



# **Demonstration 3**

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## Background

- **3 location aware demonstrations built:**
  - **Smart booth navigation:** provides automatic guidance to the visitors based on the booth availability.
  - **Smart booth monitoring:** provides sensor information (temperature and light level) to a remote emergency system to manage emergency situations.
  - **Smart taxi booking:** allows a visitor to request a taxi without knowing the visitor's whereabouts in detail.
- **The first two use indoor location detection using Eckhau software.**



## Smart Booth Navigation

- The GuideSystem is a Laptop (Windows XP) with WiFi and Internet connection. The GuideSystem is also connected with MIB520 programming board which attached with a Micaz mote. It is also running Ekahau positioning engine software to track the location of two separate visitors 1.





## Smart Booth Navigation

- The WSN gateway connected with the GuideSystem receives each booth microphone sensor readings for every 2s.

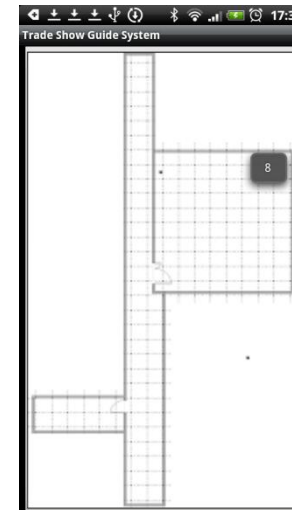
Booth ID	Location	Mic
Booth8	(1347, 800)	461
Booth7	(950, 800)	464
Booth2	(685, 2015)	486
Booth3	(685, 2400)	464
Booth1	(180, 2200)	489
Booth4	(950, 1550)	899
Booth5	(1347, 1550)	463



## Smart Booth Navigation

- When the 2 visitors enter the GuideSystem coverage area, they join with the BoothNavigation smart space as member devices with the GuideSystem as a coordinator.

Visitors	Device ID	Location
Visitor2	7d82fdbd7da3b15f3f7a4f75ac1a5fc521aa5666	(196,2303)
Visitor1	cbf4eac1d9f133c0ddcac4e0dbedbc39ed3f4804	(1084,1373)

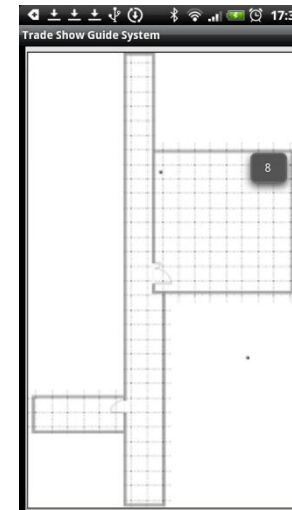




## Smart Booth Navigation

- When the 2 visitors enter the GuideSystem coverage area, they join with the BoothNavigation smart space as member devices with the GuideSystem as a coordinator.

Visitors	Device ID	Location
Visitor2	7d82fdbd7da3b15f3f7a4f75ac1a5fc521aa5666	(196,2303)
Visitor1	cbf4eac1d9f133c0ddcac4e0dbedbc39ed3f4804	(1084,1373)

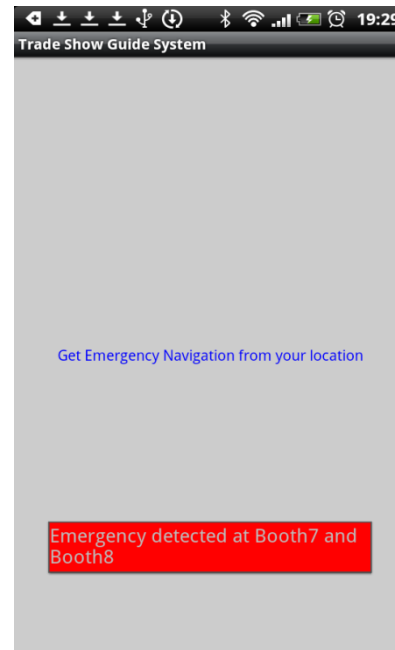




# Smart Booth Monitoring

Booth ID	Location	Temp	Light
Booth4	(950, 1550)	23	2294
Booth7	(950, 800)	26	2888
Booth8	(1347, 800)	27	3005
Booth5	(1347, 1550)	24	2318
Booth2	(685, 2015)	23	2208
Booth3	(685, 2400)	24	2135
Booth1	(180, 2200)	23	2224

Emergency System: Emergency Reports!!	
Tue Sep 20 19:29:04 BST 2011 :: Trade Show Guide System (booth8) GPS Location: 54.9805511 -1.61469717 Local Location 1347 800	
Tue Sep 20 19:29:10 BST 2011 :: Trade Show Guide System (booth7) GPS Location: 54.9805511 -1.61469717 Local Location 950 800	





## Smart Taxi Booking

- **The Smart Taxi Booking is a location aware booking service that allows visitors to request a taxi without knowing his/her whereabouts in detail.**
- **Visitors do not have to wait for the taxi in the same location as when they made request and can move to another nearby location as the taxi service is able to track the visitor location changes.**
- **Prototype consists of two different devices: Visitor and Taxi.**
  - **Visitor is an Android based HTC Sensation Smartphone with a PECES application with coordinator and gateway functionalities and it forms a TaxiBooking smart space on its own.**
  - **Taxi is an Android based HTC Flyer Tablet with PECES application with coordinator and gateway functionalities and it forms a TaxiProviding smart space on its own.**



