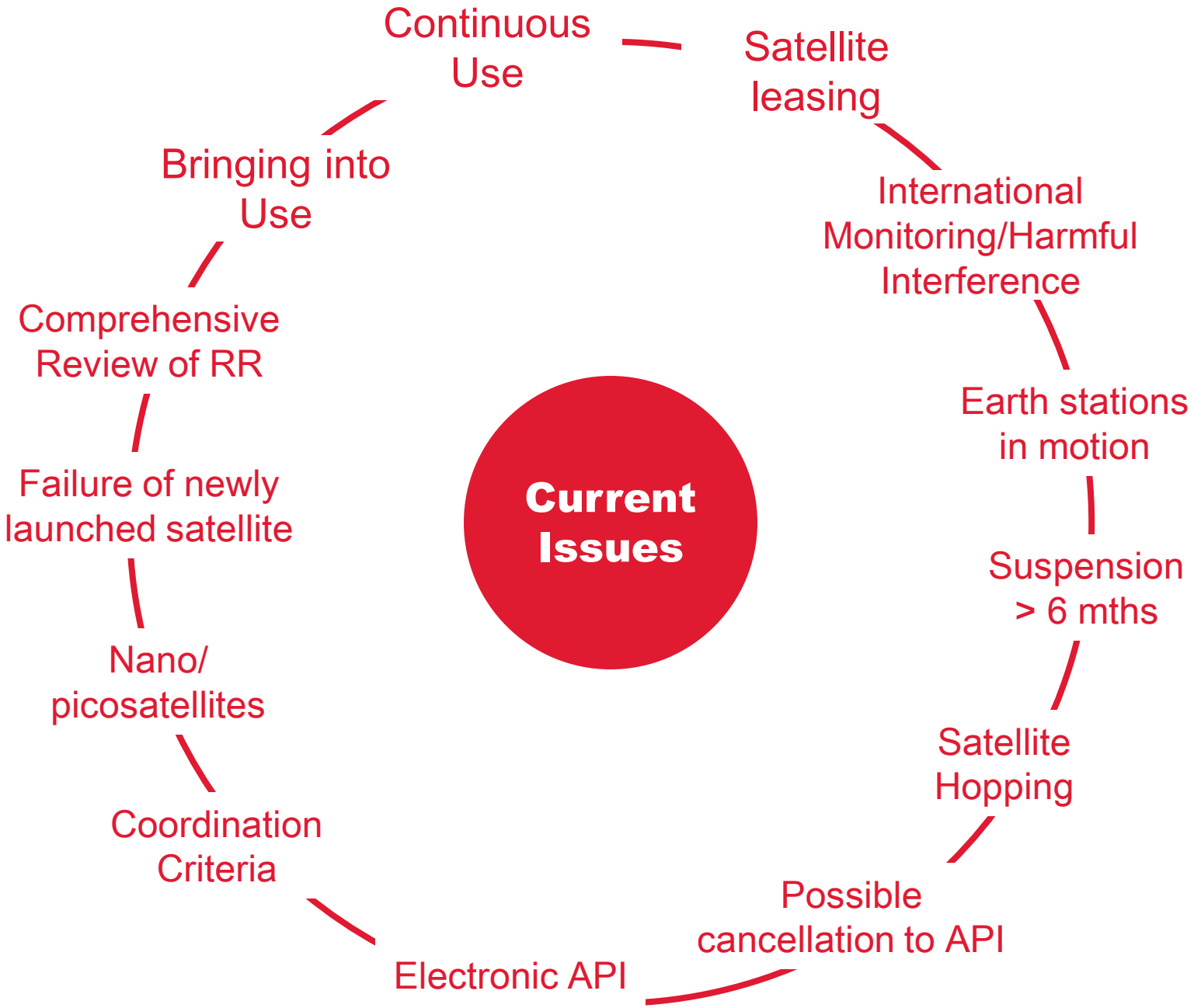
Current Satellite Regulatory Issues

Yvon HENRI

Chief of Space Services Department

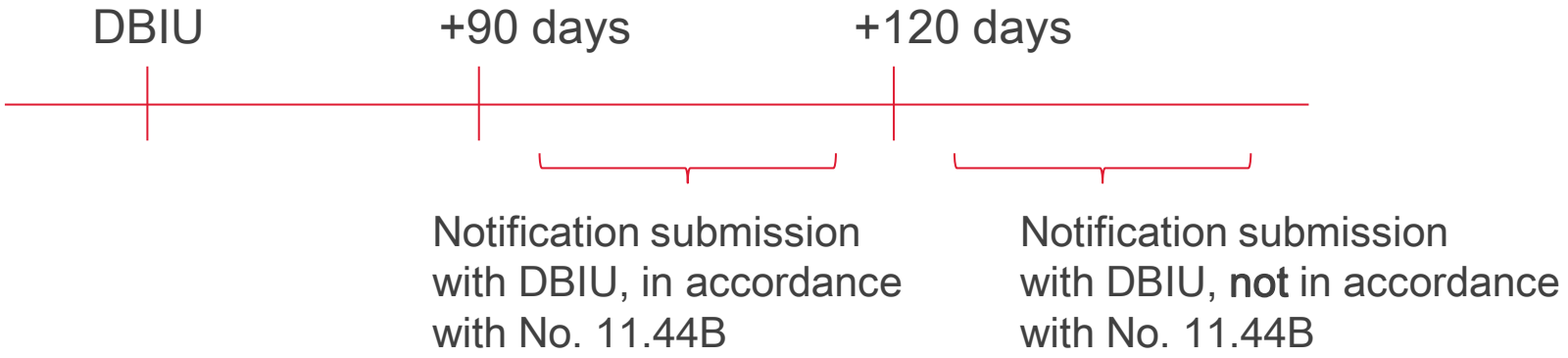
International Telecommunication Union

Efficient use of the spectrum / orbit resource workshop, Cyprus 2014


Continuous Use
Satellite leasing
International Monitoring/Harmful Interference
Earth stations in motion
Suspension > 6 mths
Satellite Hopping
Possible cancellation to API
Electronic API
Coordination Criteria
Nano/ picosatellites
Failure of newly launched satellite
Comprehensive Review of RR
Bringing into Use
Current Issues

