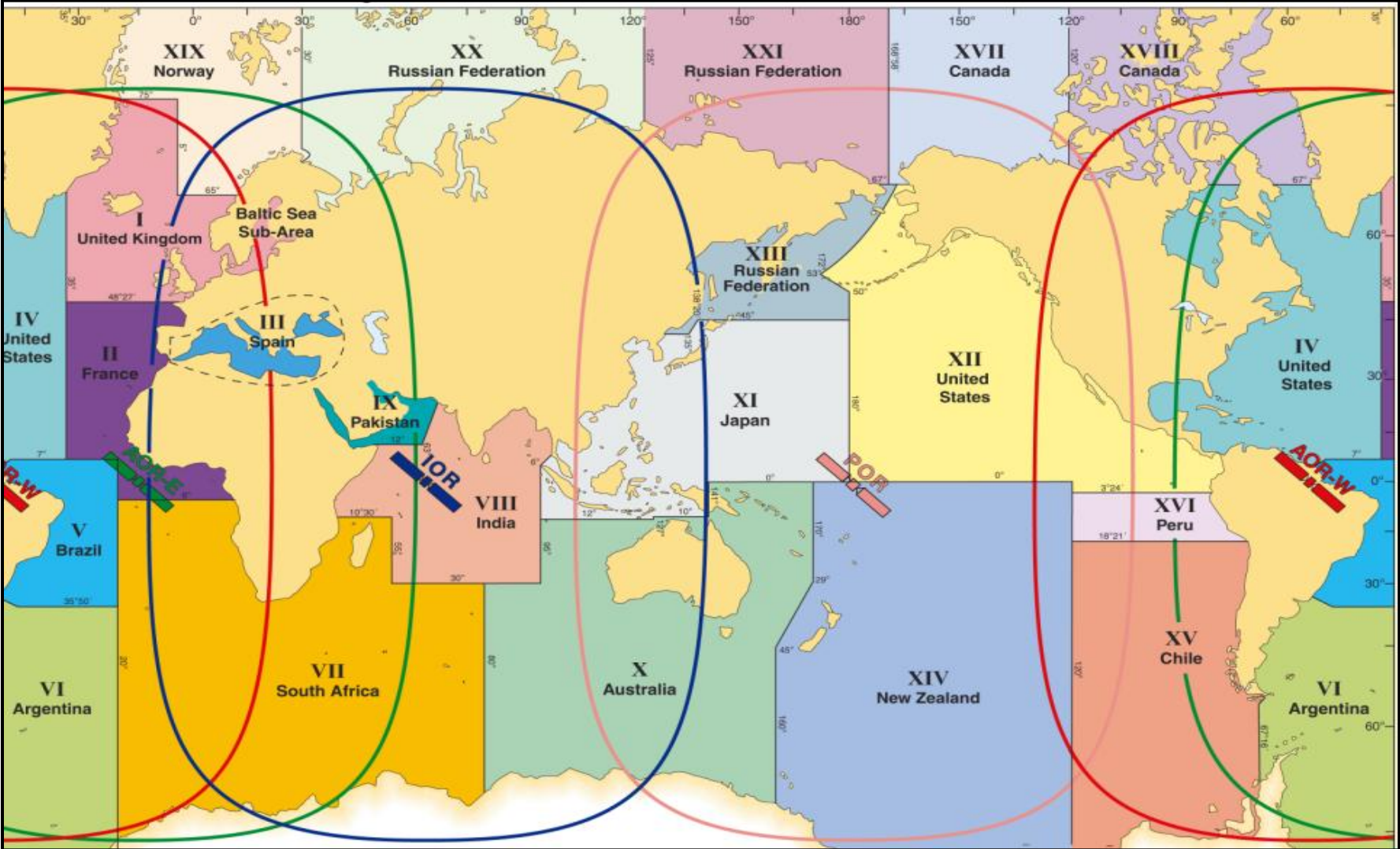
# Inmarsat's I-4 Satellite Constellation

Three ocean regions for all Broadband services:

AMER  
EMEA  
APAC

# IMO NAVAREAs/METAREAs incl. new Arctic areas

(with Inmarsat coverage)



# GMDSS Communication Functions via Satellite

No single piece of equipment can do all functions!!!

But... where does Inmarsat equipment fit?

