

Title: Usage of the Coexistence Zone

Document Number: IEEE C802.16h-06/014r1

Date Submitted: 28 Feb. 2006

Source: Mariana Goldhamer
ALVARION

Voice:+972 3 645 6241

mariana.goldhamer@alvarion.com

21a HaBarzel Street, Tel Aviv, Israel

Venue: Session #42

6-9 March 2006

Base Document:

Purpose:

Notice:

This document has been prepared to assist IEEE 802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.

Release:

The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.

IEEE 802.16 Patent Policy:

The contributor is familiar with the IEEE 802.16 Patent Policy and Procedures <<http://ieee802.org/16/ipr/patents/policy.html>>, including the statement "IEEE standards may include the known use of patent(s), including patent applications, provided the IEEE receives assurance from the patent holder or applicant with respect to patents essential for compliance with both mandatory and optional portions of the standard." Early disclosure to the Working Group of patent information that might be relevant to the standard is essential to reduce the possibility for delays in the development process and increase the likelihood that the draft publication will be approved for publication. Please notify the Chair <<mailto:chair@wirelessman.org>> as early as possible, in written or electronic form, if patented technology (or technology under patent application) might be incorporated into a draft standard being developed within the IEEE 802.16 Working Group. The Chair will disclose this notification via the IEEE 802.16 web site <<http://ieee802.org/16/ipr/patents/notices>>.