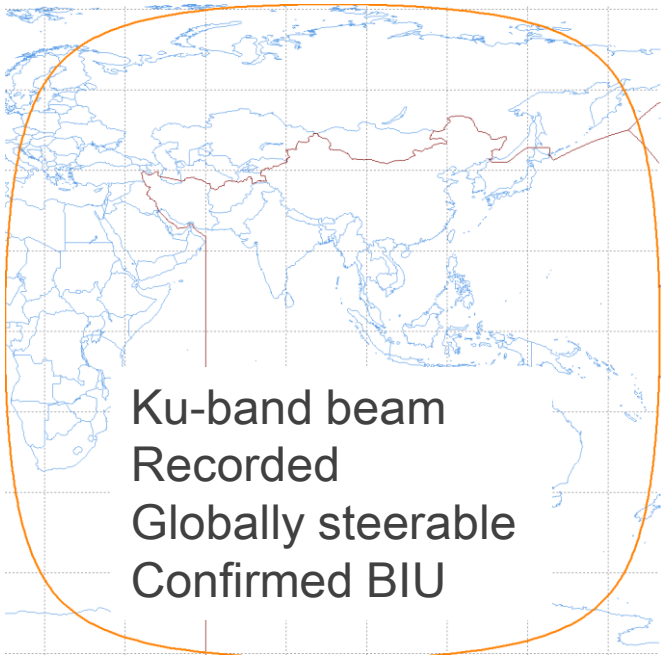
Bringing into Use

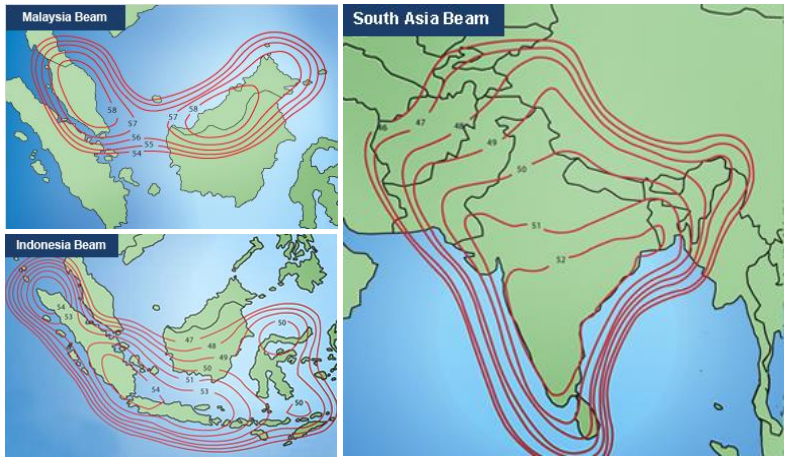
- Conditions for frequency assignments to a space station in GSO to be considered brought into use (No. 11.44B)
  - space station has capability of transmitting or receiving that frequency assignment
  - deployed and maintained at notified position for 90 days
  - Inform BR within 30 days after the end of 90-day period
- Date of bringing into use informed through notification
  - "Notified date of bringing into use" (No. 11.44)
  - Date of bringing into use "required only for notification" (Ap4, A.2.a)
- Issue: Submission of notification 120 days beyond DBIU is **not** in accordance with No. 11.44B



Continuous Use

- Under No. 13.6, “ .. continues to be in use **but not in accordance with notified required characteristics** as specified in Appendix 4, the Bureau shall consult the notifying administration and request clarification .. ”
- Steerable beams (global/semi-global) vs partially operational beams





