WRC 19

Agenda Item 7
Issue A

New Delhi

12 June 2019

Agenda Item 7, Issue A

- **Director Report** at WRC15 highlighted overfilings of NGSO systems and of extremely large constellations.
- **Current practice** allows Bringing Into Use (BIU) and notification of NGSO systems with one satellite, but it does not clarify the deployment of subsequent satellites.
- **WRC15 asked to clarify the BIU** of frequency assignments to NGSO systems and what to do when a constellation is not deployed as filed.
- Studies considered that the deployment of satellites in a constellation may take a period of many months.

The Importance of Agenda Item 7, Issue A

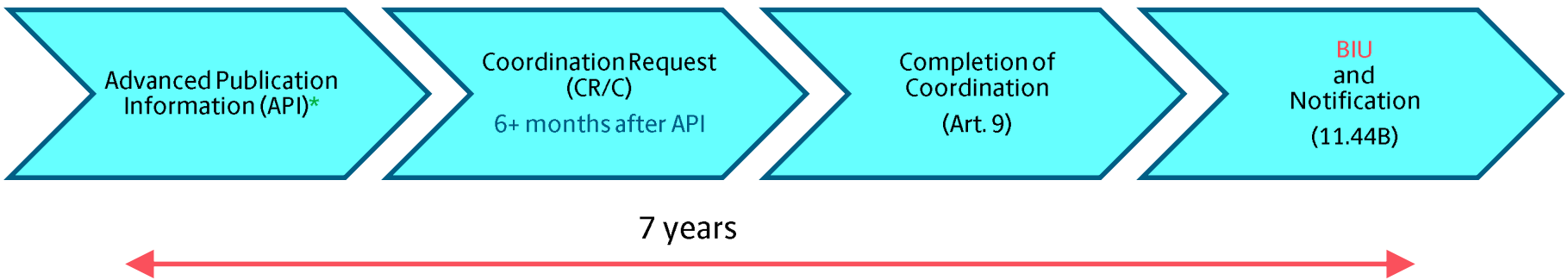
- Agenda Item 7 issue A needs to **prevents the warehousing** of spectrum and orbital resources by:
  - **(i) encouraging deployment** of NGSO systems in a reasonable amount of time and with reasonable control by the ITU.
  - **(iii) provide more certainty** to serious operators that want to develop and deploy real constellations.
- Thus, Agenda Item 7, Issue A aims to:
  1. Establish rules for the BIU and deployment timelines of NGSO systems
  2. Develop a milestone-based approach to NGSO system deployment
  3. Develop penalties for not meeting the milestones
  4. Allow transitional measures for NGSO systems already BIU'd

Current Practice

Geostationary (GSO) Systems	Non-Geostationary Systems (NGSO)
Provision **11.44B** establishes clear requirements: • **90 days** in the notified position • **30 days** after BIU to inform the Office • Application of **Resolution 49** (WRC-15) 	There are **no provisions in the RR**  • **Practice:** same as 11.44B. • **No additional provisions, regardless of the number of satellites and the number of orbital planes** indicated in the notification information. In view of the numerous notified NGSO systems, this practice could lead to a hoarding of the spectrum and the resurgence of so-called "paper satellite networks", as stated by the Director of the Radiocommunication Bureau in his report to the WRC-15.

Current BIU Process for NGSO

Current BIU process is governed by No. 11.44B:



