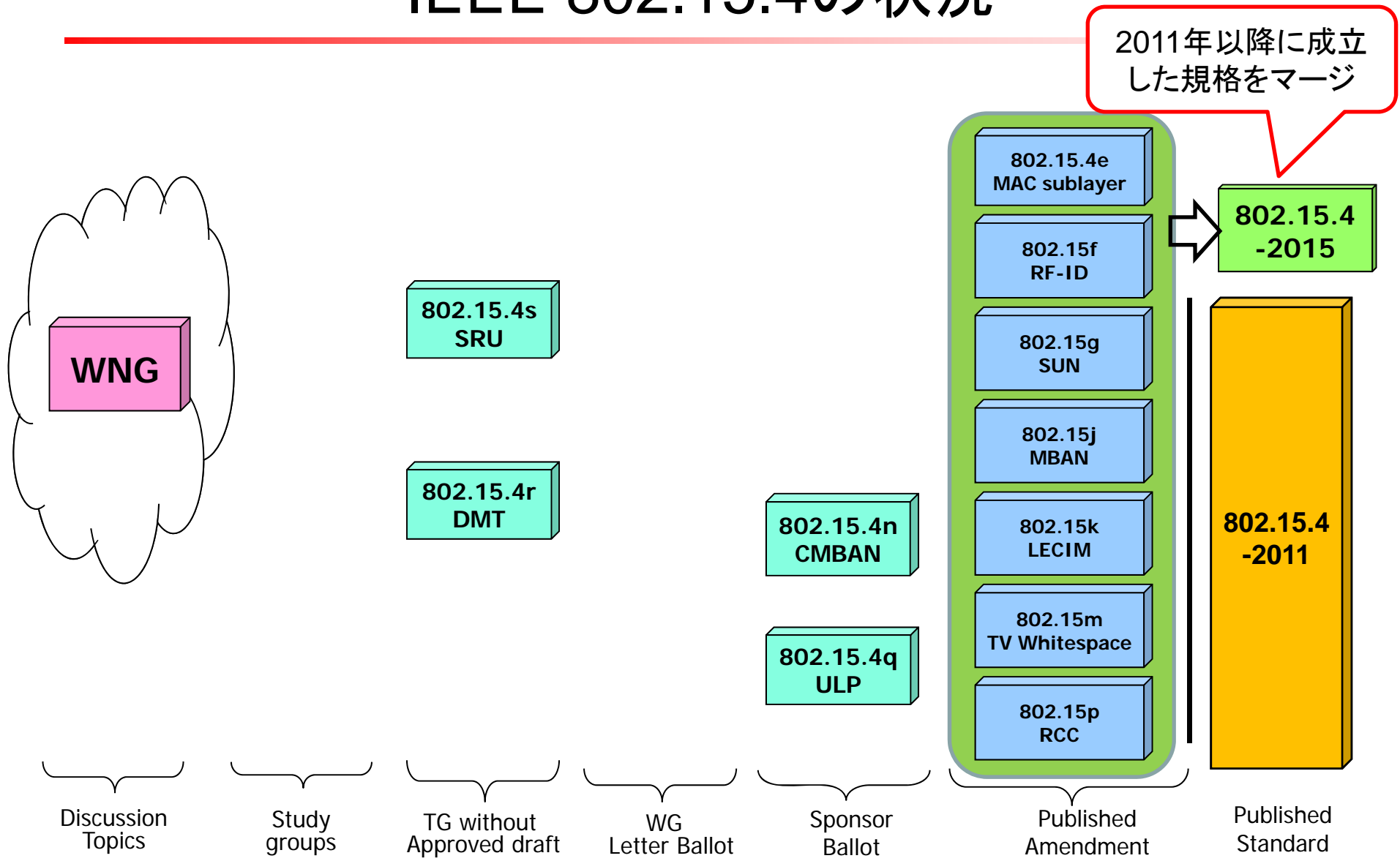


# IEEE 802.15 TG4s activity

ATR Wave Engineering Laboratories  
Shoichi Kitazawa

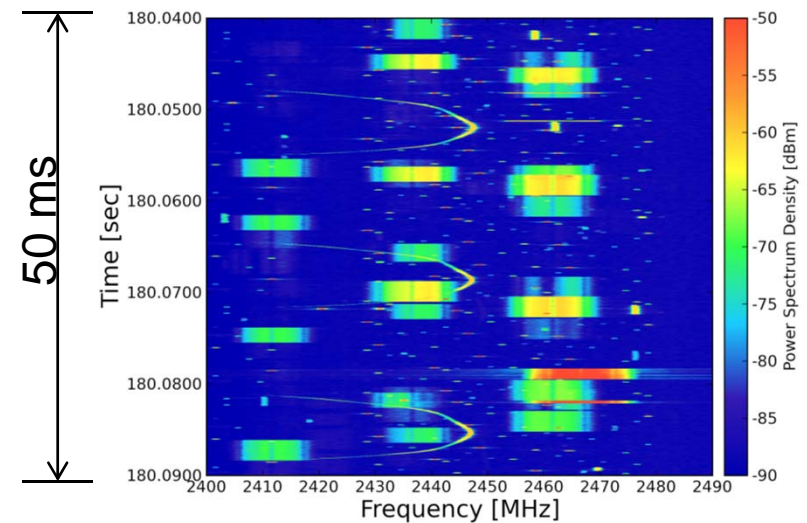
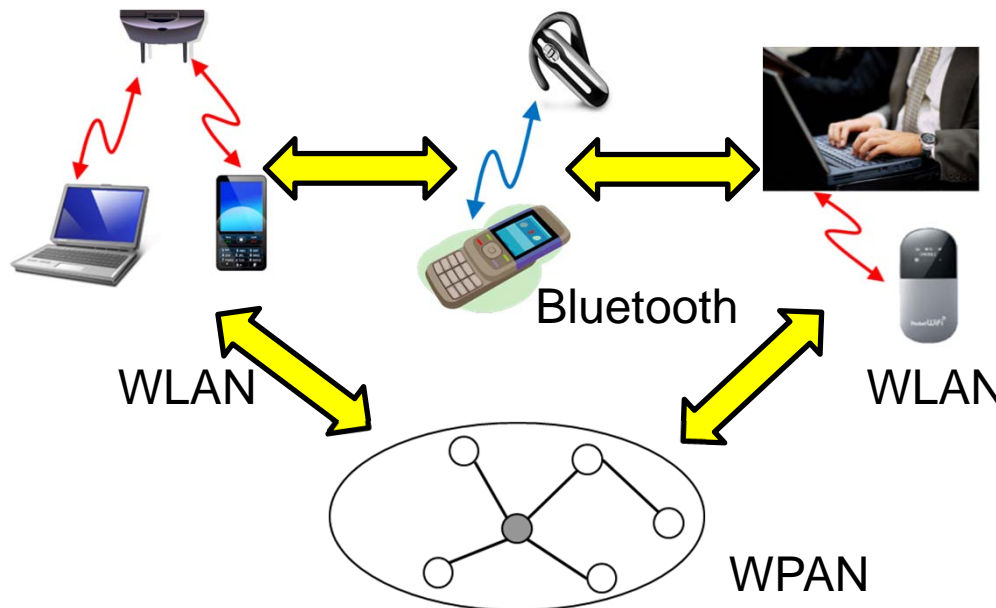
# IEEE 802.15.4の状況



# Problem statement

802.15.4で無線リソースをさらに有効に利用することが必要

- Many WPAN, WLAN systems use unlicensed frequency bands including 2.4GHz and 915MHz bands
  - ✓ Heavy interference occurs among these systems and/or other disparate systems
- Such heavy congestion in these conditions needs to be solved
- TG4s aims for efficient use of the spectrum resource



# History

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- IG SRU started November 2010
  - Discussed 2.4GHz congestion situation and new system.
  - The group agree to form an SG for developing mechanisms of Radio Resource Measurement and Management (RRMM) for WPANs.
- SG SRU started September 2013
  - The group decided to standardization of Spectrum Resource Measurement to enable spectrum resource management for 15.4.
- TG4s started September 2014
  - Chair: Shoichi Kitazawa (ATR)
  - Secretary: Hidetoshi Yokota (Landis&Gyr)
  - Discussing spectrum resource measurement issue.

# Scope of the Project

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This amendment to IEEE Std. 802.15.4 defines MAC related functions to enable spectrum resource management.

It specifies,

- spectrum resource measurements and network performance metrics, such as packet error ratio, delay, etc,
- information elements and data structures to capture these measurements,
- procedures for collecting and exchanging spectrum resource measurement information with higher layers or other devices.

