

A RS Clustering Scheme for IEEE 802.16j

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Purpose:

Introduce the concept inside of C802.16j-06/168

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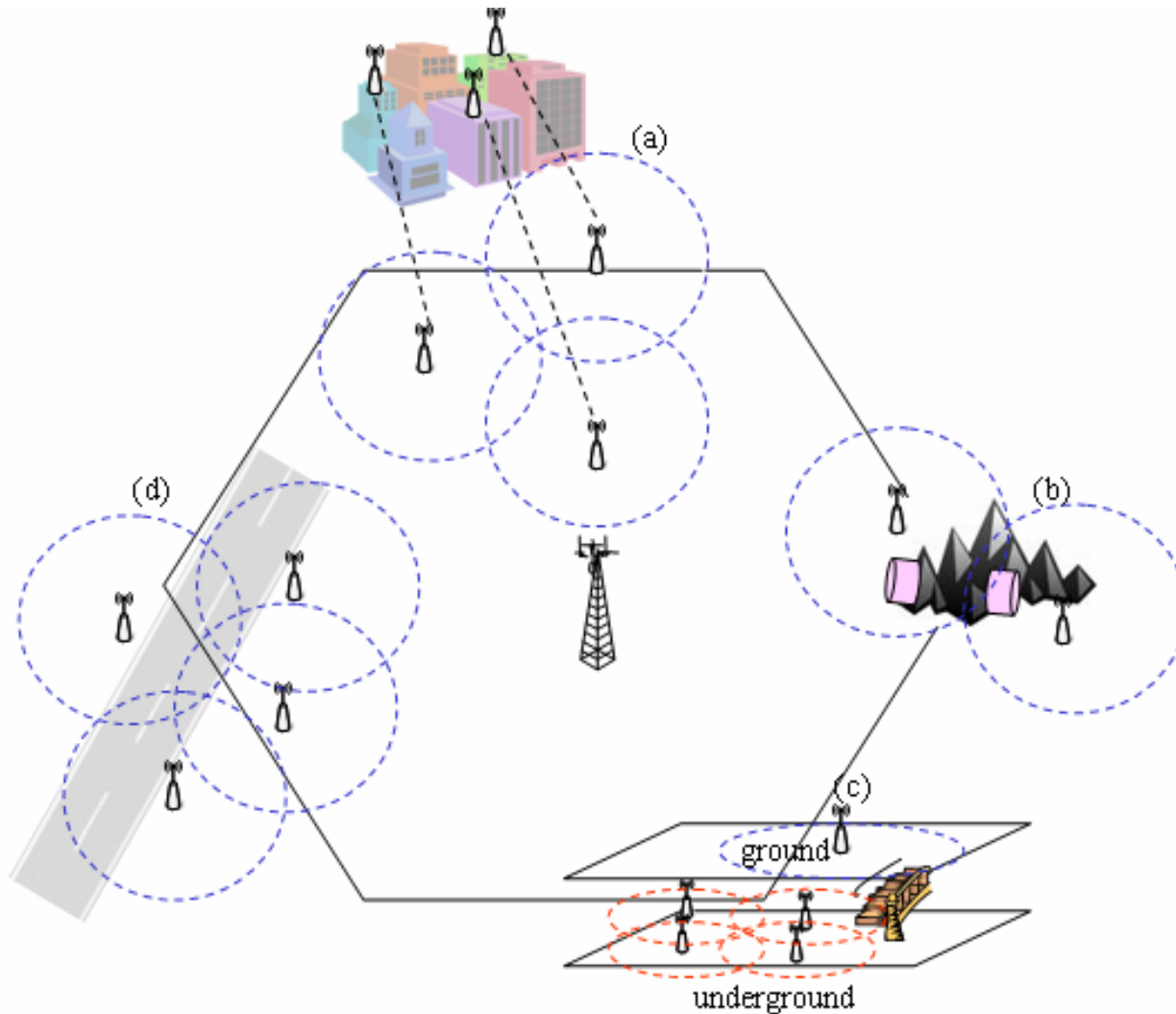
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Introduction



RSs may be deployed close to each other so as to serve a specific area, for example:

- (a) Large urban area
- (b) In a tunnel
- (c) In an underground
- (d) Along a high way

