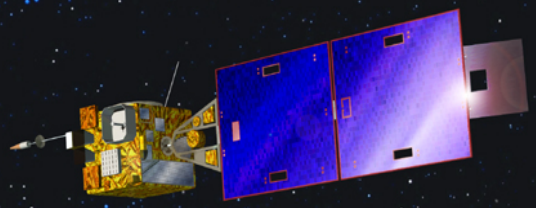
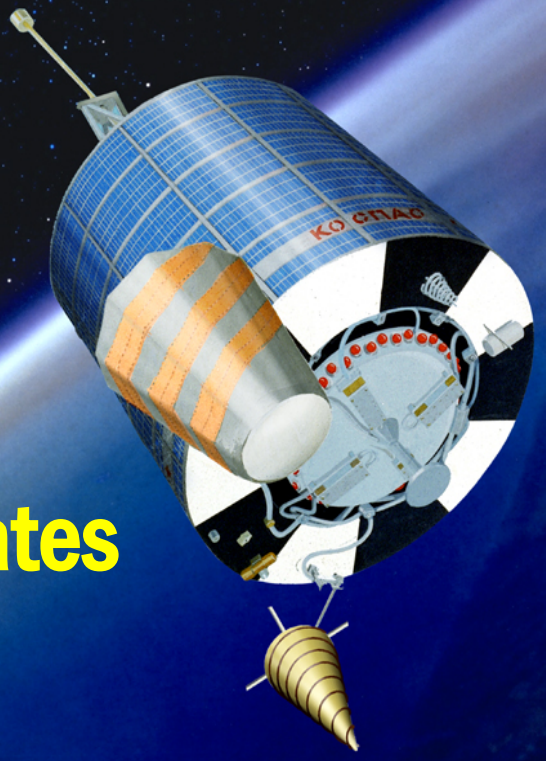
Beacon Manufacturers Workshop

Clearwater, Florida
12 May 2017





Cospas-Sarsat Programme Updates

Dany St-Pierre
Cospas-Sarsat Secretariat

•Source: CNES – D. Ducros

Cospas-Sarsat Programme

Cospas-Sarsat Programme Status

- Mission Statement
- Programme Participants
- System segment: Space, Ground, Beacon
- Assisted Saves

Cospas-Sarsat Programme Evolution

- Recent Cospas-Sarsat Meeting Outcomes
- MEOSAR Operational Capability Evolution and Implementation
- Upcoming Cospas-Sarsat Meetings
- Upcoming Cospas-Sarsat Activities
- MEOSAR D&E
- Cospas-Sarsat Secretariat Additional Activities (IBRD & Videos)

COSPAS SARSAT

Cospas-Sarsat Mission

Mission Statement

The International Cospas-Sarsat Programme provides accurate, timely and reliable distress alert and location data to help search and rescue authorities assist persons in distress.

Objective

The objective of the Cospas-Sarsat system is to reduce, as far as possible, delays in the provision of distress alerts to SAR services, and the time required to locate a distress and provide assistance, which have a direct impact on the probability of survival of the person in distress at sea or on land.

Strategy

Cospas-Sarsat Participants implement, maintain, co-ordinate and operate a satellite system capable of detecting distress alert transmission from radiobeacons and of determining their position anywhere on the globe. The distress alert and location data is provided by Cospas-Sarsat Participants to the responsible SAR services.

Services are provided world-wide and free of charge for the user in distress.

Cospas-Sarsat Participants

Cospas-Sarsat Participants

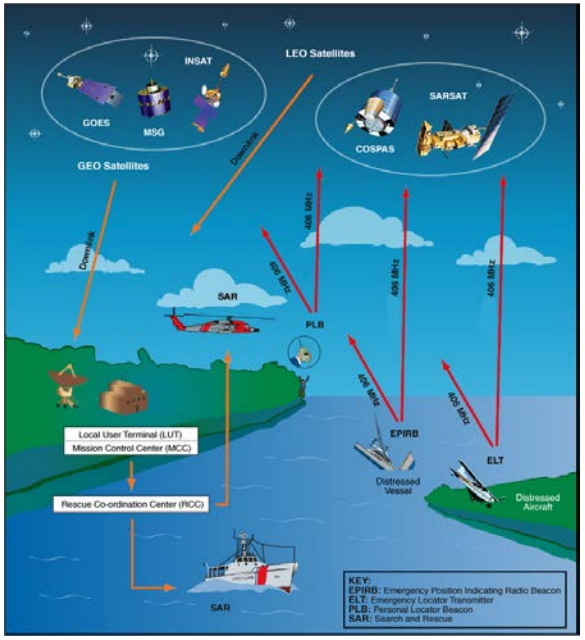
- 4 Founders: Canada, France, Russia and the USA
- 27 Ground Segment Providers
- 10 User States
- 2 Organisations

Algeria
Argentina
Australia
Brazil
Canada
Chile
China (P.R.)
Cyprus
Denmark
Finland
France
Germany
Greece
Hong Kong
India
Indonesia
Italy
ITDC
Japan
Korea (R. of)
Netherlands
New Zealand
Nigeria
Norway
Pakistan
Peru
Poland
Russia
Saudi Arabia
Serbia
Singapore
South Africa
Spain
Sweden
Switzerland
Thailand
Tunisia
Turkey
UAE
UK
USA
Vietnam

Space Segment

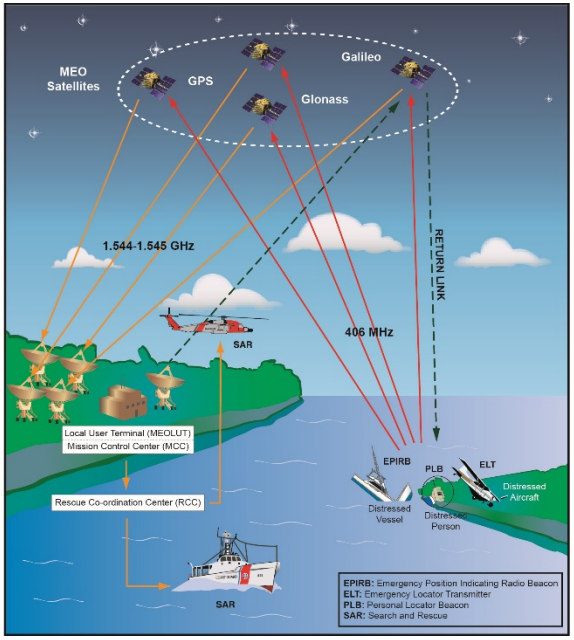
Two Fully Operational Systems

- Low Earth Orbiting Search And Rescue (LEOSAR)
- Geostationary Orbiting Search And Rescue (GEOSAR)



