Implementation of
WRC-15 outcomes
on Satellite Services

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WRC

World Radiocommunication Conference

- Held every 3 to 4 years
- Review or revise international treaty on radio-frequency spectrum and orbits
- Instructs BR and RRB
- Final Agenda set by ITU Council

PURPOSE

1. Harmonize global spectrum to create economies of scale, roaming and interoperability

2. Create regulatory certainty for a multi-trillion dollars activity playing an increasingly important role in the development of our societies

3. Creating certainty requires consensus: time, efforts and patience

4. Maintaining a sustainable ecosystem for radiocommunications

Global Space Industry

$ 335.3 billion

Source: SSIR 2016 Tauri Group

IMPORTANCE OF SATELLITE

Agriculture

Corporate networks

Maritime communication

VSAT

Earth Observation

Aviation Security

Telemedicine

E-learning

Cellular Backhaul

Internet

Disaster Relief

Satnav

SNG

DTH

Global Flight Tracking

WRC-15

2 - 27 Nov 2015
Geneva

3275 Participants
162 Member states
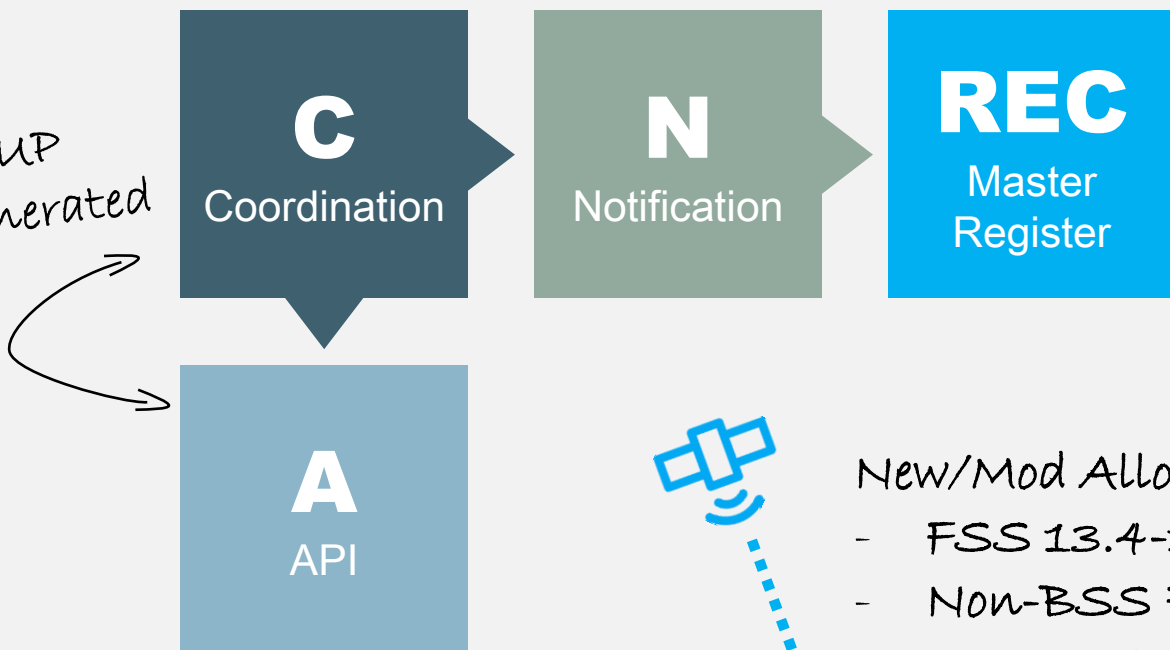130 other entities

40 Topics

678 Documents
2888 proposals
2/3 common proposals
(regional or multi-countries)

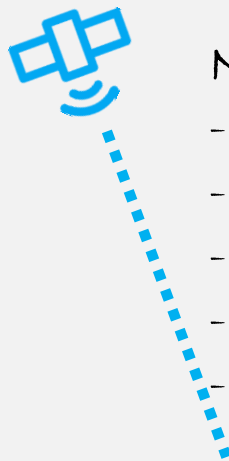120-day Notification & DBIU link removed but must be deployed & maintained continuously (11.44B.2)
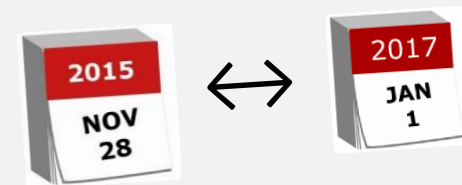
6m period SUP API auto-generated

