
Source:	SK Telecom
Title:	SK Telecom’s view on 5G NR acceleration
Document for:	Discussion and decision
Agenda Item:	9.4

1. Introduction

TSG-RAN agreed to determine NR timeline on freezing Stage-3 specification for NSA (Non-Standalone) by either Dec 2017 or March 2018 in RAN#72 meeting [1]. In this paper, SK Telecom’s view on 5G NR acceleration is described to provide key motivation on 3GPP.

2. Discussion

Over the past few years, one of the key buzzwords in the mobile network industry has definitely been 5G. An increasing number of mobile network operators, equipment manufacturers, research organizations and governments are actively engaged in discussions on 5G and its key enabling technologies. On the other hand, Korea is one of the key country to adopt advanced mobile network such as LTE-advanced and LTE-A Pro in terms of the penetration ratio and commercialization timeline as well. Korea has already penetrated more than 80 percent of LTE subscribers among whole mobile subscribers. Mobile network operators in Korea such as SK Telecom, who is the 1st ranked operator in Korea, has been very active in developing and introducing innovative technologies in their commercial networks including recent LTE-A technologies such as 3-band carrier aggregation and LTE/Wi-Fi aggregation.

Moreover, SK Telecom took fast LTE roll-out completing nationwide coverage for coping with data traffic explosion and improving customer’s Quality of Experience (QoE) via relevant Carrier Aggregation (CA) technologies. Like other LTE operators, SK Telecom’s LTE user spends 6.1 times more data than 3G user and most of the traffic is multimedia. And multimedia is expected to secure 80% of the total traffic in 2019. Coping with this explosive traffic, SK Telecom completed its nationwide LTE coverage by first half of 2012 and 3 band carrier aggregation from January 2015. As a result, we continue to be a first-runner in delivering unique user experiences with latest LTE-A technologies and preparing for the 5G era.

Observation 1: LTE markets and technologies have already matured in Korea market. Korea is distinguished country who has nationwide LTE coverage.

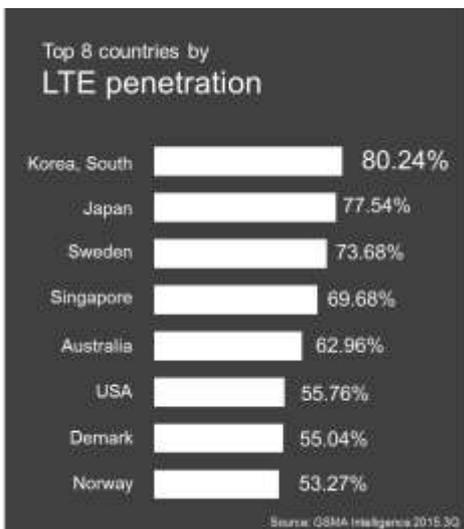


Figure 1: Top 8 countries by LTE penetration

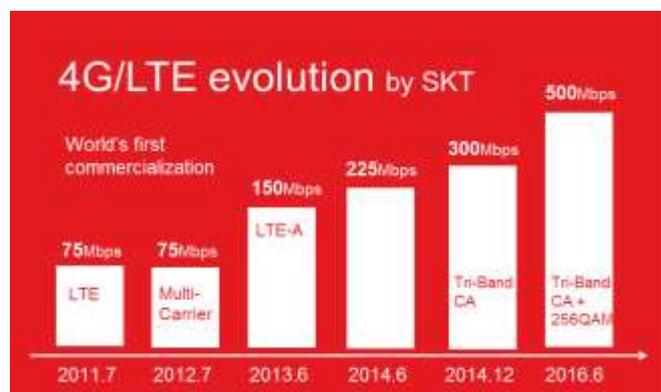


Figure 2: 4G/LTE evolution by SK Telecom

Recently, it was announced that SK Telecom will spend another \$5 billion on its 5G network over the next three years, which is similar to what SK Telecom spent lots of investment on its LTE network aggressively in 2012 [2]. In other words, SK Telecom has strong intention to start early commercialization compliant with 3GPP NR specification in 2nd half of 2019 timeline so that the operator would utilize nationwide coverage of LTE by Non-Standalone NR specification. In general, it commonly takes 12 ~ 15 months to develop infrastructure and device just after finalizing standard. After then, it would take more than 6 ~ 9 months to deploy network equipment and to optimize the radio parameter, coverage, etc. That is, it would spent more than 18 ~24 months to complete commercial 5G NR network from the completion of specification. In addition, to come up with early roll-out of 5G NR in initial stage, the operator who has already deployed national coverage of LTE would consider Non-standalone operation in cost-effective manner.

Observation 2: To ensure wide coverage in operator's coverage in initial stage, Non-standalone operation is considered when an operator has nationwide coverage of LTE.

3. Summary and proposal

Based on the observations in this paper, the followings are proposed, which is tightly aligned in [3], [4]:

Proposal 1: Completion of Stage 3 specification for Non-standalone (NSA) by December 2017 should be confirmed.

Proposal 2: Freezing of ASN.1 for Non-standalone (NSA) no later than March 2018 should be addressed accordingly.

Proposal 3: Forward compatibility from Non-standalone (NSA) migrating to Standalone (SA) in software manner should be deeply investigated.

4. References

[1] RP-161253, "NR schedule and phases," RAN WG chairmen.

[2] Park, Jungho. Interview. 12, Jan 2017 < <https://www.sdxcentral.com/articles/news/sk-telecom-to-invest-9-billion-for-5g/2017/01/> >

[3] RP-1700531, "On the overall 5G-NR workplan," Qualcomm, SK Telecom, et al.

[4] RP-170230, "Confirming the Date for Milestone Box," AT&T, SK Telecom, et al.