One System at Early Operational stage

- Medium Earth Orbit Search And Rescue (MEOSAR)



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Cospas-Sarsat Components

Space Segment:

- 5 LEO payloads (2 more planned to be deployed by the end of 2018)
- 5 GEO payloads + 4 additional under in-orbit tests (5 more planned to be deployed before 2019)
- Galileo (10 Operational SAR payloads at FOC + 2 at IOC and 4 under test), GPS DASS (20 experimental SAR payloads at IOC), Glonass (2 Operational SAR payloads useable for testing purposes).
- Additional SAR payloads to be deployed by 2020: 9 SAR Galileo, 6 SAR Glonass and up to 8 GPS DASS SAR

Ground Segment:

- 54 Operational LEOLUTs and 22 Operational GEOLUTs
- 7 commissioned MEOLUTs (EOC), 11 MEOLUTs currently used for testing purposes, more than 15 MEOLUTs planned or under development
- 30 Operational Mission Control Centres including 14 at LGM (Leosar, Geosar, Meosar)

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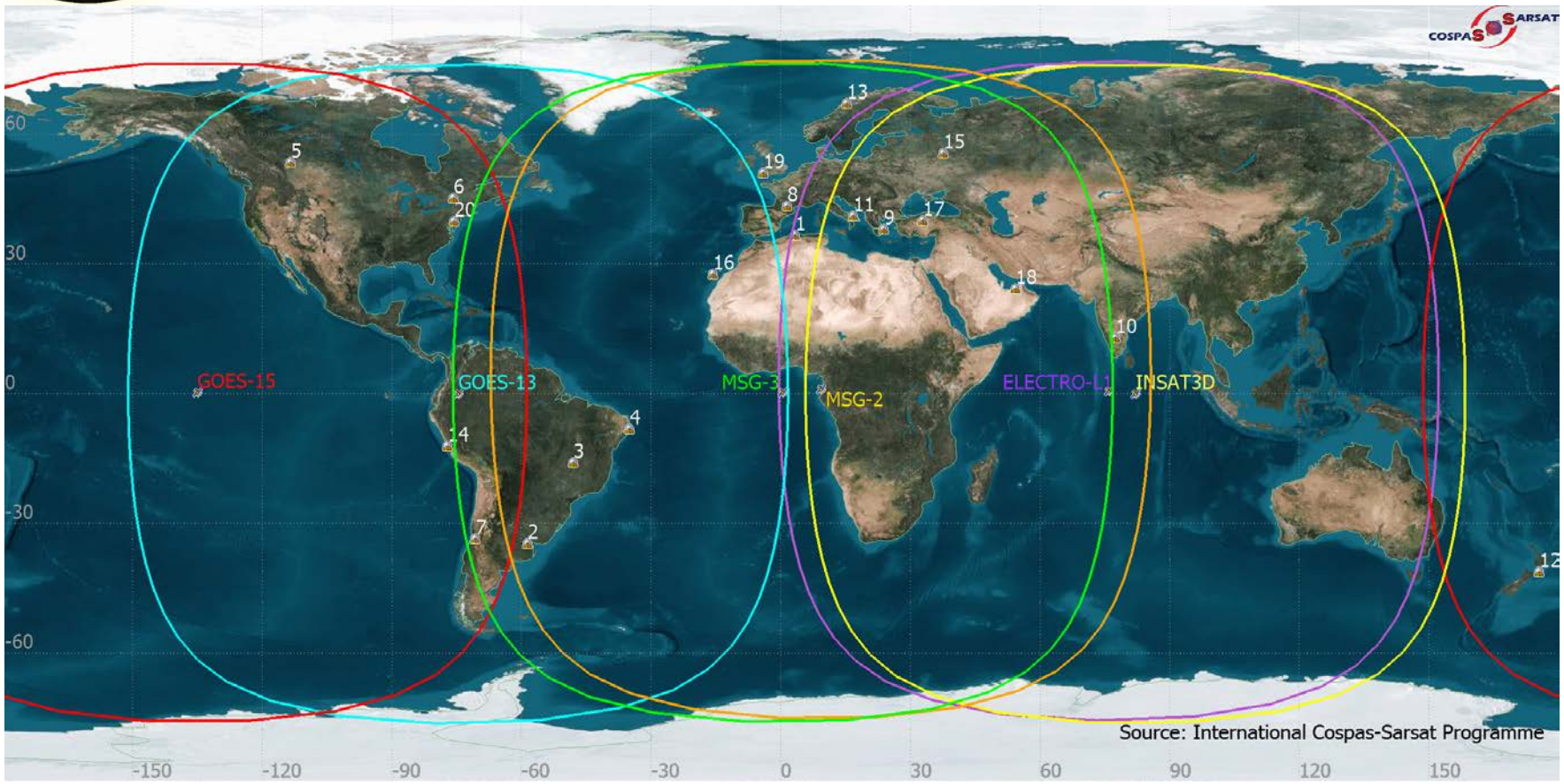
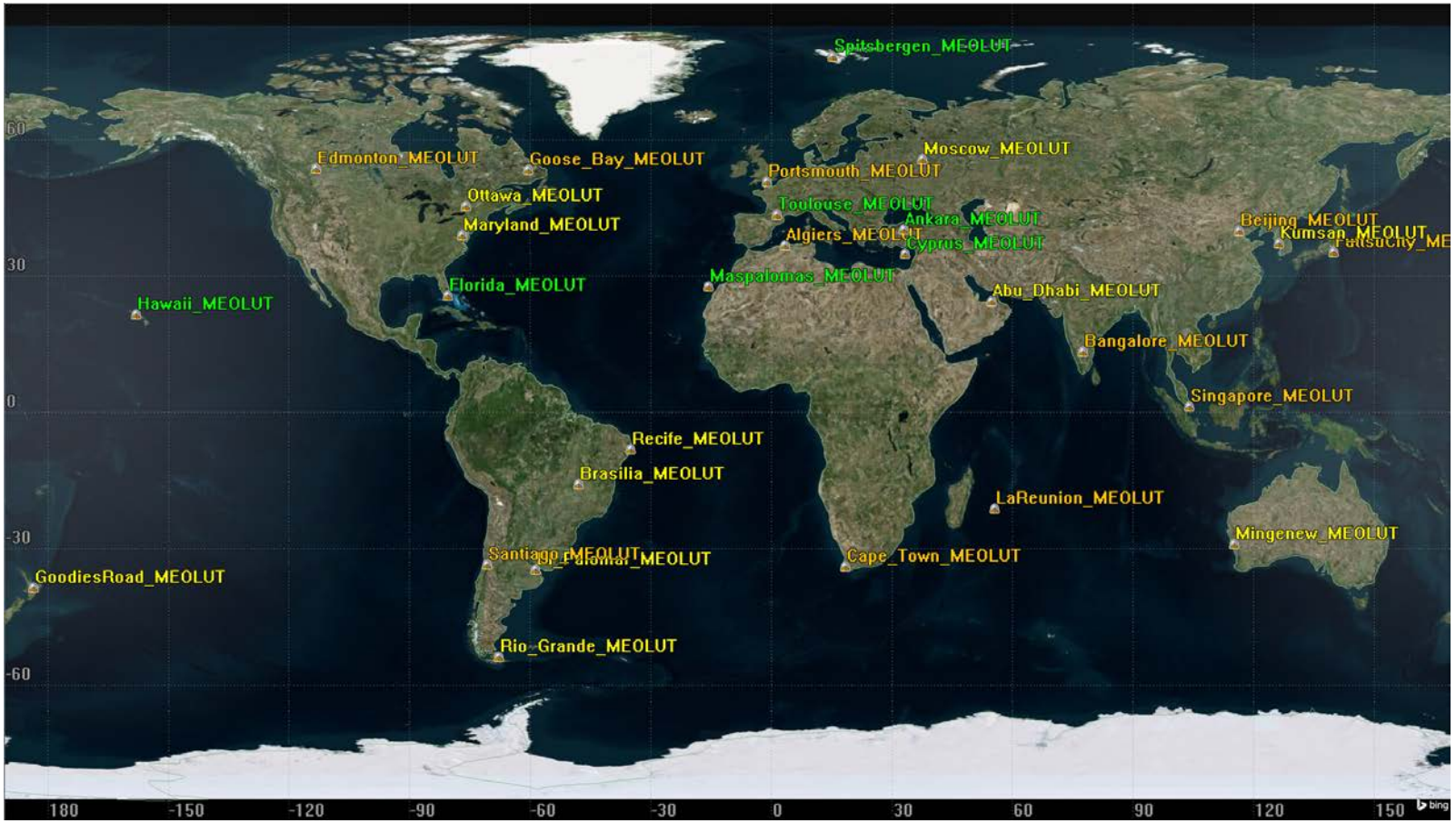
Space Segment: GEOSAR Coverage