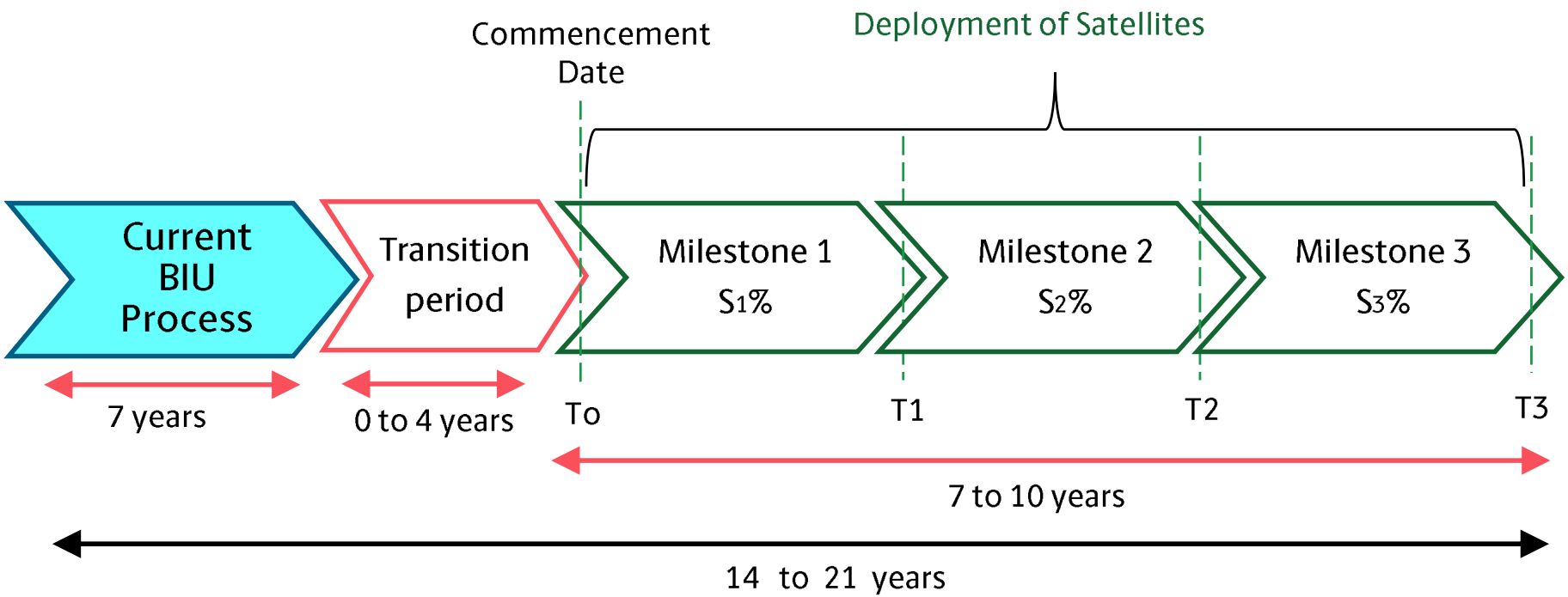
1. BIU (No. 11.44B):
   - with a single NGSO satellite deployed within the 7 year regulatory period
   - maintained at the intended orbit for 90 days
2. Notification after the 90 day period

* API is automatically generated with CR/C for Ku and Ka FSS bands as of July 2016

New BIU Approach for NGSO – AI 7 Issue A

OneWeb

Proposed milestone-based approach:



Key Principles for AI 7, issue A

1. BIU

All CPM Methods support BIU with a **single (1) satellite**
In orbit for **Options: (A)** 90 days, **(B & D)** 1 to 90 days, **(C)** undefined

OneWeb supports Option A

2. Milestone Approach

- Based on **Total # of satellites in a filing**
- **Time of MS1**
- **MS1 , T1** at **MS%** =7-10% Total satellites.
- **MS2 , T2** at **MS%** =30-50% Total satellites
- **MS3 , T3** at **MS%** =75-100% Total satellites

OneWeb supports Option F

Penalty

System that does not meet a **Milestone** gets no. satellites reduced.

Deployment Factor allows continued deployment up to Actual* DF
where, DF = 1/(MS%)

3.Commencement Date

Date adopted by the WRC19: **(i) 23 Nov 19**, (ii) 1 Jan 21, (iii) 1 Jan 23

OneWeb Supports 23Nov 19

Transition

Allows adoption by prior-BIU'd systems
Should not be too long to avoid spectrum and orbit warehousing

1. Milestone Approach – CPM text

Milestone timing (*1) Number of years after the end of the seven-year regulatory period		Minimum required percentage of satellites to be deployed to meet the milestone (*2)		Deployment Factor	
M1	1	P1	A1 & F1: 10%	DF1	10
	2		B1: 8.33%		12
			C1 & D1: 10%		10
			G1: 30%		3.33
	4		E1: 10%		10
M2	3	P2	A2 & F2: 33%	DF2	3.03
	4		C2: 30%		3.33
			B2: 25%		4
	5		D2: 50%		2
	7		E2: 75%		1.34
	2+A (*3 and *4)		G2: 60%		1.66
M3	5	P3	A3: 75%	DF3	1.34
	6		B3: 75%		1.34
			F3: 100%		1
	7		C3: 90%		1.11
			D3: 100%		1
	8		E3: 100%		1
	2+A+B (*5)		G3: 100%		1