Ku-band beam
Operational

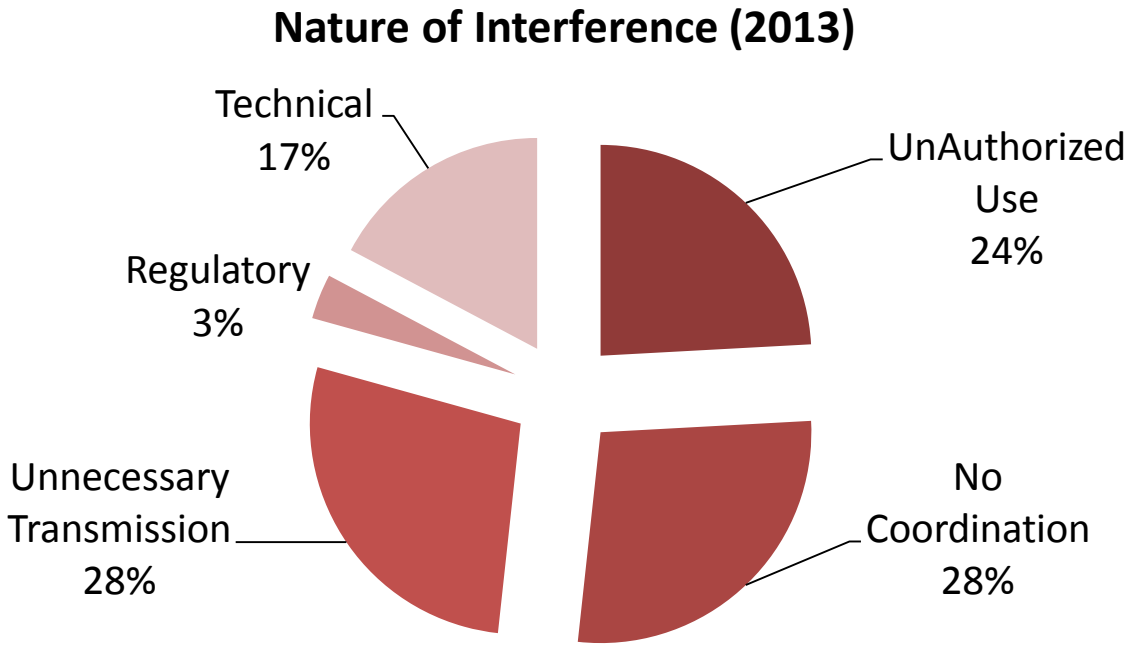
Satellite Leasing

- WRC-12 recognizes
  - administration can BIU frequency assignments for one of its satellite networks by using a space station which is under the responsibility of another administration …
  - provided that the latter, **after having been informed, does not object**, **within 90 days** from the date of receipt of information … (§3.12 Doc. CMR12/554)
- Issues
  - What is the status of minutes of the WRC Plenary with respect to a recorded assignment ?
  - How BR may apply this decision in case of objection ?
  - Notion of space station under the responsibility of another administration ?
  - What form of non-objection proof is needed ? Is Resolution 49 publication sufficient to “inform” responsible administration of the space station ?

International Monitoring

- Draft Cooperation Agreement, developed by Bureau, aims to establish a framework to assist ITU
  - Perform measurements related to harmful interference pursuant to Art. 15 and No. 13.2 or reported interference due to coordination issues related to No. 11.41
  - Verify actual operational characteristics of space station in GSO with those recorded in MIFR
- On 6 Aug 2013, the draft Cooperation Agreement was sent to administrations part of the international monitoring system requesting comments and suggestions
- The Cooperation Agreement
  - contains objective, scope, procedures and protocols to report interference or compliance with MIFR
  - could be concluded with administrations having monitoring facilities