Usage of the Coexistence Zone

Mariana Goldhamer

Alvarion

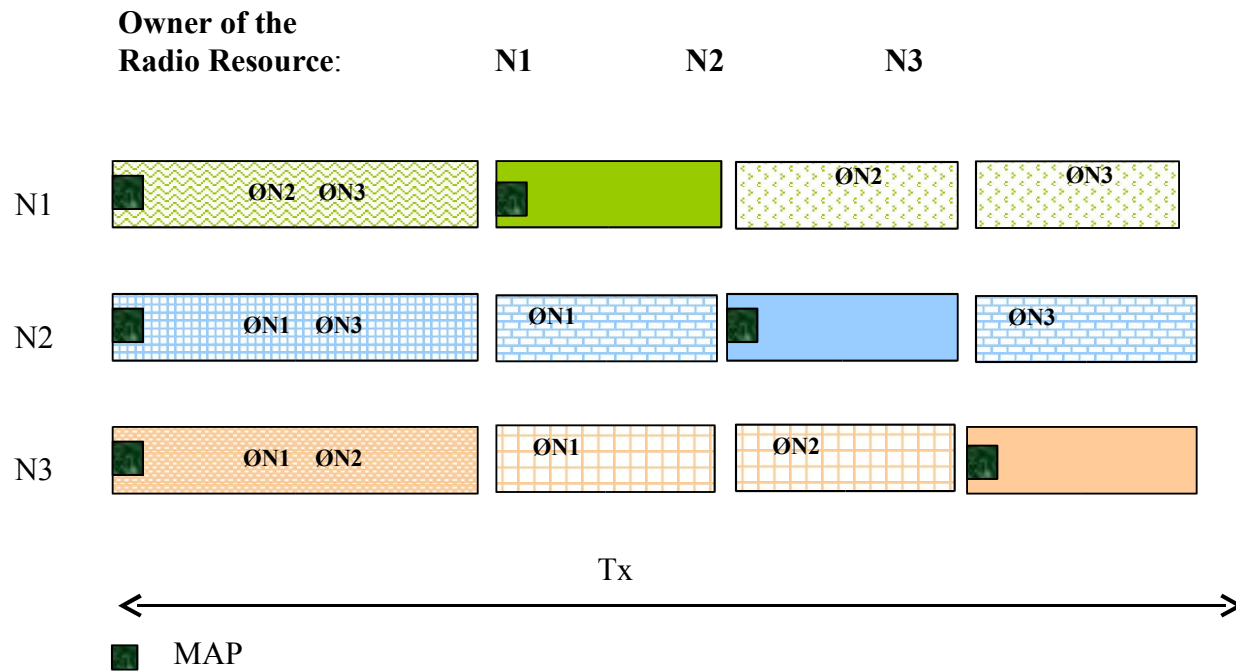
Main issues

- 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

