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

**Submission Title:** [Revisit the Rational of Fully Distributed Coordination]
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**Re:** [.]

**Abstract:** [Revisit the Rational of Fully Distributed Coordination and encourage to remind for PAC system design]

**Purpose:** [Discussion]

# Revisit the Rational of Fully Distributed Coordination

September, 2013

Samsung

# PAC Feature:
# Fully Distributed Coordination

- From PAR
  - 5.2 Scope: This standard defines PHY and MAC mechanism for Wireless Personal Area Networks (WPAN) Peer Aware Communications (PAC) optimized for peer to peer and infrastructureless communications with fully distributed coordination.
  - 5.4 Purpose: The purpose is to provide a global standard for scalable, low power, and highly reliable wireless communications for emerging services such as social networking, advertising, gaming, streaming, and emergency services. Existing standards may be able to provide parts of the envisioned PAC services, but no single standard provides infrastructureless peer-aware communications with fully distributed coordination

- From TGD
  - IEEE 802.15.8 shall support a fully distributed, decentralized, and self-organized system composed of PDs.

# The Problem of Centralized Coordination

- ■ Low scalability
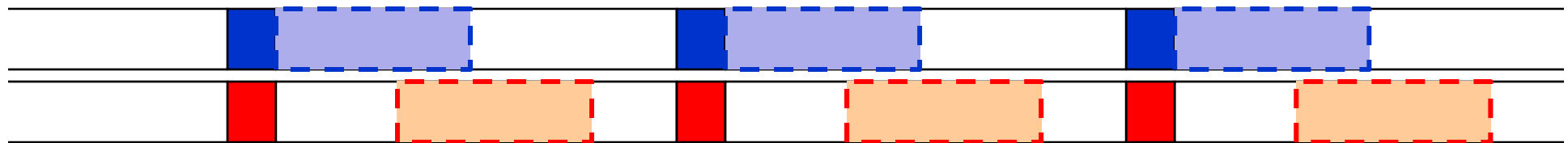  - – Coordination is limited by transmission range of coordinator

