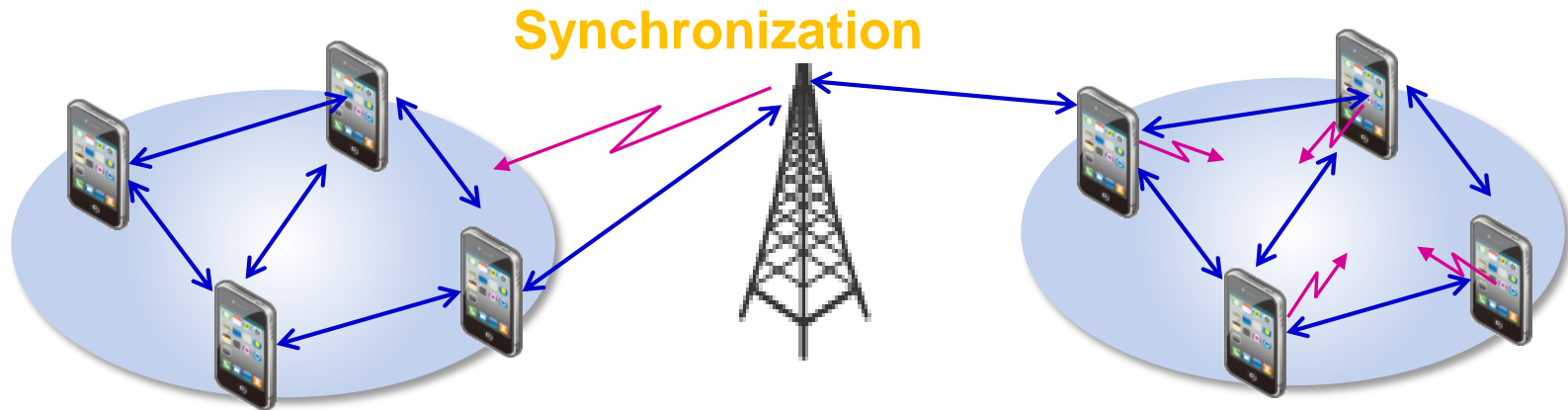


Distributed Device-to-Device Wireless Networks to Enable Smart Community

Huan-Bang Li, Lin Shan, Ryu Miura, Fumihide Kojima

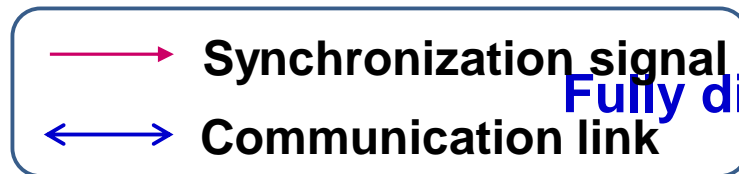
National Institute of Information and Communications Technology
(NICT) Japan