C Coordination

N Notification

REC Master Register

No. 13.6 clarifications reinforced

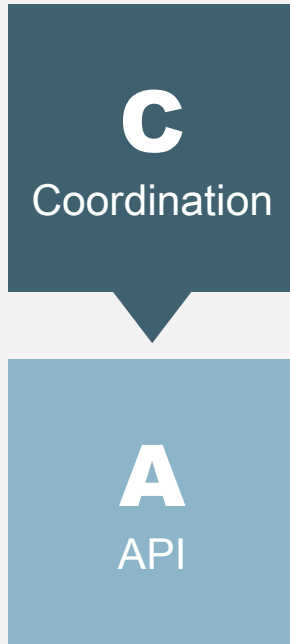If notified beyond 6m, 3-year suspension period reduced (MOD No. 11.49)

A API

New/Mod Allocations
- FSS 13.4-13.65 GHz
- Non-BSS FL 14.5-14.8 GHz
- MMSS 7375–7750 MHz
- EESS 7190-7250 MHz
- EESS 9200-9300, 9900-10000 MHz and 10.-10.4 GHz

2015 NOV 28 ↔ 2017 JAN 1

Entry into force

Elimination of submission of APIs

C Coordination	
A API	

- From **1 Jul 2016**, BR ceased to accept APIs for satellite networks or systems subject to coordination
- Between 1 Jul – 31 Dec 2016, Coordination Requests (without APIs) will have date of receipt **1 Jan 2017**
- From **1 Jan 2017**, Coordination Requests will have "actual" date of receipt
- BR will publish API basic characteristics based on Coordination Request
- BR currently developing submission system as per Res 908

Source: **CR/401 of 19.05.2016 and CR/415 of 09.12.2016**

C

Coordination

Use of 14.5-14.8 GHz

- Administration should specify the use 14.5-14.8 GHz when submitting Coordination Request – BSS feeder link (No. 5.510) or non-BSS feeder link (Res 163/164)
- If non-BSS FL, provide commitment to meet separation distance and PFD limits (A16c of Appendix 4) and antenna diameter (C.10.d.7 of Appendix 4)
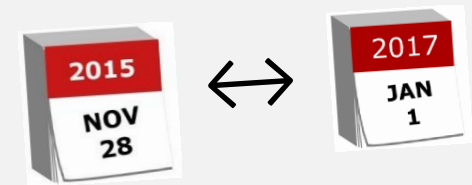
Source: **CR/403 of 05.07.2016**

C
Coordination

Effective date of entry in force

- Finding is "qualified favourable" if frequency allocation is adopted by WRC but not yet in force at time of submission and will be in force by date of bringing into use
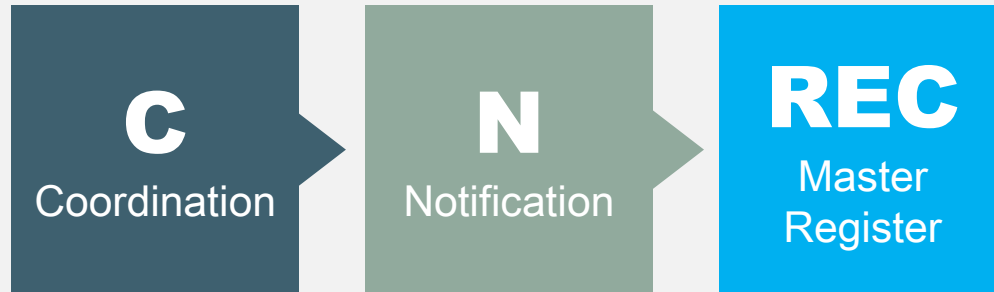
Source: **Rules of Procedure RRB16/72**

2015 NOV 28 ↔ 2017 JAN 1

Entry into force

Clarification on notified/recorded assignments (No. 13.6)

