

# Recommendations on IEEE802.16j Technical Requirements

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Purpose:

The purpose of this document is to propose a draft for IEEE 802.16 TGj functional requirements.

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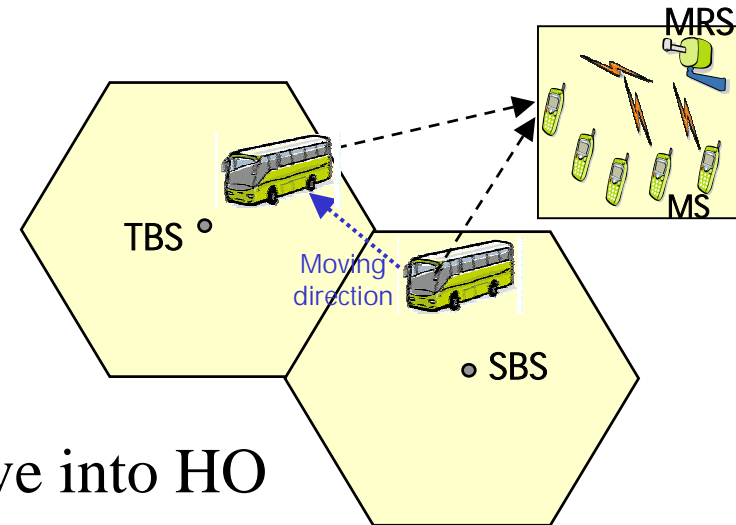
- RS Strategies
- Handover classification
- HO with MRS involved
- Potential Mobility Schemes
- Summary

# RS Strategies

- **Throughput enhancement RS**
  - MS receives BS broadcast messages directly
  - The separation of control and data in DL
    - DL Preamble and MAP are transmitted from BS to MS directly.
    - All other DL and UL traffic is relayed for throughput enhancement
  - Low Capacity RS
- **Coverage extension RS**
  - No direct link between MS and BS
  - All the information exchange between BS and MS should be relayed
  - High Capacity RS
- **Extra considerations on mobile RS HO**
  - MRS and its subordinate MSs handover in moving

# Handover Classification

- Between neighboring BSs, without RS involved
  - Conventional HO
- HO with FRS involved
  - Ref. C80126j-06-005r1
- HO with MRS involved
  - MRS serves as a new NE to involve into HO
  - Many on-board MSs may experience HO in a short period



# MRS Involved Mobility Scenarios

- Two cases to be considered
  - Moving vehicles
    - Both MRS and its subordinate MS involved in HO
    - Intra-BS HO & inter-BS HO
  - Stopped vehicles
    - MS HO only
      - Passengers get on/off vehicles
        - Require MS handover
      - Passengers around vehicles
        - No MS handover

# Requirement for MRS

- MRS handover is transparent to MS
- MRS HO shall not add extra latency on the MS HO
- MRS HO shall have no additional requirement on existing MS HO procedures
- Support mobility of MRS with its subordinate MS
  - On moving vehicles
    - Internal MS can access MRS after powering on
    - External MS around vehicles can not connect to MRS after powering on
    - External MS/RS is not allowed to perform HO from outer BS/RS to on-board MRS
      - Avoidance of ping-pong HO
  - On stopped vehicles
    - Passengers getting on vehicles can handover to on-board MRS
    - Passengers getting off vehicles handover to outside BS/RS

# Two potential MRS HO schemes

- Group mobility:
  - Only MRS HO happen, which is transparent to MS
  - MS maintains original wireless access on mobile vehicles
  - Rapid handover, less signaling overhead and latency
- Individual mobility:
  - Both MRS & on-board MS experience HO process
  - MS experience a conventional HO and is not aware of MRS HO
  - Less impact on exiting BS
  - Less complexity of RS

# Summary

- RS classification in terms of two dimensions,
  - coverage extension or throughput enhancement
  - FRS, NRS or MRS
- HO classification
  - Conventional, FRS/NRS involved and MRS involved
- Requirement for HO with MRS involved
  - Support mobility of MRS with its subordinate MS
  - No additional latency and impact on existing MS HO
- Potential MRS HO schemes
  - Group mobility
    - MS experiences no handover in moving vehicles
    - Complex RS (take some responsibilities of CID allocation, and etc.)
  - Individual mobility
    - Frequent MS handover
    - Less complexity of RS