



30TH WORLD RADIOCOMMUNICATION SEMINAR

24 - 28 October 2022

Geneva, Switzerland

Introduction to BSS & FSS Plans



www.itu.int/go/wrs-22

#ITUWRS

ITU Constitution

Article 44

- Radio frequencies and any associated orbits are limited natural resources
- Must be used rationally, efficiently and economically in conformity with the Radio Regulations (RR)
- To have equitable access to those resources

Article 45

- Not to cause harmful interference to services operating in accordance with the RR

Two Different Approaches

Coordination

First come, first served
based on current requirement

Efficient /economical

Late comers may not have access to
(the early users have consumed all)

Plan

Distribution of resources
based on current and future
requirement

Equitable access

Planning Approach: the “Space Plans”

Parking Plan

- **Resource**: parking slot
- **Parameters**: size, location
- **Rules** on newcomer’s request for a parking
- **Rules** on use, modification, additional slot

Space Plan

- **Resource**: frequency bands, orbital positions
- **Parameters**: EIRP, earth stations, coverage, service area, C/N.....
- **Previsions** on new Member’s request for an entry in Plan
- **Provisions** on use, modification and additional use



Space Plans

To guarantee equitable access, it is based on a reservation of capacity for future use by the ITU Member States:

Not all Plan assignments are currently in operation, BUT will not be cancelled and are protected from harmful interference from other networks.

Planning Approach: TWO “Space Plans”

Broadcasting-Satellite Service and feeder-link Plans

- 11.7-12.2 GHz (Region 3)
 - 11.7-12.5 GHz (Region 1)
 - 12.2-12.7 GHz (Region 2)
-
- 17.3-18.1 GHz (Region 1&3)
 - 17.3-17.8 GHz (Region 2)
 - 14.5-14.8 GHz (Region 1&3 except Europe)

Appendices 30/30A BSS Plan

Fixed Satellite Service Plans

- 4500 – 4800MHz
 - 10.7 - 10.95 GHz
 - 11.2 - 11.45 GHz
-
- 6725 - 7025 MHz
 - 12.75 - 13.25 GHz