(*1) Initial timing is the date of receipt by the Bureau of the relevant complete information under RR No. 9.1 or No. 9.1A

Option F

Option A

Examples: Option F and Option A

With regard the Option for the Milestones – OneWeb supports Option F, or A

In selecting the most appropriate Option, OneWeb is of the view that one needs to consider:

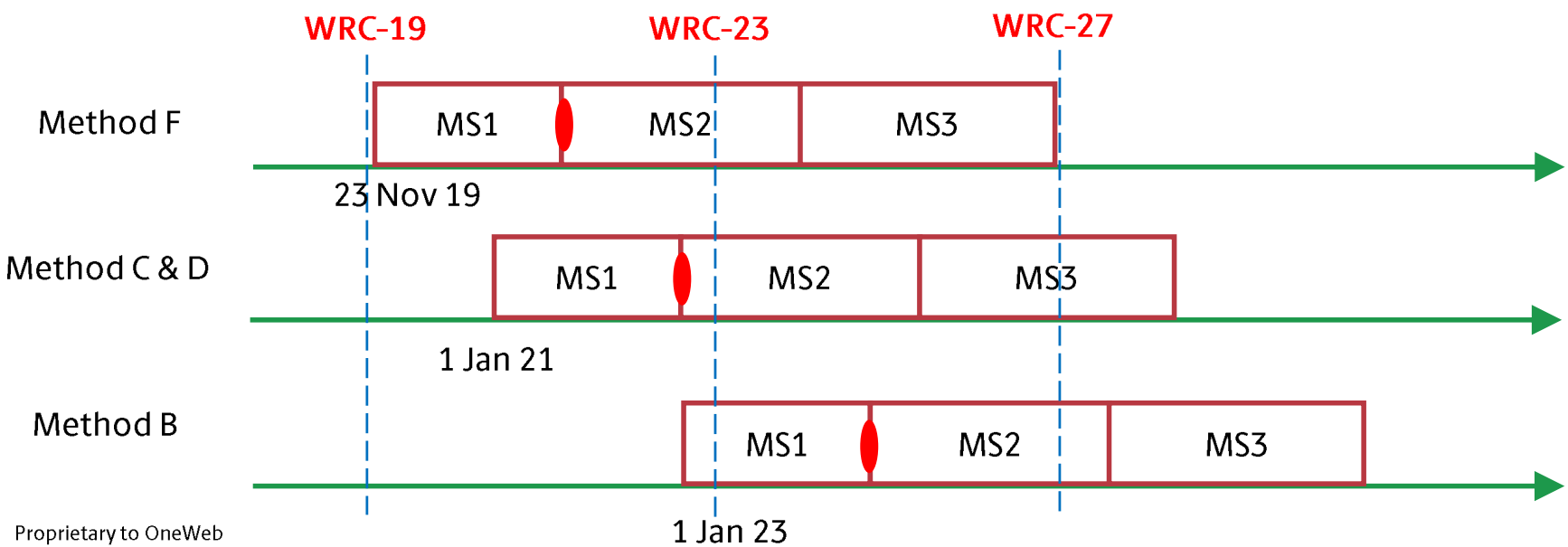
- The Balance between **preventing spectrum warehousing** and **flexible NGSO operational requirements**.
- **MS1 should occur no later than 1 year after the end of the 7-year regulatory period, with** low a deployment of **10%** of the notified Total satellites.
- The **total number of years** allowed for the complete deployment of the system should not be more than 5/6 yrs

Milestone	Parameters	CPM Option A	CPM Option F
MS1	Timing	1 year	1 year
	% satellites	10%	10%
	Deployment factor	10	10
MS2	Timing	3 years	3 years
	% satellites	33%	33%
	Deployment factor	3.03	3.03
MS3	Timing	5 years	6 years
	% satellites	75%	100%
	Deployment factor	1.34	1

2. Commencement Date of Milestones

The following table summarizes the options of the **Commencement Date** in the CPM-19 Report.