Coordinator

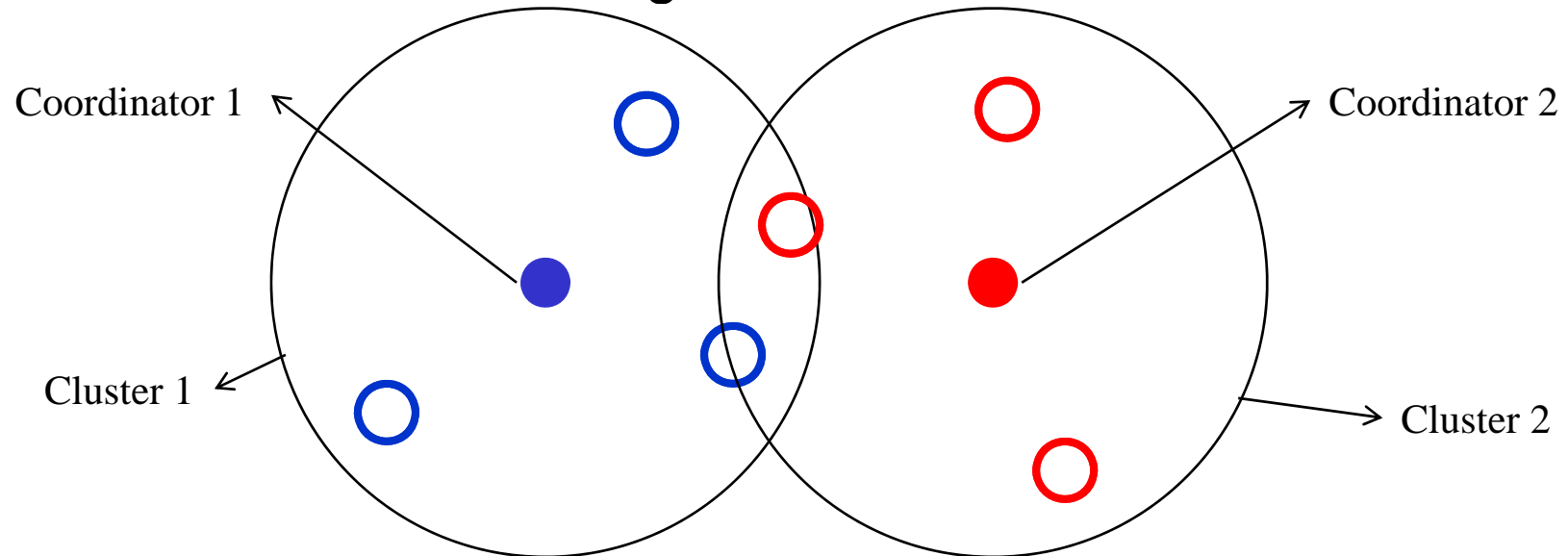Cluster

<September 2013>
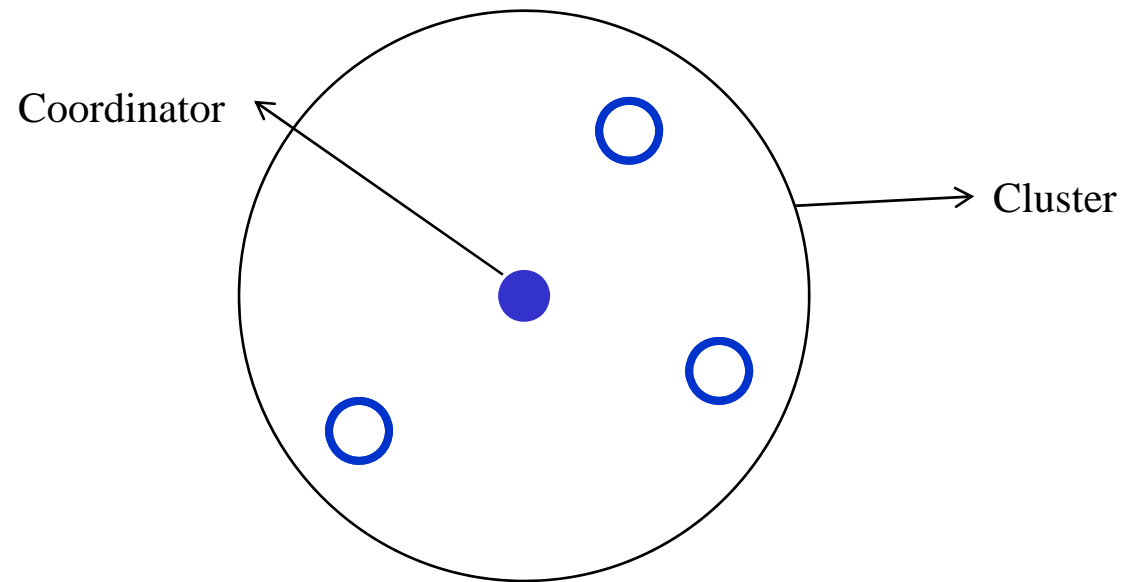
# The Problem of
# Centralized Coordination

