3GPP TSG RAN Meeting #72
Busan, Korea, 13 - 16 June 2016

RP-161011

NR Schedule

Agenda Item: 9.3, Document for: Decision

Source: Samsung

Introduction

- Work on NR is progressing under schedule based on 2-phase approach (for normative work):

	Start	Completion	Note
Technology SI	March 2016	March 2017	
Phase 1 WI	March 2017	June 2018	for early commercialization
Phase 2 WI	June 2018	Dec 2019	for fulfillment of all requirements and IMT-2020 submission

- There is a proposal in RP-160812 to introduce an additional phase, i.e., 3-phase approach

	Schedule	Note
Phase A: Non-StandAlone (NSA) NR	~ Dec 2017 (at latest March 2018) as part of Rel-15	Priority on below and above 6GHz licensed bands, eMBB & low latency in UP, LTE as anchor with CP, connected to EPC
Phase B: StandAlone (SA) NR	~ Sep 2018 (at latest Dec 2018) as a part of Rel-15	All RAN functions for SA operation, 5G CN, NAS protocol
Phase C: Full IMT-2020 NR	~ at latest Dec 2019 as Rel-16	Full IMT-2020 NR

- In this contribution, we share our view on NR schedule and a possible way to move forward

Observations on 3-Phase Approach for NR Standardization

- Motivation for the '3-phase approach' is to expedite the 1st NR specs (by 6 months)
  - → Majority of L1/L2 features are common for non-standalone (NSA) and standalone (SA) and therefore, NSA NR in Dec 2017 is equivalent to 6-month (40%) reduction in work time without a reduction in work scope (compared to the existing schedule)
  - → Reduction in work time could limit the extent of key L1/L2 features introduced for NR

- In order to expedite NR standardization, the first phase of NR in '3-phase approach' will only support NSA while SA is to be supported in later phases
  - → Initial batch of NR UEs (only supporting NSA) will not be able to operate in a NR-only network (where there is no LTE support)
  - → Alternative would be to maintain LTE network as long as there are operational NSA-only NR UEs

Comparison of Specification Work between SA and NSA (1/2)

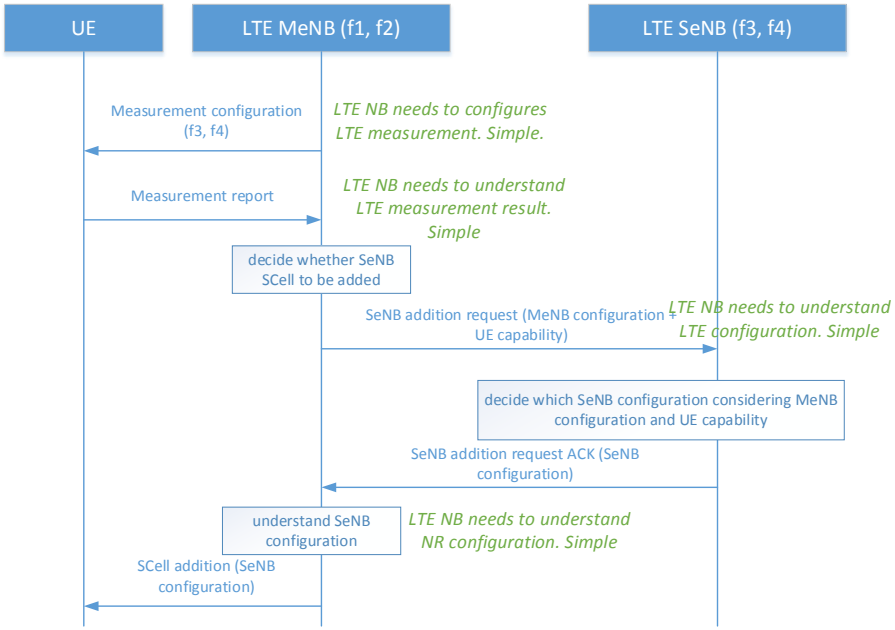
- L1 and L2 are common between SA and NSA
- The main differences are in L3
  - Mobility
  - System information
  - Paging
  - RRC connection management
- The work load of the L3 components listed above is not trivial, but it should be noted that workload for L1/L2 is much higher
- Dual Connectivity (DC)-type mobility required for NSA is not that simple as having been thought (recognized in RAN2#94)