Method F (OneWeb)	Methods C and D	Method B
23rd Nov 2019	1st Jan 2021	1st Jan 2023



2. Commencement Date of Milestones

The following table summarizes the options of the **Commencement Date** in the CPM-19 Report.

Method F (OneWeb)	Methods C and D	Method B
23rd Nov 2019	1st Jan 2021	1st Jan 2023

A later date leads to (i) Paper Filings and (2) Coordination uncertainty by real systems, as it:

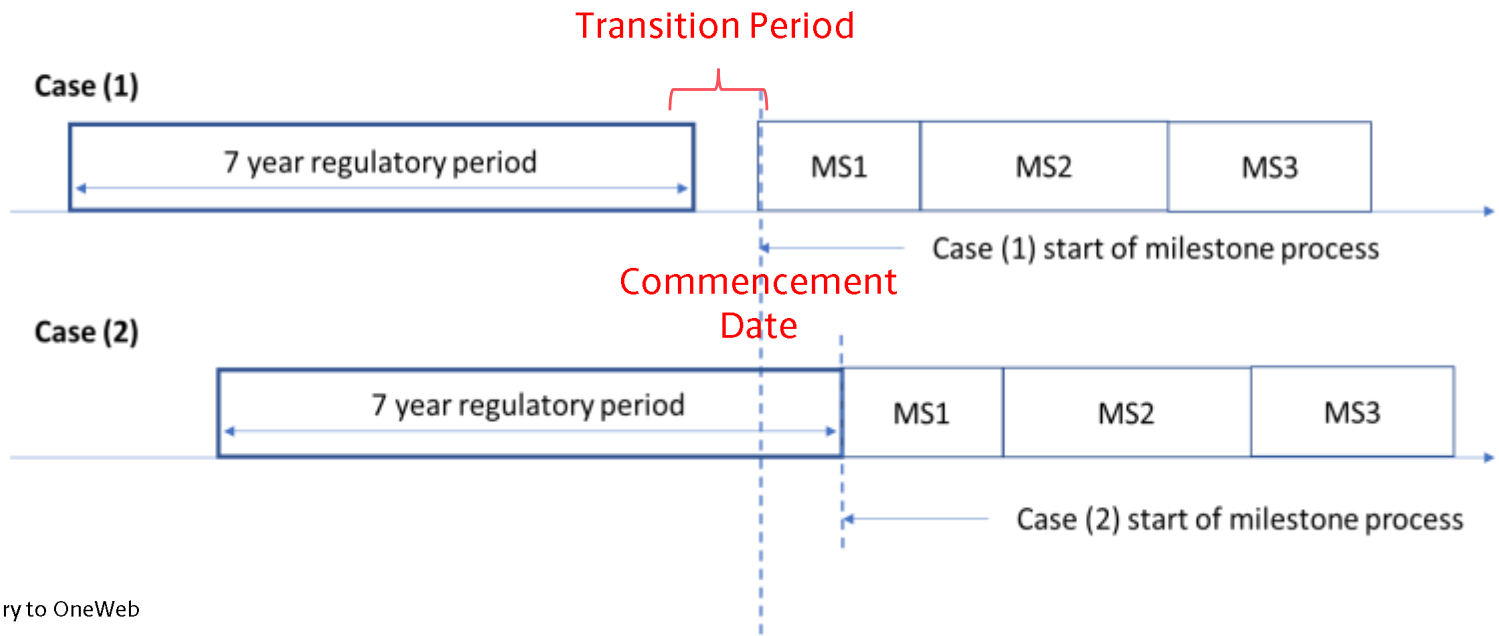
- Leads "paper satellite networks", as it was identified by the **Director of the BR at WRC-2015.**
- Would create uncertainty with respect to frequency coordination between later filed non-GSO system and earlier ones. If it is too long it will leave the real NGSO systems in limbo to finalise frequency coordination.

Also because, the **first milestone (MS1) should occur no later than 1 January 2021**, so that **WRC23** has the necessary hindsight, perspective and time to possibly adjust the overall milestone approach if cases of potential difficulty were reported to the BR and/or RRB before the conference.

