

Agenda: 9.1

Document for: discussion

Work Plan towards completion of New Radio Access Technology SI in RAN4

NTT DOCOMO, INC.

Contents

- Introduction
- Objectives
- Preliminary RAN/RAN1 Time Plan
- Overall time plan
- Preliminary RAN4 time plan
- RF and co-existence related work
- Summary

Introduction

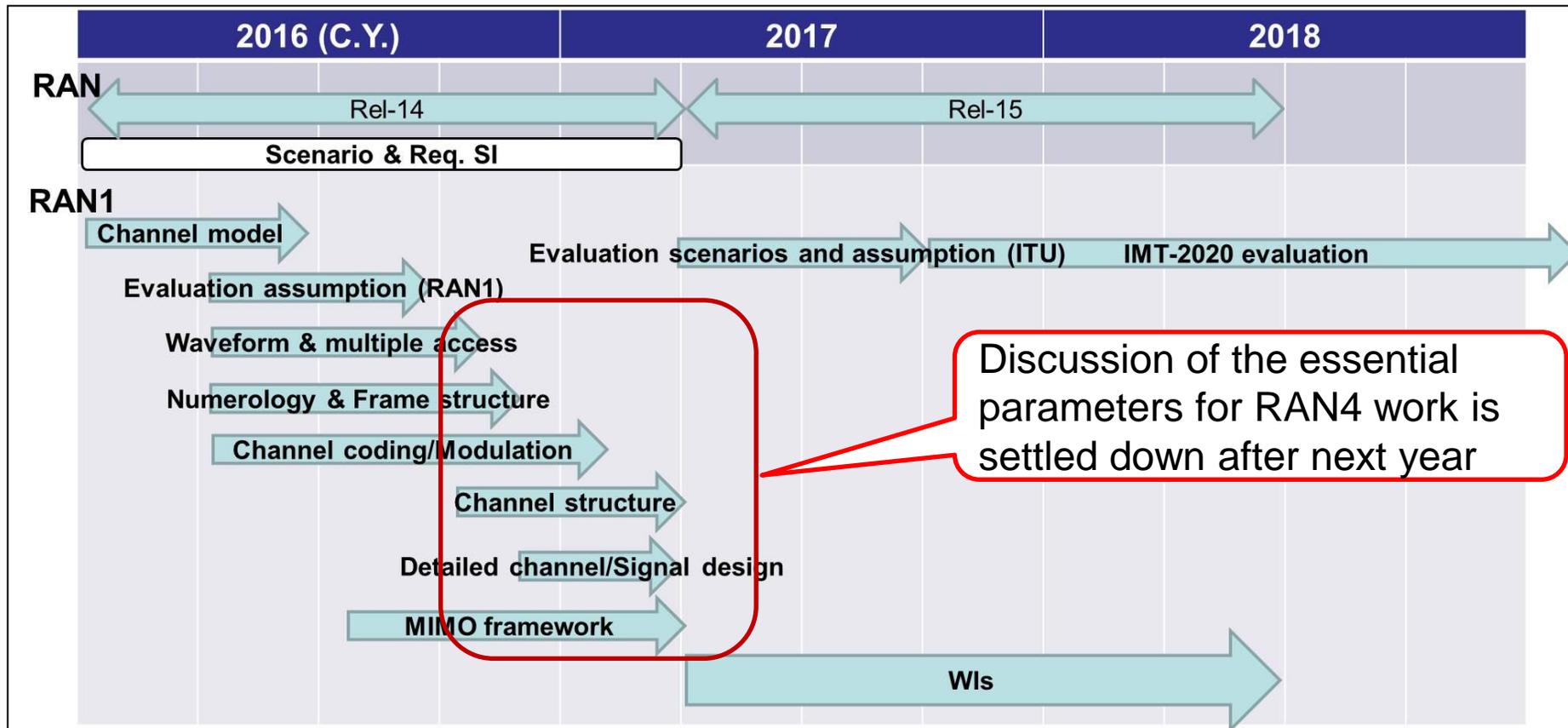
- SI on New Radio Access Technology was approved in RAN#71.
 - See RP-160671.
- In this contribution, we share
 - Where RAN4 is in SI in terms of
 - Overall time plan including 3GPP RAN/RAN1 and ITU-R
 - RAN4 work in high level
 - RF/co-existence related work in RAN4 work