As of May 2017



MEOLUTs (Current and Planned)



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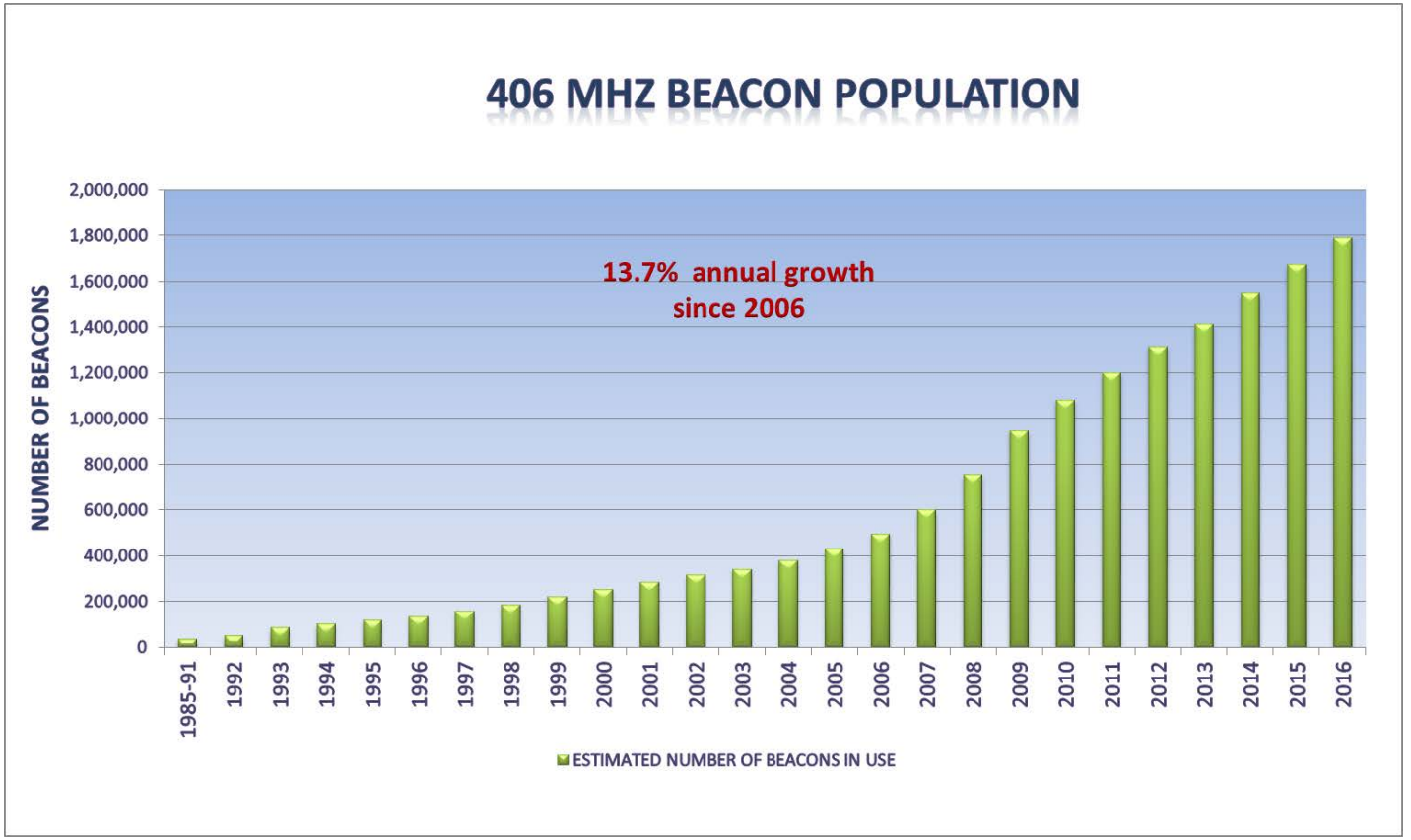
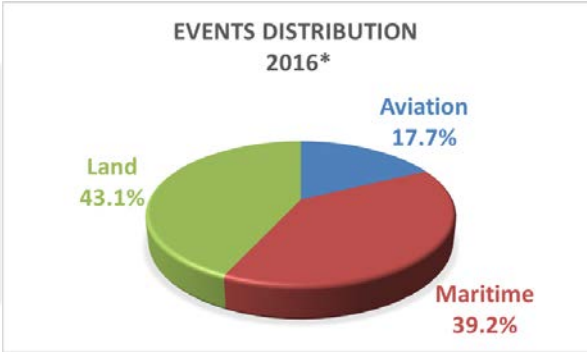
Beacon Population Evolution