# Scope of the TG4s (cont'd)

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## **Need for the Project:**

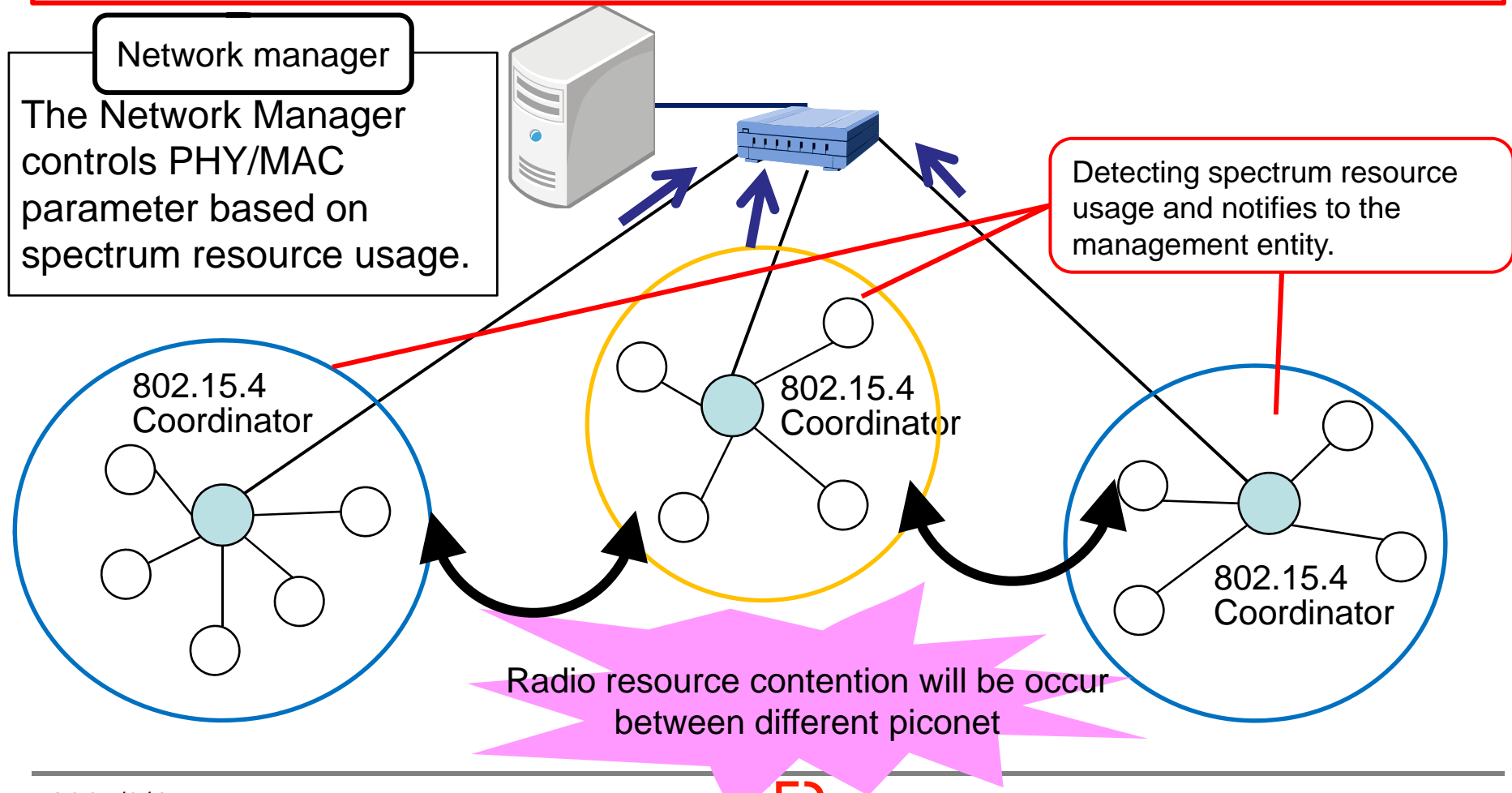
As various wireless systems are deployed in the shared and license exempt frequency bands including 2.4GHz and 915MHz bands, heavy interference has limited performance of the wireless systems. In order for these wireless systems to operate more effectively, a standardized set of spectrum resource measurements is needed that will facilitate management functions in these networks.

## **Stakeholders for the Standard:**

The stakeholders include manufacturers and users of telecom, medical, environmental, energy, and consumer electronics equipment and manufacturers and users of equipment involving the use of wireless sensor and control networks.