D2D With and Without Infrastructure



**Infrastructure-
dependent
D2D**

**Infrastructure-
independent
D2D**



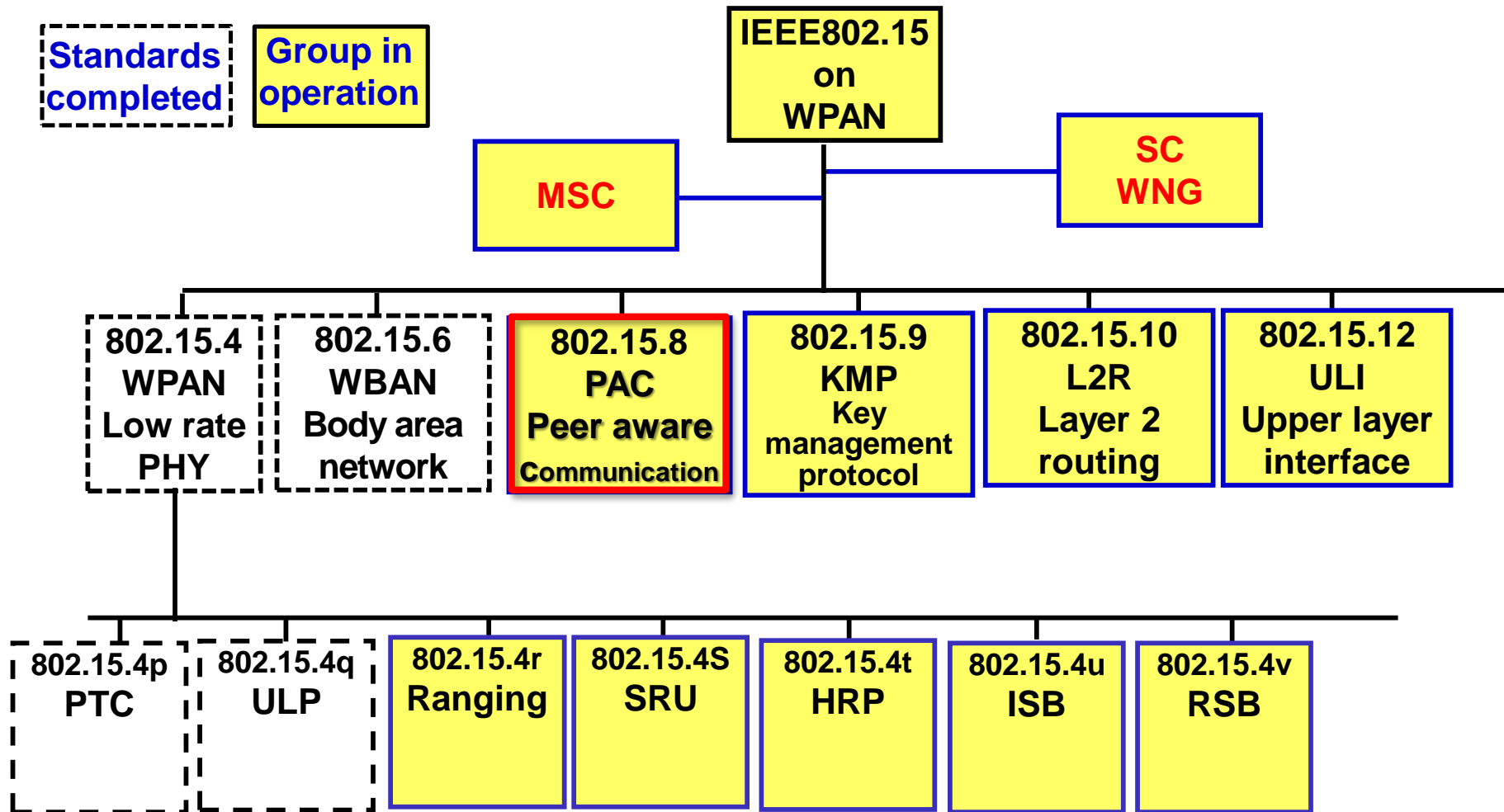
Fully distributed coordination



PAC

Peer Aware Communications

IEEE 802.15 Working Group



IEEE 802.15.8 to be completed in one year

PAC for Local Social Networking