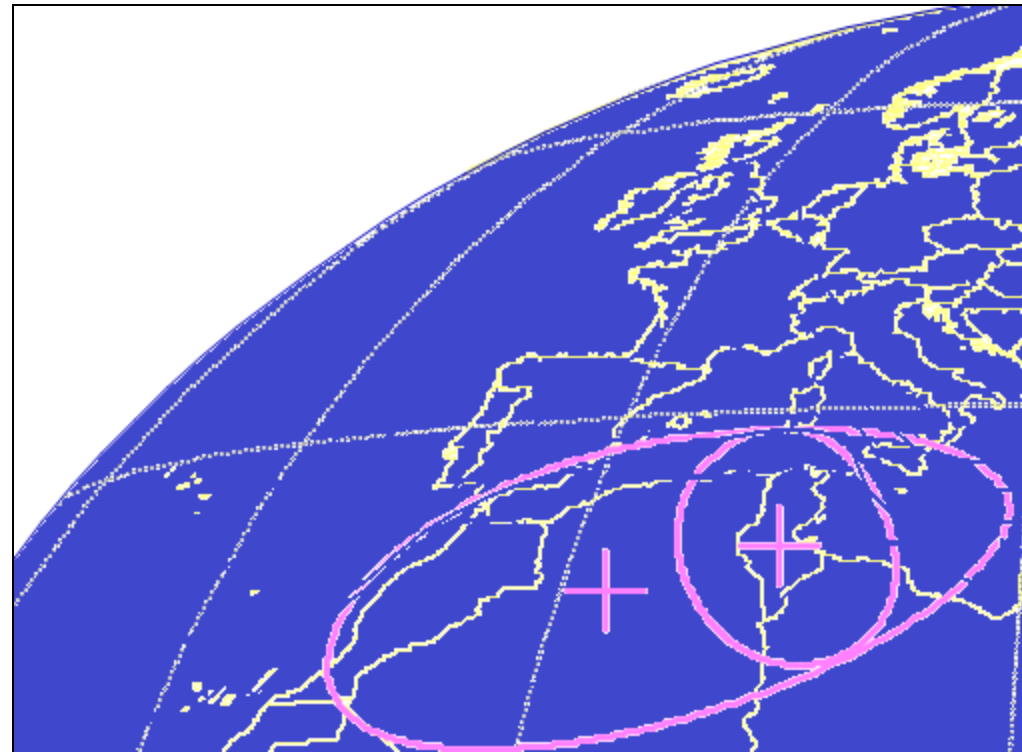
Appendix 30B FSS Plan



Space Plans features (1)

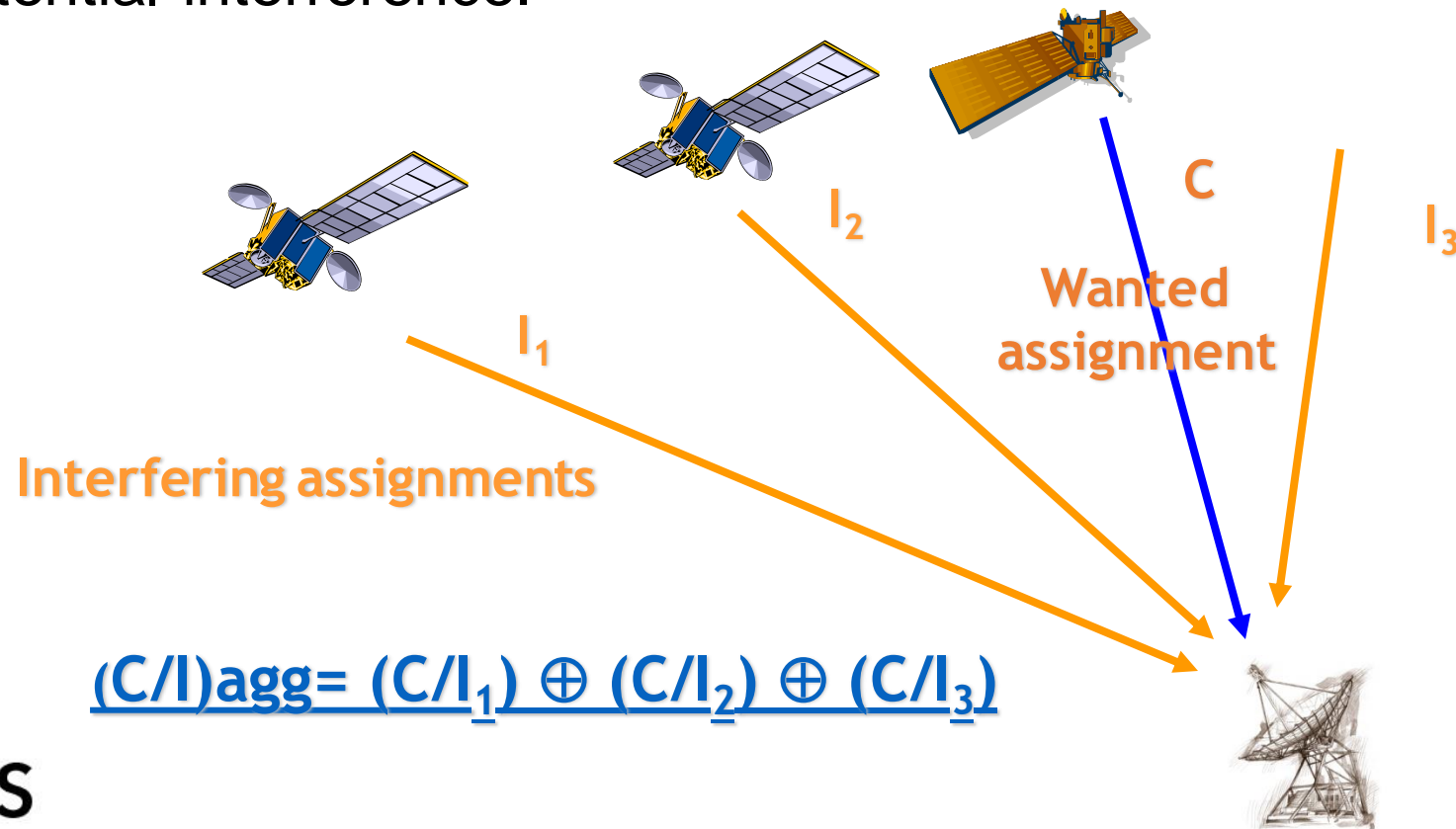
To guarantee equitable access, the beams cover the national territory of each Administration:

