Location Services - Finding the People in the Internet of Things

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DUMB DECISIONS
Track The People
Definitions

• Location Services – the repository for location information.
• Contributing Device – a sensor or other device that feeds location information to location services. Additionally a proprietary location services could be a Contributing Device.
• Entity – a thing that is being tracked
AllJoyn Location Services

- Database for location information
- Applications do not need to know the technology used to provide location information.
- A common interface for applications to retrieve location information.
- Common interface for devices to provide various location information.
Types of Services

• Location Services provides five types of location information:
  – Presence – Is the entity present or absent.
  – Distance – The distance between two entities.
  – Geofence – Is an entity inside or outside of a circle around another entity.
  – Position – The position of an entity within a coordinate system.
  – Containment – Is an entity within a bounded area.
How it works

- Contributing Device
- Location Services
- Application
- Entity
- Contributing Device

AllSeen Alliance
Application Interfaces

• Filters
  – A list of entities
    • Regular expressions can be used
  – Service specific information

• Similar methods for each service
  – Query
    • Returns list of entities that match filter
  – Subscribe
    • Subscribe with a filter
    • Creates a Tracker
Application Interfaces – cont.

• Tracker
  – AllJoyn Bus object
  – Signaled when a change in entity information matches filter
  – Entity that changed passed back in the signal
  – Contains filter used for creation
  – Contains method to retrieve all Entities that match filter
  – Trackers have a lifetime, and a lifetime threshold
    • When lifetime threshold is reached signal is sent
    • Applications that are still interested can call KeepAlive method
Contributing Device Interfaces

• Allow sensors and other equipment to add location service information
Privacy

• Known entities can have privacy policies applied to limit the dissemination of their location information

• Anonymous entities are tracked
  – Have no privacy policies.

• Privacy uses the ACLs of AllJoyn Security 2.0
Presence Service

- The Presence service will provide presence information about other known or unknown entities.
- The Presence service will allow a device to determine if another entity has been detected.
Geofence Service

- Geofence provides information on whether an entity is inside or outside a geographic boundary surrounding another entity.
Distance Service

- Provides distance information about other entities
- The distance between two entities
  - Not all entity pairs may have distance information.
- Allows a device to know its distance with respect to another device
Position Service

• The position of an entity within a co-ordinate system
  – Origin X,Y,Z
  – WGS84
Containment Service

• The containment service will provide information on whether a device or object is within a proscribed area.
Scenarios

• Home automation
• Passenger tracking
• Convention management