Objective

- Objectives of the SI
 - The followings are mentioned in the SID of RP-160671,
 - The study aims to develop an NR access technology to meet a broad range of use cases including enhanced Mobile BroadBand (eMBB), massive MTC (mMTC), Ultra-Reliable Low Latency Communication (URLLC), and additional requirements defined during the RAN requirements study.
 - The new RAT will consider frequency ranges up to 100 GHz.
- Objectives specific to RAN4 in the SID
 - Fundamental RF aspects – especially where they may impact decisions on other aspects, e.g.,
 - Study and identify the aspects related to the testability of RF and performance requirements
 - Identify relevant RF parameters to be used for sharing and co-existence studies
 - **Note that this point is also related to the task requested by ITU-R WP 5D as per WRC-19 agenda item 1.13 (RP-160508)**

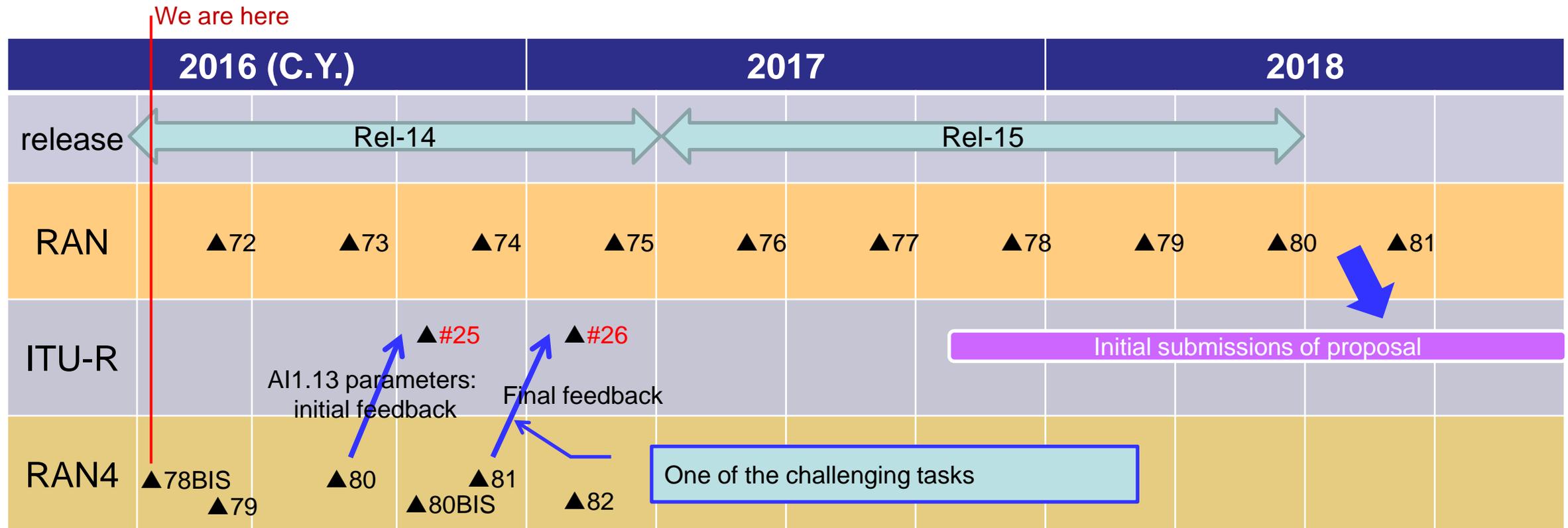
Preliminary RAN/RAN1 Time Plan

- The preliminary RAN/RAN1 work plan below was presented in RAN#71 in [RP-160353]
- According to the plan below, RAN4 can start a full scale operation at a later stage of the SI.
 - Since most of specs associated with co-existence and RF spec are settled down after the completion of work by RAN1 in next year.