- National Coverage
- National service area



Space Plans features (2)

To use the space resources rationally, efficiently and economically, the **Aggregate C/I** method is used to identify potential interference.



Space Plans features (3)

Protection from harmful interference is provided based on the **Plan characteristics** and NOT on the characteristics entered into the **Master Register** at notification stage. This is different for networks operating in the non-plan frequency bands.

Space Plans features (4)

Standard parameters (assumptions) are used to ensure equity amongst Administrations and possible future use
(main assumptions with some exceptions)

- Same amount of frequency for each beam
- Elliptical beam using defined space station antenna pattern
- Defined C/N
- Same values of system noise temperature
- Similar power level
- Defined earth station antenna size and pattern
-

BSS Plan and FSS Plan

Some distinct features

APPENDICES 30/30A

BSS Plan

Plans separated by Regions

Assignments Plans

Shared with other space services in other Regions

List for R1&3 only

Cluster concept in Region 2 Plan

APPENDIX 30B

FSS Plan

Worldwide plan

Allotment Plans (conversion to assignments before use)

No other space service allocated

List for all 3 regions

Protection based on grid points in service areas for downlinks

Appendix 30

- Article 10: Plan for BSS in Region 2
- Article 11: Plan for BSS in Regions 1 &3

Appendix 30A

- Article 9: Plan for feeder links in region2
- Article 9A: Plan for feeder links in Region 1 &3

Appendix 30B

- Article 10 : Plan for FSS

BSS Plan

(Article 10 of AP30)

12 224.00 MHz (1)

1	2	3	4		5		6	7	8	9	
ALS00002	-166.20	1	-149.66	58.37	3.76	1.24	170	1	59.7	9/GR1	10
ALS00003	-175.20	1	-150.98	58.53	3.77	1.11	167	1	60.0	9/GR2	10
ARGINSU4	-94.20	1	-52.98	-59.81	3.40	0.80	19	1	59.9	9/GR3	
ARGSUR04	-94.20	1	-65.04	-43.33	3.32	1.50	40	1	60.7	9/GR3	10
B CE311	-64.20	1	-40.60	-6.07	3.04	2.06	174	1	61.6	8 9/GR.7	10
B CE312	-45.20	1	-40.27	-6.06	3.44	2.09	174	1	61.0	8 9/GR.9	10
B CE411	-64.20	1	-50.97	-15.27	3.86	1.38	49	1	62.6	8 9/GR.7	10
B CE412	-45.20	1	-50.71	-15.30	3.57	1.56	52	1	62.7	8 9/GR.9	10
B CE511	-64.20	1	-53.10	-2.90	2.44	2.13	104	1	63.0	8 9/GR.7	10
B NO611	-74.20	1	-59.60	-11.62	2.85	1.69	165	2	62.8	8 9/GR.8	10
B NO711	-74.20	1	-60.70	-1.78	3.54	1.78	126	2	62.8	8 9/GR.8	10
B NO811	-74.20	1	-68.76	-4.71	2.37	1.65	73	2	62.8	8 9/GR.8	
B SU111	-81.20	1	-51.12	-25.63	2.76	1.05	50	1	62.8	8 9/GR.6	10
B SU112	-45.20	1	-50.75	-25.62	2.47	1.48	56	1	62.2	8 9/GR.9	
B SU211	-81.20	1	-44.51	-16.95	3.22	1.36	60	1	62.5	8 9/GR.6	10
B SU212	-45.20	1	-44.00	-16.87	3.20	1.96	58	1	61.3	8 9/GR.9	
BAHIFRB1	-87.20	1	-76.06	24.16	1.81	0.80	142	1	61.6		
BERBERMU	-96.20	1	-64.77	32.32	0.80	0.80	90	2	56.8		
BERBER02	-31.00	1	-64.77	32.32	0.80	0.80	90	1	56.9	2	10
BOLAND01	-115.20	1	-65.04	-16.76	2.49	1.27	76	1	67.9	9/GR.5	
CAN01101	-138.20	1	-125.63	57.24	3.45	1.27	157	1	59.5	9/GR.10	10
CAN01201	-138.20	1	-112.04	55.95	3.35	0.97	151	1	59.6	9/GR.10	10
CAN01202	-72.70	1	-107.70	55.63	2.74	1.12	32	1	59.6		