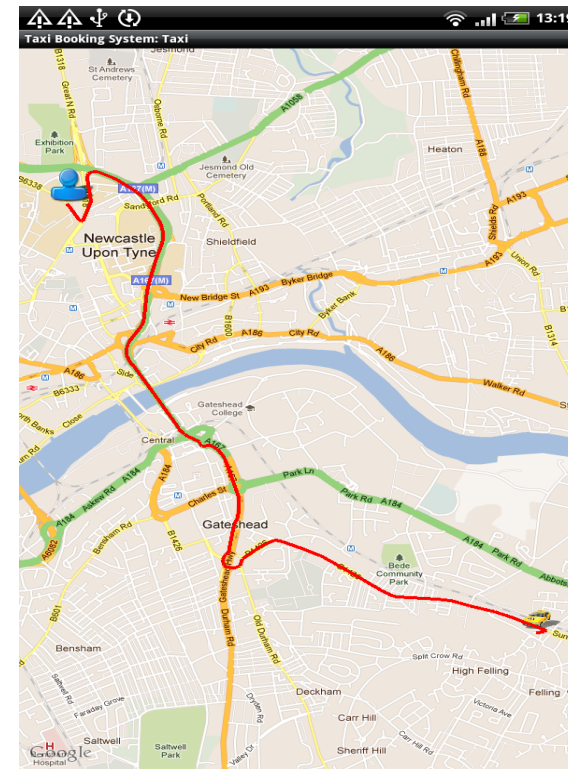
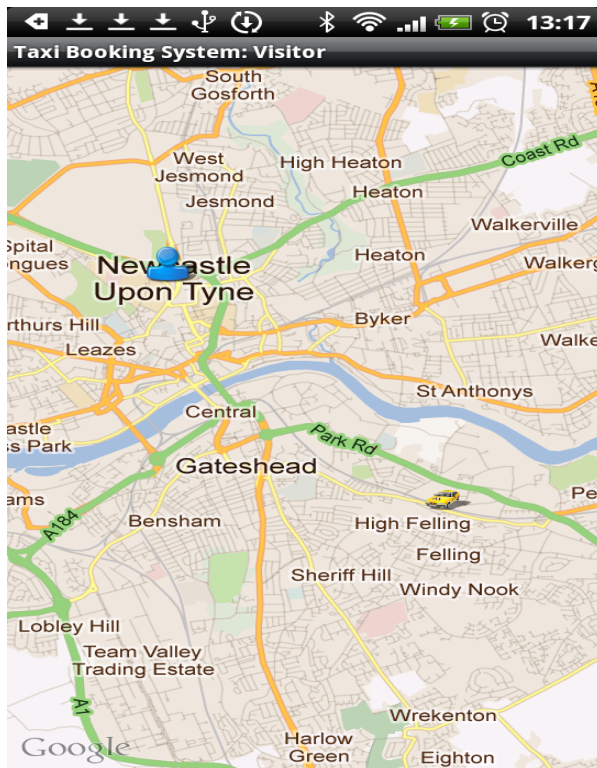


## Smart Taxi Booking

- The Taxi forms a TaxiProviding smart space and it is made available to the internet registry.
- The Visitor forms a TaxiBooking smart space and it is made available to the internet registry.
- Whenever a taxi service is needed, the Visitor forms a hierarchical smart space with TaxiBooking and TaxiProviding smart spaces and sends taxi request information with its GPS coordinate information.
- When the request is received by the Taxi, if it is willing to provide a service to the Visitor, the Taxi forms a hierarchical smart space with TaxiBooking and TaxiProviding smart spaces and sends response message with its latest GPS location information.
- The Visitor can track the taxi location and may move to a new location.
- The Taxi gets the Visitor's new location and calculates the new route

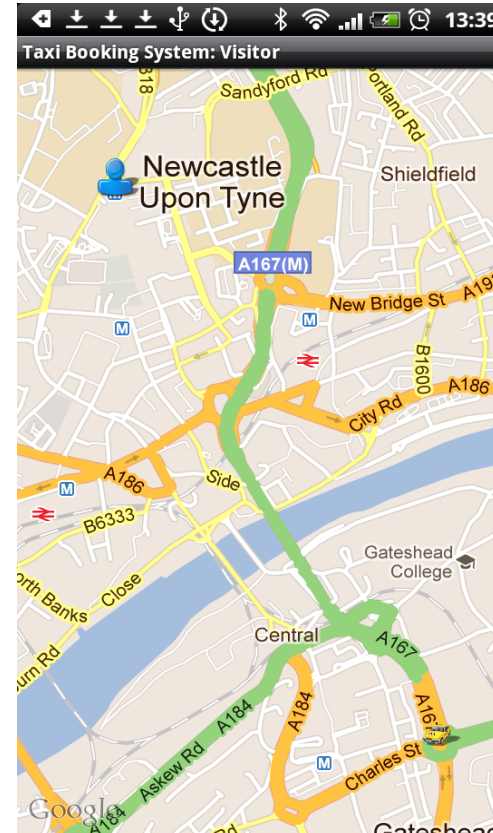


# Smart Taxi Booking





# Smart Taxi Booking



Visitor moves. Taxi route is updated

# Smart Taxi Booking

Pervasive computing in embedded systems



# Peces

