Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)

Submission Title: [Usage Model and System Design Considerations for Low Rate WPAN Operating in TV White Space]
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Re: [Usage Model and System Design Considerations]

Abstract: [Usage model and System Design Considerations for discussion of PAR and 5c documents]

Purpose: [This document facilitates discussion in the 802.15 SG for TV White Space.]

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High Level Summary

- This document presents the primary usage model (UM) for low rate WPAN operating in TV white space

- An illustration is provided to give the overall idea of the UM

- Related parameters are also presented as guidelines to facilitate the discussion on system design

- Some design considerations are provided to facilitate further discussion

Chin-Sean Sum

UM Illustration

SUN
(Smart Utility Networks)

WAN
(Wide Area Networks)

WAN links

SUN links
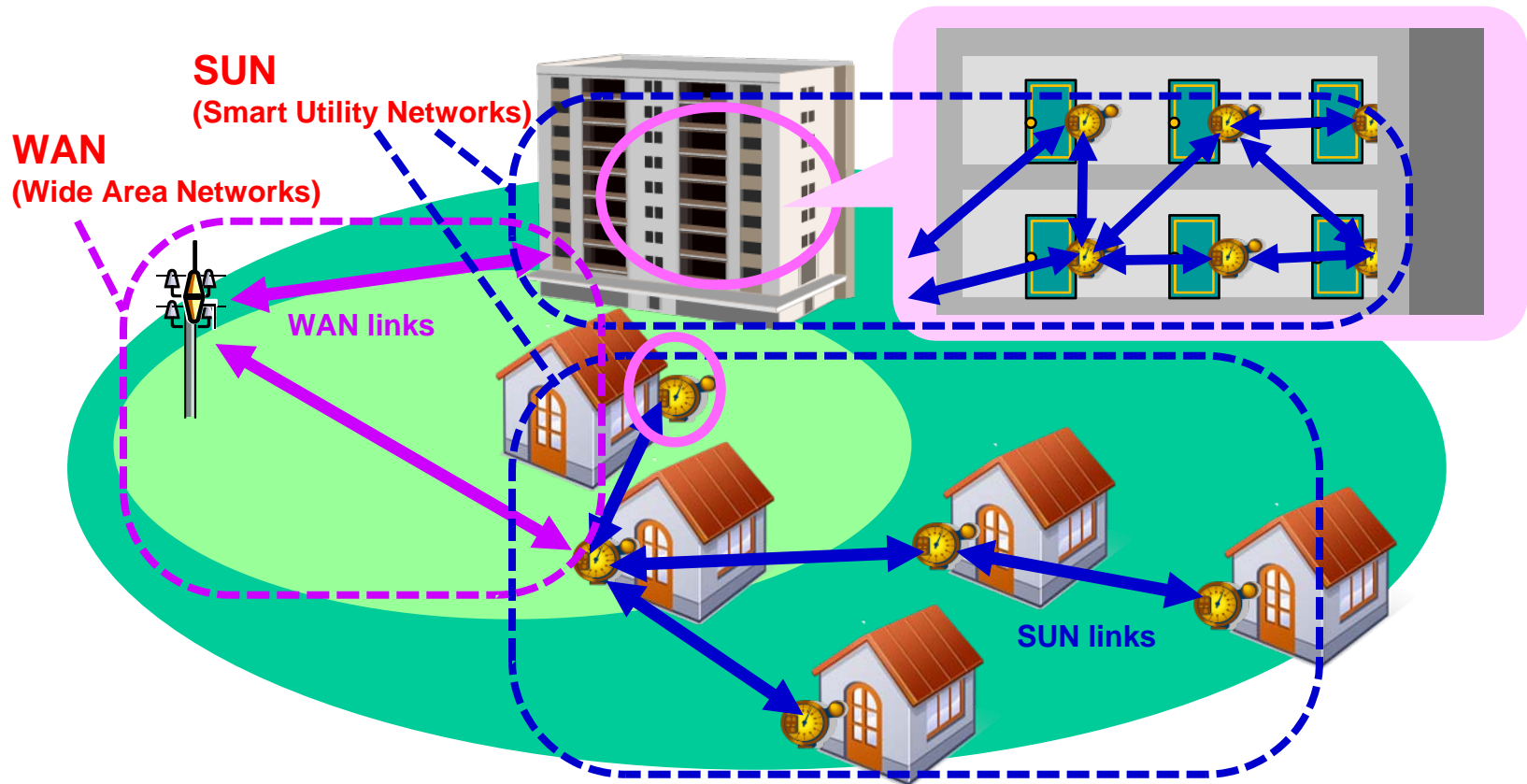
UM Related Parameters

Environment	Indoor/outdoor. Urban/suburban/rural.
Data rate	Up to 1Mbps
BER/PER requirement	PER <= 1%
Operating range	Up to several km
User capacity	Up to several thousands
Mobility	Fixed
Security features	Required
Reliability	High
Device category (WPAN)	FFD (network controller, device), RFD (device)
Device category (Regulation)	High power device, low power device, very low power device
Application Examples	Utility smart grid networks, utility monitoring and control, mobile utility control and data collection

System Design Considerations

- Main considerations for system design
  - Accommodating different requirements from regulation
    - Enabling protocols
    - Security
  - Should not duplicate PHY/MAC functionalities that are likely to be completed in other 802.15.4 projects