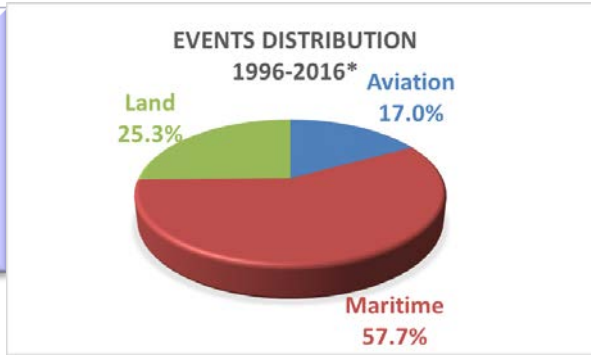
Cospas-Sarsat
SAR Events and Assisted Saves

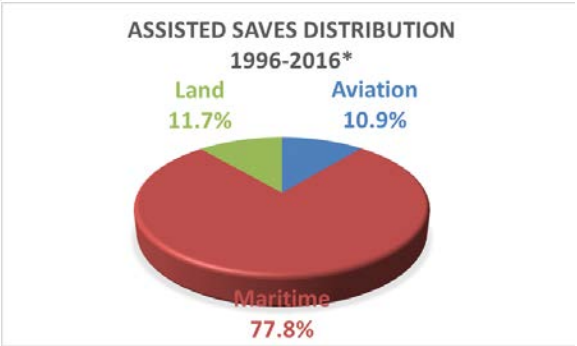
	2016*
SAR Events:	861*
P. Rescued:	2156*