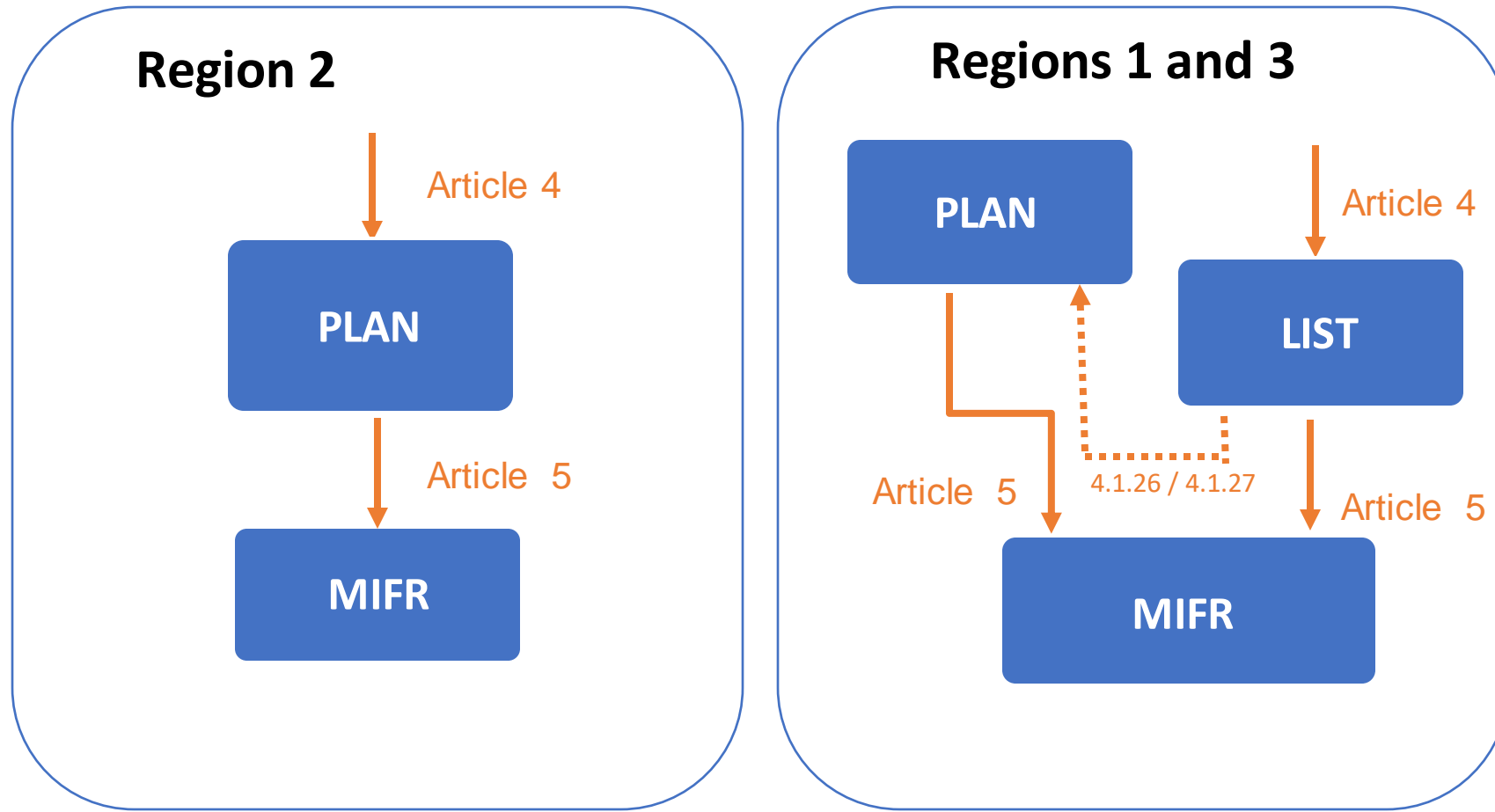
FSS Plan

(Article 10 of AP30B)

4 500-4 800 MHz, 6 725-7 025 MHz

1	2	3	4	5	6	7	8	9	10
ABW00000	-98.20	-69.10	12.40	1.60	1.60	90.00	-9.6	-41.4	
ADL00000	113.00	140.00	-66.70	1.60	1.60	90.00	-9.6	-41.3	* /MB1
AFG00000	50.00	66.40	33.90	2.20	1.60	15.00	-9.6	-39.4	
AFS00000	71.00	27.20	-30.10	5.30	1.60	128.00	-7.8	-38.6	
AGL00000	-36.10	15.90	-12.40	2.40	1.60	78.00	-9.6	-39.1	
ALB00000	4.13	20.00	41.10	1.60	1.60	90.00	-9.6	-41.4	
ALG00000	-33.50	1.60	27.80	3.30	2.20	133.00	-8.6	-38.9	
ALS00000	-159.00	-158.60	57.50	6.30	1.60	1.00	-7.9	-38.8	* /MB2
AND00000	-41.00	1.50	42.50	1.60	1.60	90.00	-9.6	-41.4	
ARG00000	-51.00	-62.00	-33.60	4.80	2.90	93.00	-2.5	-38.1	* /MB3
ARGINSUL	-51.00	-60.00	-57.50	3.60	1.60	154.00	-9.6	-38.5	* /MB3
ARM00000	71.40	45.13	40.12	1.60	1.60	90.00	-9.6	-40.4	
ARS00000	51.90	45.70	23.10	3.70	2.60	153.00	-8.7	-39.3	
ASCSTHTC	-37.10	-11.80	-19.60	5.60	1.80	77.00	-8.0	-39.0	* /MB4
ATG00000	-77.70	-61.80	17.00	1.60	1.60	90.00	-9.6	-41.8	

