

Discussion on requirements for Rel-17 MCOver5GS

CBN, Airbus, CATT, Huawei, ZTE,TD-Tech

■ Business requirement of 5G MC service deployment in China

- In China, both railway company and public safety organizations including police/fire control/emergency communication etc. have business plan for 5G MC service. The completion of the 5G MC service related standards is the essential part to enable their commercial use.
- China Market requires completion of MBS features within Rel-17 (see [S6-210470](#))

■ The railway related MC service in China



➤ China State Railway Group Company, Ltd. (China Railway), which is a state-owned sole proprietorship enterprise that undertakes railway passenger and cargo transportation services in China, has published several official documents to instruct the industry and market of FRMCS. Their roadmap on 5G-R is shown in figure 1. China Railway has already set up the 5G MC service for railway standard project. They are considering to incorporate 3GPP MCX standards in their project if the completion time of 3GPP MCX can match the timeline of their business plan.

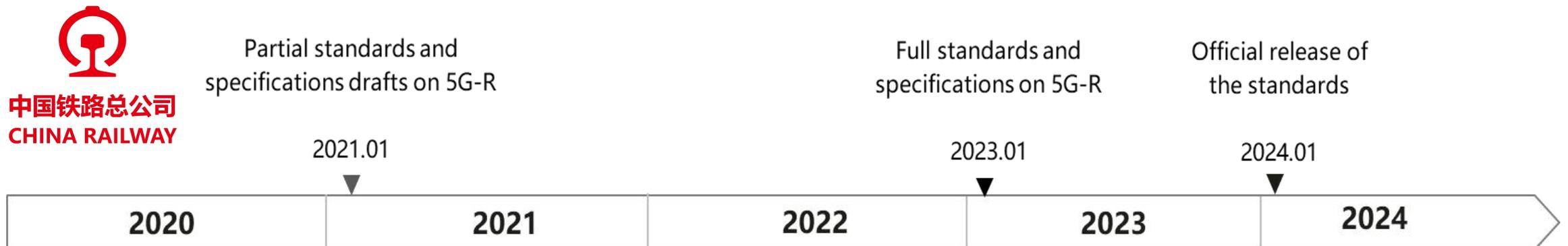


Figure 1: China Railway roadmap on 5G-R

■ The MC service in Hong Kong SAR, China



➤ In Hong Kong, the 2x10M of at 700MHz is already allocated to the Government of Hong Kong. There is a plan to deploy the 5G mission critical system including PTT, video and data service with the acquired spectrum. The figure 2 below shows the MC service business plan for the Government of Hong Kong. A global MC service standards is preferred to have the low cost, continuous technology evolution etc.



Figure 2: Timeline of 5G MCX deployment in Hong Kong, China

■ The MC service in Mainland of China



➤ CBN, as one of the four wireless operators in China, is planning to provide mission critical service for the public safety responders including police/fire control/emergency communication etc. at 700MHz. Multicast/Broadcast delivery mode are required to improve the sub-1GHz FDD spectrum utilization efficiency. The final business deployment plan and related technical standards to adopt is under discussion (3GPP 5G MCX is one of potential referenced technologies). If 3GPP could complete the 5G MCX standard in time, it would be a sound alternative to be utilized for CBN to provide nationwide public safety service ASAP.

5G MBS is the essential feature of the MCOver5GS



- Supporting the group size varying from tens to several thousands is a common requirement for the three 5G MCX networks mentioned above (Public safety networks in China (Mainland & Hong Kong)/China Railway). When thousands of group members are distributed in a cell or two, the network with the very limited spectrum resource cannot serve so many users via unicast at the same time. So the 5G MBS is the absolutely essential feature to enable the large-scale and formal commercial use of MC Service over 5GS.

Feasibility analysis of SA6 MCover5GMBS in Rel-17



➤ Features required for 5G MCX

- Usage of transport mode service is the common mechanism of MCPPT, MCVideo, MCDData, although LTE MBMS and 5G MBS support two type of services : Transport only mode and Full service mode.
- Usage of full service mode is just one additional option for MCDData.
- 5G MBS and LTE/EPS MBMS interworking is not required for Chinese deployment

➔ The minimum features for Rel 17 is usage of transport only mode for MCX.

➤ SA2 already finished the works required for starting SA6 discussion

- Architecture for supporting of broadcast and multicast concluded [S2-2101113](#).
- Features and procedures covered by [S2-2101114](#), [S2-2101115](#) provide similarity services of MB2 defined in 23.468.
- From above conclusion, it is very clear for SA6 to know what kind of capabilities will be provided to application layer. When and how to use those capability. Those are enough for SA6 to start related work.

➔ SA6 can start work from April meeting

➤ Expected working load

Features of MCX server	Related procedures in SA6 in 4G MCX	Potential issues for 5G
Trigger the establishment of MBMS /5G MBS bearer	<ul style="list-style-type: none">• Use of pre-established MBMS bearers• Use of dynamic MBMS bearer establishment	<ul style="list-style-type: none">• Selection of 5G Broadcast/Multicast for group delivery• When to trigger establishment of 5G Broadcast/Multicast session (Take 4G MCX as reference)
Notify the MBMS/5G MBS bearer information to receiving user	<ul style="list-style-type: none">• MBMS bearer announcement• MapGroupToBearer	<ul style="list-style-type: none">• How to announce 5G MBS receiving information• (Existed mechanism for 4G MCX can be reused)
Determination of Dynamic switching between unicast and MBMS/5G MBS	<ul style="list-style-type: none">• MBMS bearer listening report from terminal• Determination of delivery method	<ul style="list-style-type: none">• SA2 already have mechanism for unicast and 5G multicast switching• SA6 can only focus on the for unicast and 5G broadcast switching (Existed mechanism for 4G MCX can be reused)

➔ 2 meetings are enough to complete the minimum features

Proposal



- As indicated above, there are explicit business demands for 5G mission critical service. Whether 3GPP standard can be adopted will be largely determined by whether a MCX standard with essential features can be released in Rel-17.
- Based on that, it is kindly suggested 3GPP takes Chinese Market requirement into account and makes sure the essential features including 5G MBS support are covered in Rel-17.
- It is proposed 3GPP agrees the related changes to the WID document(Revised WID: [SP-210220](#)).