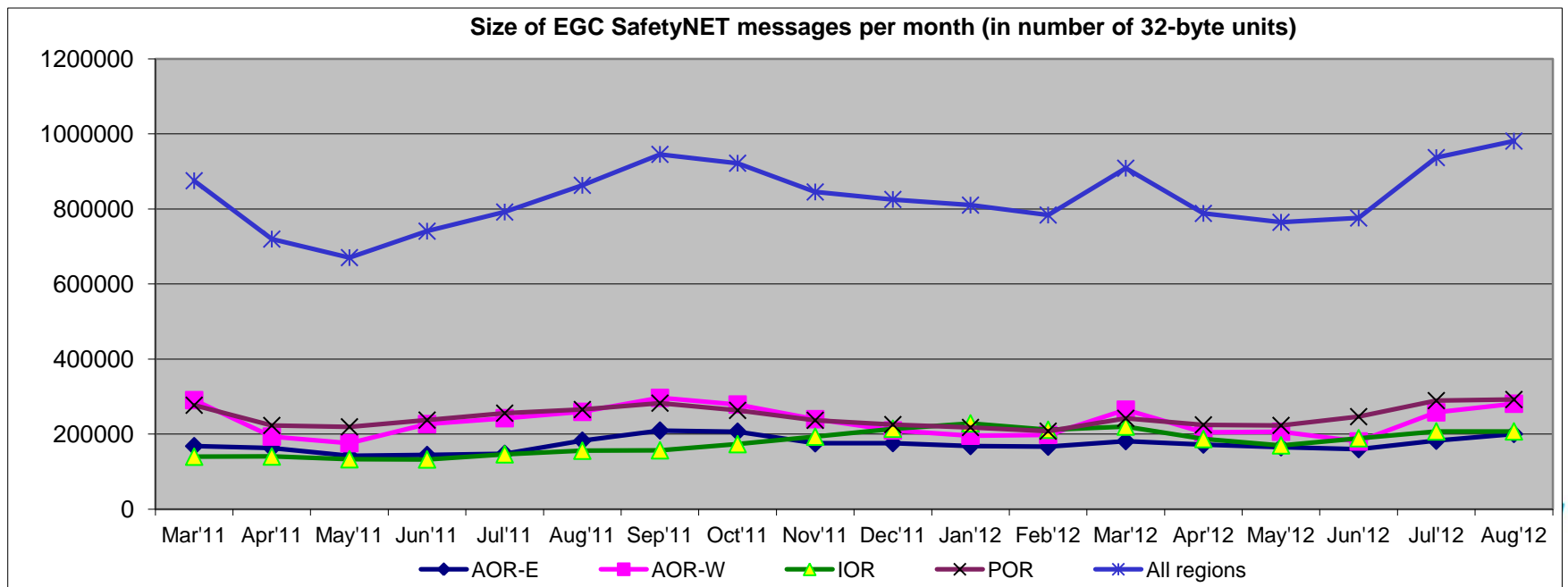
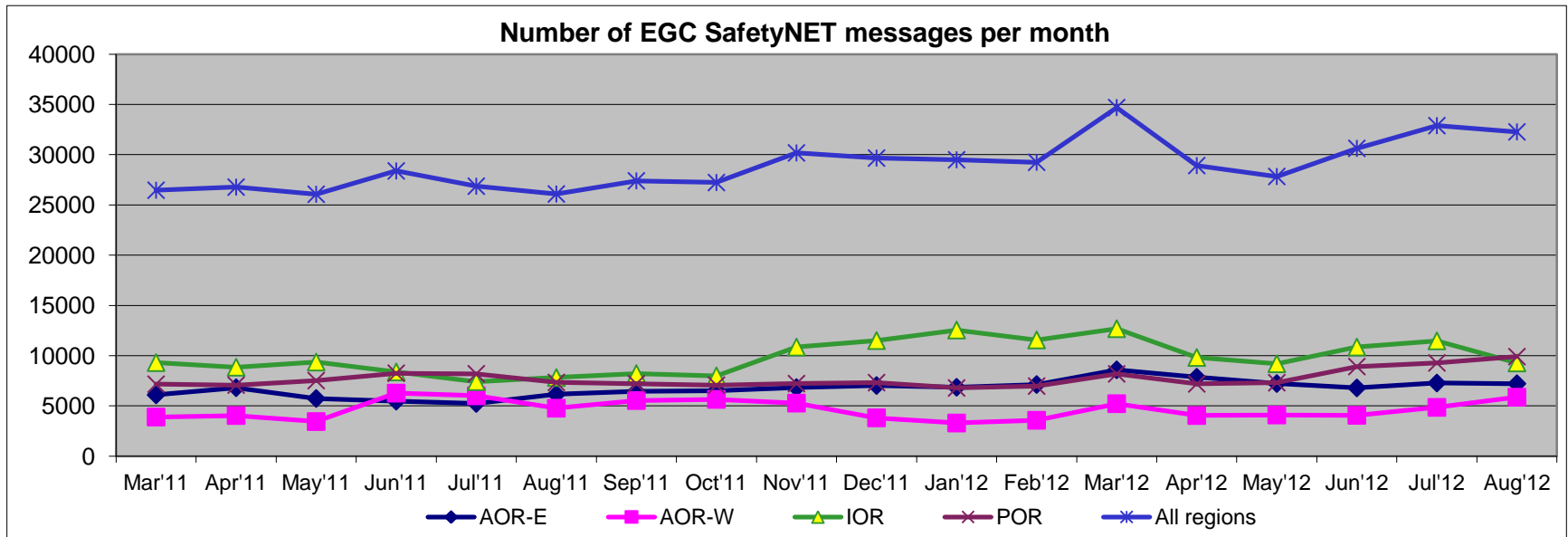
GMDSS Functions	Inm-B*	Inm-F77	Inm-C
1. Distress Alerting ship-to-shore	Yes (voice)	Yes (voice)	Yes
2. Distress Alerting shore-to-ship		Yes (voice)	Yes
3. Distress Alerting ship-to-ship			
4. SAR Communications	Yes	Yes	Yes
5. On-scene communications			
6. Tx/Rx of MSI	Yes (Tx)	Yes (Tx)	Yes
7. Locating signals			
8. General communications	Yes	Yes	Yes
9. Bridge-to-Bridge communic.			