SAR Events (1982 / 2016*)
> 12422*

P. Rescued (1982 / 2016*)
> 43522*

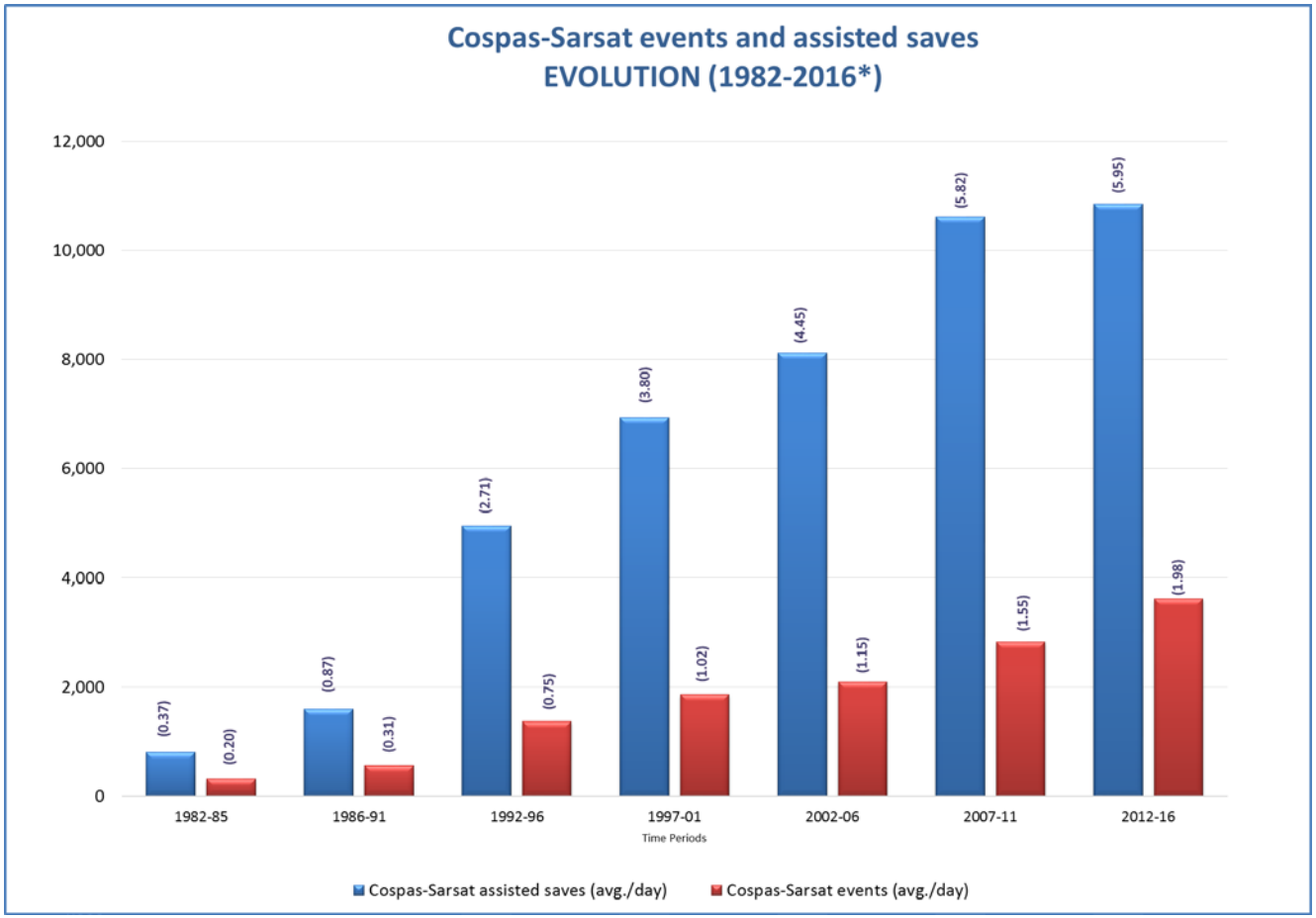




COSPAS SARSAT

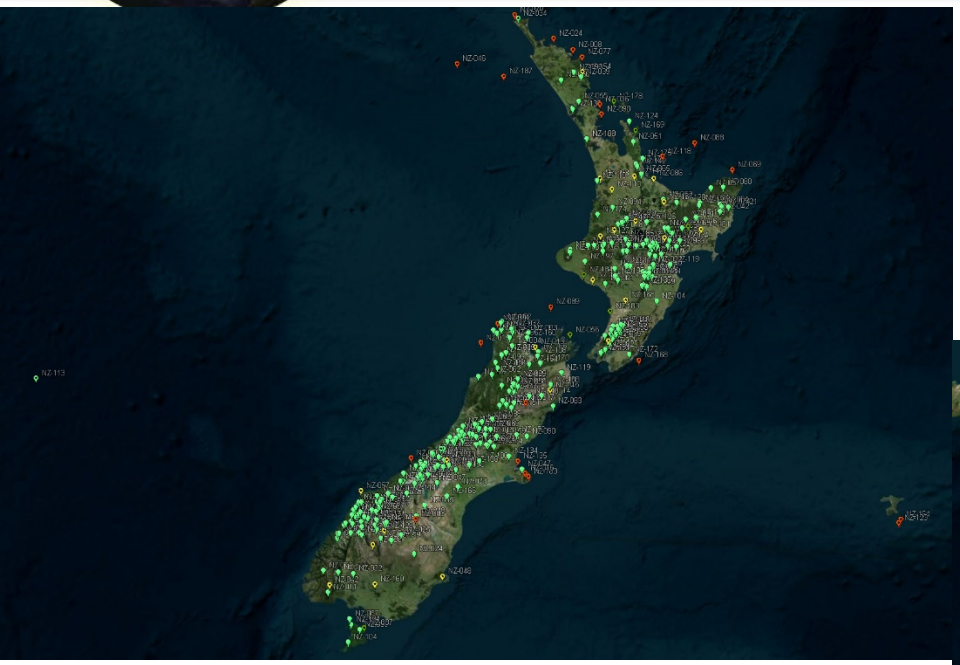
* Estimated from the 2016 data received so far

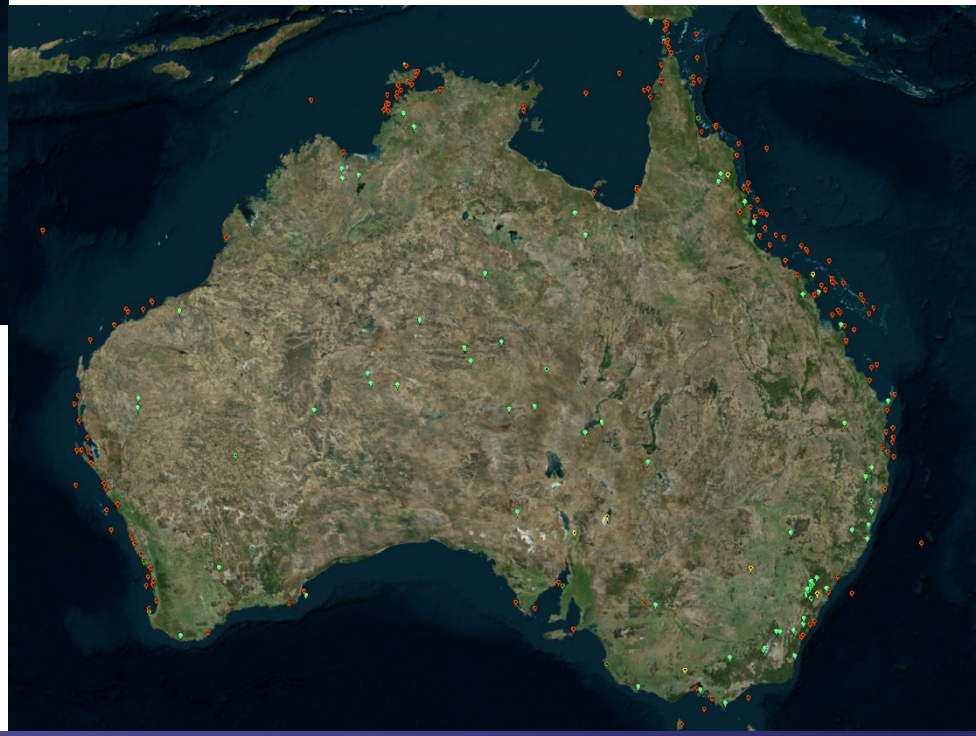
Cospas-Sarsat Saves Evolution



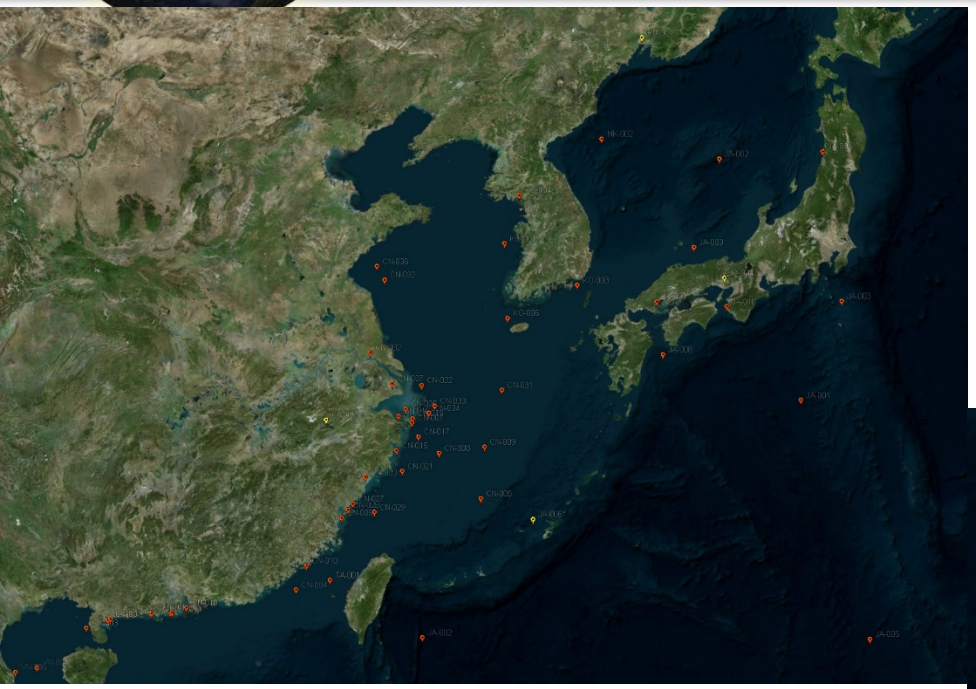
ON AVERAGE, CLOSE TO 6 ASSISTED RESCUES/DAY IN THE LAST 10 YEARS