Harmful Interference Statistics

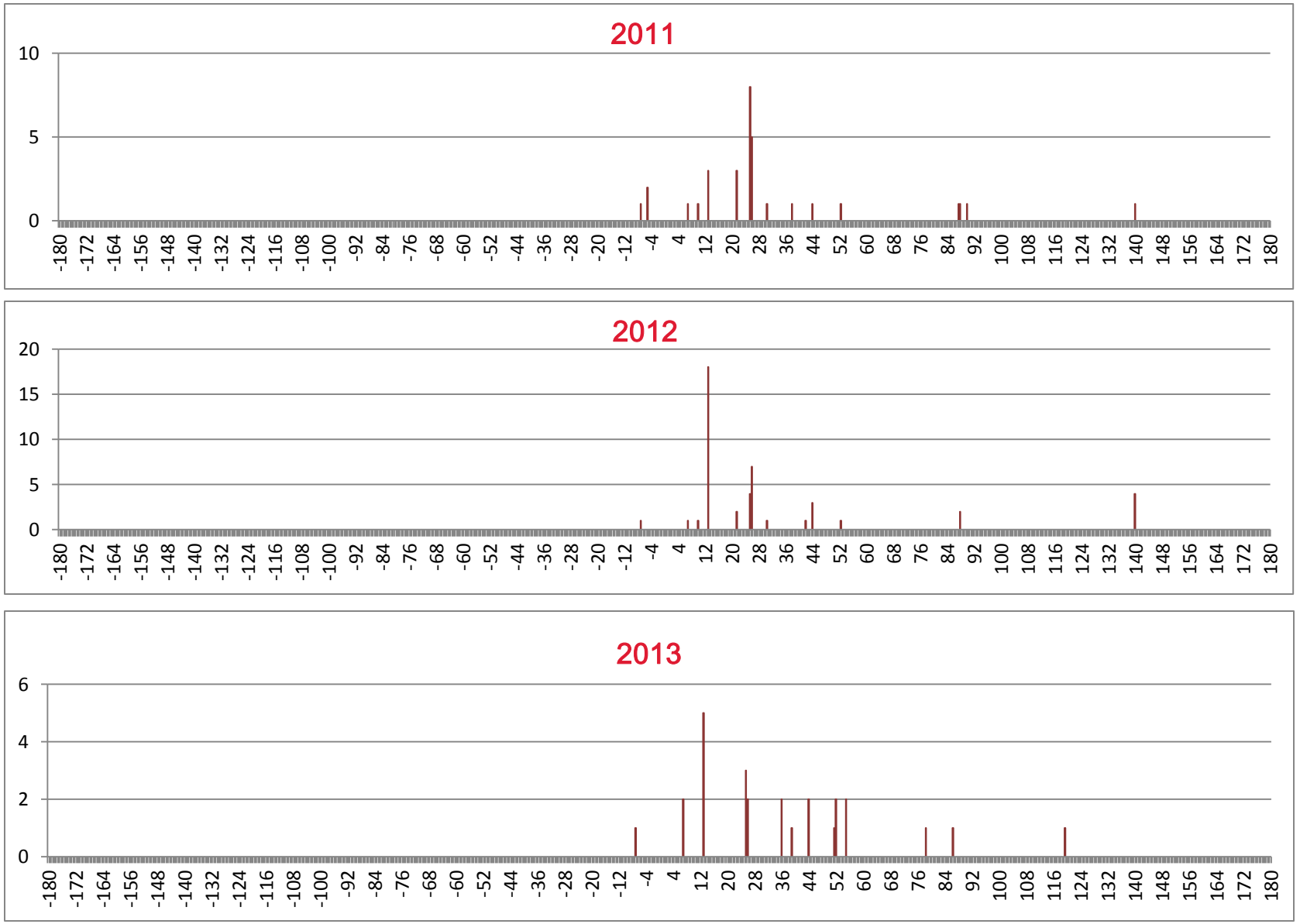


Affected Services:
FSS, BSS, MSS, EESS, RNSS

Affected Freq. Bands (GHz):
1.2
1.5 / 1.6
2.2
3/4, 5/6
10-14
17/18

- Based on Information and Statements provided by Notifying Administrations to Bureau
- One Case may involve several short or long time occurrences

Distribution and Evolution of Cases of Interf. along GSO



Earth Stations in Motion

- Circular Letter CR/358 of 14 Feb 2014
- New class of station code “UC” for Earth station while in motion with space station in FSS in bands listed in No. 5.526
  - 19.7-20.2 & 29.5-30 GHz in R2
  - 20.1-20.2 & 29.9-30 GHz in R1/3
  - Satellite network should have both FSS and MSS
- Coordination requirements established based on existing criteria for FSS links
  - Coordination Arc for FSS vs FSS
  - DT/T > 6% for FSS vs MSS
- Modification to add “UC” to existing assignments will have a new date of receipt