Problem Definition

■ Frequent Handovers

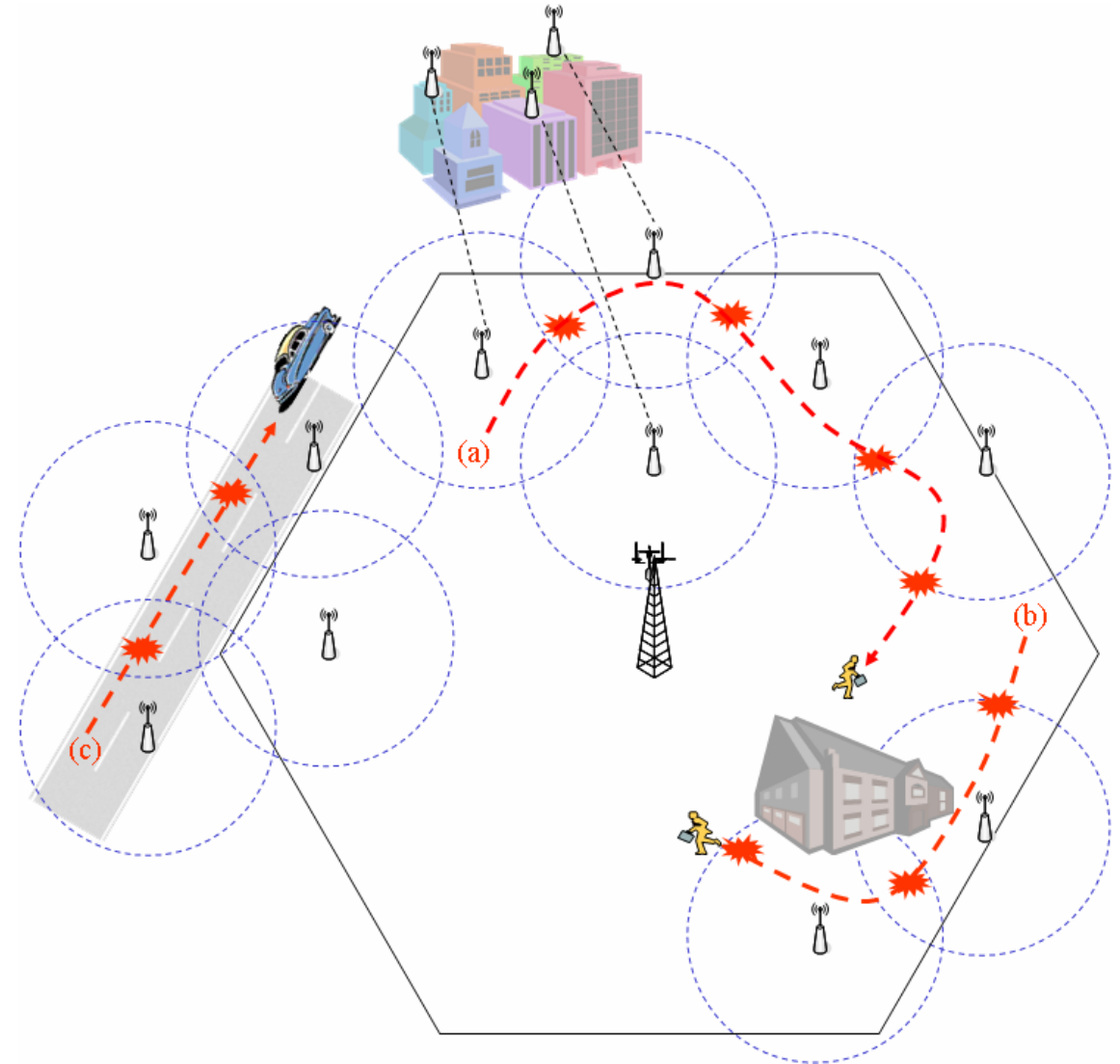
– Frequent handovers may be happened for the MS in this case

– For example:

Path a : 4 handovers

Path b : 3 handovers

Path c : 2 handovers

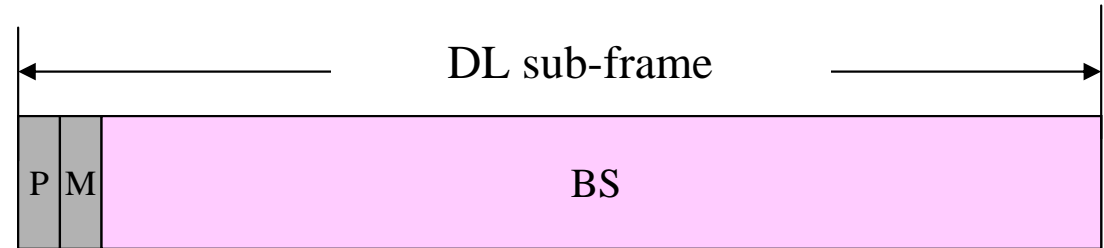


Problem Definition

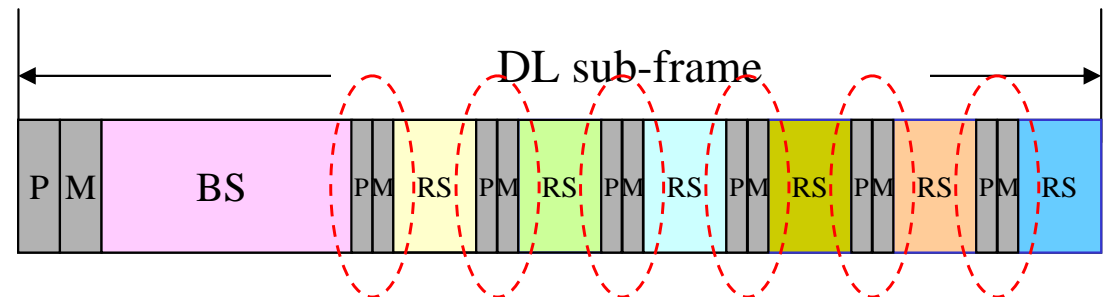
- More overhead by more relay regions

- RS transmission may be time division manner, and each relay zone may require its control signals. ex. preamble, FCH, and MAP