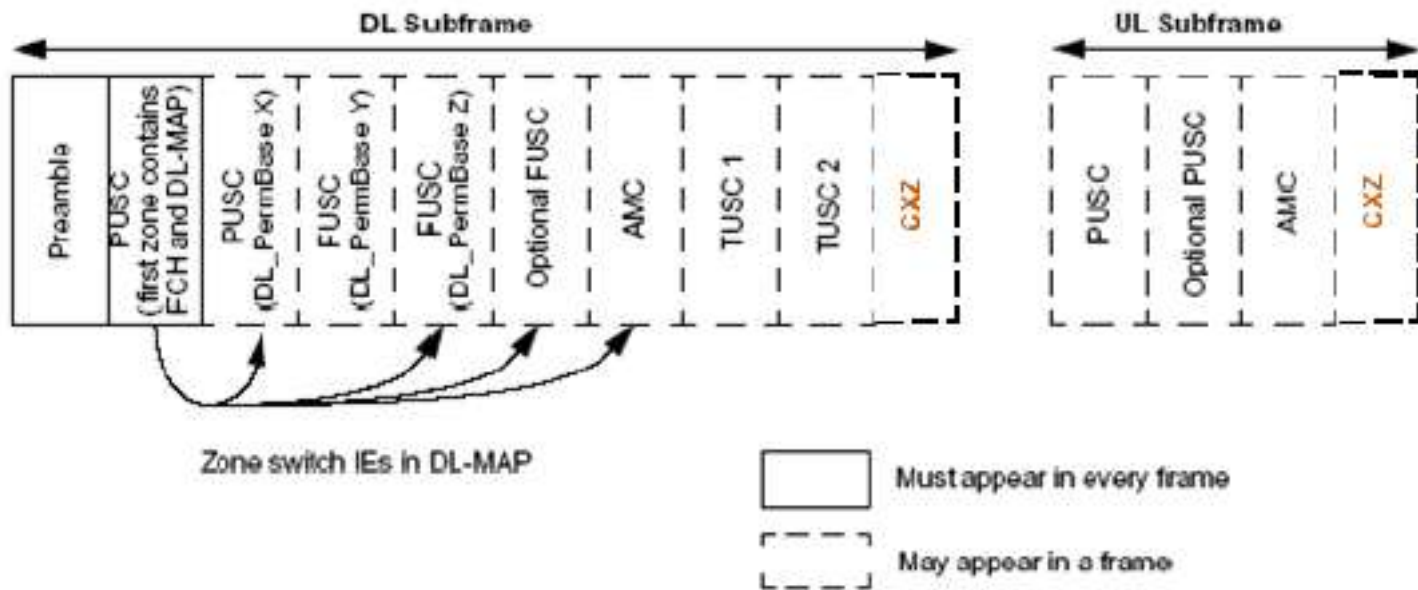
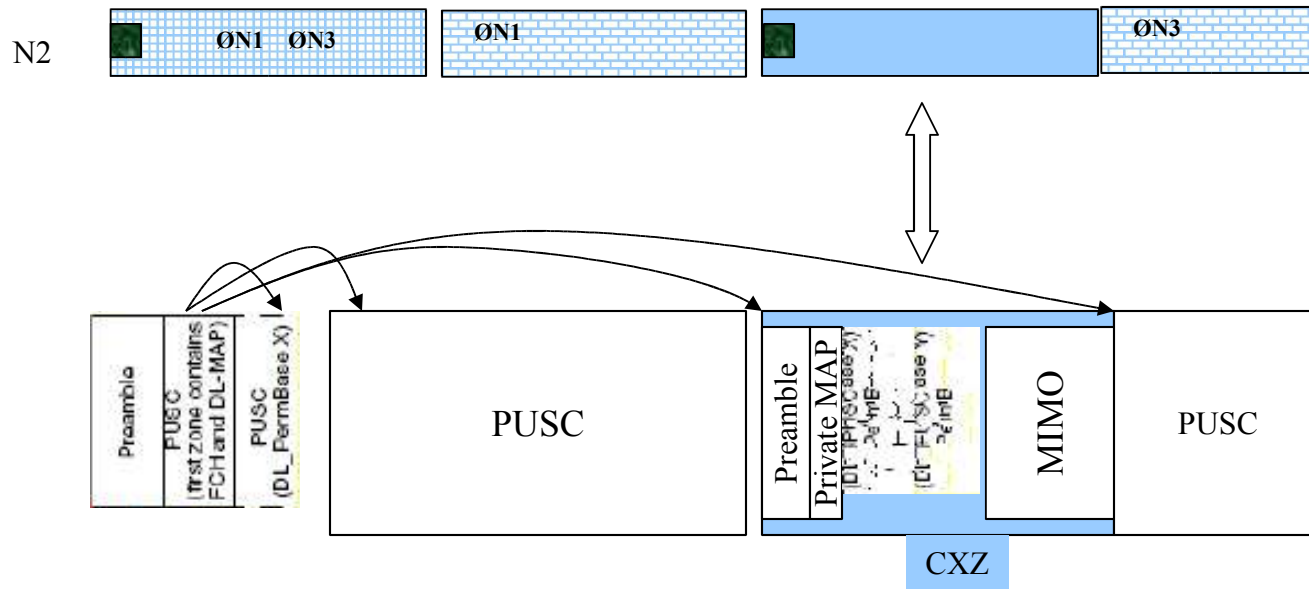
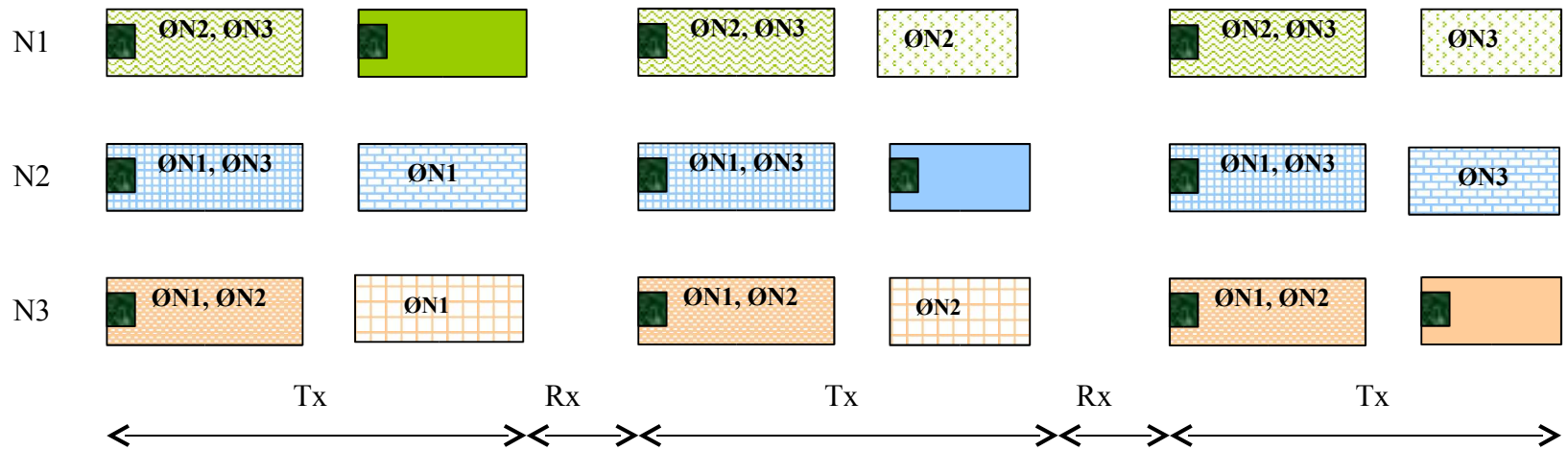