Source: CR/358 of 14.02.2014

Suspension > 6 months

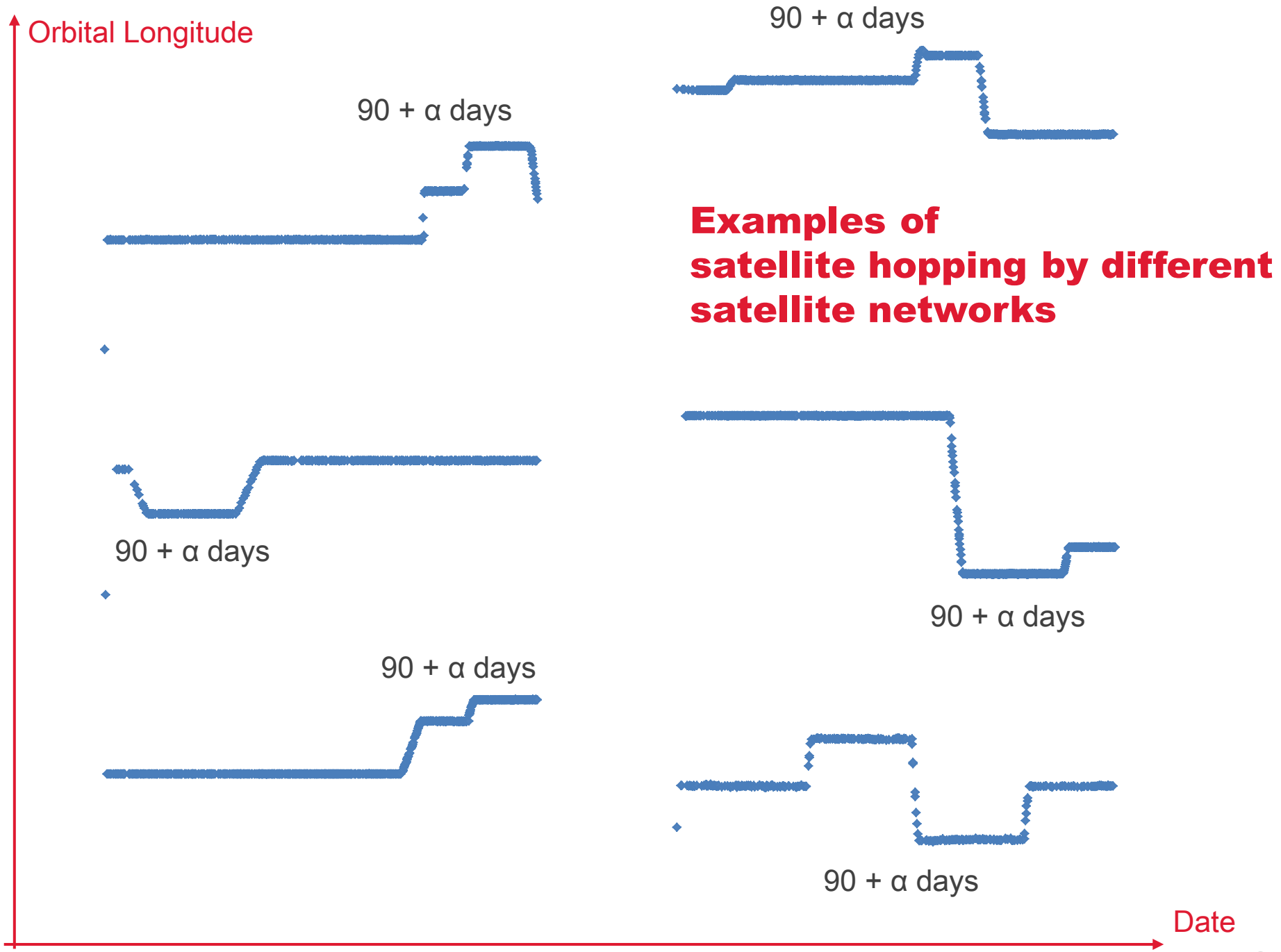
- Under No. 11.49,
  - Wherever the use of a recorded frequency assignment .. is suspended for a period exceeding six months … no later than six months from the date on which the use was suspended, inform the Bureau of the date on which such use was suspended …
- Since 01.01.2013, BR has received suspension requests under No. 11.49 **more than 6 months** from date of suspension
  - BR publishes such cases in relevant Parts of BR IFIC, on webpage and requests confirmation by RRB
  - RRB has noted such cases
- Issues
  - Cancel such cases ?
  - Apply No. 13.6 ?
  - Allow such cases but with 3-year period reduced by time elapsed between the end of 6-month period and the date that BR is informed of suspension ?

Source: Document RRB14-1/9-E, [468] Annex 28 - Working document- Draft CPM text on WRC-15 AI 7

Satellite Hopping

- Use of one space station to bring frequency assignments at different orbital locations into use within a short period of time was not the intent of Nos. 11.44B & 11.49
- Issues:
  - Cases where satellite moved to one orbital position, stayed 90 + α days and then moved again
  - No. 11.44B requirements satisfied even though satellite may not be intended to be operated at that position
  - Thus, regulatory lifetime could be extended by 3 years with suspension under No. 11.49
  - How to distinguish genuine cases from abuse ?