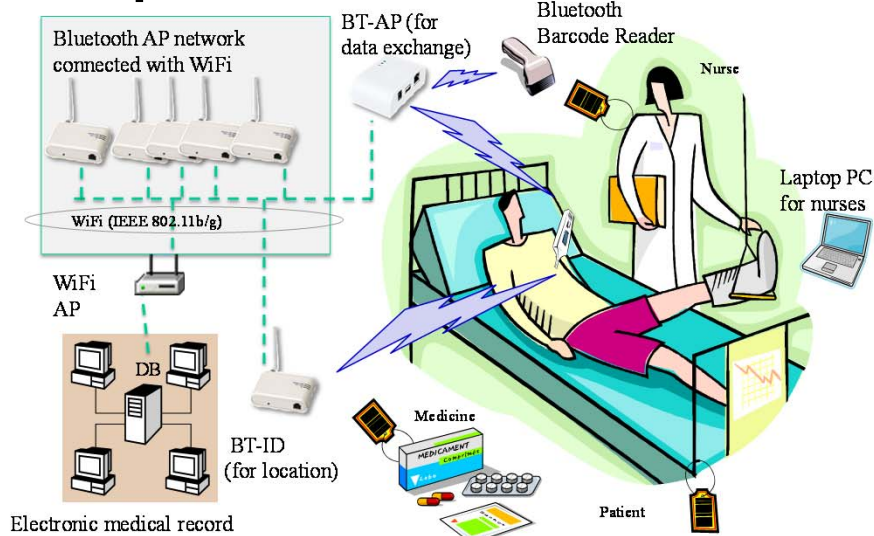
# General Use Case

無線ネットワーク制御に必要な無線リソース測定 (Spectrum Resource Measurement) 情報を収集する方式を策定



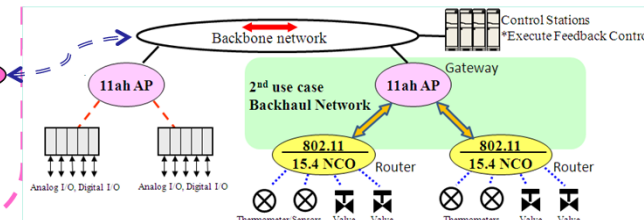
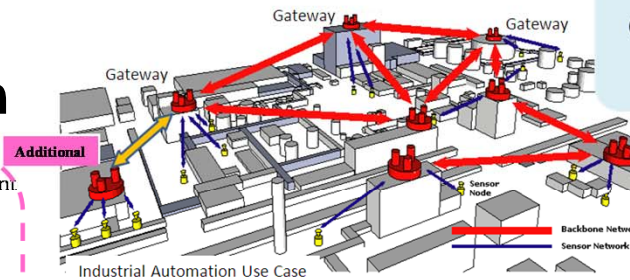
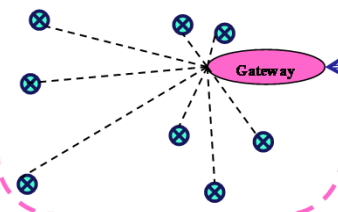
# Applications

## Hospital/Medical/Healthcare

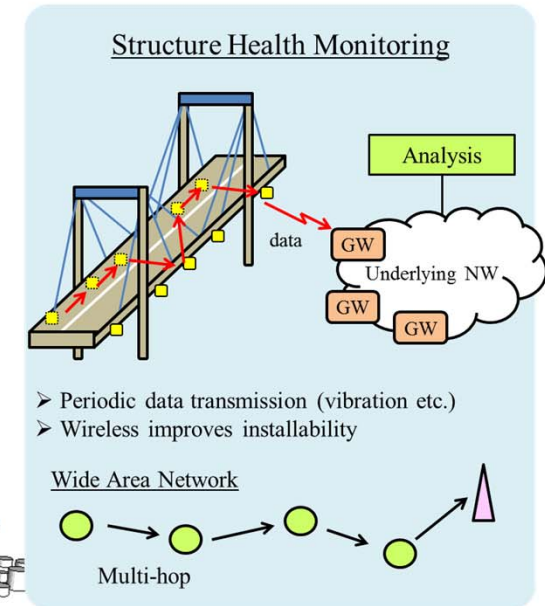


## Industrial Automation

- Temporal network deployment
- Episodic/Unexpected traffic
- Disaster responsiveness
- Emergency action to prevent accident