- More capacity consumption by more relay regions



One BS case

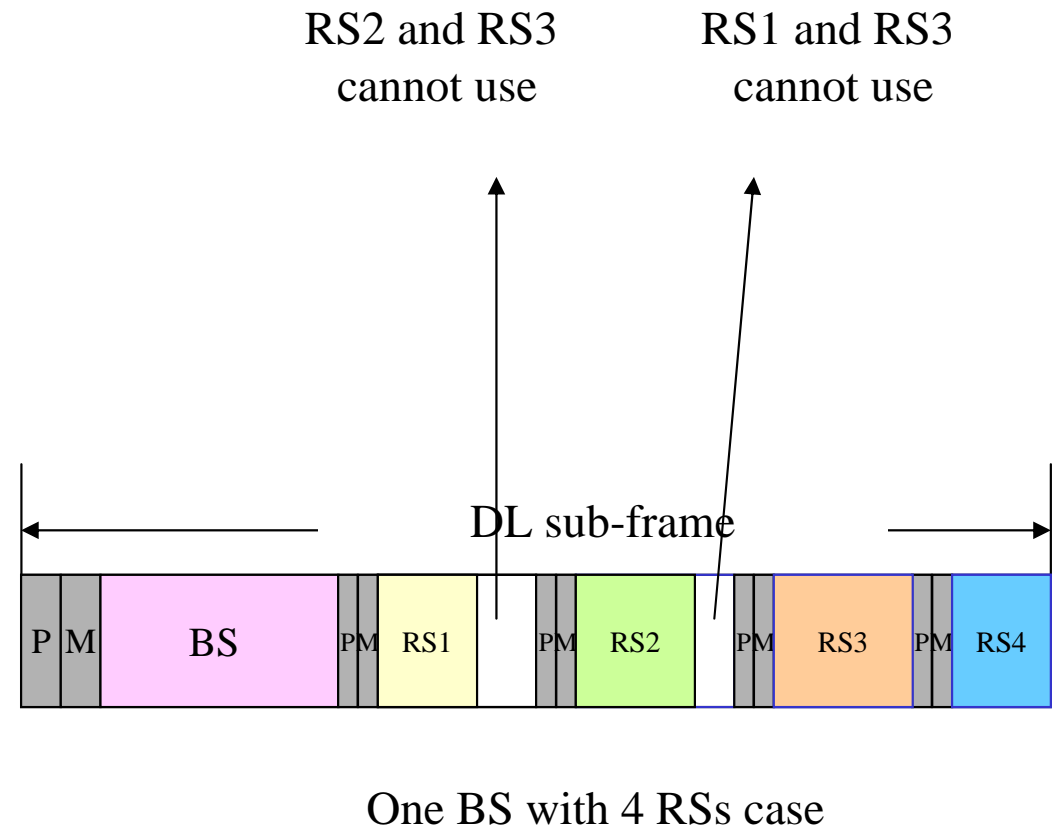


One BS with 6 RSs case

Problem Definition

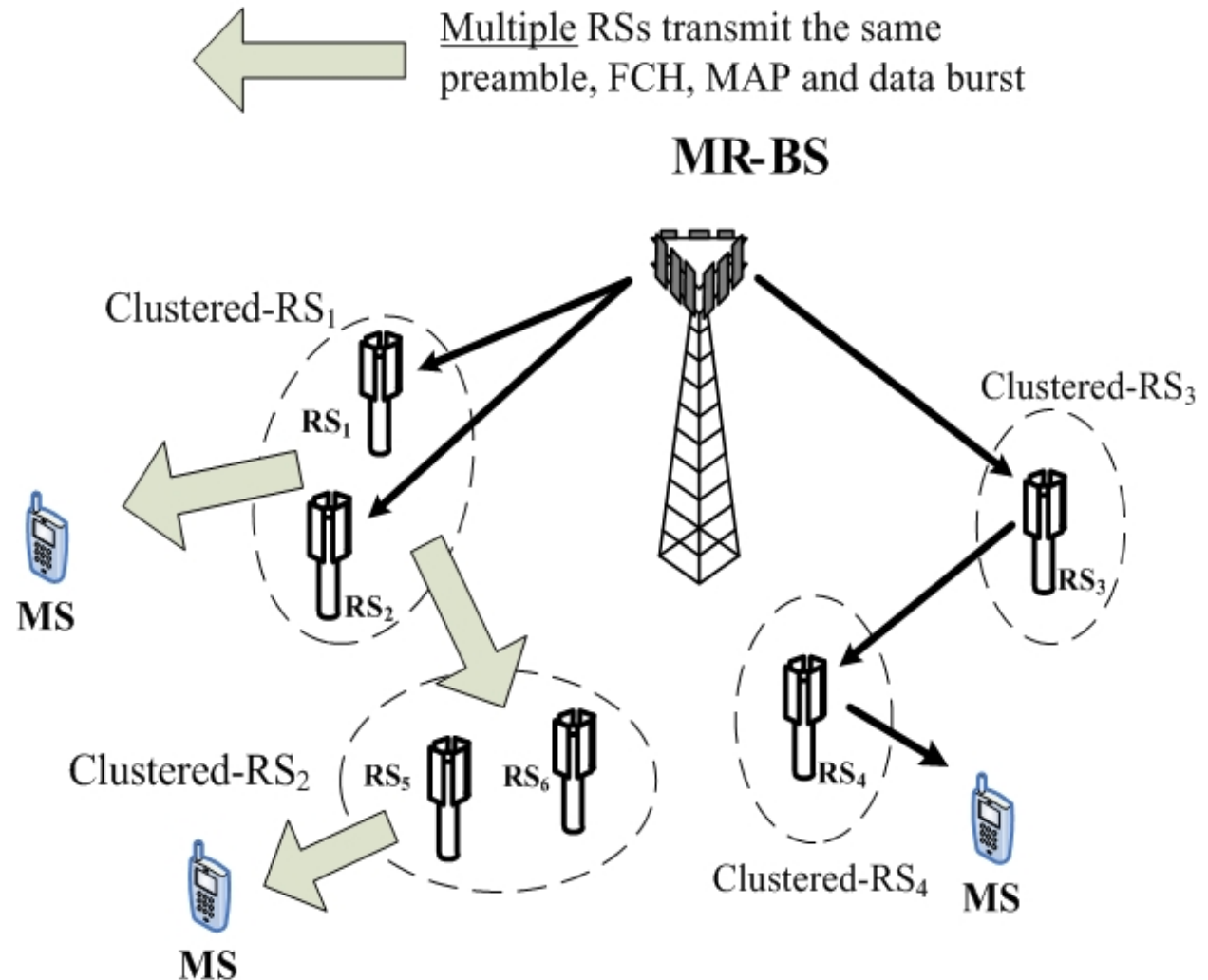
- **Lower trucking efficiency if resources are pre-allocated to each relay region**