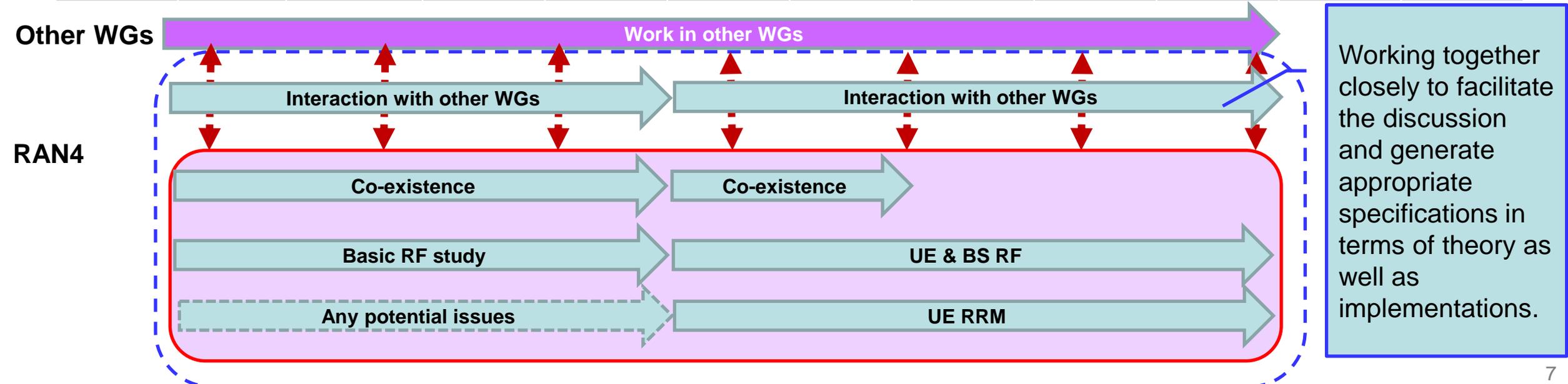
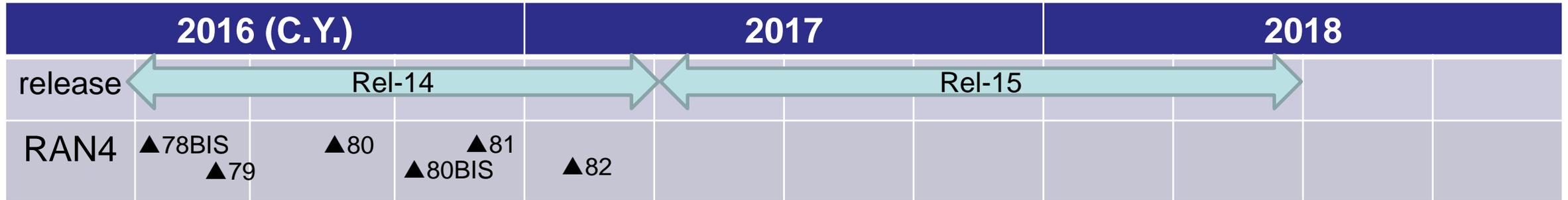
Overall time plan

- The schedule is challenging. Thus;
 - **Proactive interaction with other WGs is essential, for example**
 - R4 seeks the parameters for 3GPP co-existence study and send an LS to R1 from the beginning.
 - Then, R1 may consider the situation in R4 and will try to provide the parameters asap.



Preliminary RAN4 work

- Work for R4 in SI is roughly divided into three parts
 - Co-existence
 - RF study (part of RF perspective is used for co-existence as well)
 - Any potential issues such as UE RRM.



RF and co-existence related work (1/2)

- The parameters requested by WP 5D for studies on WRC-19 agenda item 1.13 would be highly overlapped with those which RAN4 should study regardless of their request.
 - In addition to the requested parameters by WP 5D, 3GPP would need to identify other parameters to be utilized for 3GPP co-existence study for wider frequency range.