AP30/30A BSS Plan Procedure

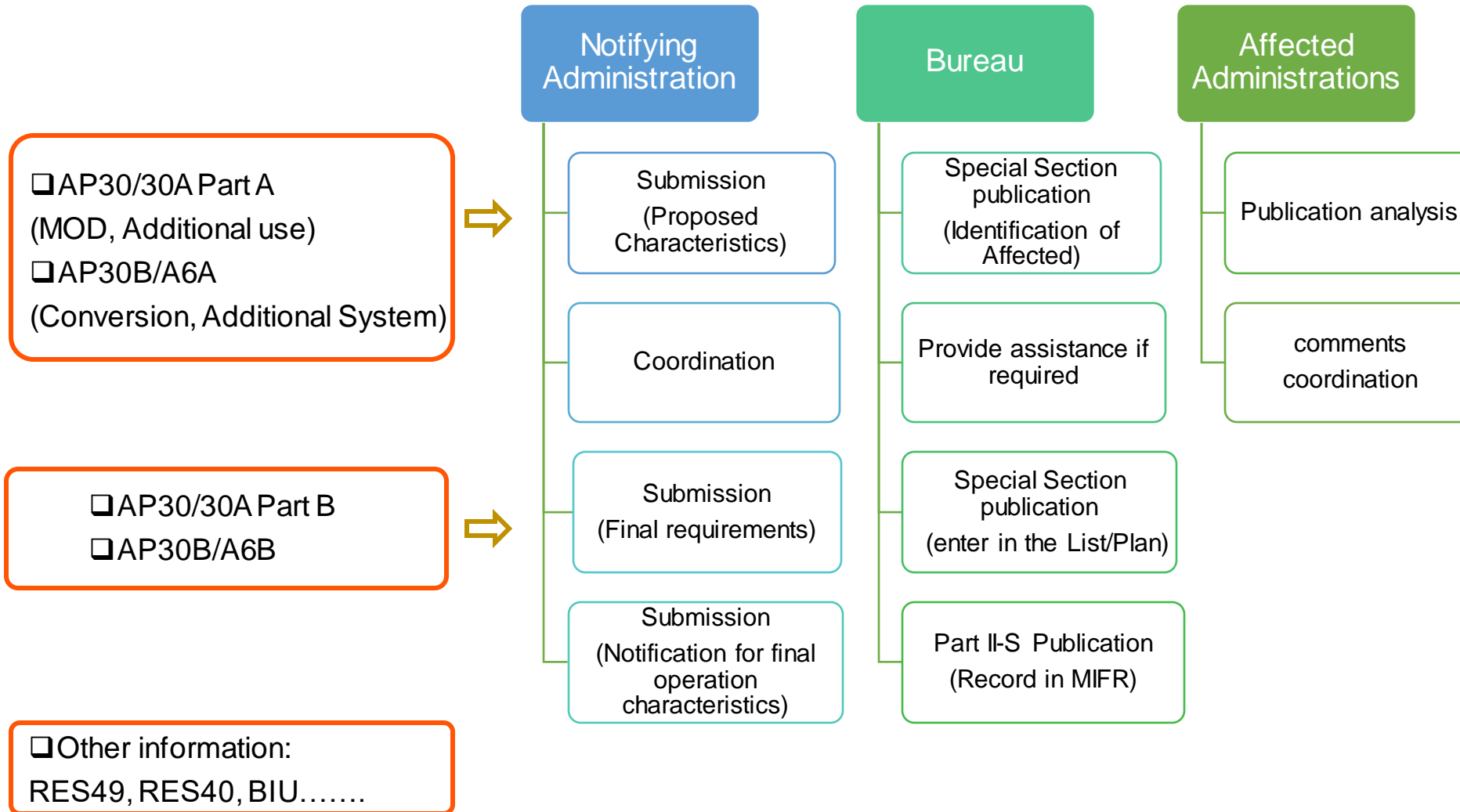


AP30B FSS Plan Procedure



Article 6 of AP30B

Article 8 of AP30B



Regulatory deadlines for Plans

APPENDICES 30/30A

8 years for completing provisions of Articles 4&5 of AP30/30A: inclusion in the Plan/List, , bringing into use (BIU)

RES 49 information within **30 days** after BIU date limit.

Confirmation of BIU within **90 days**.

4 months for comments after publication.

Bringing back into use within **3 years** after suspension of Region 1&3 List assignments.

15 years operation for R1&3 List.

APPENDIX 30B

8 years for completing provisions of Articles 4&5 of AP30/30A: inclusion in the Plan/List, , bringing into use (BIU).

RES 49 information within **30 days** after BIU date limit.

Confirmation of BIU within **90 days**.

4 months for comments after publication.