- If Administrations provide incomplete clarification, BR to request additional or alternative information
- Use of Article 48 (military radio installations) has to be direct reference, else BR will continue requesting clarification under No. 13.6

Source: **CR/389 of 29.01.2016**

C Coordination	N Notification	REC Master Register

New format and improved process

- In coordination, BR introduced more detailed list of affected satellite networks due to same or opposite direction of transmission
- In notification, BR introduced detailed provisions under No. 11.41 and NOTEX system to implement No. 11.41A

Source: **CR/397 of 08.04.2016**
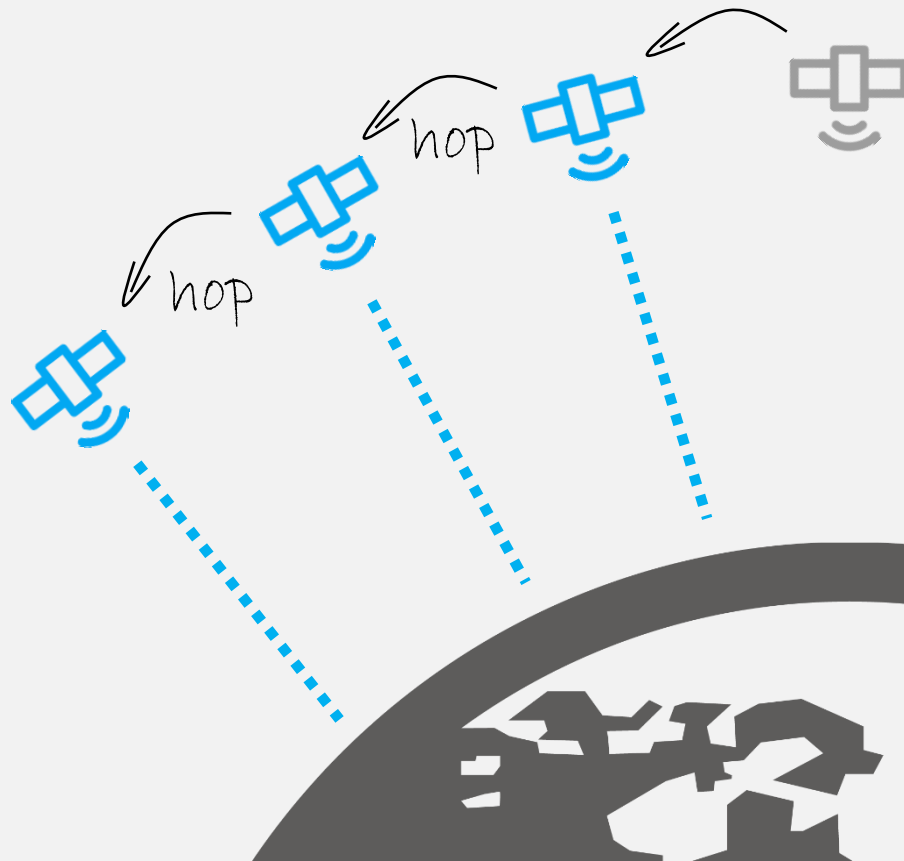
Satellite launch failure

- WRC-15 confirmed WRC-12 decision
- RRB to address co-passenger delay or force majeure
- Extension to be "limited and qualified"

Source: **CR/389 of 29.01.2016**

One space station to bring into use (BIU) multiple orbital locations

- WRC-15 adopted Res 140 (WRC-15) to deal with this issue
- Administrations to inform BR if BIU or BBIU using existing satellite (within past 3 years) or not
- BR developed form and webpage
- From 1 Jan 2018, considered not BIU or BBIU if info not provided by Administrations

