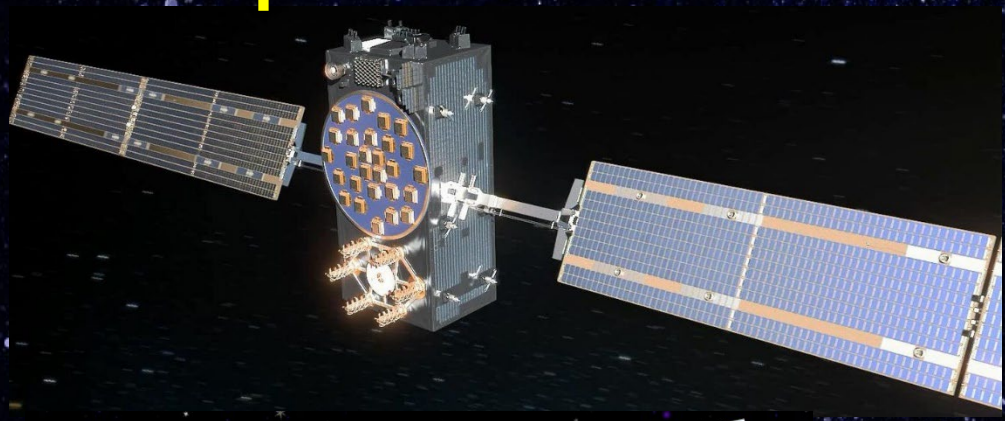
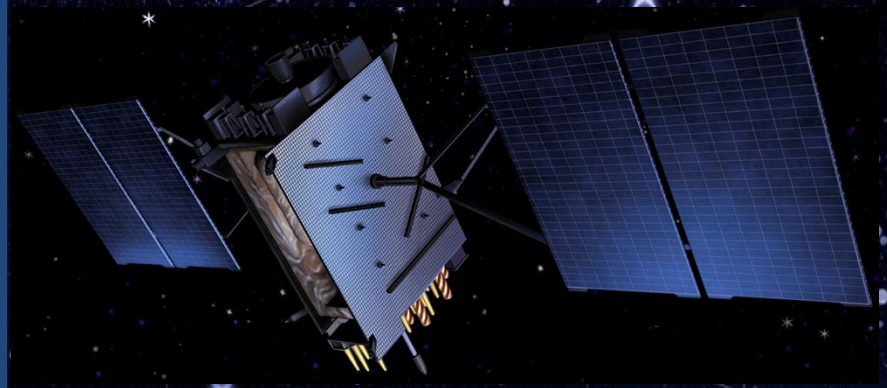
Beacon Manufacturers Workshop
13 May 2022





PRELIMINARY RESULTS OF THE 2022 SURVEY OF BEACON MANUFACTURERS

Andryey Zhitenev
Cospas-Sarsat Secretariat

Preliminary Results of the 2022 Survey of Beacon Manufacturers

2022 Survey - Participants

- conducted by the Cospas-Sarsat Secretariat since 1991, annually

- **42** beacon manufacturers participated in the 2022 survey
- geographical distribution of participating manufacturers:

  - Europe: 33%
  - North America: 30%
  - Rest of the World: 37%

Extended 2022 Survey Questionnaire

- Better structured and more detailed survey form:
  - detailed beacon types and categories
    - ELT: (AF) / (AD) / (AP) / (S), ELT(DT)
    - EPIRB: FF, Non FF, VDR
  - questions about the source of navigation data (ELTs)
  - questions about production volumes and plans for new beacon types: SGBs, ELT(DT)s, RLS
- Web-based survey form submission method
  - 38% of submissions
  - future automation of data collection and processing
  - higher reliability of data collection and processing

2022 Survey Web-Based Forms

https://www.cospas-sarsat.int/en/documents-pro/beacon-manufacturer-survey-2022

2022 Survey Submission Methods

- email : 57%
- web : 38%
- other (phone) : 4%

2022 Survey Highlights

207,218

beacons produced Worldwide in 2021

3.1% increase from 2020

2022 Survey Highlights

Distribution of Beacon Manufacturers by Annual Production Volumes in 2021 and 2020 (*)

Annual production	Count of manufacturers in 2021	% to Total in 2021	Count of manufacturers in 2020	% to Total in 2020
"0" production	3	7.1%	9	19.1%
1-499 units	16	38.1%	16	34.0%
500-999 units	4	9.5%	5	10.6%
1000-5000 units	14	33.3%	11	23.4%
> 5000 units	5	11.9%	6	12.8%
TOTAL	**42**	**100.0%**	**47**	**100.0%**

