Agents2Go: An Infrastructure for Location-Dependent Service Discovery in The Mobile Electronic Commerce Environment

Overview

Electronic Commerce

automation, personalization, adaptation, “intelligence”

localization, convenience, anywhere, anytime

Agents

dynamic ad hoc networks, service discovery, negotiation

Mobility
Motivation

• Location dependent services discovery
• Distributed infrastructure
• Service provider representation
• Dynamic
  • Changing information
  • Location detection
• Use already existing infrastructure

The Agents2Go Platform

• Location dependent services discovery
  – Location dependent information retrieval
  – The search results contain information about restaurants that are local to the requesting user.
• Distributed services
  – Distributed Information
  – Service information is distributed and grouped by regions.
  – Information about the restaurant is stored locally.
• Automatic location detection
  – Cell tower ids are mapped to the geographical region name.
• Service provider representation
  – Service Agents reside at the service provider locations.
  – Restaurant Agents reside at the restaurant locations.
CentaurusComm Transport Protocol

- Two level message-based transport protocol
- Higher level (Level II) implemented by every component in the system
  - provides reliability, segmentation, reassembly
  - reliability via SACKs
- Replaceable low-level modules (Level I) to support different wireless media
- Modules for Infrared, CDPD and Bluetooth implemented

The PalmApp

- The *PalmApp* is a generic form visualizer, independent of the system functionality.
- XML dynamically rendered by the *PalmApp*
- The *PalmApp* provides a graphical interface to the user.
- Users can submit an information request to the system via The *PalmApp*. 
The A2G Server and The Locator

- The **A2G Server** receives user requests from a **PalmApp**, maps its cell tower id to the geographical region and forwards this request including region name to the **Locator**.
- The **Locator** maps **Brokers** to regions. It delegates requests from the **A2G Server** to the designated **Brokers**.
- The **A2G Server** and the **Locator** could be replaced when using Bluetooth technology.
- Collection of cell tower ids.
- Cell Overlaps
The Broker

- The Broker manages information for all participating restaurants in it’s designated geographical region.
- The Broker manages:
  - Static information – rarely changing information (address, phone number)
  - Dynamic information – frequently changing information (waiting times, promotions). The Broker timestamps Dynamic information.
    - “fresh” age group,
    - “aged” age group,
    - “trashed” age group
- The Broker receives user requests and generates appropriate responses, which it sends it back to the requesting user.

The Restaurant Agent
The Agents2Go System is a dynamic, location aware, distributed system.

- The **Broker** holds auctions to find the best deals for the user.
- The **Broker** maintains reputation information about service providers.
- The **Broker** forwards a request that yields no matches to its neighboring Brokers.
- The Agents2Go System anticipates the future geographical location of the user.
- Disconnected operations or operations in regions with poor wireless connectivity.
The Restaurant Agent

- The *Restaurant Agent* provides a graphical interface to a restaurant host.
- The *Restaurant Agent* is used to send dynamic information like updates and promotions to the *Broker* that manages that restaurant’s geographical region.