Distribution of assisted save locations

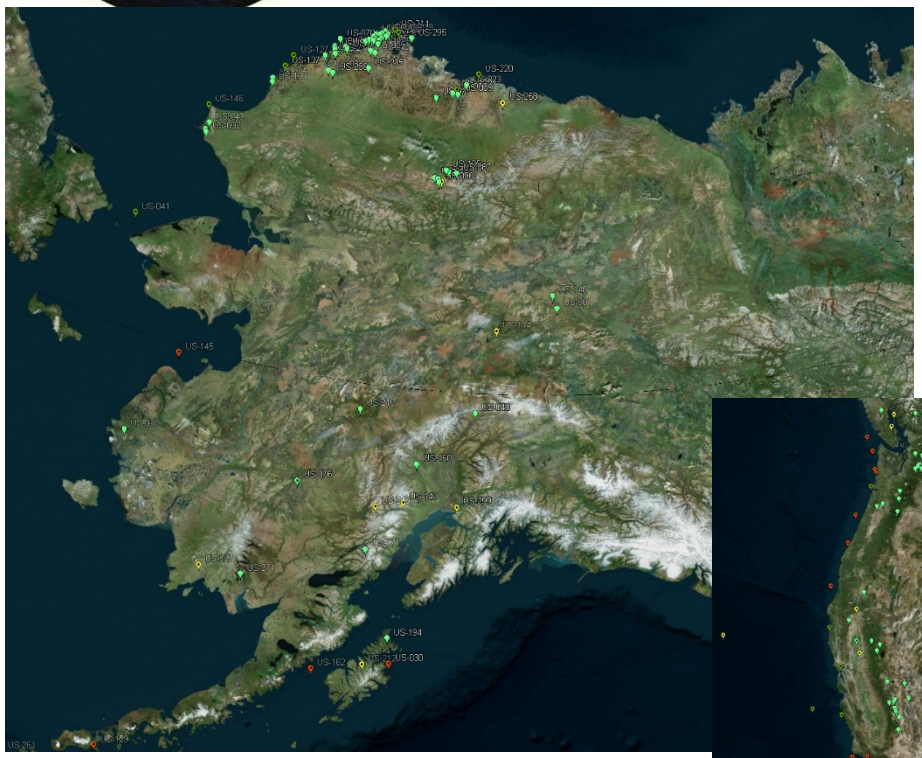




Distribution of assisted save locations



Distribution of assisted save locations



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Recent Cospas-Sarsat meetings CSC-57 Outcomes

57th Council Meeting (December 2016)

- Amendments approved for 10 C/S Technical documents: T.001, T.003, T.004, T.007, T.008, T.016, T.017, T.018, T.019, T.020 and approval of new document C/S T.022 preliminary Issue A.
- Amendments approved to G.004 (Glossary), R.018 and P.016 and 7 other operational and programmatic documents.
- Agreement that all agreed criteria to enter the MEOSAR Early Operational Capability (EOC) phase had been satisfied, and declaration of MEOSAR EOC as of 13 December 2016.

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Cospas-Sarsat Recents Meetings TG-1 2017 Outcomes

TG-1 2017 on SGB and SGB/FGB ELT(DT) Development of Technical Documents (March2017)

- Amendments developed for 9 C/S Technical documents: T.001, T.002, T.007, T.008, T.009, T.018, T.019, T.020, T.021.
- The amendments to documents C/S T.001, T.007, T.018 and T.019 were considered matured enough and schedule critical for the development of ELT-DTs and were recommended for approval by the CSC-58 in May 2017. Proposed amendments to these documents could be found on the TG-1 website in the annexes of the TG-1 Report.
- Discussion on requirements for a combined ELT-DT and ELT-AF.

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MEOSAR Operational Capability Evolution

- Each phase beyond EOC (i.e., IOC and FOC) will provide improvement in MEOSAR system performance.
- At IOC, all ground segment equipment deployed will meet documented system performance requirements, and limitations observed at the entrance to EOC are anticipated to be resolved.
- At FOC, the MEOSAR system will have sufficient ground- and space-segment resources to provide global and real time coverage.
- The entrance into the IOC phase and FOC phases are anticipated within the next years before the end of the decade.

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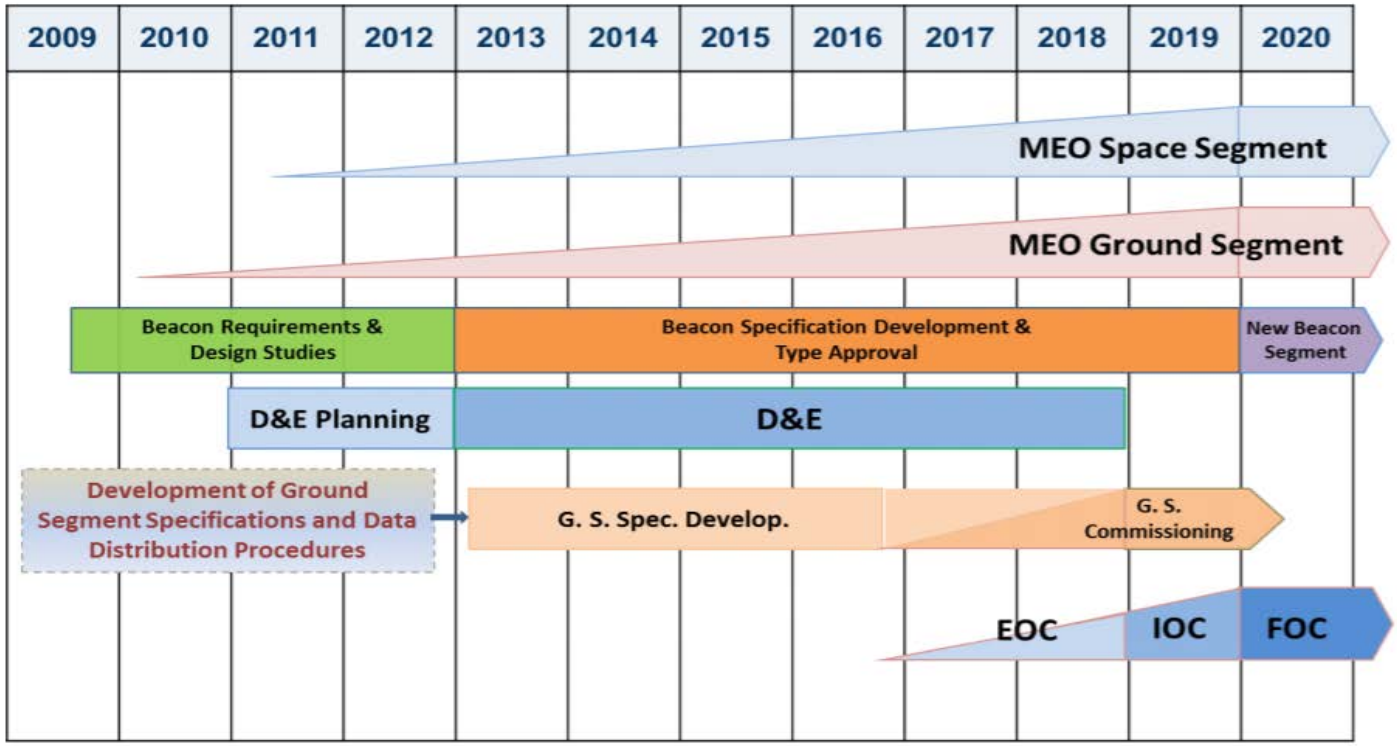
MEOSAR Operational Implementation

ANNEX I

TENTATIVE TIME LINE OF MEOSAR IMPLEMENTATION



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Upcoming Cospas-Sarsat meetings

- Task Group Meeting on SGB and SGB/FGB ELT(DT) Development of Operational Documents, C/S A.003 and QMS (TG-2/2017) (develop operational documents for the use of ELT-DTs and SGBs).
- 31st Joint Committee Meeting (October 2017.
- 59th Council Meeting (February 2018).

