Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Proposed frame structure for coexistence of incompatible PHY's in the licensed bands**
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Re:	This is a contribution to IEEE 802.16a.
Abstract	The contribution proposes a mechanism for coexistence of different PHY's in the licensed bands. The solution requires a frame that has adjustable size, adjustable duration for UL and DL subframes, as well as adjustable UL subframe starting time.
Purpose	Assist 802.16a to enable coexistence of incompatible PHY's.
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Proposed frame structure for coexistence of incompatible PHY's in the licensed bands

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Instruction

802.16-D3 has multiple incompatible PHY layers and modes in the licensed bands, making it impossible for BWA systems using different PHY's to coexist. Unlike the license exempt bands in which anybody can deploy a BWA system and trigger a coexistence problem, a licensed band in a certain area is normally owned by only one vendor. The coexistence problem appears if this vendor does not want to limit his choice of subscriber stations for a single PHY and therefore wants to collocate BWA-BS's with different PHY's. For this scenario, these BWA systems can harmonize with each other and coexist if the frame structure in 802.16 is modified to allow the systems to time-share the channel.

Proposed frame structure

In comparison with the current frame structure in the licensed bands, the proposed frame structure makes the following changes:

- The frame size is adjustable.
- The duration of both DL-subframe and UL-subframe are adjustable.
- The starting time of the DL-subframe is adjustable.
- Synchronization between different BWA PHY's must be accomplished regardless the vendor. Therefore, common synchronization interface must be defined in the standard.

The proposed frame structure is shown in Figure 1.

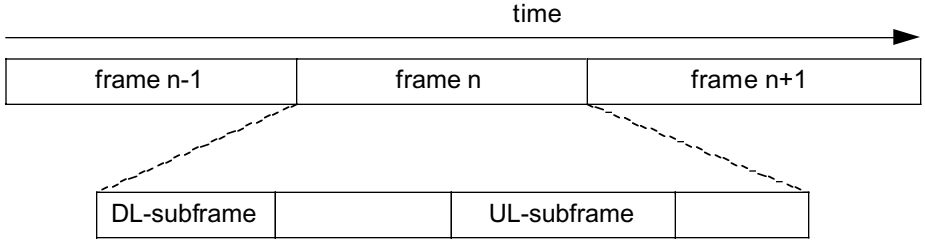

Figure 1 Proposed frame structure in the licensed bands

Coexistence of multiple BWA systems

When distinct BWA-BS's collocate, a so-called coordinator (implementation defined) is needed to distribute the bandwidth and synchronize the base stations. Notice that for a constant bandwidth allocation all the BWA systems use the same frame length. This coordinator should decide, according to the channel requirements from each BWA system, how to divide the frame among these BWA systems. As a result, an optimal frame-sharing pattern can be decided and implemented, allowing coexistence of the BWA systems. This is illustrated in Figure 2.

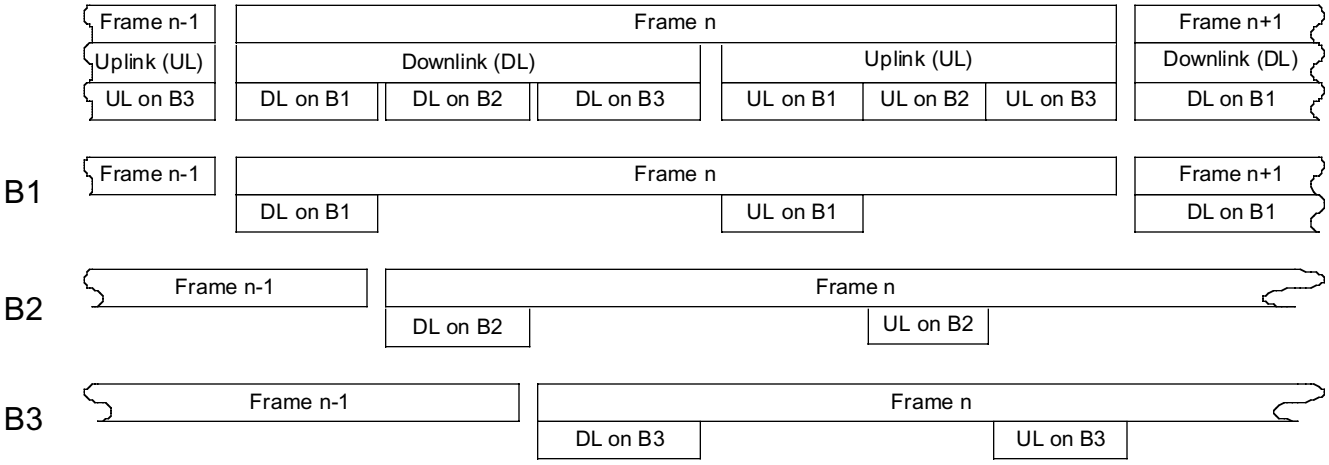

Figure 2 An example of coexistence for multiple BWA systems