Title: Usage of the Coexistence Zone

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Purpose:

Usage of the Coexistence Zone

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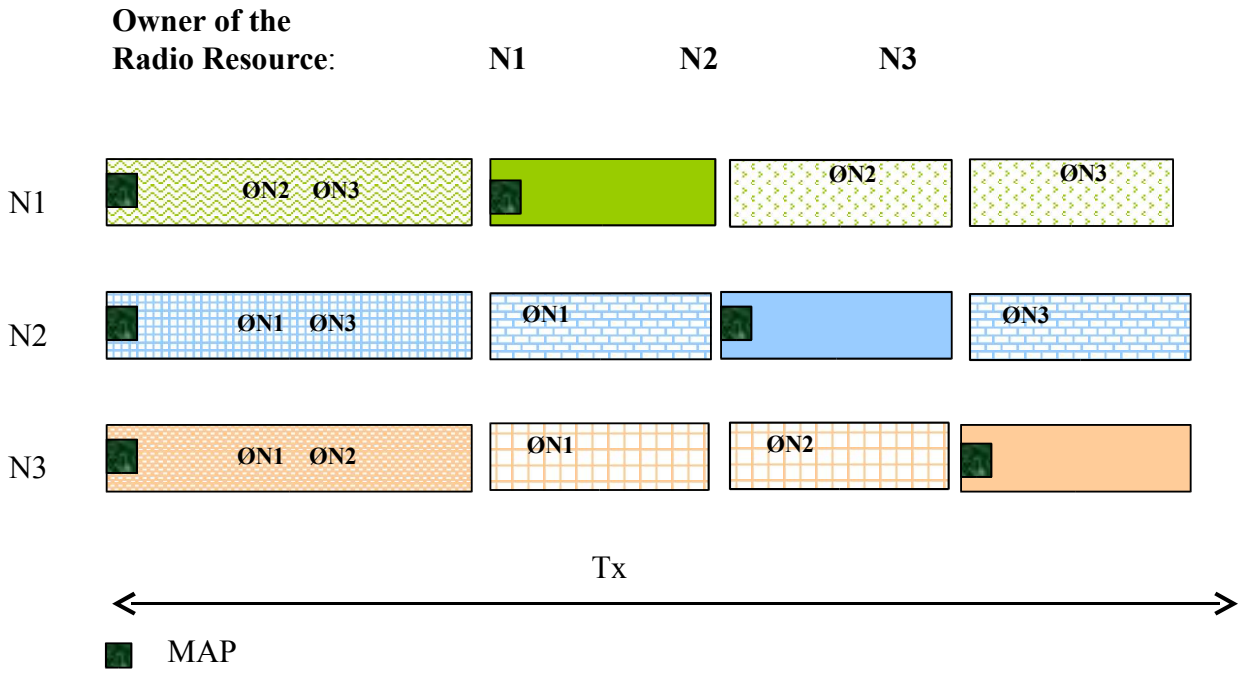
Main issues

- Relation between Master sub-frames and CXZ
- Extended functionality of the CXZ
- High-level mechanisms which can be improved by using the CXZ

Inter - 802.16 system coexistence

- Are defined three basic mechanisms
  - Synchronization of the MAC Frames
  - Adaptive channel selection, to select a working channel
  - Separation of the remaining interference in the time domain
    - By using the Master sub-frames
      - **The only time interval being “interference-proved”**
    - **Using the Coexistence Protocol to achieve interference-free sub-frames**