\* Inmarsat-B will be closed down on the 31 December 2014



# Number and size of EGC SafetyNET messages per ocean region



# FleetBroadband – New generation of maritime services from Inmarsat



FleetBroadband is part of broadband (BGAN) family of services based on 3G network technology and operated over Inmarsat I4 (4th generation) satellites since Nov 2007.

The traffic is grounded at Inmarsat Satellite Access Stations (SASs) – 3 ocean regions

Maritime portfolio – FB500, FB250, FB150



Standard IP data (up to 432kbps)



Voice (accessible simultaneously with data via a single terminal) and fax



Streaming IP with guaranteed data rates on-demand



ISDN for Voice & Data

Distress voice on T&T MESs   
**inmarsat**

# FleetBroadband Specification



	FleetBroadband 500	FleetBroadband 250	FleetBroadband 150
<b>Antenna Diameter</b>	55 cm	32 cm	27 cm
<b>Antenna G/T* (at 5° elvn)</b>	-7 dB/K	-15 dB/K	-15 dB/K
<b>Antenna EIRP**</b>	22 dBW	15.1 dBW	15.1 dBW
<b>Antenna Type</b>	Directional/Stabilised	Directional/Stabilised	Directional/Stabilised
<b>Antenna Target Weight</b>	15-20 kg	3-5 kg	2-3 kg
<b>Voice</b>	4 kbps	4 kbps	4 kbps
<b>Standard IP</b>	Up to 432 kbps	Up to 284 kbps	Up to 150 kbps
<b>ISDN Data</b>	Yes	No	No
<b>IP Streaming</b>	32, 64, 128, 256 kbps	32, 64, 128 kbps	No

\* **Gain-to-noise-temperature (G/T)** is a characteristic of antenna performance, where G is the antenna gain in dB at the receive frequency and T is the equivalent noise temperature of the receiving system in K<sup>0</sup>

\*\* **Effective isotropically radiated power (EIRP)** is the amount of power that antenna would emit to produce the peak power density in the direction of maximum antenna gain

# 505 Emergency Calling service via FleetBroadband

**505**  
for FleetBroadband  
In an emergency  
call 505. You will  
be connected to a  
Maritime Rescue  
Coordination Centre