IMT-2020 technology related parameters in the frequency range 24.25-86 GHz

No.	Parameter	IMT-2020	
		eNB	UE
1	Access technique		
2	Modulation parameters		
3	Channel spacing		
4	Channel bandwidth (MHz)		
5	Signal bandwidth (MHz)		
6	Transmitter characteristics		
6.1	Power dynamic range (dB)		
6.2	Spectral mask		
6.3	ACLR		
6.4	Spurious emissions		
7	Receiver characteristics		
7.1	Noise figure		
7.2	Sensitivity		
7.3	Blocking response		
7.4	ACS		



3GPP SI related parameters in the frequency range up to 100 GHz

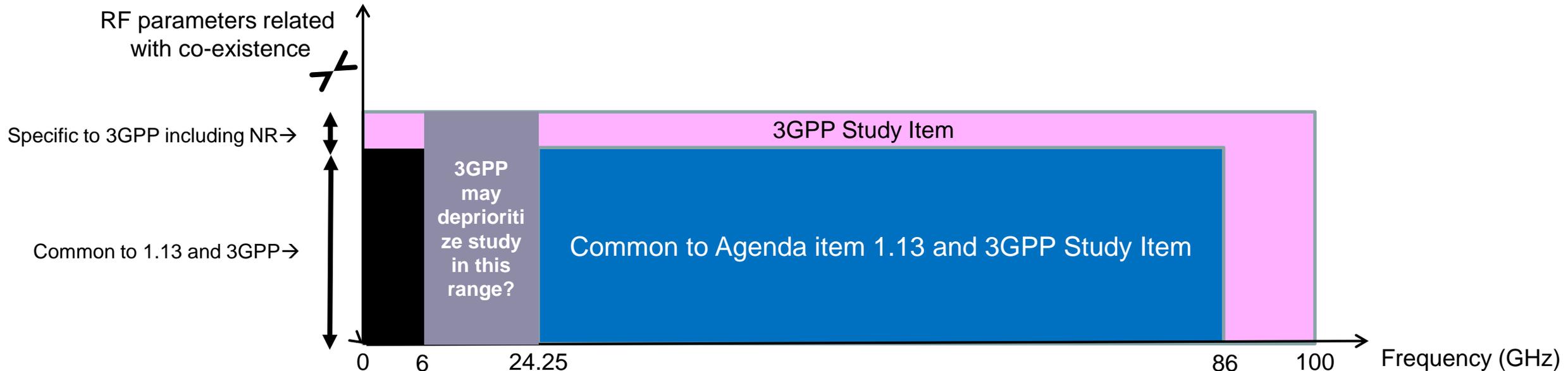
No.	Parameter	3GPP				IMT-2020/3GPP		3GPP	
		Frequency range(GHz)		Below 6		24.25-86		86-100	
		eNB	UE	eNB	UE	eNB	UE	eNB	UE
1	Access technique								
2	Modulation parameters								
3	Channel spacing								
4	Channel bandwidth (MHz)								
5	Signal bandwidth (MHz)								
6	Transmitter characteristics								
6.1	Power dynamic range (dB)								
6.2	Spectral mask								
6.3	ACLR								
6.4	Spurious emissions								
7	Receiver characteristics								
7.1	Noise figure								
7.2	Sensitivity								
7.3	Blocking response								
7.4	ACS								
...	...								
...	...								

Most of parameters would be able to be reused based on what 3GPP has conducted so far.

3GPP may deprioritize study in this range unless there is any particular demand

RF and co-existence related work(2/2)

- Progressing the work to address the request from WP 5D on agenda item 1.13 would facilitate the subsequent work in SI and WI due to the following reasons
 - Work for agenda item of 1.13 from WP 5D is almost overlapped with what 3GPP needs to do in SI scope as illustrated in the below figure.
 - The areas in pink and blue indicate those 3GPP needs to tackle.
 - The area in grey indicates that 3GPP may deprioritize its study unless there is any particular demand.
 - The area in black indicates that 3GPP would be able to reuse what we have conducted so far.



Note that 3GPP studies and provides the relevant RF parameters for WP 5D while does not conduct any studies for sharing and co-existence for WP 5D.

Summary

- We shared where RAN4 is in order to complete the work as scheduled.
 - Time schedule for the completion of SI is challenging
 - Interaction with other working groups is essential to proceed with R4 related work not only in R4 but also in other WGs
 - Progressing the work to address the request from WP 5D on agenda item 1.13 is essential to facilitate subsequent work in SI and following WI