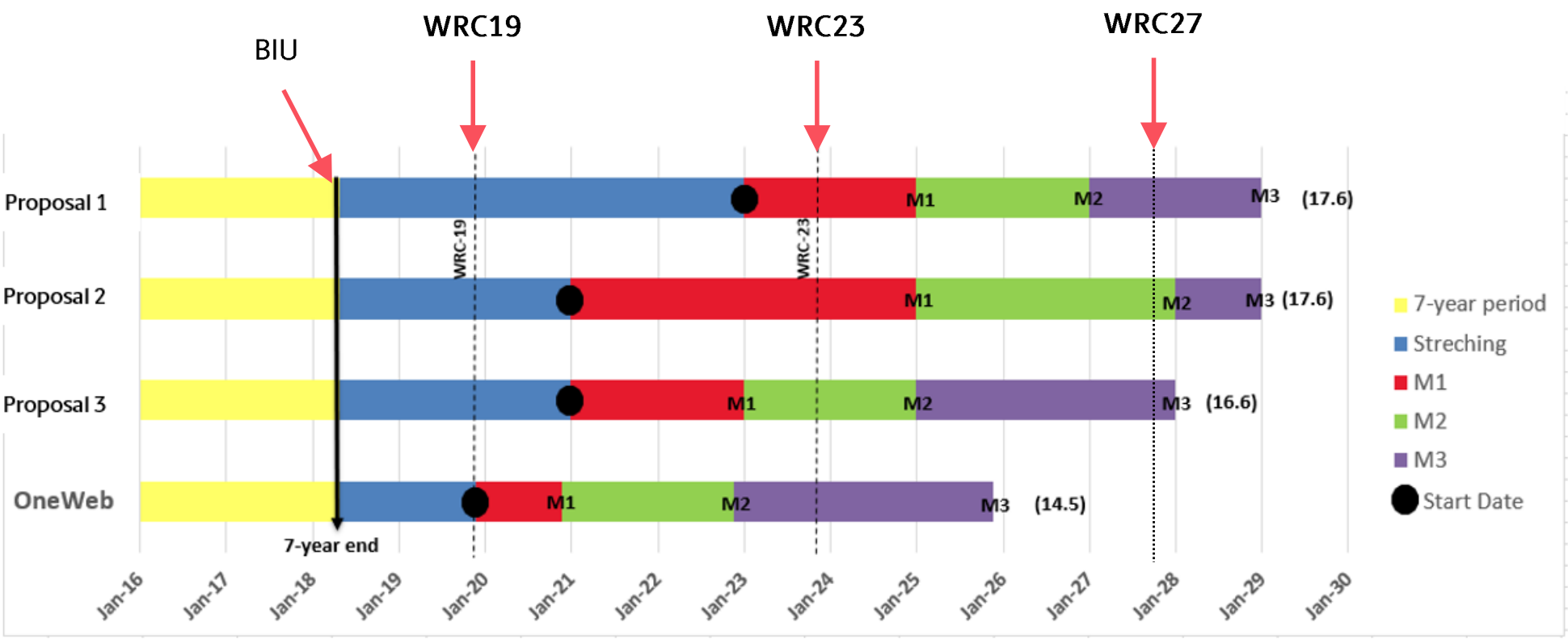
3. Transitional Measures

- **Case (1)**: For systems whose regulatory period (No. 11.44) ending before the commencement date of milestones would be counted from such a date;

- **Case (2)**: For systems whose regulatory period ending after the Commencement Date of milestones would be counted from the date of expiry of their regulatory period (No 11.44), i.e. no transition measure needed.



Putting everything together



Conclusions - Agenda Item 7, Issue A

OneWeb

OneWeb Supports

1. **Period required to BIU** – Retain 90 days (Option A) as per No. 11.44B.

2. **Milestones – Support Option F,** or **Option A**, which include a deployment factor (DF)

Option F	Option A
1 years – 10%	1 year – 10%
3 years – 33%	3 years – 33%
6 years – 100%	5 years – 75%

3. **Commencement Date and Transitional measures.**
   - Support Commencement Date of **23 Nov 2019**, or compromise to **1 Nov 2021** as long as **MS1** is before WRC-23.
   - For systems with Latest Date of BIU (the end of 7-year regulatory period) before the dates above, the Milestone Commencement Date should be as above. For all other (newer) systems, it should be their Last Date of BIU.

Thank you

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