* 500, 1K, 5 K thresholds - as requested by BMW 2020

2022 Survey Highlights

Annual Production

- 2021: **207,218** beacons produced globally (+3.1% vs 2020)

- 2020: ~ 2**01,000 (-1%)**
- 2019: ~**203,000** (- 0.3%)
- 2018: ~**204,000** (- 6.5%)
- 2017: ~**218,000** (+ 8.4%)
- 2016: ~**201,000** (+ 2.3%)
- 2015: ~**197,000** (+ 4.5%)
- 2014: ~**189,000** (+ 20.7%)
- 2013: **~156,000** (- 2.5%)
- 2012: ~**160,000** (+ 2.2%)

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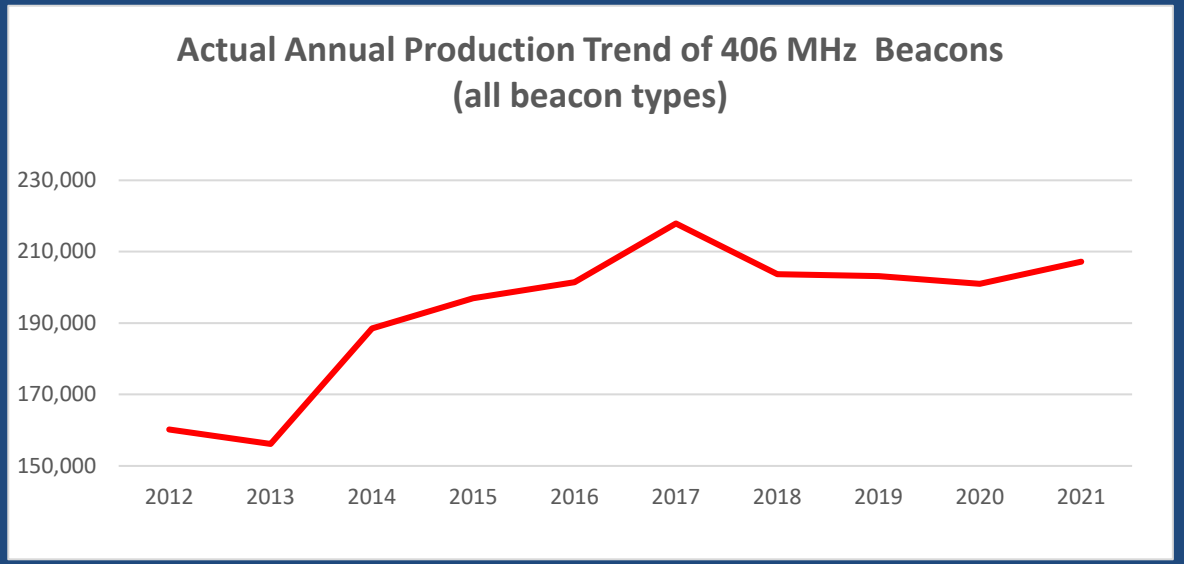
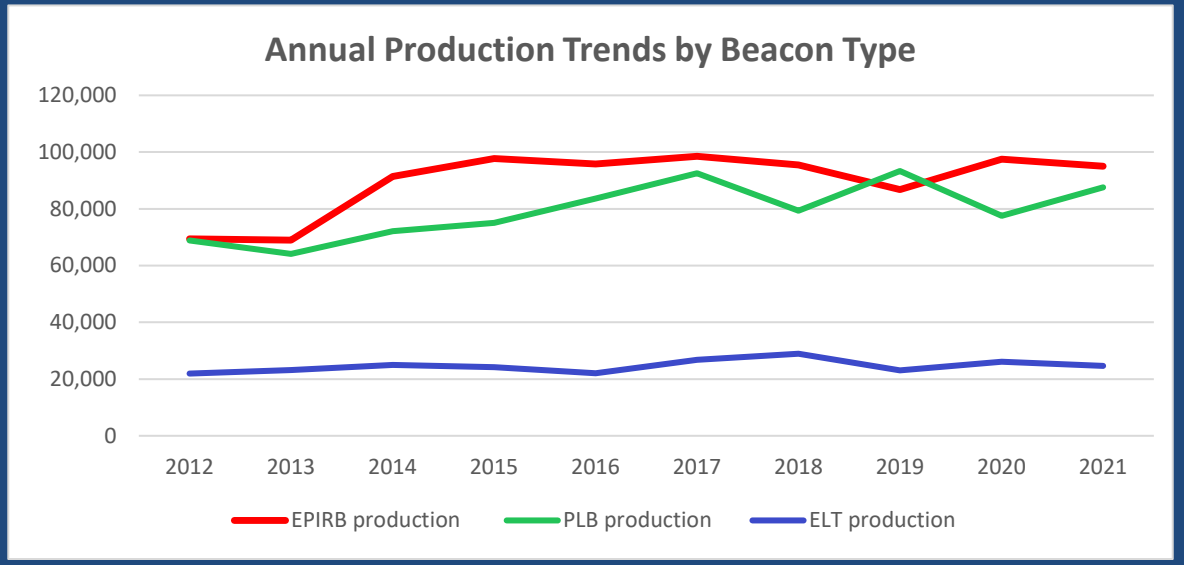
- 10-year average annual production growth : +4,500 units (+ 3% p.a.)