Bringing back into use within **3 years** after suspension.

Protection of assignments/allotments

Commenting to protect existing assignments/allotments



- Comments in AP30/30A for R2 :
no reply = agreement
- Comments in AP30/30A for R1/R3 and AP30B:
no reply = disagreement
- Assistance procedure exists for AP30B and AP30/30A
in R1/R3: Reply within **30 days** of BR reminder!
no reply = deemed to have given agreement

Plan and Non-Plan Procedures Comparison

	Non-Plan BSS/FSS GSO	APPENDICES 30/30A	APPENDIX 30B
Regulatory Period	7 years	8 years	8 years
Inclusion in the List	Not applicable	AP30/30A Part B (Regions 1&3)	AP30B/A6B
Notification	Yes	Yes, but not for protection	Yes, but not for protection
To be compatible with	Previously filed	Plan, List, previously filed	Allotment, List, previously filed
Identification	- Affecting and affected	- Affected only	- Affected only
	- Single entry criteria	- Aggregate criteria	- Single entry and aggregate criteria
No comment within 4 months	Assistance No.9.60	Agreement for Region 2	Assistance under §6.13
		Assistance for Region 1 & 3 under 4.1.10a	

key points to remember

- Plans ensure equitable access and equitable use of frequency and orbital resources
- In the Radio Regulations, Appendices 30/30A/30B contain the Plan/List/MIFR processes and definitions
- Processing deadlines should be carefully tracked
- Plan and non-plan procedures have similarities and differences
- It is important to comment when your Administration is identified as potentially affected by new assignments

Space Plans, a long HISTORY

- [WARC-77](#) established the Region 1&3 BSS Plan
- [RARC-83](#) established the Region 2 BSS and associated feederlink Plan
- [WARC ORB-85](#) included the Region 2 BSS and associated feederlink Plan into the Radio Regulations
- [WARC ORB-88](#) established the FSS Plan and Region 1 &3 BSS feeder-link Plan
- [WRC-97](#) revised the Region 1&3 BSS and associated feederlink Plans
- [WRC-2000](#) revised the Region 1&3 BSS and associated feederlink Plans
- [WRC-07](#) revised the FSS Plan
- [WRC-12](#), [WRC-15](#) and [WRC-19](#) Revised provisions in order to simplify the procedures and consider the development of technology

Resolution 559 (WRC-19)

Temporary regulatory measures for Regions 1&3 administrations having national assignment in Plan of Appendix **30** degraded severely (downlink EPM values of a test point equal or below -10dB for at least 50% of total number of EPM values)

Take advantage of the removal of limitation on orbital arcs in previous Annex 7 of Appendix **30**

45 Administrations have applied the special procedure (submit new assignments with new orbital position and channels)

If an Administration successfully applied the procedure, it could submit a request to WRC-23 to replace the current Plan assignments with the new ones.

Resolutions 170 (WRC-19):

- Additional measures in FSS in frequency bands subject to Appendix **30B**
- Be applied once by one or a group of administrations having no assignment in the List and no assignment submitted under Appendix **30B**
- Service area is limited to national territory (or national territories)
- Coverage defined as minimum ellipse for national territory (or national territories)
- Facilitate the entry in the List

Modification to Appendix **30B** by WRC-19:

- Reduce of coordination arc (10/9 degrees to 7/6 degrees)
- Change of single-entry *C/I* criteria values and addition of PFD criteria
- Allow to use only sub-bands each of 250MHz in 10-11GHz/12-13GHz bands (for additional use).....

Future Challenges

- Use of bands subject to Appendix **30/30A** and Appendix **30B** By earth stations on aircraft and vessels.
- Allotment for new Member States.
-

Balance between efficient use and equitable use

General information relating to Space Plan services:

<http://www.itu.int/ITU-R/go/space-plans/en>

Thank you!

ITU – Radiocommunication Bureau

Questions to brmail@itu.int or jian.wang@itu.int