Master sub-frame – Type 1



Existing definition of the CXZ

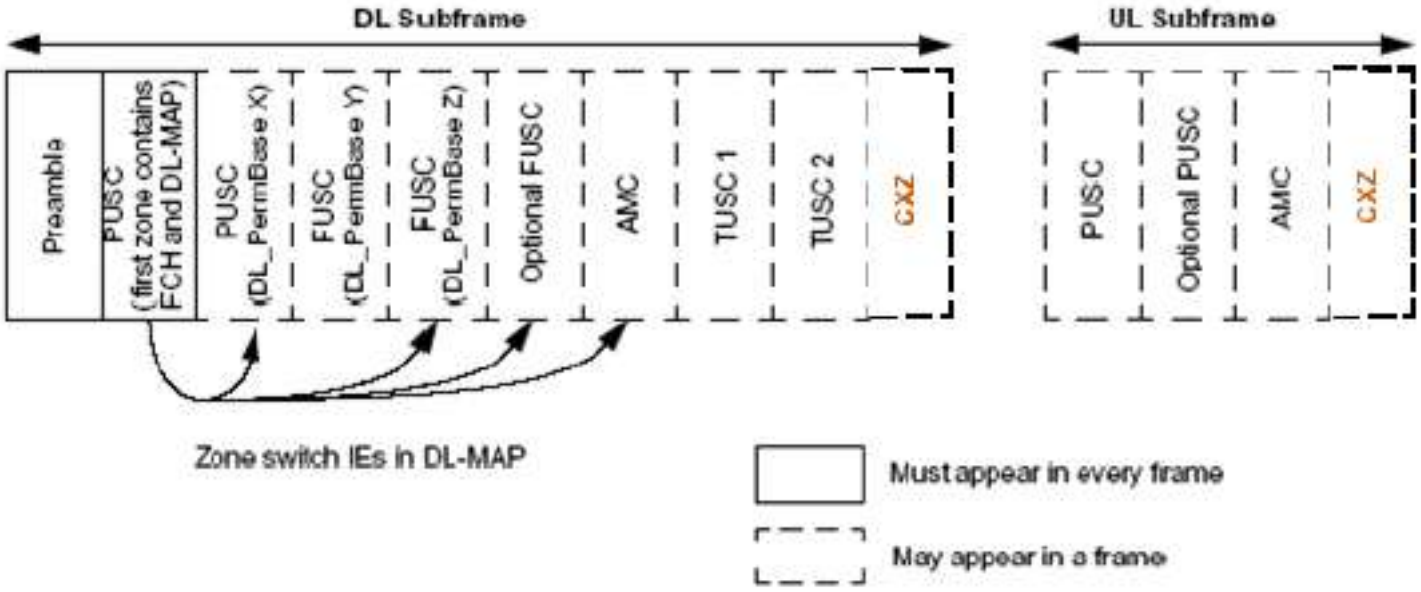