Tech Component		Stand-Alone	Non Stand-Alone
L1	Waveform & Multiple Access	common	
	Frame Structure	common	
	Channel Coding	common	
	MIMO	common	
	L1 Procedures and Signaling	common	
	Physical Layer Channels	common	
	Physical Layer Signals	common	
L2	PDCP	common	
	RLC	common	
	Random Access	common	
	Scheduling	common	
	Other MAC functions	common	
L3	Measurement	common	
	UE states	common	
	Mobility	HO, idle mobility	DC type
	System Information	MIB, SIB1,..	MIB
	Paging	Required	Not required
	RRC Connection Management	Setup/reconfiguration	reconfiguration

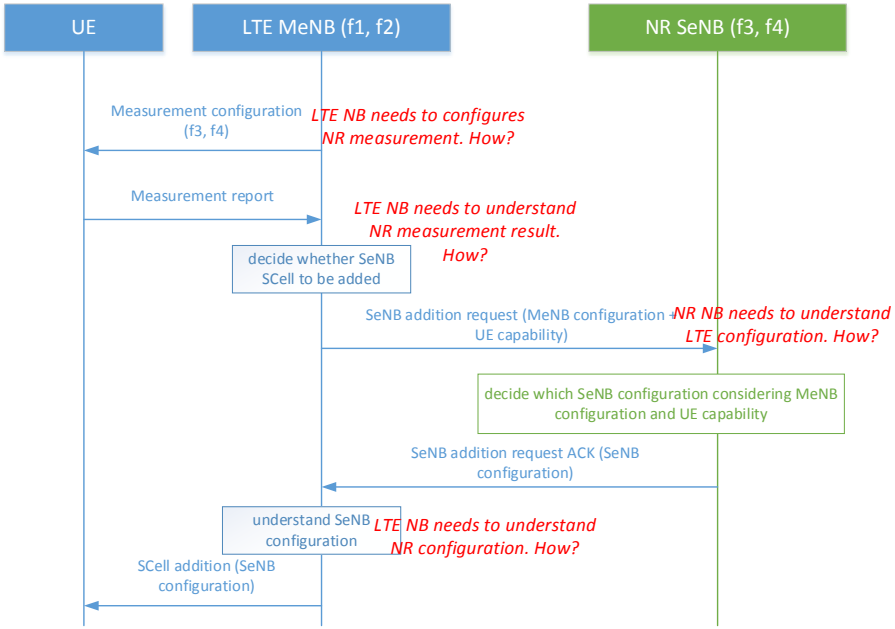
Comparison of Specification Work between SA and NSA (2/2)

- Intensive discussion expected regarding how to support LTE – NR DC
  - In case the LTE DC mechanism is reused, LTE specifications have to be continuously updated according to new releases of NR so that LTE MeNB understands new NR parameters
  - Otherwise, new DC mechanism should be discussed from scratch

