Smarter technology for all

3GPP TSG RAN Meeting #91-e
Electronic Meeting, March 16 – 26, 2021

RP-210673

Agenda Item:	15
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Motivation for Beam-management and CSI Enhancements in NR Rel-18

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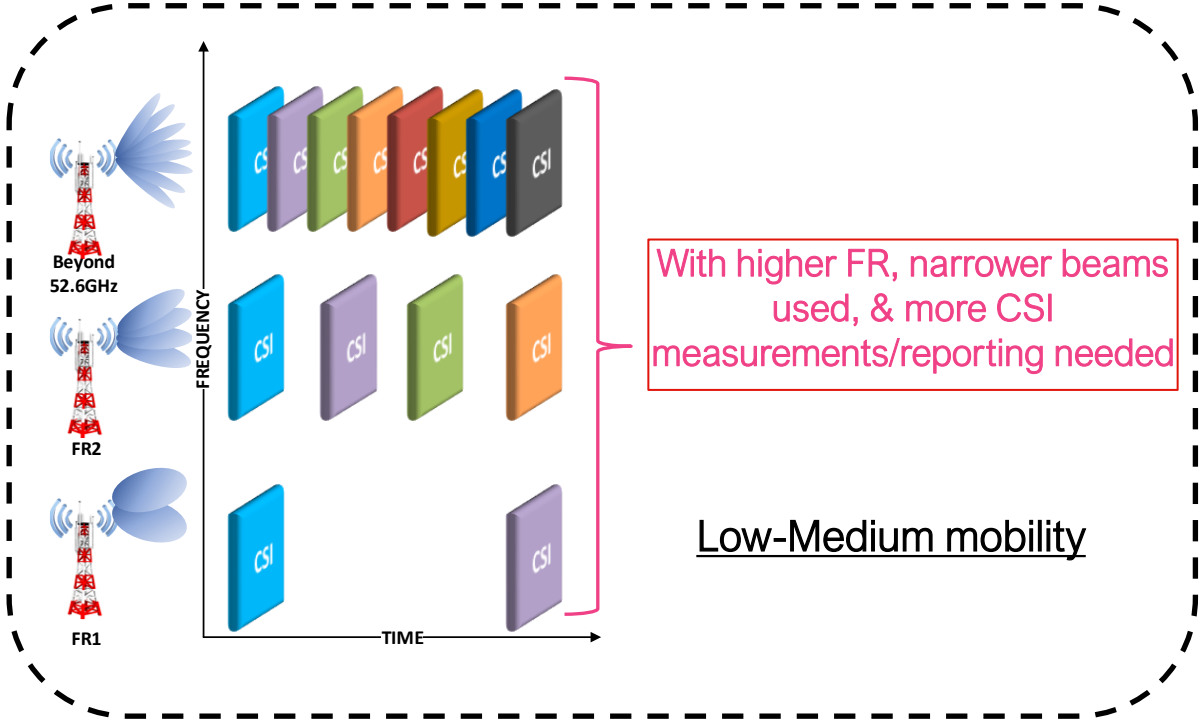
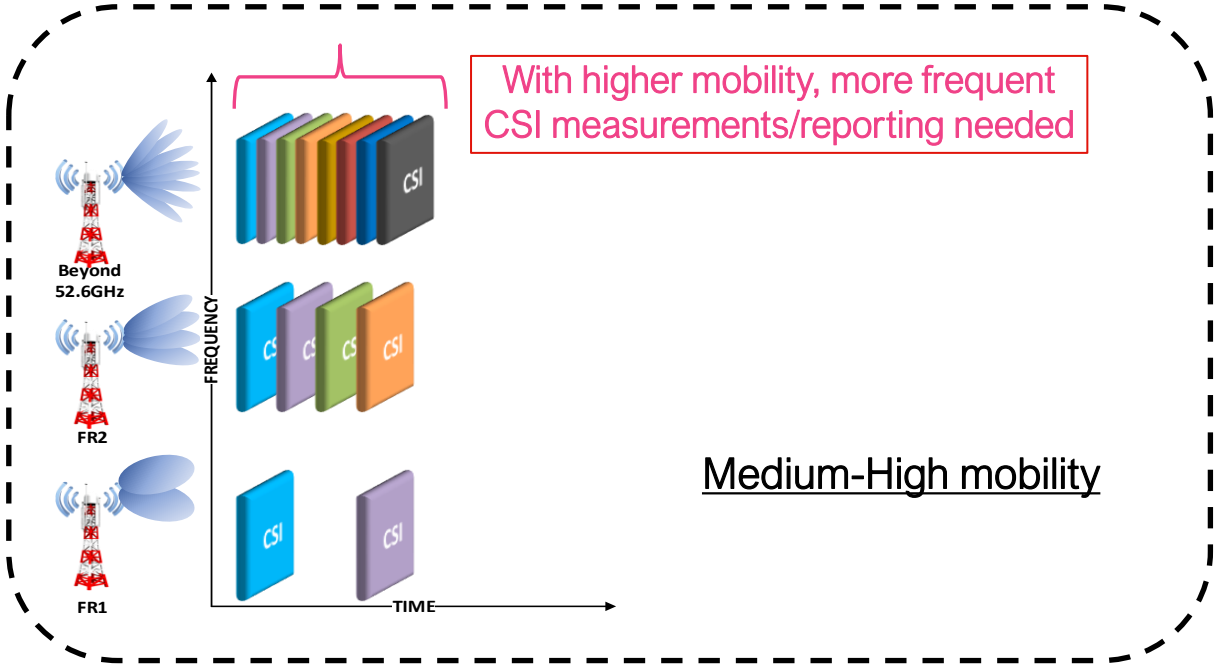
Introduction

