

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

Submission Title: [Use cases of non-medical BAN applications]

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Abstract: [Introduction for non-medical application of WBAN]

Purpose: [To encourage discussion]

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Use cases of non-medical BAN applications

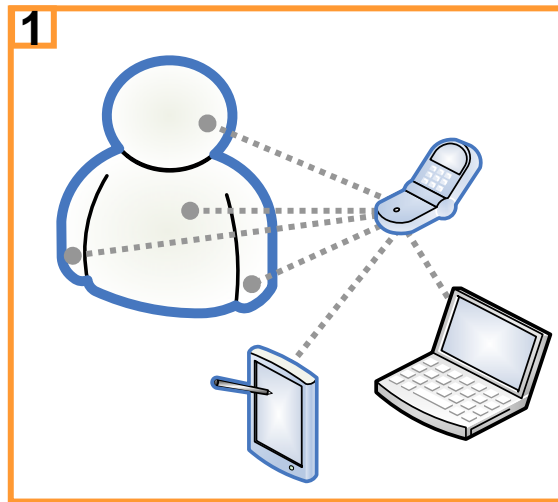
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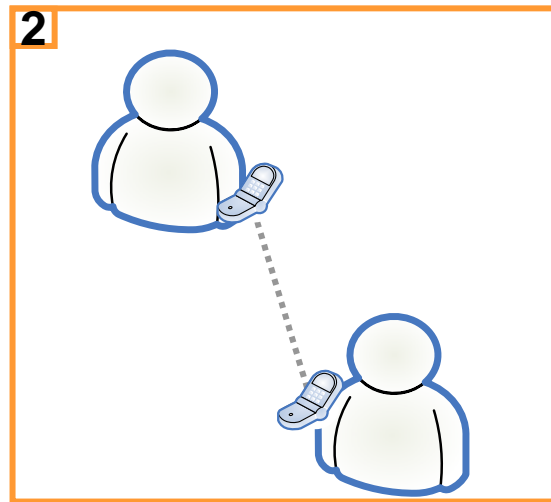
BAN Feature

■ BAN (Body Area Network)

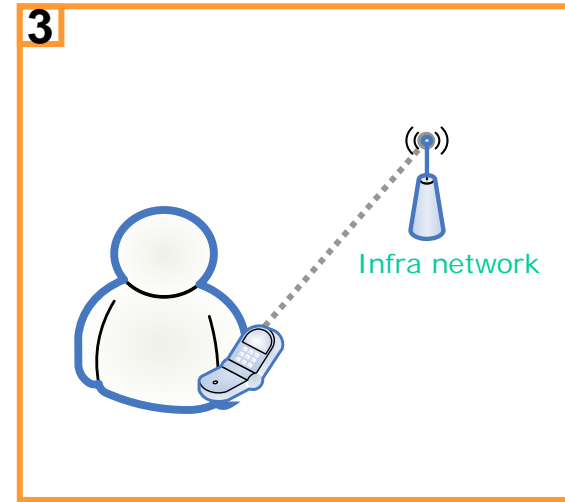
- Short range wireless communication (~3meter)
- Communication with a plenty of sensors or devices
- Communication with other BAN networks
- BAN should be connected to infra networks
- It requires low power consumption (for sensors)
- SAR (Specific Absorption Rate) should be satisfied



BAN Piconet



BAN Piconet – BAN Piconet



BAN Piconet – Infra network

Requirement

- User / Device Authentication
 - User Information (Subscription Status, Provided Service List, Connected Device List)
 - Device Information (H/W Capabilities, S/W Capabilities)