Source: **CR/396 of 31.03.2016, CR/403 of 05.07.2016**

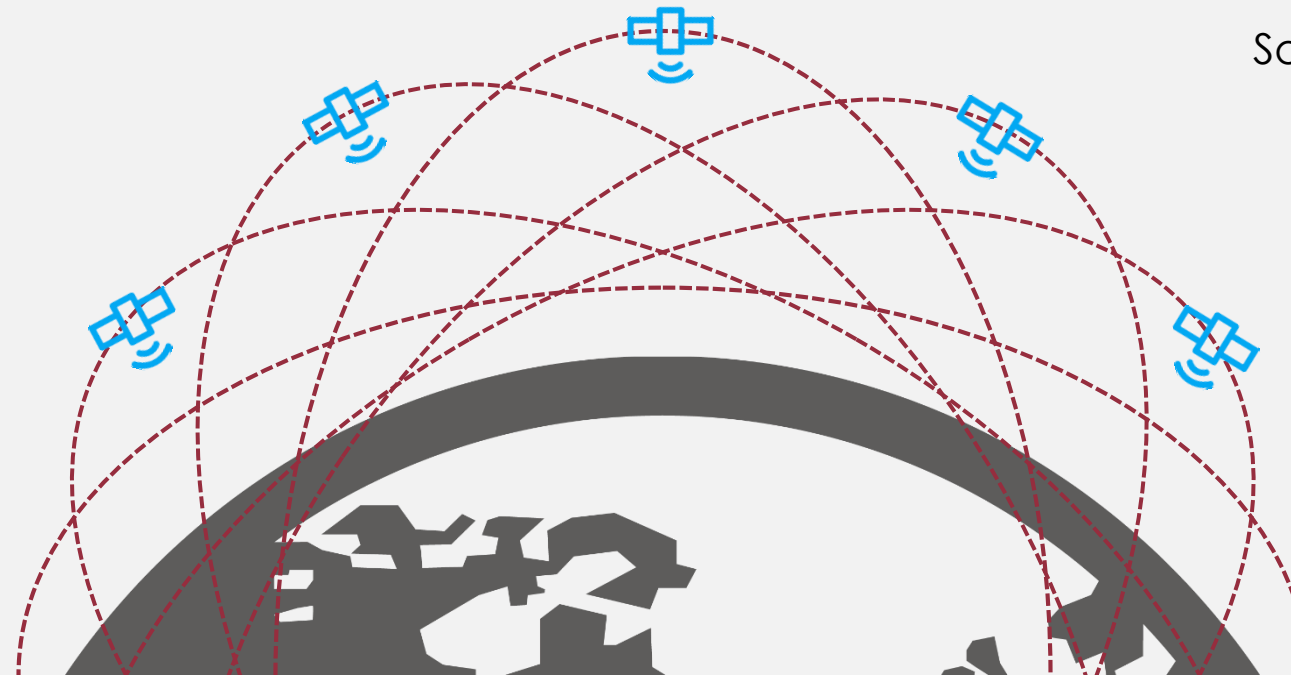hop

hop

Bringing into use of non-GSO FSS/MSS systems

- ITU-R to examine under WRC agenda item 7 and develop possible additional milestones beyond RR Nos. 11.25 and 11.44
- To consider implications on non-GSO systems BIU after WRC-15