**inmarsat**

- ➔ 505 Emergency Calling developed for FleetBroadband family of equipment – FB150, FB250 and FB500 in advance of GMDSS
- ➔ Three satellite regions give global coverage:
  - Americas @ 98°W
  - Europe/Middle East/Africa @ 25°E
  - Asia Pacific @ 143.5°E
- ➔ Dial 505
  - Short-code dialling to one of 3 strategically located RCCs
    - Automatic routing to RCC Den Helder (the Netherlands), RCC Norfolk (USCG) and RCC Australia
  - 505 Emergency Calling brings increased safety for all mariners using the same satellites as for the GMDSS
- ➔ **No Priority or pre-emption – Not a substitute for the GMDSS**
- ➔ No Charge for the service



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# Voice distress on Inmarsat FB



- ➔ Introduced in July 2011 on any T&T FB terminal and meet requirements of IMO A.1001(25) Resolution for priority and pre-emption
  - at present is not compliant with requirements of para 3.6 Restoration and spare satellites
- ➔ Services
  - Distress priority voice (non-SOLAS) ship-to-shore – initiated by pressing “SOS” button
    - automatic connection to one of three RCCs (Norfolk, Canberra, Den Helder)
  - Distress priority voice shore-to-ship – initiated by RCCs via two-stage dialling access and pin code
  - Urgency calls – in ship-to-shore direction and routing agreed with the RCCs
    - 32 – Medical advice
    - 38 – Medical assistance
    - 39 – Maritime assistance
  - Distress test
    - via Distress test mode and pressing SOS button
    - automatic connection to terrestrial network and audio announcement
- ➔ Charging for Distress and Urgency calls
  - no charge for Distress calls in ship-to-shore and shore-to-ship direction
  - no charge for Urgency calls in ship-to-shore direction

# Why we need new safety data services on FB platform (1/2)

as further evolution of MSI broadcast systems

COMSAR 16/WP.6, Annex 1, para 3.18

(Proactive approach)



- ➔ Existing services (text only) defined in late 80s (last century!!!) and never been changed, modified, revised (except Arctic NAV/MET areas)
- ➔ IMO/IHO/WMO (may) require new data type safety services (e.g. Weather charts) and new data text services
- ➔ All Nav/Met services use same C2 service codes (except Coastal warnings) and it is not possible to distinguish between these MSI (New services will use unique service codes)
- ➔ Additional addressing is (may be) required (Sub-areas and Fixed areas)
- ➔ Need for “on air” via satellite software upgrade for EGC configuration
- ➔ IMO “requirements” for standard user interface (COMSAR 15/INF.3 “Scoping exercise...”)
- ➔ “Pull” archive MSI (NAV/MET services only)
- ➔ Simultaneous submission of MSI to FB and Inmarsat-C systems and cross-over (except new FB services and addressing)
- ➔ SAR services, Coastal warning services, priorities, repetition codes remain the same
- ➔ New (planned) services will meet all existing IMO/IEC performance standards/specs

## Why we need new safety data services on FB platform (2/2) in addition to NAV/MET MSI broadcast



- ➔ RCCs may require acknowledgement on reception of P3 and P2 SAR related MSI
- ➔ Distress alert – new data fields for DA packet - Nature of Distress – MOB (Man Over Board), Number of persons on board and list of RCCs to address DA to
- ➔ Shore-to-ship and Ship-to-Shore messaging with Safety, Urgency and Distress priority
- ➔ Distress Chat and Surface Picture (SURPIC) services for RCCs (SAR services only)
- ➔ Via satellite (available on Inmarsat-C/mini-C MESs as PVT) and local distress button test
- ➔ To build-in hooks for SSAS and LRIT services as potential GMDSS services
- ➔ **Inmarsat Maritime Safety Data Services (MSDS) project covers the above issues and is in progress now but a few questions remain...**

# MSI addressing – existing (Inm-C) and proposed (FB)

## ➔ Existing addressing

- NAVAREA/METAREA (fixed) - 01-99 – two digits (*Do we expect more areas?*)
- Circular area (user defined) - 10 alphanumerics (up to 999 kn miles in radius)
- Rectangular area (user defined) - 12 alphanumerics
- Coastal warning areas (fixed) -  $X_1X_2B_1B_2$  (*Australia – add a new  $B_1=P$  character only for the existing service*)
- Ocean region (all ships) SAR service only - always 00 (never been used)

## ➔ Proposed addressing in addition to above

- Sub-area within NAVAREA/METAREA - 3 alphanumerics, e.g.
  - Baltic Sea - 01A (others areas to be defined later)
- Fixed areas (e.g. for international inland waterways) – (5) numerics (TBD), e.g. 51111, 12345, etc.