Source: [34] Report of the first meeting of the Working Party of the Special Committee on Regulatory/Procedural Matters


Orbital Longitude
90 + α days
90 + α days
90 + α days
90 + α days
90 + α days
90 + α days
Examples of satellite hopping by different satellite networks
Date

Possible cancellation of API

- For satellite networks subject to coordination under Section II of Article 9
  - Coordination information cannot be received earlier than 6 months after API receipt (No. 9.1)
  - APIs currently include very limited data, i.e. orbital position and frequency bands
- If 6-month period eliminated, coordination process with identified administrations may commence sooner
- Possible outcomes at WRC-15:
  - SUP of API, or
  - Retain API but SUP 6-month minimum period ?

Source: [34] Annex 05 - Working document towards draft CPM text on WRC-15 agenda item 7
[468] Annex 30 - Working document - Draft CPM text on WRC-15 agenda item 7

Electronic Submission of API

- Resolution 908 (WRC-12) instructs Bureau, to implement a secure paperless electronic approach for the electronic submission and publication of API for satellite networks or systems subject to coordination
- SpaceWISC (Space Web based Interface for Secure Communication) will be used for
  - Submission and publication of API subject to coordination under Section II of Article 9
  - Submission of comments under No. 9.5B
  - Automatic cancellation of API not covered by coordination after 24 months (No. 9.5D)
- Test version will be made available in spring/summer 2014

Possible changes to coordination criteria

- Resolution 756 (WRC-12) - Studies on possible reduction of the coordination arc and technical criteria used in application of No. 9.41 in respect of coordination under No. 9.7
- Issues
  - Current coordination trigger of $\Delta T/T = 6\%$ to be increased or replaced by C/I
  - PFD masks to be developed towards harmonizing technical parameters for heavily congested bands
  - Coordination Arc to be further reduced
  - How to appropriately protect existing networks ?

Source: [468] Annex 37 - Working document - Elements for future discussion and development related to WRC-15 AI9.1, Issue 9.1.2

Nano/picosatellites

- Preliminary agenda of WRC-18
- Resolution 757 (WRC-12)
  - to consider whether modifications to the regulatory procedures for notifying satellite networks are needed to facilitate the deployment and operation of nanosatellites and picosatellites
- Over 500 satellites under development, mostly operating in amateur-satellite service or meteorological-satellite service
- Growing number puts great pressure on the frequency bands currently in use
- No clear definition or characteristics in Appendix 4 to differentiate NGSO vs nano/picosatellites
- SG7/WP7B studying characteristics, spectrum requirements and services of nano and pico satellites

Source: CACE/572 of 01.06.2012, Annexes 5 & 6 to Document 7B/226-E

Failure of newly launched satellite

- According to No. 11.44B, "… considered as having been brought into use … deployed and maintained at the notified orbital position for a continuous period of ninety days …"
- Failure of a newly launched satellite during the 90-day bringing into use period
- WRC-12 decided, to submit such cases to RRB for its consideration and decision on a case-by-case basis
- Issues:
  - Definition of newly launched ?
  - Broaden to include failure of in-orbital satellites ?
  - Broaden to include resumption of use ?

Source: [34] Annex 07 - WD towards draft CPM text on WRC-15 AI7 - Failure of a [newly launched] satellite during the 90-day BIU period

Comprehensive Review of RR

- Comprehensive review of the Radio Regulatory regime governing space services in non-planned bands
- Reasons for review include excessive filings, misuse of No. 11.41, deficiencies of Nos. 11.44, 11.44.1, 11.48, 11.49, satellite characteristics with over protection, mismatch between satellites and actual use, complex procedure associated to RR, RoP, etc.
- Proposed solution:
  - Formal procedure – Notification
  - Informal procedure – Coordination
  - Replace DT/T with PFD and C/I
  - Reduce BIU time limit to 5 years, introduce satellite ID
  - Limit use of No. 11.41
  - Deletion API, Coordination Arc, Nos. 9.41, 11.32A

Source: [34] Annex 08 - Comprehensive review of RR regime governing space services in non-planned bands under WRC AI7
[468] Annex 19 - WD - WRC-15 AI7- Summary of preliminary discussions on Possible comprehensive review of RR regime governing space services