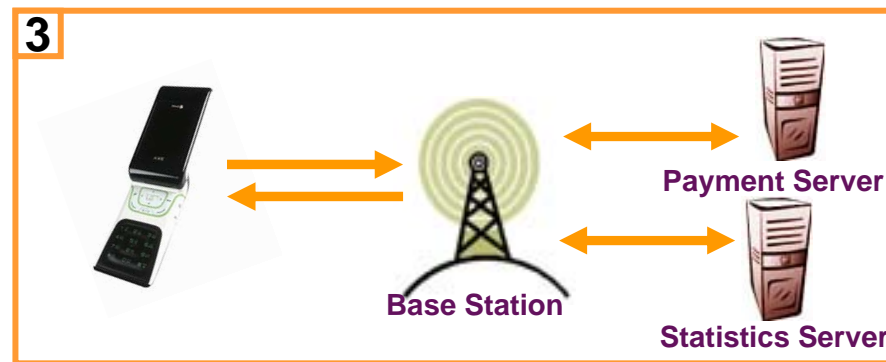
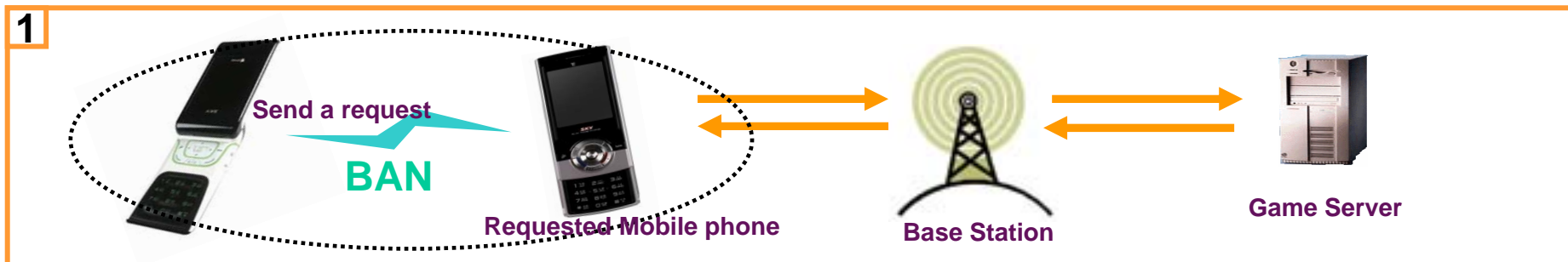
- Device Management / Provisioning
 - Delivering the appropriate contents to the application device considering its capability
 - Configuration of the application devices for the contents server

- Session Management / Charging / Security
 - The various devices can be connected simultaneously
 - Reliably providing the services independently from BAN technologies
 - Efficient way of Charging and Security control

Use-case I : Game (1/3)