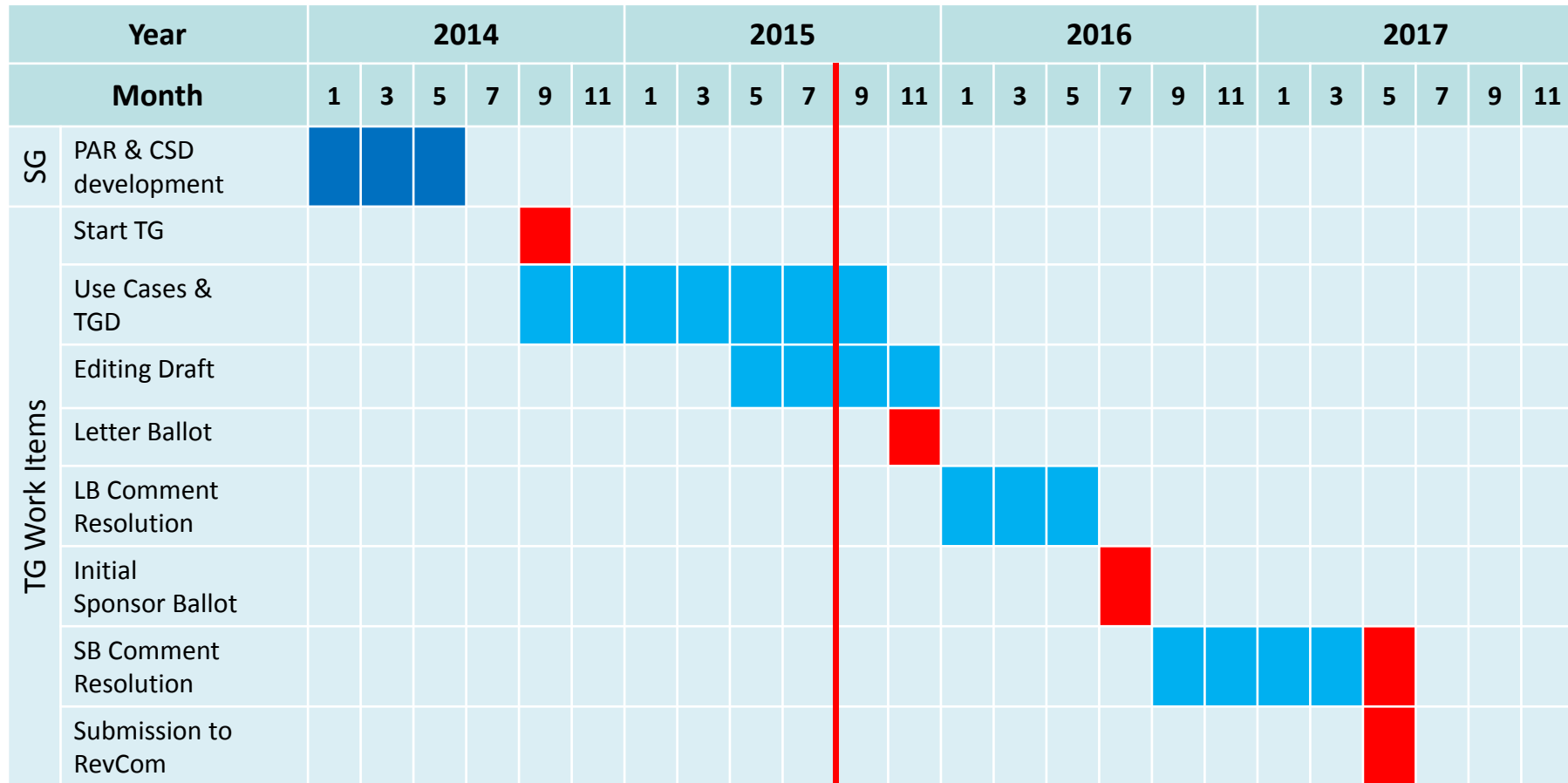
## Infrastructure Monitoring





# Time line of the TG4s

Draft作成が若干遅延、9月会合で集中して議論



# Current Status

## SRMに関連してTPCについても議論を開始

- Discussing MAC functions related to Spectrum Resource Measurement
- Start discussing of Transmit Power Control issue
- Updating Technical Guidance Document and developing Draft.

TG4s document

[https://mentor.ieee.org/802.15/documents?is\\_group=004s](https://mentor.ieee.org/802.15/documents?is_group=004s)