## ➔ Who will propose/define new areas and what process will be???

- IMO/WMO/IHO/IMSO
- Can Inmarsat assist???
- Need answer now



# Definition of EGC SafetyNET Service Codes (as in the IMO Manual)

Service Code	Navigational information (5 services)	Meteorological information (4 services)	Search and Rescue (SAR) (4 services)	Piracy countermeasures broadcast (4 services)
<b>00</b>			All ships call	
<b>04</b>	Navigational, Meteorological or Piracy warning to a rectangular area	Navigational, Meteorological or Piracy warning to a rectangular area		Navigational, Meteorological or Piracy warning to a rectangular area
<b>13</b>	Navigational, Meteorological or Piracy coastal warning	Navigational, Meteorological or Piracy coastal warning		Navigational, Meteorological or Piracy coastal warning
<b>14</b>			Shore-to-ship distress alerts to a circular area	
<b>24</b>	Navigational, Meteorological or Piracy warning to a circular area	Navigational, Meteorological or Piracy warning to a circular area		Navigational, Meteorological or Piracy warning to a circular area
<b>31</b>	NAVAREA/METAREA warning, MET forecast or Piracy warning to NAVAREA/METAREA	NAVAREA/METAREA warning, MET forecast or Piracy warning to NAVAREA/METAREA		NAVAREA/METAREA warning, MET forecast or Piracy warning to NAVAREA/METAREA