Source: **RRB-73 RoP on No. 11.44**

Coordination among non-GSO FSS systems

- Administrations may mutually agree on multilateral coordination meetings
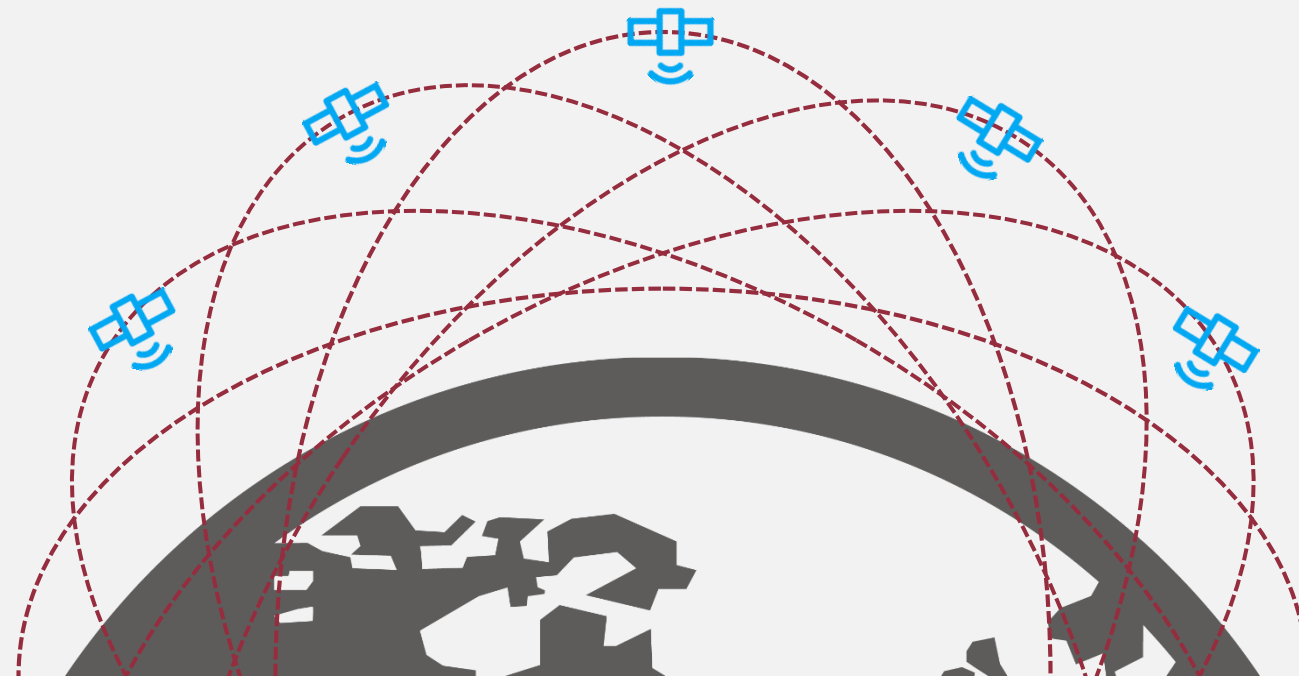- ITU-R can further study / submit under WRC agenda item 7

Source: **CR/389 of 29.01.2016**

Equivalent Power Flux-Density (EPFD) software

- EPFD limits are used to protect GSO from NGSO systems
- Beta version of EPFD software provided for testing (Summer 2016)
- Final software released in November 2016
- Administrations of NGSO systems are advised to prepare PFD/EIRP masks

Source: **CR/405 of 03.06.2016, CR/414 of 06.12.2016**
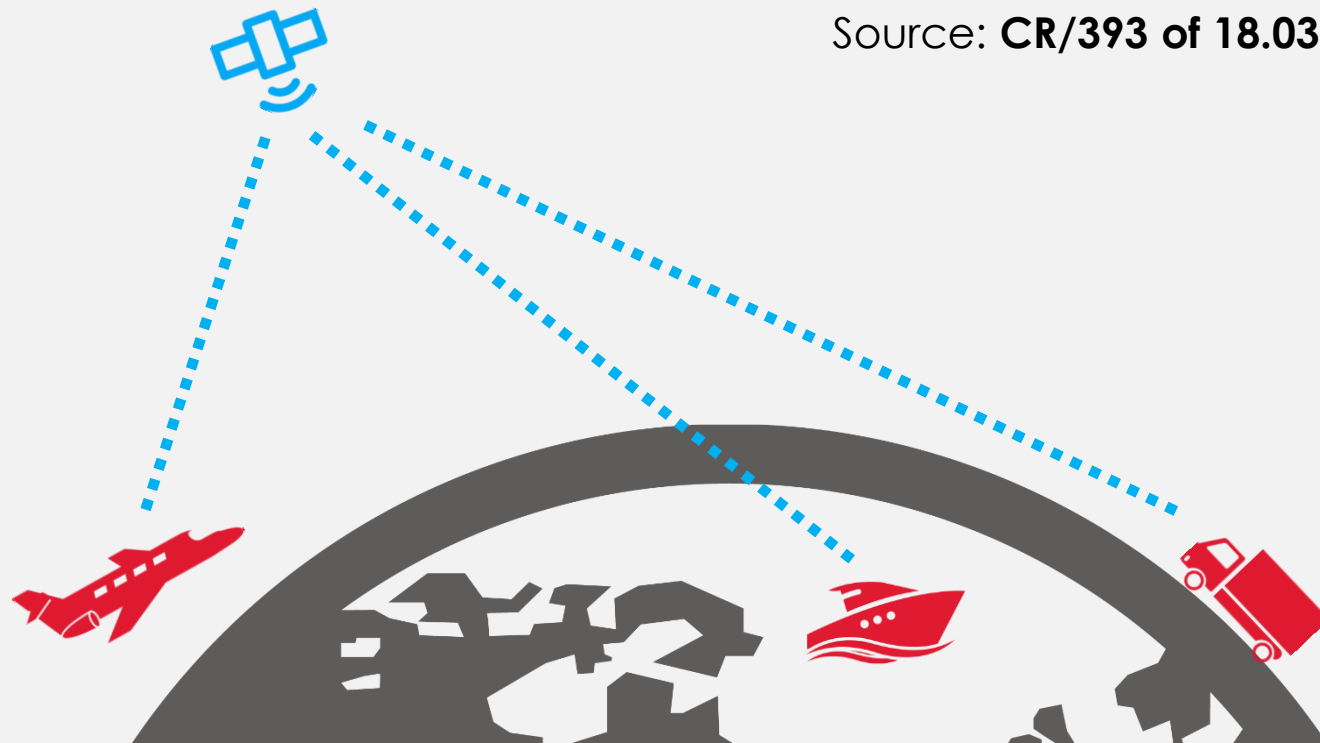
Typical Earth Stations