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Upcoming Cospas-Sarsat activities

- Continuation of the MEOSAR system deployment (More satellites deployed and commissioned, more MEOLUTs made available and commissioned, more antennas in currently-deployed MEOLUTs and more MCCs commissioned at LGM).
- MEOSAR D&E Phase III Test Campaign.
- SGB POC Test Campaign.
- A new additional LEOSAR payload deployed.
- ELT-DT tests.

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MEOSAR D&E

- "MEOSAR D&E should assess technical and operational performance and offer a well supported analysis of the characteristics, capabilities, and benefits of the MEOSAR system." (see document C/S R.018).
- Characterisation of the technical and operational performance of the MEOSAR system (8 technical tests & 7 operational tests).
- evaluation of the operational effectiveness of the MEOSAR system.
- development of performance specifications and commissioning standards for MEOSAR satellites, MEOLUTs and MCCs.
- provide the basis for the integration of the MEOSAR system in the Cospas-Sarsat Programme.
- Phase III operational tests of the MEOSAR D&E will be conducted with a mix of S-band and L-band satellites (T-tests L-band only).

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MEOSAR D&E

Technical tests	Operational tests
T-1: Processing Threshold and System Margin T-2: Impact of Interference T-3: MEOLUT Valid/Complete Message Acquisition T-4: Independent Location Capability T-5: Independent 2D Location Capability for Operational Beacons T-6: MEOSAR System Capacity T-7: Networked MEOLUT Advantage T-8: Combined MEO/GEO Operation Performance	O-1: Potential Time Advantage O-2: Unique Detections by MEOSAR System as Compared to Existing System O-3: Volume of MEOSAR Distress Alert Traffic O-4: 406 MHz Alert Data Distribution Procedures O-5: SAR/Galileo Return Link Service O-6: Evaluation of Direct and Indirect Benefits of the MEOSAR System O-7: MEOSAR Alert Data Distribution - Impact on Independent Location Accuracy

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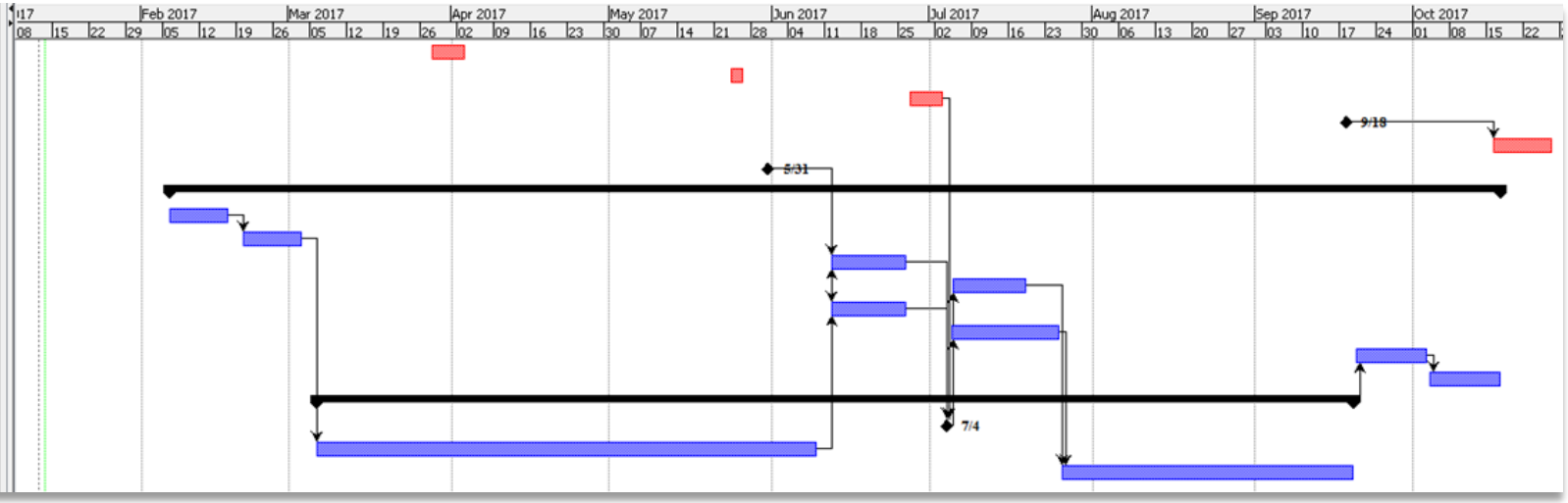
Phase III Timeline

Duration	Name
5 days?	TG-1/2017
3 days?	CSC-57
5 days?	TG-2/2017 (TBC)
0 days	JC-31 WP deadline
10 days?	JC-31 (TBC)
0 days	4 Add. Galileo (16 Galileo total)
182 days	T-Tests
10 days	T-1
10 days	T-3
11 days	T-4
10 days	T-4/T-7
11 days	T-5
15 days	T-5/T-7
10 days	T-6
10 days	T-8
142 days	O-Tests
0 days	Switch to network mode
70 days	O-1/2/3/4/5/6/7 Stand-alone
40 days	O-1/2/3/4/5/6/7 Network



Correspondence Working Groups

- Correspondence Working Groups are now intensively used by Cospas-Sarsat participants to conduct numerous specific tasks.
- 12 Correspondence Working Groups are currently active within the Cospas-Sarsat Programme Among these CWGs:
- ELT-DTs
- T.018/T.021 document development (SGB)
- Homing and Intelligent Transmission Scheduling Correspondence Group (SGB)

Cospas-Sarsat Secretariat additional activities

- International Beacon Registration Database
- Cospas-Sarsat Video

International Beacon Registration Database (IBRD)

- Cospas-Sarsat operates the International 406 MHz Beacon Registration Database (IBRD) which is freely available to users with beacons coded to a country with no national registration facilities, or with beacons coded to an Administration that wishes to allow use of the IBRD.
- IBRD helps to facilitate the availability of beacon registration data to SAR services.
- In 2016, there were over 12,690 new beacon registrations in the IBRD, which had the end of 2016 held close to than 67,600 registration records for beacons from 142 Administrations. of which only 22 had less than 500 beacons registered and only 13 more than 1000.
- The search and rescue community has continued consistent use of the IBRD, with an average of 382 SAR users per month logging in to the IBRD in 2016.