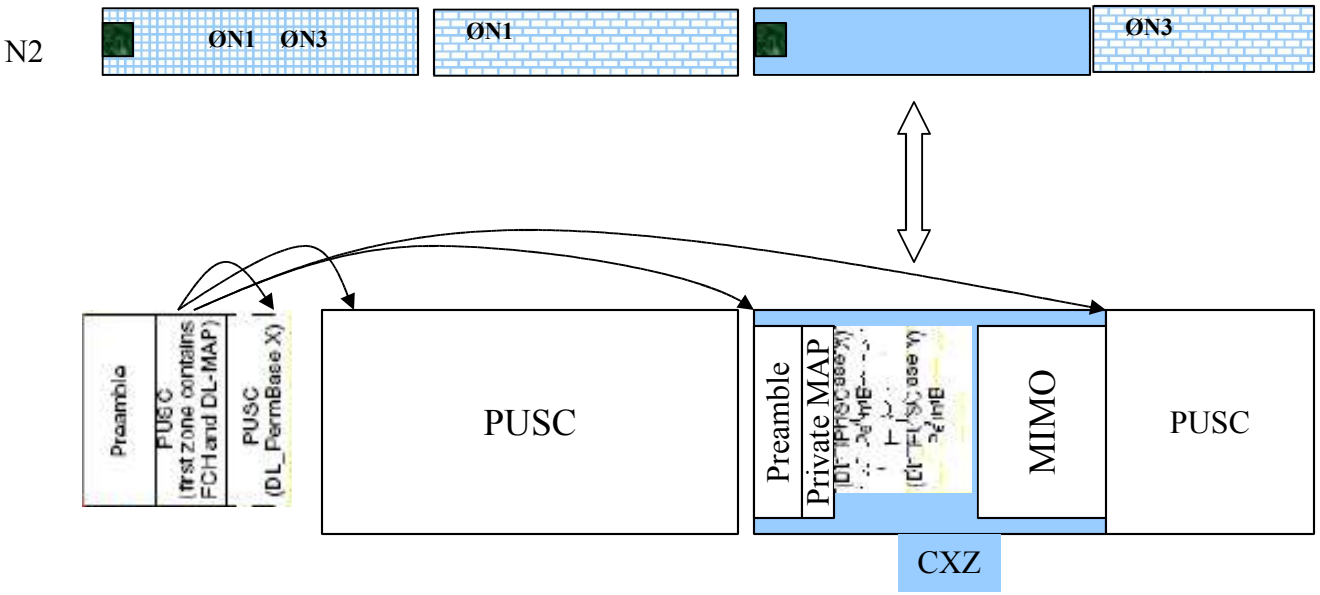
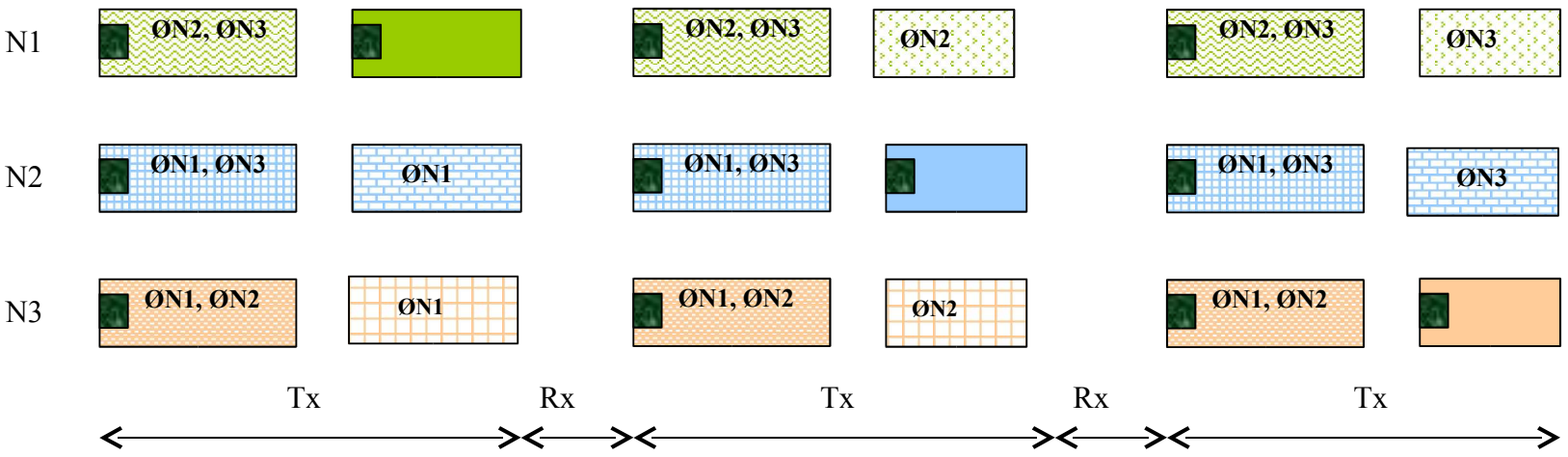