- May happen when decentralized resource allocation is considered
- The resource may not be fully utilized



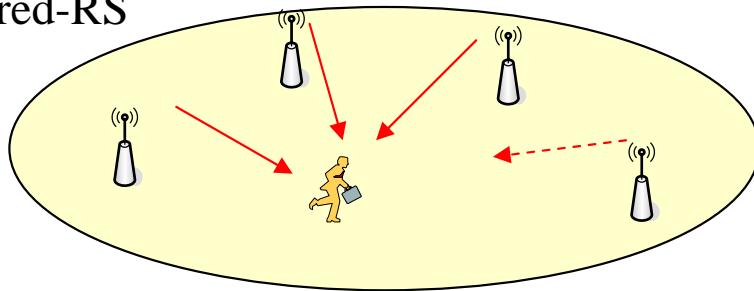
Concept of RS Clustering

- **Clustered-RS**
 - A set of RSs which transmit the same preamble, FCH, MAP and data burst
 - The set may include single RS
- **Adjacent RSs could be clustered together as a clustered-RS**
 - Reduce handover frequency between RSs
- **Advantage**
 - Lower handover frequency
 - Control overhead reduction
 - Radio resource sharing

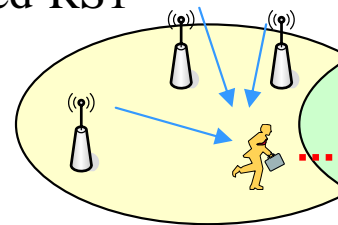


Mobility Managements for RS Clustering

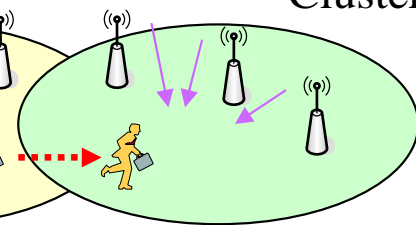
Clustered-RS



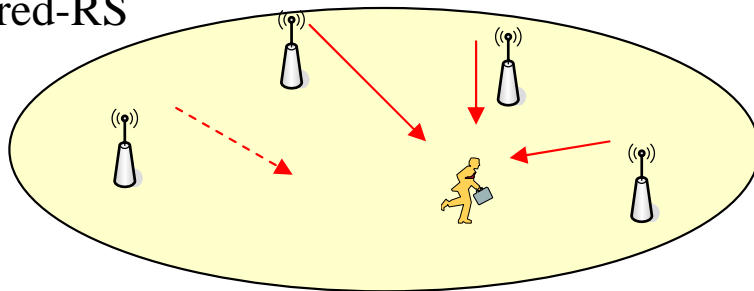
Clustered-RS1



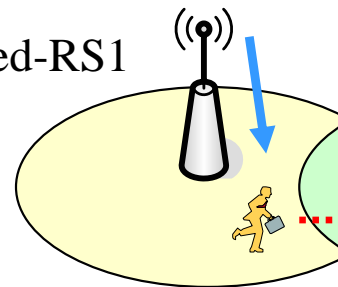
Clustered-RS2



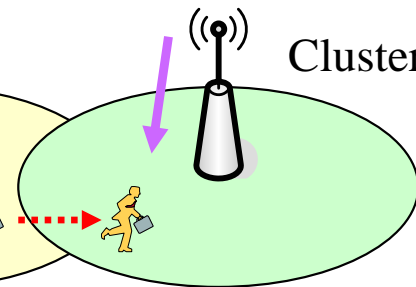
Clustered-RS



Clustered-RS1



Clustered-RS2



Intra-Cluster
"No Handover"

Inter-Cluster
"Handover between Clustered RS"

Summary

- Enable the **RS clustering** concept can achieve lower handover frequency, lower control overhead and higher resource utilization efficiency.
- A **measurement mechanism** is required to estimate how close the relay stations are
 - Addressed in text proposal