- WRC-15 concluded further ITU-R studies needed before any regulatory decision
- Administration can submit typical earth station, for information purposes
- Information to assist technical and regulatory studies - possible international recognition of millions of typical ES
- BR developed a web platform to submit and post information
  https://www.itu.int/net4/ITU-R/space/TypicalESinFSS

Source: **CR/389 of 29.01.2016, CR/404 23.05.2016**

Earth Station In Motion (ESIM)

- New class of station, UF, for ESIM communicating with GSO FSS in 19.7-20.2 GHz and 29.5-30.0 GHz (No. 5.527A)
- Class of station available from 28 Nov 2015
- Use of ESIMs subject to 10 strict conditions to protect incumbent services from interference (Res 156 (WRC-15))
- Administrations to provide commitment to immediately cease or reduce interference to terrestrial systems (Res 156 (WRC-15))

Source: **CR/393 of 18.03.2016, CR/403 of 05.07.2016**

Aeronautical Mobile-Satellite Service (AMSS)

- New classes of station, E5/T5 and E6/T6, for AMSS Route (R) and Off-Route (OR), respectively
- Class of station available from 28 Nov 2015
- Introduced due to 1 087.7-1 092.3 MHz allocation to AMSS(R) for Automatic Dependent Surveillance-Broadcast (ADS-B) aka "Global Flight Tracking"

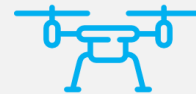Source: **CR/394 of 18.03.2016**, **CR/403 of 05.07.2016**

Unmanned Aircraft System (UAS)

- New classes of station, UG, for ES on board UA with GSO FSS (Res 155(WC-15))
- BR developed a web platform for Administrations to submit UAS for information, to assist ITU-R studies
- BR would not process submissions with UAS until Res 155 is implemented
- Administrations and ITU-R Sector Members to exercise utmost goodwill in terms of active participation andsubmissions of contributions totehrelevant ITU-R study groups.
https://www.itu.int/net4/ITU-R/space/UAS-submissions

Source: **CR/407 of 05.07.2016**

Closing Remarks

- Most new or mod regulations in force on **1 Jan 2017**
- But qualified favourable from **28 Nov 2015**

- Detailed information, see referenced Circular Letters
  - http://www.itu.int/md/R00-CR-CIR/en

- Rules of Procedures reflecting the decisions of WRC-15 approved at RRB-73 (17-21 September 2016)
  - http://www.itu.int/md/R00-CR-CIR-0412/en

- ….CCRR/58 on Draft Rules of Procedure to reflect the decisions of WRC-15 and existing rules that may require updates (5 December 2016)
  - http://www.itu.int/md/R00-CCRR-CIR/en

- WRC-19 Agenda and Preparatory Studies
  - http://www.itu.int/en/ITU-R/study-groups/rcpm/Pages/wrc-19-studies.aspx

MERCI

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