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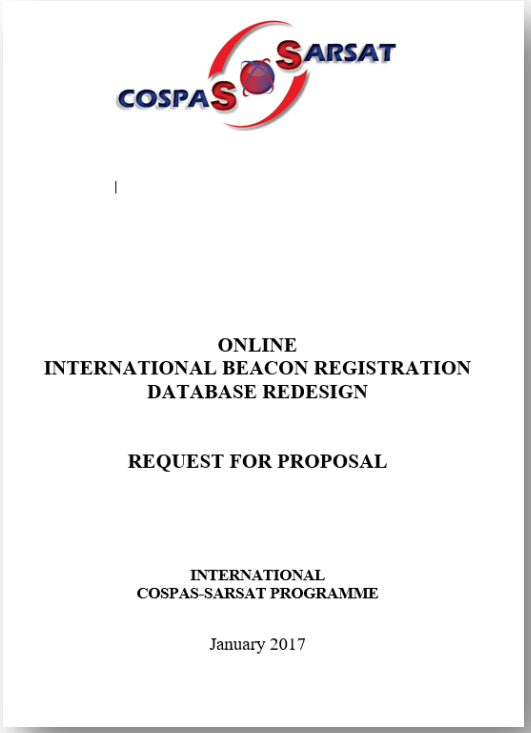
International Beacon Registration Database

PROJECT OBJECTIVES

- Benefit beacon owners, National Data Providers, Ship and Aircraft Inspectors and Maintenance Personnel, and SAR services by making beacon registration information easily accessible.
- Benefit Cospas-Sarsat Secretariat employees by giving them the ability to update page contents quickly and manage reports, contacts and users more efficiently.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ONLINE
INTERNATIONAL BEACON REGISTRATION
DATABASE REDESIGN

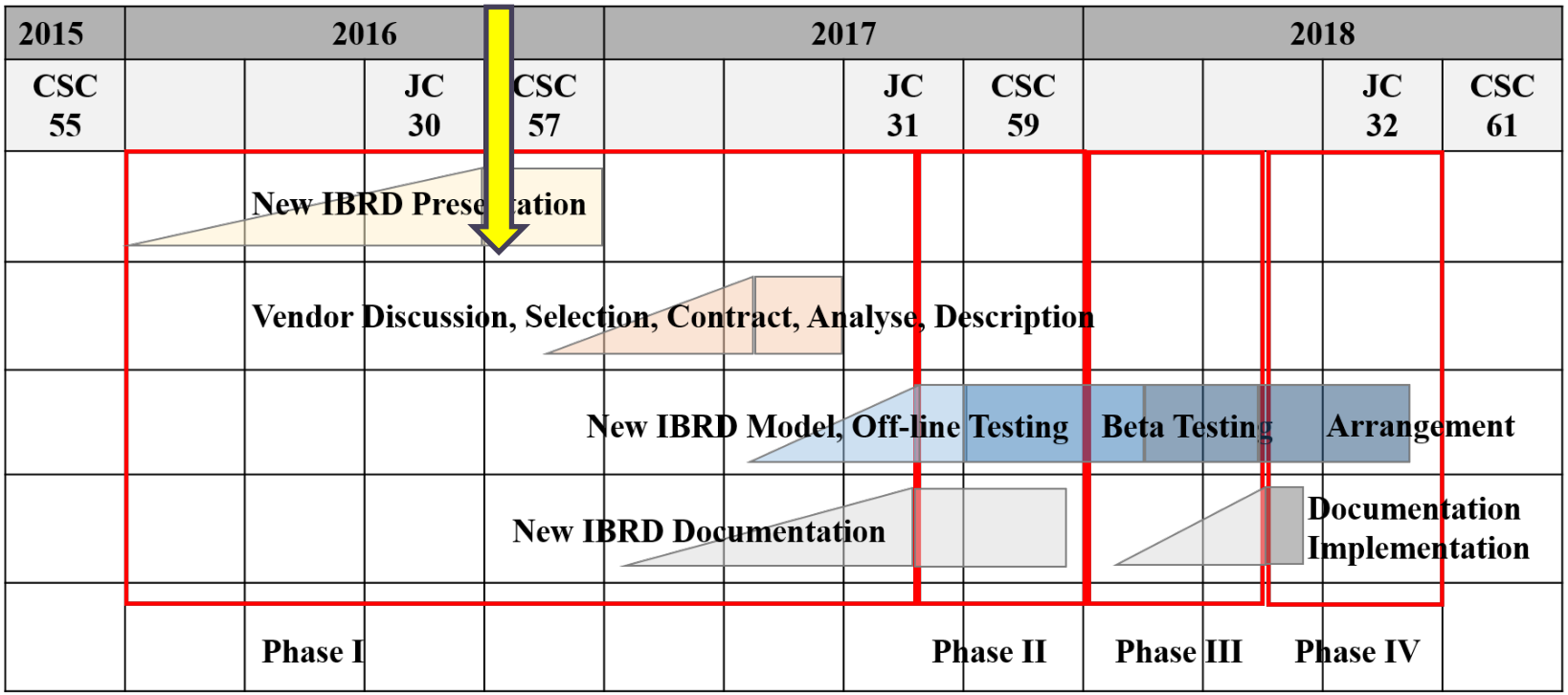
REQUEST FOR PROPOSAL

INTERNATIONAL
COSPAS-SARSAT PROGRAMME

January 2017

New IBRD development schedule

Time line to be ready end of 2018



New IBRD features

1. Next-generation beacon registration
2. Mobile friendly interface
3. Mix National Data Provider (creation) / Owner (u
4. Email address validation
5. New decode program
6. Quick registration
7. Shared beacons
8. Optional medical data
9. Photos
10. Temporary activity
11. New SAR Service interface

New Cospas-Sarsat Video(s)

- At its CSC-55 Session in December 2015, the Council decided to proceed with development of the new Programme videos.
- The initial version of the training videos was available for review at CSC-57.
- Work has begun towards the development of FAQ-style video-minis, designed for hosting on YouTube.
- For further details see CSC-57/OPN/11/1.
- A close-to-final version of the main Cospas-sarsat video will be reviewed at CSC-58.

COSPAS SARSAT

For More Information

International Cospas-Sarsat Programme
1250 René Lévesque West, Suite 4215

Montréal, Canada H3B-4W8

Phone: +1 514 - 500 – 7999 ext. 1004
Fax: +1 514 - 500 - 7996

Email: dstpierre@cospas-sarsat.int

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