2022 Survey – Detailed Beacon Distribution

Beacon type	2021 Global Production, units	% of Total Beacon Type	% of Global Production Total
Total ELTs , Including:	24,656	100%	11.9%
- ELT(AF)	16,566	67.2%	8.0%
- ELT(AP)	937	3.8%	0.5%
- ELT(AD) and ELT(S)	7,153	29.0%	3.5%
- ELT(DT)	0	0.0%	0.0%
Total EPIRBs, including:	94,959	100%	45.8%
- EPIRB Float Free and EPIRB VDR	41,252	43.4%	19.9%
- EPIRB Non-Float Free	53,707	56.6%	25.9%
Total PLBs	87,603	100%	42.3%
Total of Global Production for all beacon types	207,218	100%	100.0%

Beacon manufacturers indicated that in 2021 they produced about 1,600 FGB RLS-enabled beacons, and there was no production of SGBs.

2022 Survey - Location Protocol Beacons

Beacon Type	Production of LP-beacons, units	Ratio of LP-beacons to all beacons produced, %	Ratio to all LP-beacons, %
EPIRBs	79,267	83.5%	43.1%
PLBs	87,294	99.6%	47.5%
ELTs	17,333	70.3%	9.4%
All 406 MHz Beacon Types	**183,894**	**88.7%**	**100.0%**

An estimated **1,484,000** LP beacons were in use at the end of 2021, which corresponds to 76 % of all beacons deployed worldwide

(73% - in 2020, 70% - in 2019, 63% - in 2018, 59% - in 2017)

2022 Survey – Navigation Data Source (ELTs)

ELT category	EXT Nav	EXT+INT Nav	INT Nav
ELT (AF)	12,004	1,763	
ELT (AP)		338	
ELT (S) and ELT(AD)			3,228
ELT (DT)			
All ELT categories	12,004	2,101	3,228

Estimated Global Beacon Population

- About **1,949,000** beacons were in use at the end of **2021** **(**using the assumed-replacement-period estimation method**)**
- Annual change in global beacon population: **~ +2.7%**
- Production in 2021(**~207,000)** was higher than in 2011 **(~157,000)**
- Estimates obtained with the alternative method (the Registration Rate method) indicates that in 2021 global beacon population could have reached **2,959,000** units.

Estimates of Beacon Population as Function of the Assumed Beacon Life Cycle

Analysis of Beacon Life Cycle Reported by Beacon Manufacturers and Estimated Global Population

Beacon Type	Historical modelling assumption, years	Median life cycle based on survey of 2022 (2021/2020 /2019/2018), years	Weighted* life cycle Based on survey of 2022 (2021/2020/2019/2018), years
EPIRB	10	10 (10/8/9/8)	10(8/9/9/9)
PLB	10	10 (10/9/8/8)	8 (8/8/7/7)
ELT	10	15(12/15/15/10)	17(18/19/16/17)
ALL beacon types	10	10 (10/10/10/10)	10(9/9/9/9)
Estimated Global 406-MHz beacon population in 2021	**~ 1,949,000 ("10-10-10" assumption)**	**~ 2,223,000 ("10-10-12" assumption)**	**~ 2,090,000 ("10-8-17" assumption)**