- In NR Rel-17, FeMIMO WI is working towards beam enhancements
  - To support unified TCI framework for DL and UL beam-management
  - To reduce latency for beam updates

- However, high-latency and large-signaling overhead for beam-management and CSI procedures are still expected to remain bottleneck, and further exacerbated for:
  - Narrower beam in higher FR2 and beyond 52.6 GHz
  - Medium-high speed scenarios such as high-speed train, highway scenarios, UAVs
  - Dense networks with larger number of UEs
  - URLLC/IIoT scenarios such as factory automation





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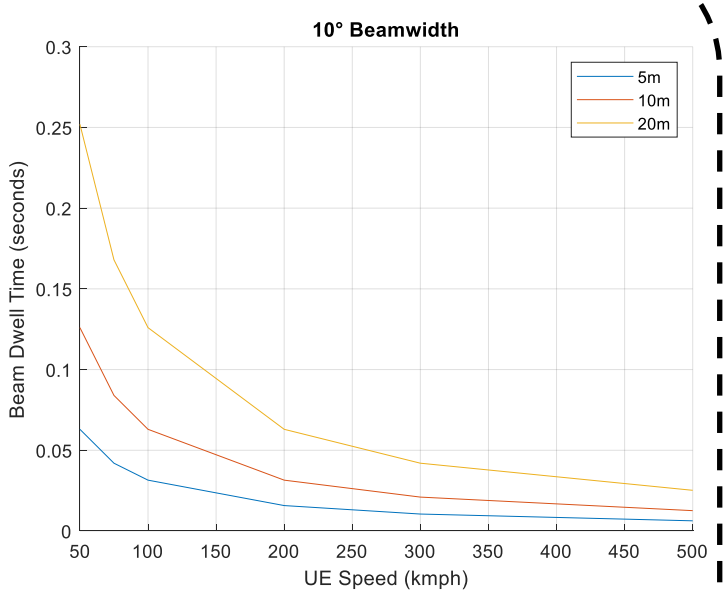
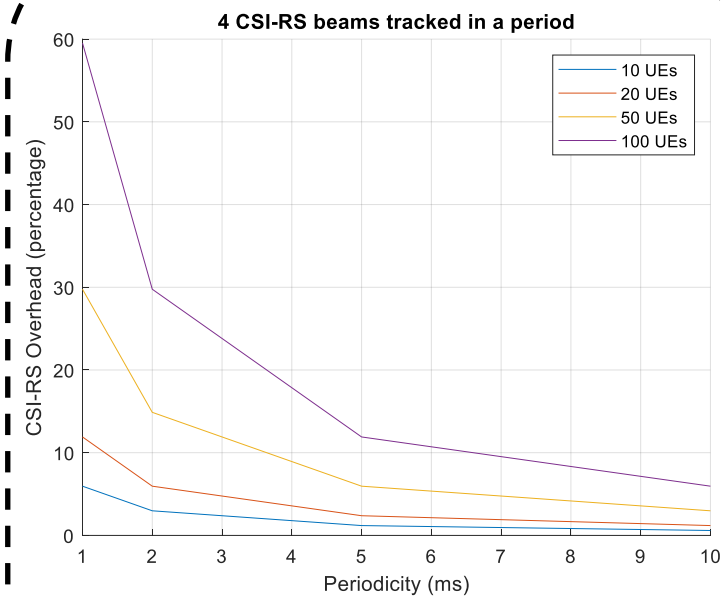
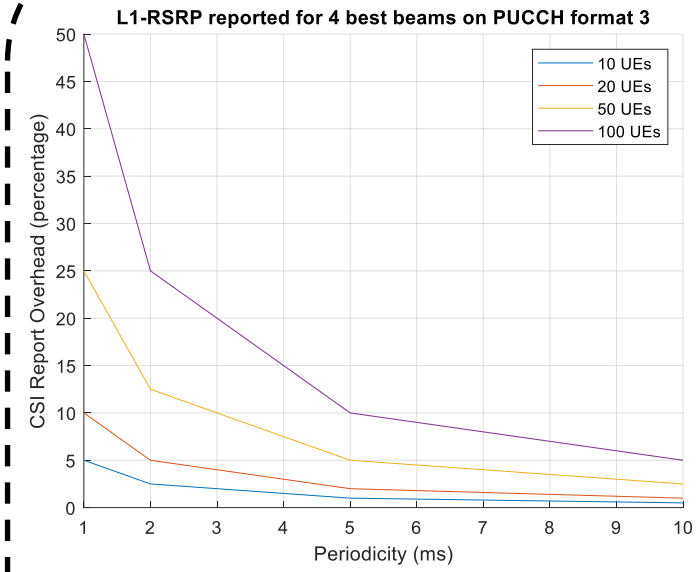
Example Analysis of Beam-Management and CSI Issues