■ Problems in inter-cluster situation
  – Synchronization

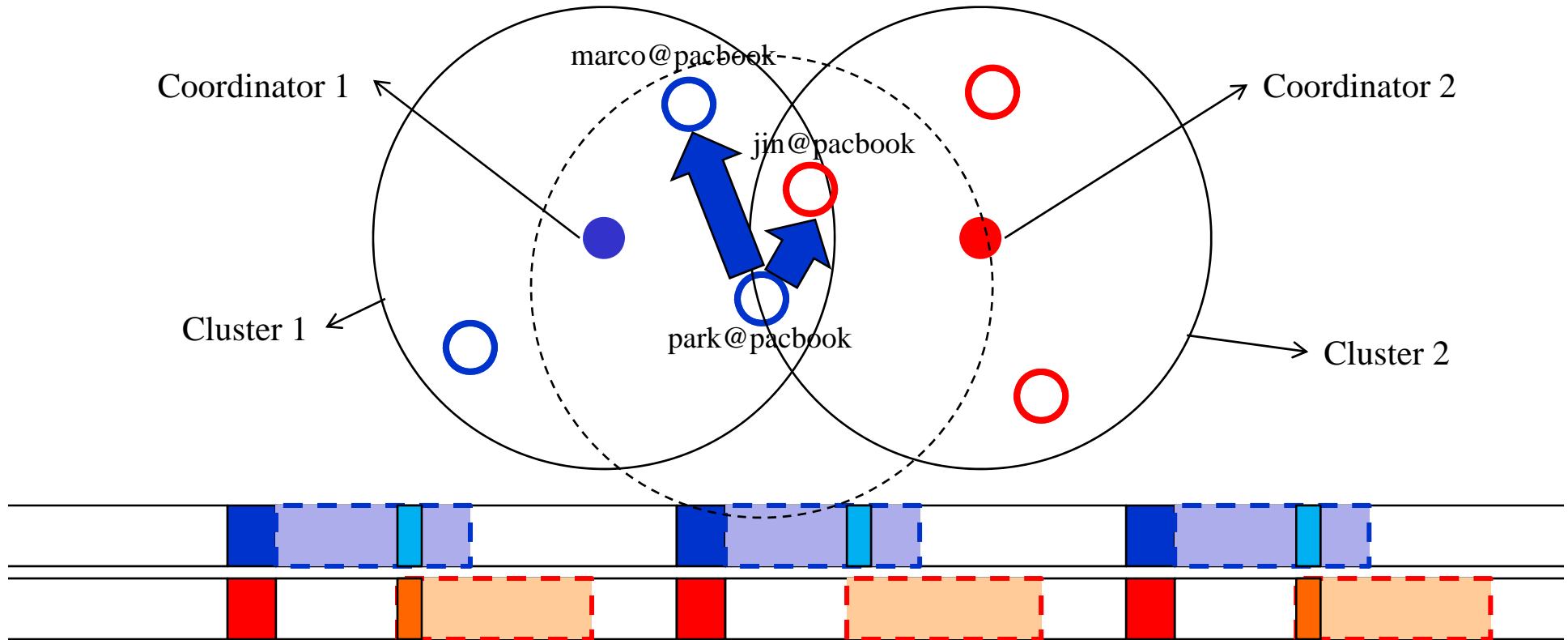Coordinator 1

Coordinator 2
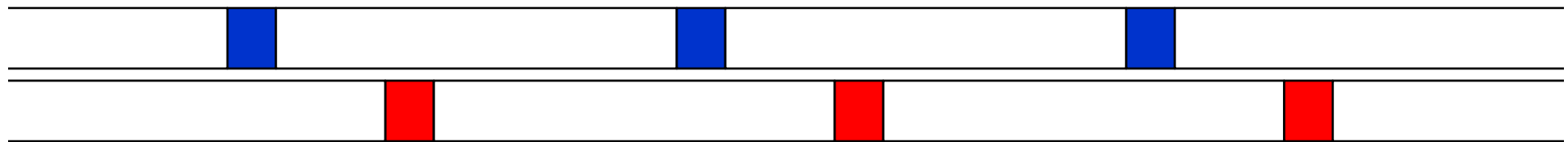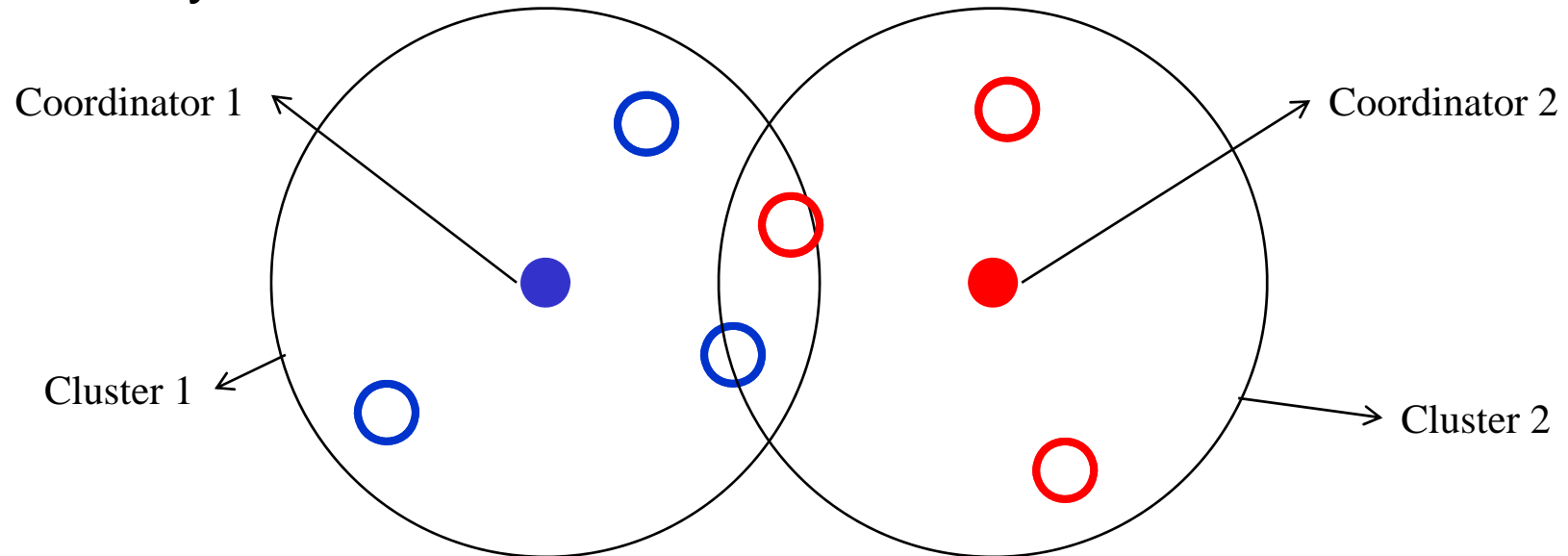
Cluster 1

Cluster 2

# The Problem of Centralized Coordination

■ Problems in inter-cluster situation
  – Interference management

# The Problem of
# Centralized Coordination

■ Problems in inter-cluster situation
  – Multicast or broadcast

# **Conclusion**

- Centralized coordination can not solve the technical problem to design PAC

- Fully distributed coordination is preferred
  - For synchronization

  - For resource allocation
    - Multicast or broadcast
    - Interference management

- Fully distributed coordination
  - No hierarchy

  - PD centric coordination by cooperation with other neighboring PDs