Note: * Weighted life cycle (WLS) was calculated with the formula:

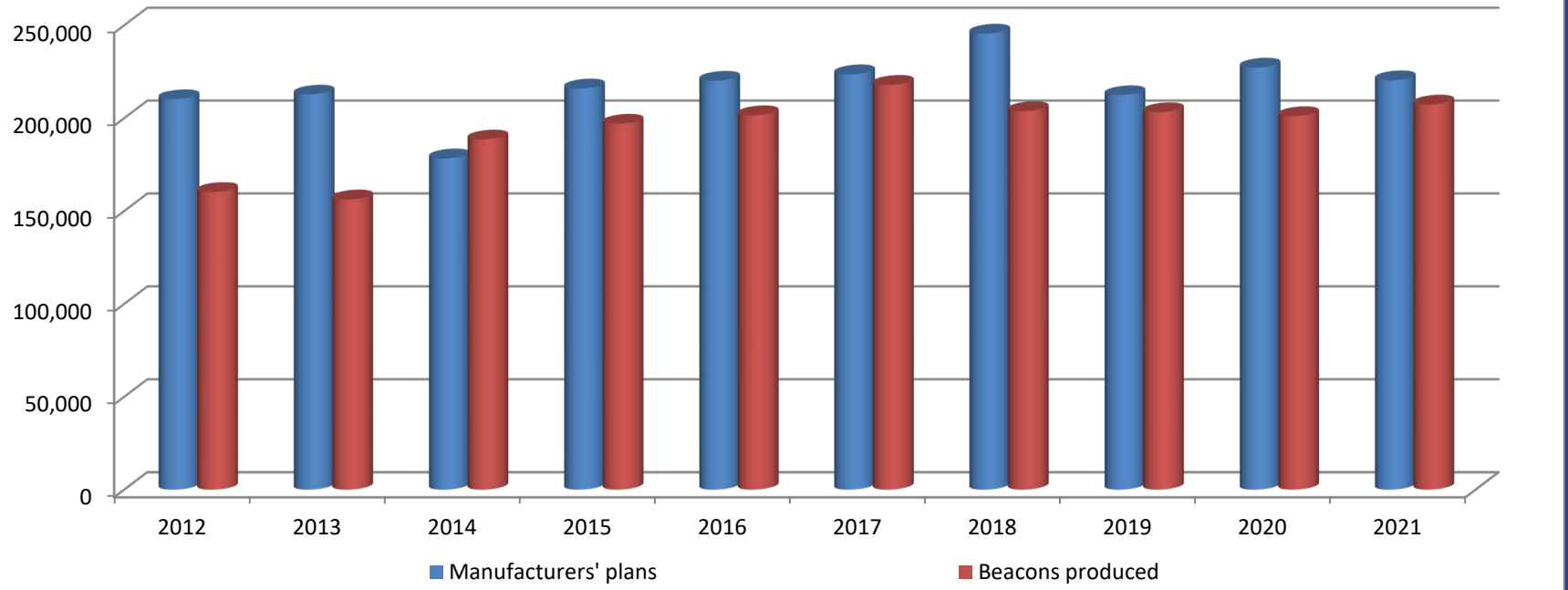
$$\mathbf{WLS} = \sum (\mathbf{L_i} \times \mathbf{W_i}) / \sum \mathbf{W_i},$$ where:

- $\mathbf{L_i}$ is the beacon life cycle reported by the i-th beacon manufacturer for a beacon type,
- $\mathbf{W_i}$ (weighting factor) is the annual production volume of a beacon type, as reported by the i-th beacon manufacturer.