Dual connectivity between LTE nodes



Dual connectivity between LTE and NR

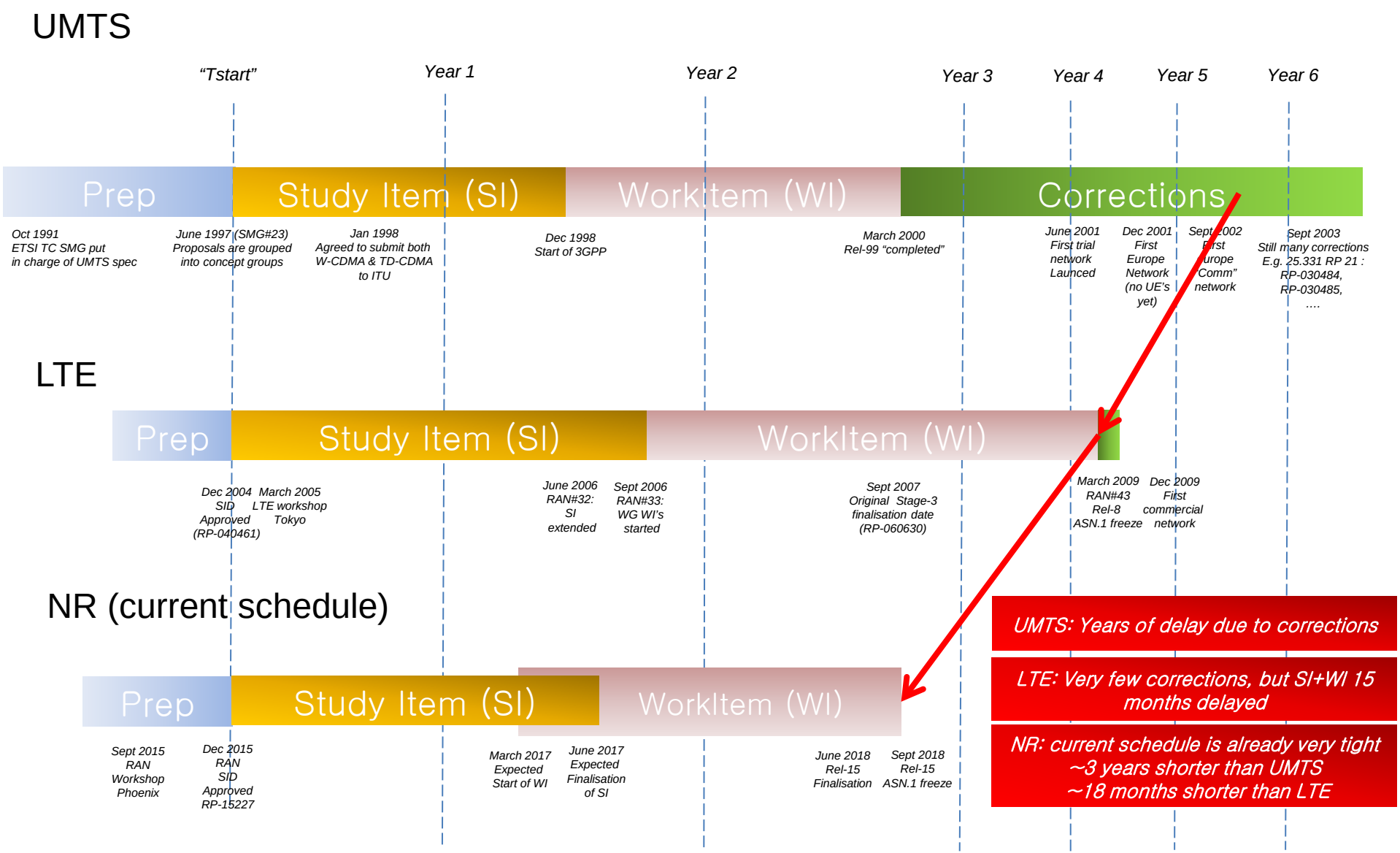


Conclusion

- While we recognize industry demand for expedited NR standardization, quality of NR specifications should not be compromised in the process

- Proposal
  - Maintain the current NR schedule, i.e., Phase 1 in June 2018 and Phase 2 in Dec 2019
  - Specify the support for both SA and NSA in NR Phase 1 WI with priority on <6GHz and >6GHz licensed bands
  - Other details of NR Phase 1 WI scope should be decided taking into account the SI outcome
  - The remaining features that are required to fulfill NR requirements but are not supported in Phase 1 should be specified in NR Phase 2 WI

Annex A: 3GPP Time Plans for New RAT's



Thanks!