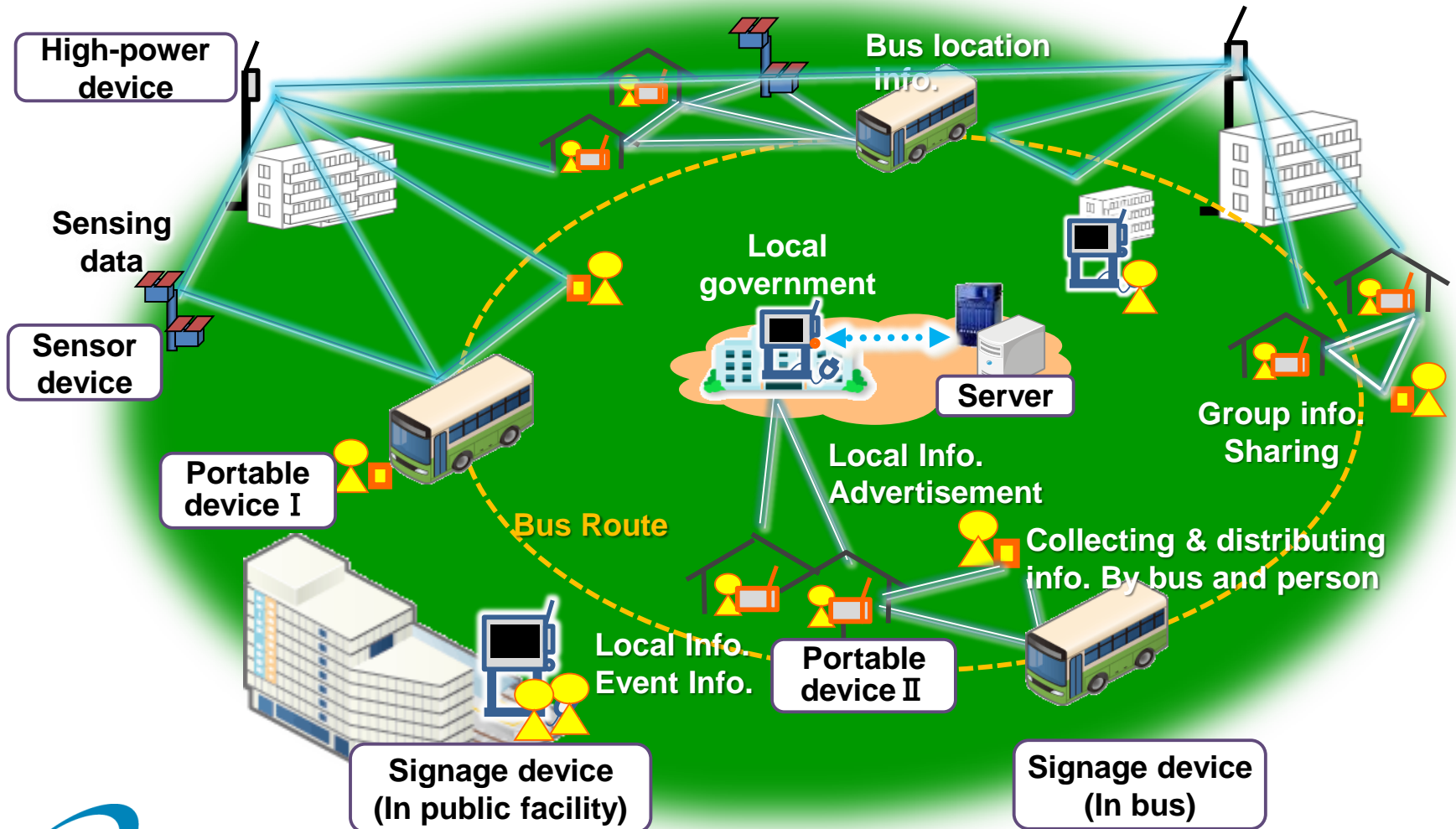


Local society

- Geo-social networking
 - Relevant to situation/context
 - Local group chatting
- Proximal search & information sharing
 - Suitable for dynamically changing proximal information
 - Proximal profile matching
- Personal broadcast
 - Advertisement, etc.