<b>34</b>			SAR coordination to rectangular area	
<b>44</b>			SAR coordination to circular area	
<b>73</b>	Chart correction service to fixed areas – Not available			

*C2 = 04, 13, 24 and 31 are services for NAV, MET and Piracy MSI*

# Existing (Inm-C) and **proposed (FB)** Nav/Met and other services

C2 Service code	Existing Type of NAV/MET MSI and Piracy c/measures b/cast
<b>04</b>	Navigational, Meteorological or Piracy warning to a rectangular area
<b>13</b>	Navigational, Meteorological or Piracy coastal warning
<b>24</b>	Navigational, Meteorological or Piracy warning to a circular area
<b>31</b>	NAVAREA/METAREA warning, MET forecast or Piracy warning to NAV/METAREAs
<b>73</b>	<i>Chart correction service to fixed areas – Defined but not available</i>

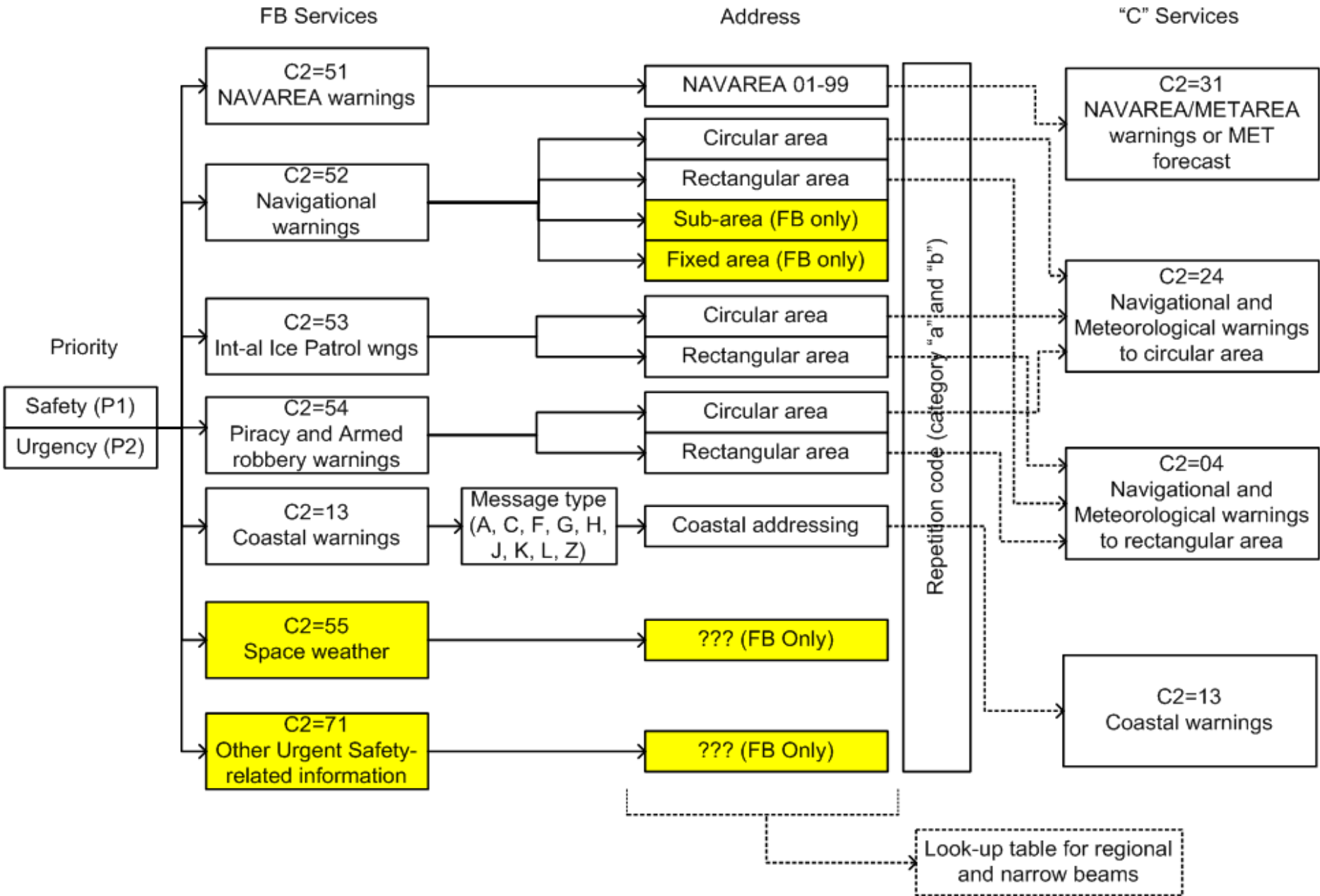
C2 code	C2 Navigational service name	C3 Address
51	NAVAREA warnings	NAVAREA (01-99)
52	Navigational warnings	Circular, Rectangular, Sub-area, Fixes area
53	International Ice Patrol warnings	Circular, Rectangular
54	Piracy and Armed robbery warnings	Circular, Rectangular
55	Space weather	Circular, Rectangular (???)
13	Coastal warnings	Coastal addressing

