

PHILIPS

sense and simplicity

IEEE 802.19 Coexistence workshop: TVWS opportunities and challenges

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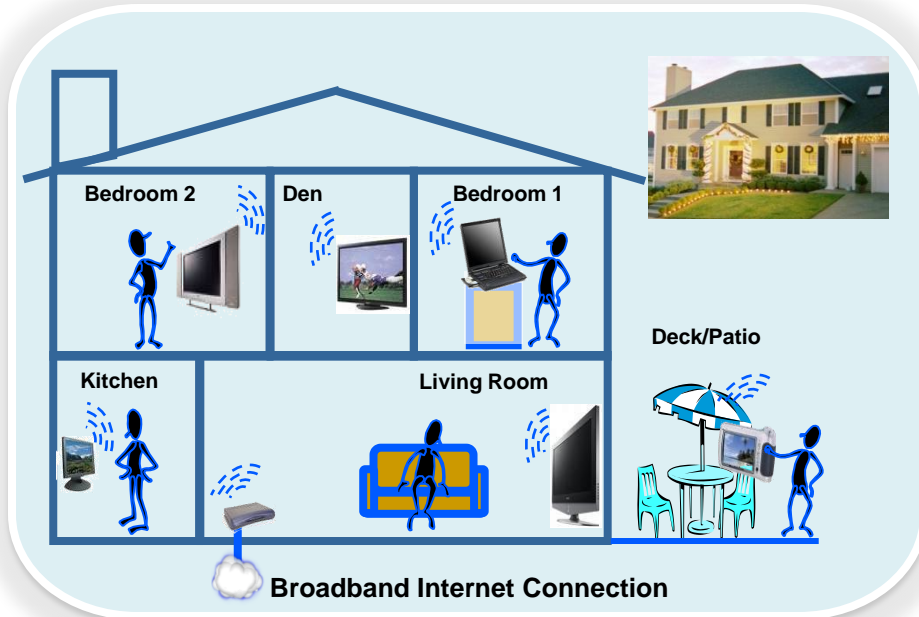
Philips Research North America

TV White Spaces participation

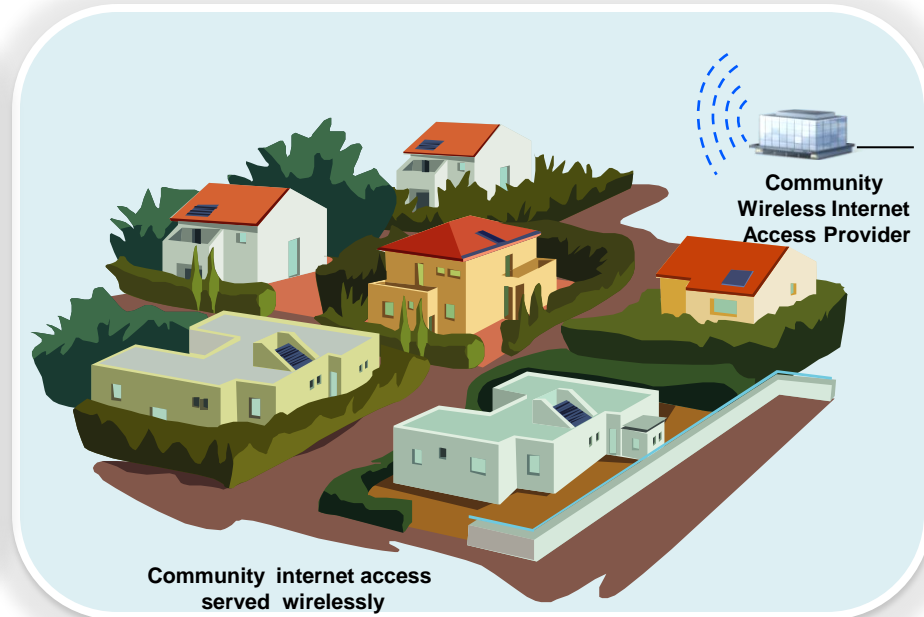
- IEEE 802.22
 - Participated and contributed since San Antonio meeting (Nov '04)
- Ecma and CogNeA
 - Founding member of CogNeA (please see cognea.org)
 - Significant contributions to the Ecma-392 standard
- Federal Communications Commissions (FCC)
 - One of only a few to submit prototypes for testing
 - Several contributions on technology and policy discussions
- CEPT SE-43
- Frost and Sullivan
CR Excellence award



TVWS Business and Services



Whole-home HD streaming



Community internet access

- Businesses and services based on two applications
- More generally, what it can and cannot be?
 - Can: applications that need reliable and/or long range coverage
 - Cannot: applications that need high bandwidth, small form factor

TVWS Business and Services - 2

- Does it enable some new services?
 - Yes, there is the opportunity
 - Rules permitting fixed TVBDs with mode 1 TVBDs important
 - Further new applications with sensing-only
- Or is it just another band for all wireless services?
 - Multiple standards in TVWS inevitable
 - However, TVWS as just more spectrum, a risky view

The ECMA-392 standard: Highlights

- Personal/portable devices operating in TV white spaces
- Efficiency
 - The standard defines a 6, 7 and 8 MHz physical layer
 - A highly efficient medium access layer also defined
 - High definition in a single 6 MHz channel with single antenna
- World-wide applicability
 - A toolbox approach to support world-wide spectrum regulation
 - Sensing algorithm or database access are not part of the standard
- Application support
 - Support for real-time applications from the ground up
 - A “big tent” approach

Challenges and Obstacles

- Regulatory
 - Rules should be finalized soon (expected in Q3 2010)
 - TV band devices should not be burdened any further
 - Spectrum regulation should be harmonized worldwide
 - Out-of-band emissions mask in the US is a challenge
- Industry
 - Is TVWS just another band, i.e. more channels?
 - National Broadband Plan: TVWS market uptake in a year or two essential, to avoid repurposing of spectrum.
 - Need to give users reasons to buy TVWS solutions

Role of coexistence

- Multiple TVWS standards => coexistence essential
- Technical
 - Back-haul based coexistence is a good place to start
 - “Channel assignment” and near-far network coexistence
 - Somewhat inefficient and slow for time sharing
 - Over the air coexistence may be necessary, especially for short-range coexistence
- Business
 - Devices should not be burdened with mandatory coexistence support
 - If in doubt, let the marketplace decide if coexistence is needed
 - Especially, since rules are not finalized (world-wide).