Test Bed - Precursor PAC System

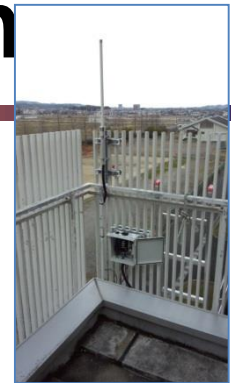
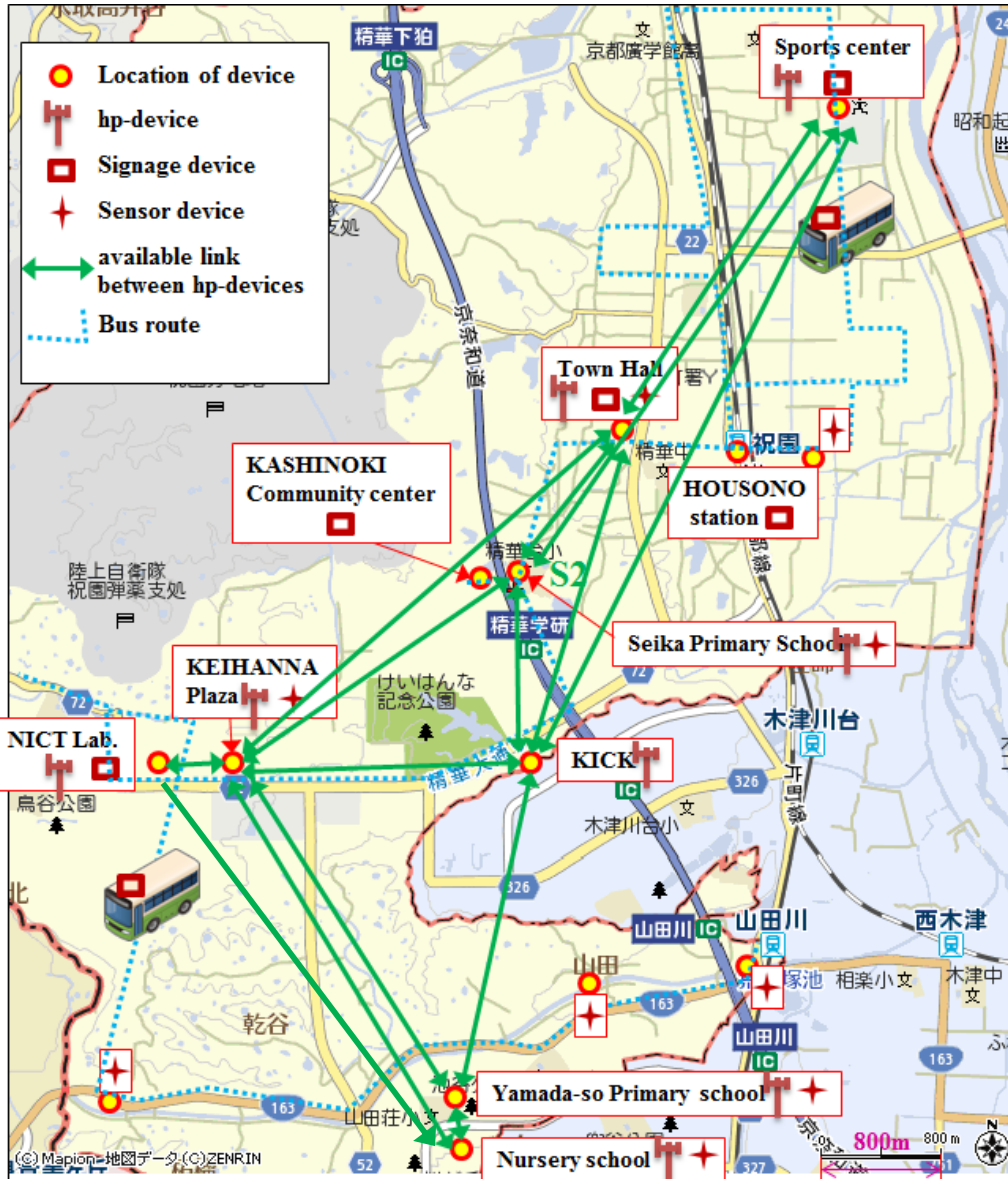
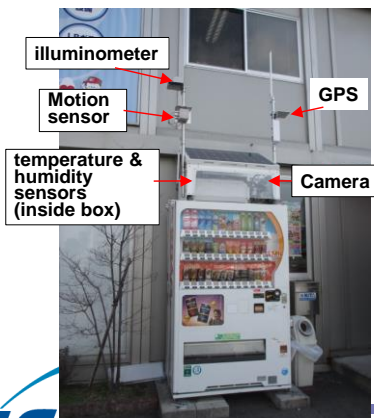
Various devices connect each other to diffuse information.
Information is diffused with neighbors' moving



Features of The Developed Test Bed

1. There is **neither central control unit nor central coordination** in the test bed.
2. **Delay tolerance** is enabled by using buffers in devices to hold data/message.
3. Synchronization based on the 1 pps signal of GPS and **self-organization** based on a 60s frame.
4. Channel access based on **combined TDMA and CSMA/CA**.
5. **Data sharing within group** by registering group ID and device IDs

Deployment at Seika-Town



Example of Display of Signage Device

Date, Time

News, Info., Advertisements,
etc.

| | |
|---|---|
|  いまの時間 | 11/21 (月) |
| | 13時43分 |
|  精華町の天気 | きょうの天気 |
| | 最高気温 20°C  |
| 11月21日11時0分発表 | あすの天気 |
| | 最高気温 19°C  |

精華くるりんバス

精華町のコミュニティバス「精華くるりんバス」は地域交流の促進などを目的に、高齢者などの交通手段として、平成17年3月より運行しています。

高齢化社会を迎えるなか、身近な地域の足となるべく、精華くるりんバスの安定的な運行に向けて、多くのご利用をお願いします。



精華町広報キャラクター
京町セイカ

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