C2 code	C2 Meteorological Service name	C3 Address
61	METAREA warnings	METAREA (01-99)
62	Meteorological warnings	Circular, Rectangular, Sub-area, Fixes area
63	Storm warnings	Circular, Rectangular, Sub-area, Fixed area
64	Tropical/Tsunami warnings	Circular, Rectangular, Sub-area, Fixed area
65	Weather Charts	METAREA, Sub-area, Fixed area
13	Coastal warnings	Coastal addressing

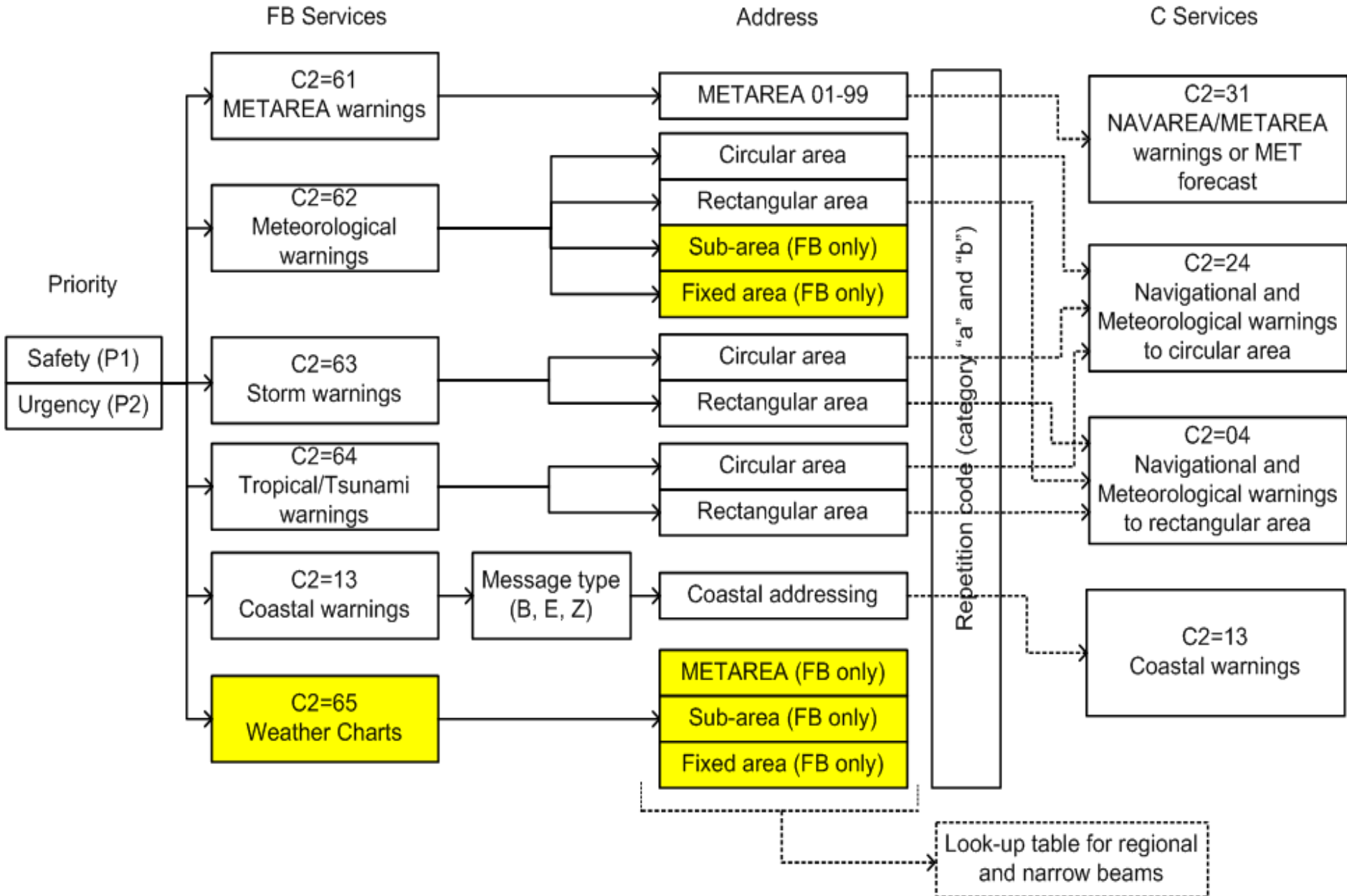
71 - Other Urgent Safety-related information – Address format TBA/C

81 - Security Related information – Under Nav MSI or as a separate “SecurityNET” type services? Cascade down? Address? Decision/opinion?