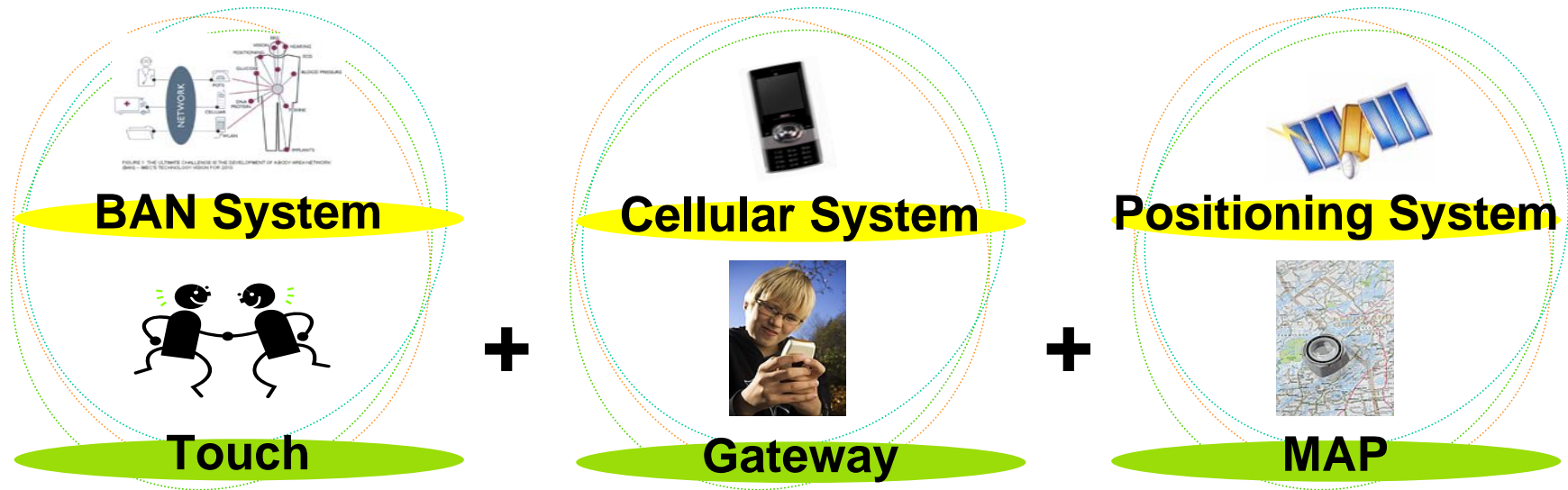
■ Mobile phone game using BAN

- 1. Requesting for a game through BAN and downloading it through the cellular network
- 2. Playing the game through BAN (P2P & connecting sensor)
- 3. Managing the payment & the statistics of the game (through the cellular network)



Use-case I : Game (2/3)

■ Location-based Game



**Location shared,
participation of the public**

* CitiTAG : Urban Space Game of iPaq PocketPC

Use-case I : Game (3/3)

■ Requirements

SAR Safety		Regulatory - Radio	Topology		Type of data link	Data rate (per link)	Number of devices (per piconet)
			P2P , Star (sensor game)		Asymmetric	Medium (100-500Kbps)	Small (2-10)
Duty cycle (per device) % per minute or hour		Radio range	Coexistence		Robustness/ reliability	Power Consumption	Autonomy (can it use energy scavenging)
20-30		< 3m	Yes		High	Medium	No
Quality of Service		Set up time for a new link	Mobility		Location awareness	Channel	Security
Sensitive to error	Sensitive to latency						
Highly	Highly	<0.5s	Yes		No	In-air	Yes
Form Factor		Privacy	Power delivery		Cost	Market size	Covered by Other Standards
			Battery	Energy Scavenging			
Small		Yes	Yes	No	Low	Very large	Bluetooth

Use-case II : Social Network (1/5)

■ Basic Use-case

- Exchange digital profile or business card
- Match making
 - ◆ Hobby
 - ◆ Game
 - ◆ Online community member