High mobility, distance between UE & TRP, and narrower beam width results to short beam dwelling time



Short beam dwelling time requires frequent RS transmissions for beam measurements



Frequent RS measurements require frequent CSI reporting for faster beam updates

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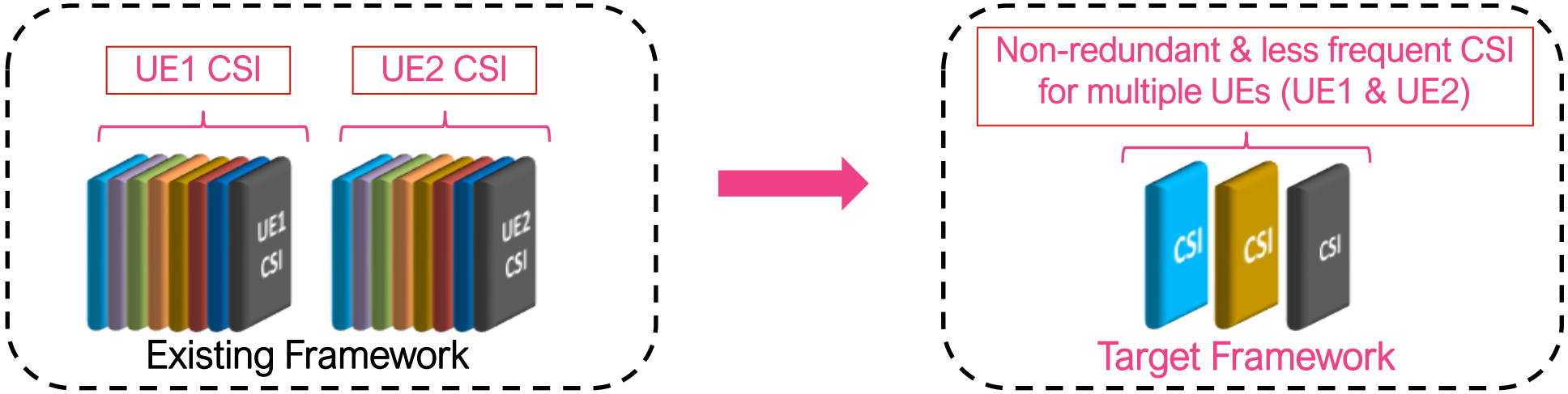
Proposal for Beam-Management and CSI Enhancements

- For NR Rel-18, we think that there is significant scope to further improve on existing beam-management and CSI framework and we propose
  - to study beam/CSI enhancements for use-cases & deployment scenarios where the inherent characteristics (of these scenarios) can be leveraged to reduce the need for frequent beam/CSI measurements, reporting & indication/update
    - UE's movement and/or location characteristics, for example deterministic/predicted/periodic/circular range of movement
    - Multiple UEs follow similar movement and/or path
  - to study methods for the identified scenarios to facilitate low complexity, low overhead beam-management and CSI framework for achieving non-redundant and less frequent beam/CSI measurements/reporting



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thanks.

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