Manufacturers' Production Plans for 2022

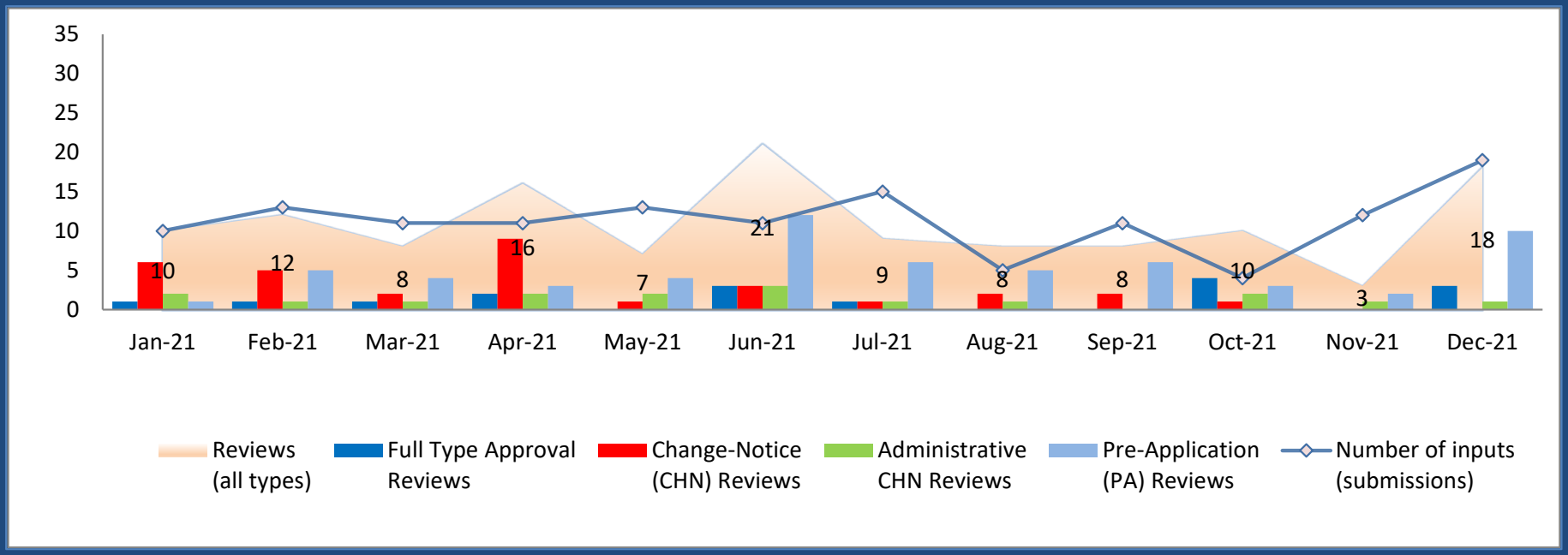
- For 2022, beacon manufacturers plan to produce over **265,000** new beacons (+28% over the actual 2021 production volume), including:
  - 107,000 new EPIRBs,
  - 27,000 new ELTs,
  - 131,000 new PLBs.
- Beacon manufacturers indicated their 2022 plans to produce about 25,000 FGB RLS-enabled beacons and 100 FGB ELT(DT)s . There are no SGB production plans.
- Based on the beacon manufacturers plans for **2022**, an estimated global population of 406 MHz beacons at the end of 2022 could reach: **2,053,000 units** (using the assumed-replacement-period estimation method; likely higher using the registration-rate method)

Comparison of Beacon Manufacturers' Plans vs Actual Annual Production



Beacon Type	Manufacturers' Plans for 2021	Actual Production in 2021	Actual over Forecast Discrepancy, %
All beacon types	220,300	207,200	-6.0%

Type Approval Activity in 2021



In 2021, the Secretariat performed 135 reviews of type-approval submissions, including:

- 16 submission for full type approvals,
- 32 change notices (“technical”) submissions;
- 17 submissions for administrative change notices,
- 61 previews of re-application submissions .

Type Approval Applications - Pre-application Consultations

- Pre –application consultations are highly recommended when:
  - beacons with novel or non-standard features,
  - beacons with customer-specific non-standard operating scenarios,
  - special-use (LoC) beacons,
  - beacons with known non-compliances,
  - new beacon types (e.g., SGBs, ELT(DT)s),
  - CHNs for modifications not covered by Section 6,
  - application for two or more models,
  - beacon with TCXO from a new TCXO manufacturer,
  - new beacon manufacturers;
  - other circumstances, when a pre-test advise and recommendation from the Secretariat is needed

Type Approval Applications - Pre-application Consultations

- Objectives of pre-application/pre-test consultations:
  - familiarization with the beacon design and features, intended operating scenarios, modes of operation
  - define the applicable standards
  - pre-application check of documentation and technical data items
  - define a need for a case-specific test setup/procedures
  - define a scope of type-approval testing

For more information...

Cospas-Sarsat Programme
1250 Rene Levesque Blvd, Suite 4215
Montreal, Quebec H3B 4W8
Canada

Phone: +1 514 500 7999
Fax: +1 514 500 7996
Website: www.406.org
E-mail: mail@406.org

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