■ Advanced Use-case

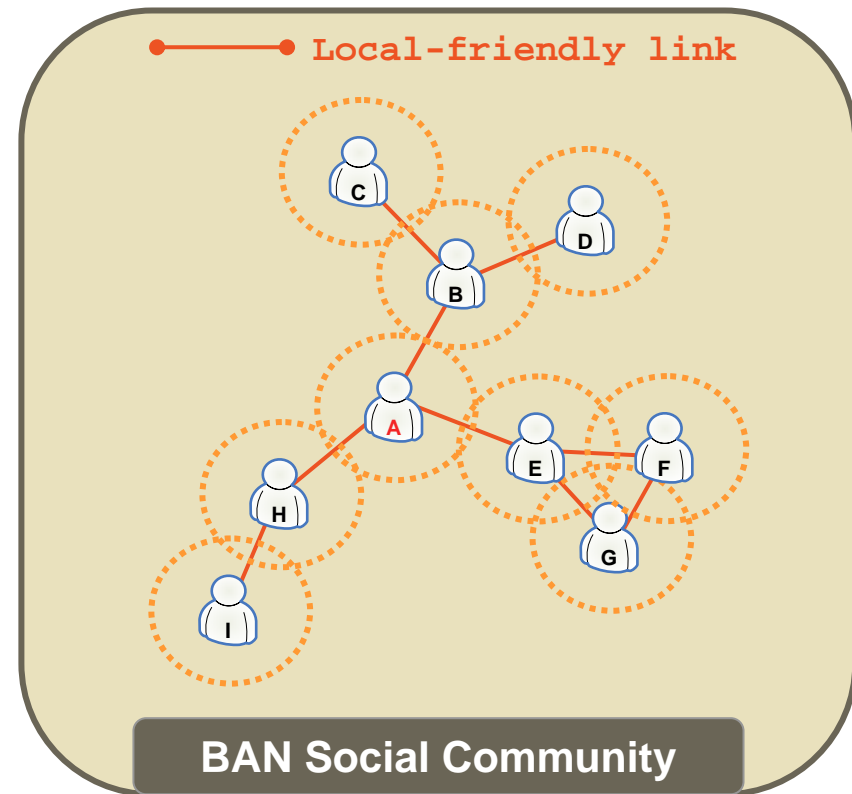
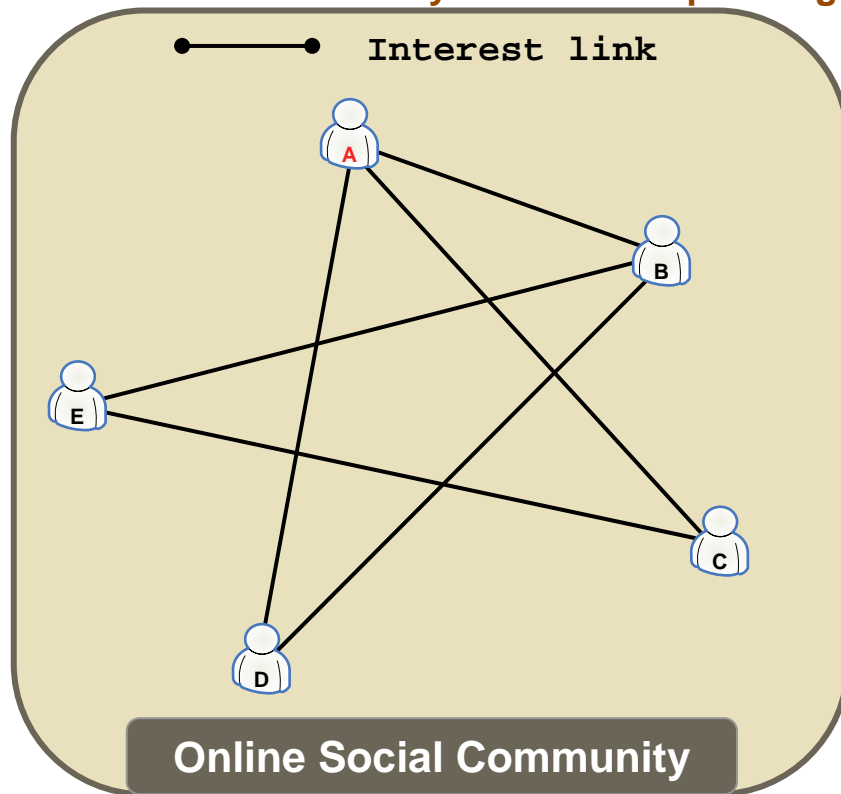
- Manage user-centric human networks
 - ◆ Old Market
 - Online SNS (Social Network Service) market (e.g. Cyworld, Facebook) is fatigued
 - ◆ Rising Market* (Mobile Social Network Service)
 - Small and intimate social network (BAN-exclusive service)
 - Group with same preference and emotion
 - Group management in mobile user's point of view
 - Convergence with mobile service and online SNS (e.g. Short messaging and Blog)
 - New service using the social relation or context (e.g. Ads targeted by social context)

* SK Telecom TOSSI service was launched at Dec. 2007

Use-case II : Social Network (2/5)

■ BAN Social Network

- Neighborhood social network
- Social network consisted of the local-friendly relations
- Local-friendly link is built up through BAN interaction



Use-case II : Social Network (3/5)