Figure 219—Illustration of OFDMA frame with multiple zones

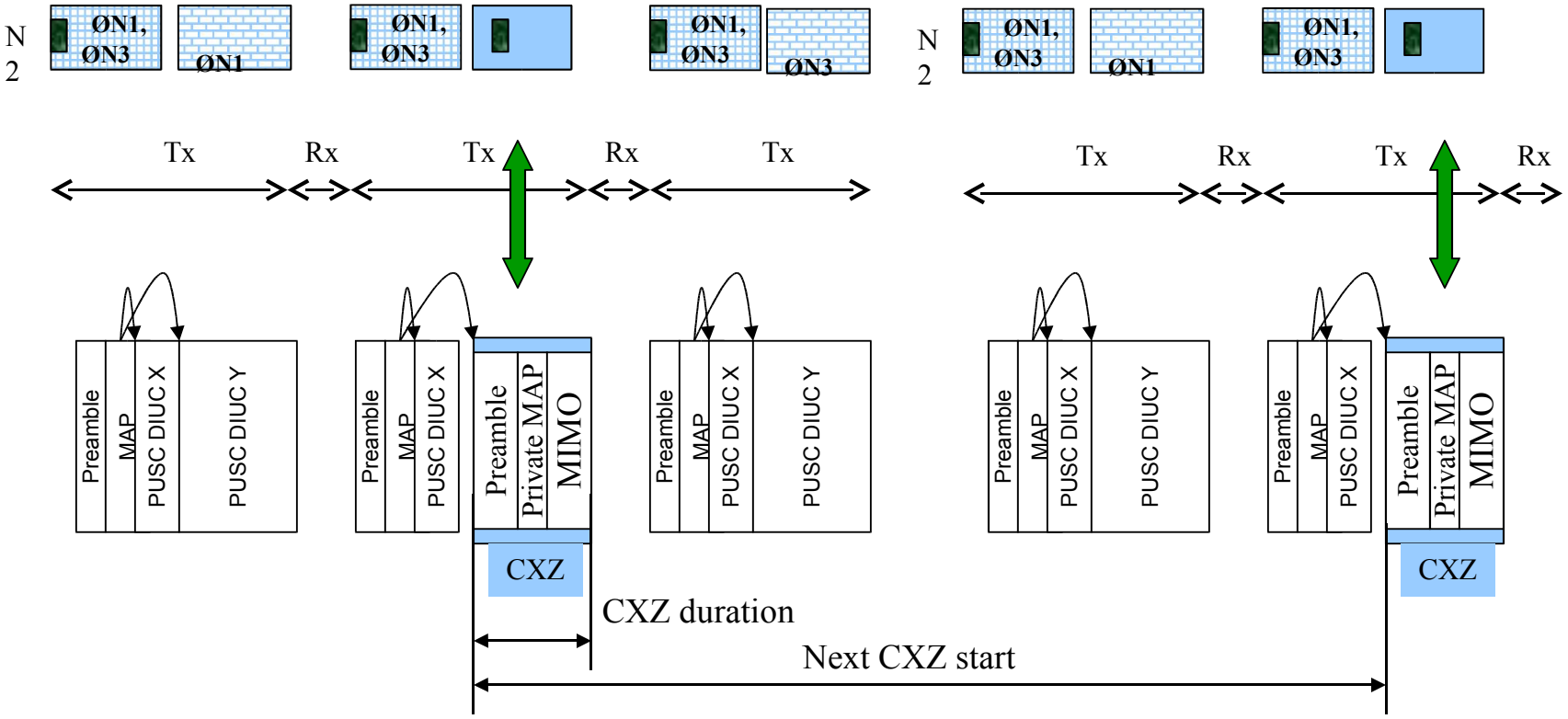
Using the CXZ to schedule a Master sub-frame – enhanced concept



Master sub-frame – Type 3



Coexistence Zone for the pattern concept



Down-link Frame

- First zone
  - Includes MAP which points to the CXZ
    - The location of the CXZ can be semi-permanent
  - Indicates the permutation mode used initially in the CXZ
- Coexistence Zone
  - Starts with preamble
  - Includes any other zones (MIMO, AAS, Tx diversity, other permutations)
  - Private MAP (for the users which cannot be addressed otherwise due to interference)
  - Increased data rates
    - Modulation and coding
    - MIMO may work better

UL CXZ

- Can use different other zones
  - The SS transmission may change the modulation and coding
  - Beam forming zone may be activated
- The SS transmission may use higher powers
  - The UL Private MAP can include this info

Attributes of the CXZ

- Are possible due to the Master sub-frames and the coexistence protocol
- Lower interference for SSs
  - MAP can be transmitted at higher rates
    - Resolve the problem of transmitting the MAP only in the OFDMA Zone 1
  - Data can be transmitted at higher rates
    - DL capacity is increased
  - Higher powers may be used
    - Cell size is increased
- Lower interference for BS
  - Data can be transmitted at higher rates
  - Higher powers may be used
    - Cell size is increased

Other mechanisms which can be scheduled during the CXZ

- Radio Signature transmission
  - Beneficiate from reduced interference
  - GAP DIUC/UIUC can be used in parallel to reduce the interference more
- CTS slot
  - Same as above
- Community entry process

Conclusion

- CXZ translate the Master sub-frame concept to the MAC Layer
  - Preambles and Private MAPs are needed
- CXZ zone can increase the overall capacity of the system
  - MAPs and data are transmitted with higher rates
  - MIMO operation suffers less interference