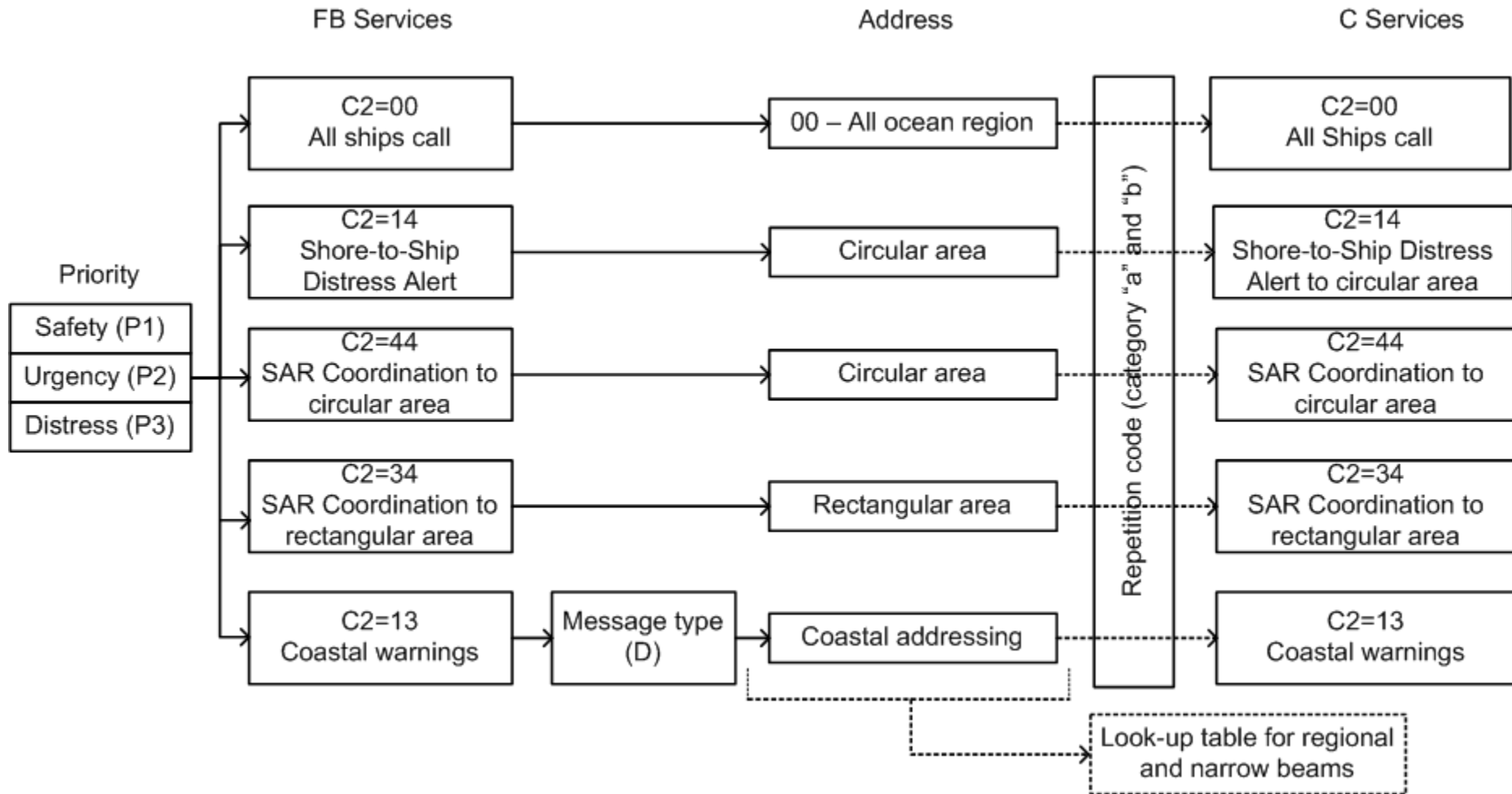
# New Navigational MSI addressing



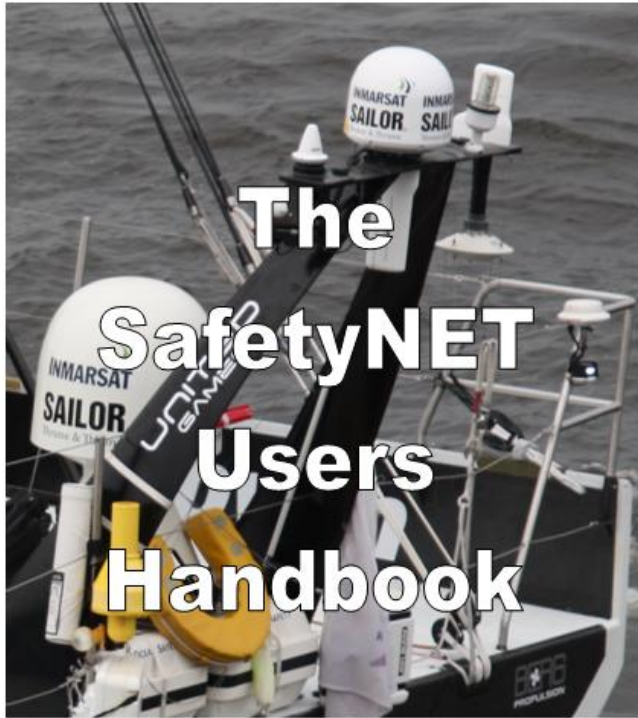
# New Meteorological MSI addressing



# SAR MSI addressing (no changes)



# Inmarsat SafetyNET Users Handbook, 5<sup>th</sup> Edition



Fifth Edition

- ➔ Handbook is PDF file to be published on [www.inmarsat.com/safety](http://www.inmarsat.com/safety)
- ➔ Mainly for mariners to explain how to use SafetyNET to obtain required MSI
  - The IMO International SafetyNET Manual is official reference for SafetyNET service
- ➔ Explains operation of SafetyNET service and what MSI MUST and MAY be received
  - gives typical MSI broadcasts and its availability
  - EGC receiver types
  - how to manage EGC receivers (incl. position update)
  - good operating practice
- ➔ NEW items
  - EGC setup screen and how to set up EGC receiver to receive Coastal Warnings
  - EGC log and its details
  - revised IMO performance standards for EGC equipment



**Thank you and kind regards from the  
Maritime safety services team:**

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