■ **Motto**

● **BAN social network will**

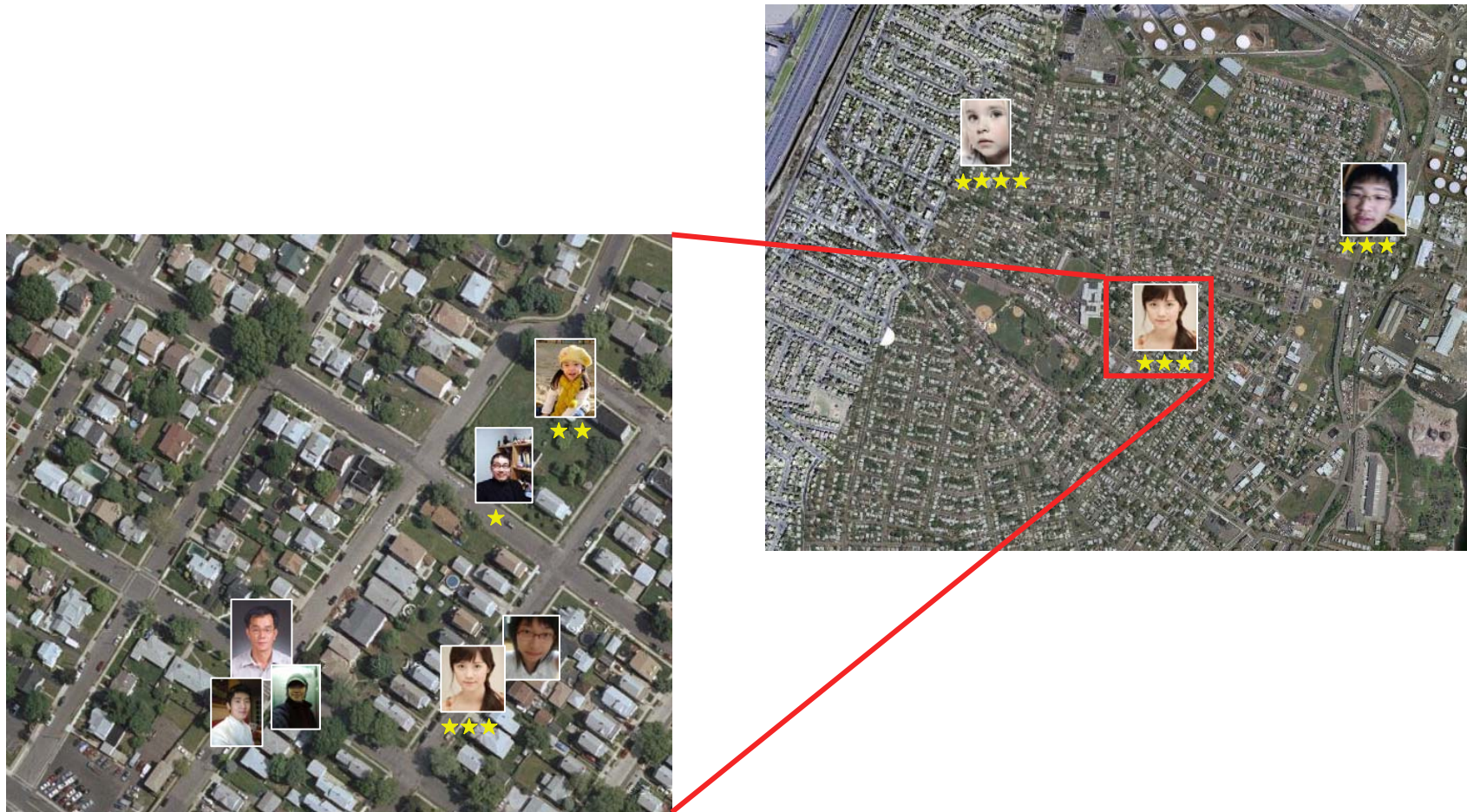
- ◆ help the neighborhood get stronger
- ◆ help people develop friendships in their neighborhoods
- ◆ help people become more civic in their involvement in their communities

■ **Benefits**

- **Easy use makes social network service market be expanded**
- **Mobile phone with BAN has a main role for the service**
- **The mixed world : between local social world and virtual social world**
 - ◆ More friendly and strong social network
 - ◆ Additive information over the real world

Use-case II : Social Network (4/5)

- Reputation system makes the local star!



Use-case II : Social Network (5/5)

■ Requirements

SAR Safety		Regulatory - Radio	Topology		Type of data link	Data rate (per link)	Number of devices (per piconet)
			P2P		Asymmetric	Low (20-30 Kbps)	Small (2-10)
Duty cycle (per device) % per minute or hour		Radio range	Coexistence		Robustness/ reliability	Power Consumption	Autonomy (can it use energy scavenging)
One connection		< 2m	Yes		Mediate	Low	No
Quality of Service		Set up time for a new link	Mobility		Location awareness	Channel	Security
Sensitive to error	Sensitive to latency						
Highly	Less	<0.5s	No		Yes	In-air	Yes
Form Factor		Privacy	Power delivery		Cost	Market size	Covered by Other Standards
			Battery	Energy Scavenging			
Small		Yes	Yes	No	Low	Very large	-