Figure 219—Illustration of OFDMA frame with multiple zones

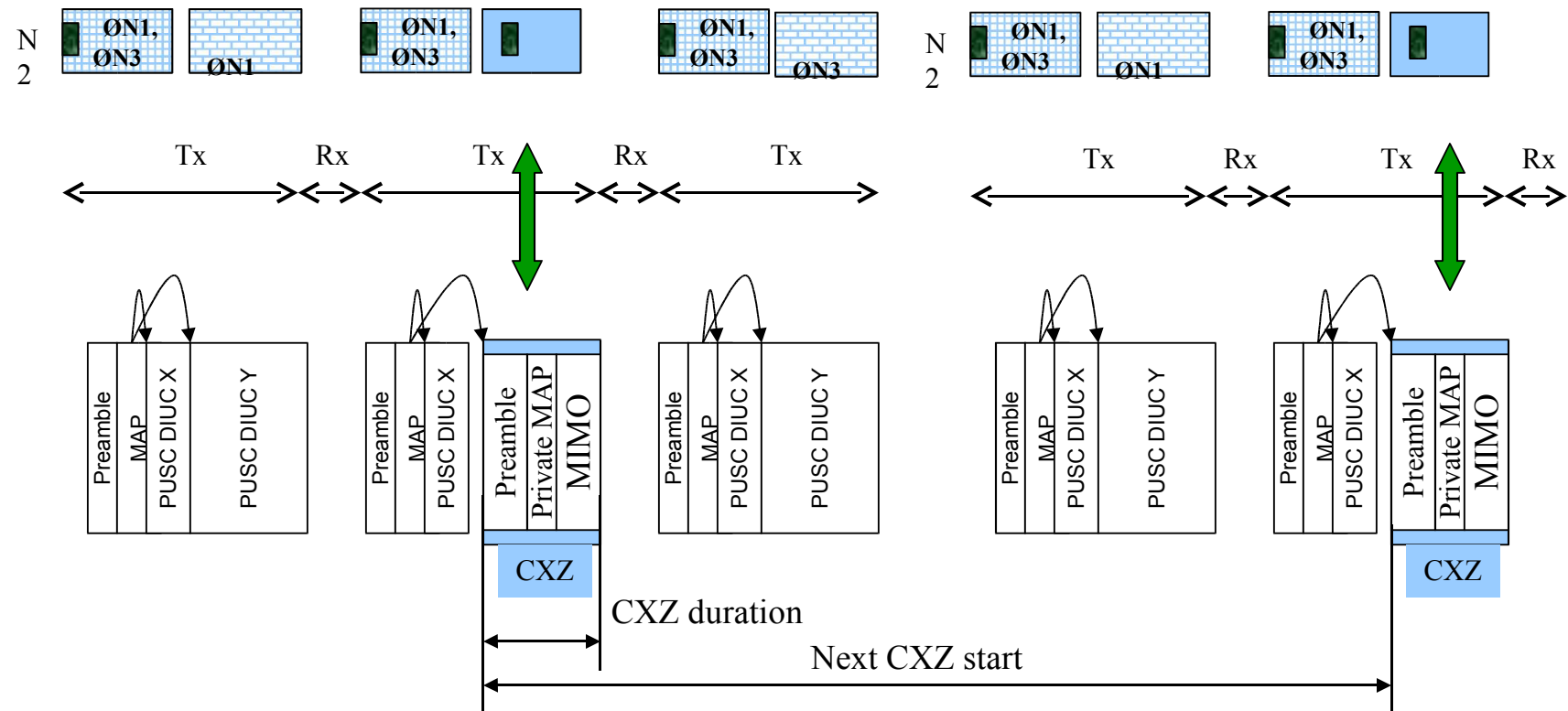
Using the CXZ to schedule a Master sub-frame – enhanced concept



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