

Personal Information Guide – A Platform with Location Based Services for Mobile Powered E- Commerce

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Mobile powered E-Commerce

The Idea

- Availability of conventional Web-Services on mobile devices
- Value-adds with location-based services
- Intelligent information aggregation

Restrictions

- Mobile Devices like cellular phones or PDAs have a small display and limited graphic capabilities
- Data transfer rates are low compared to wired connections
- Data transfer is expensive
- Devices can be used anywhere anytime

Examples of mobile Applications

Mobile banking

Mobile brokering

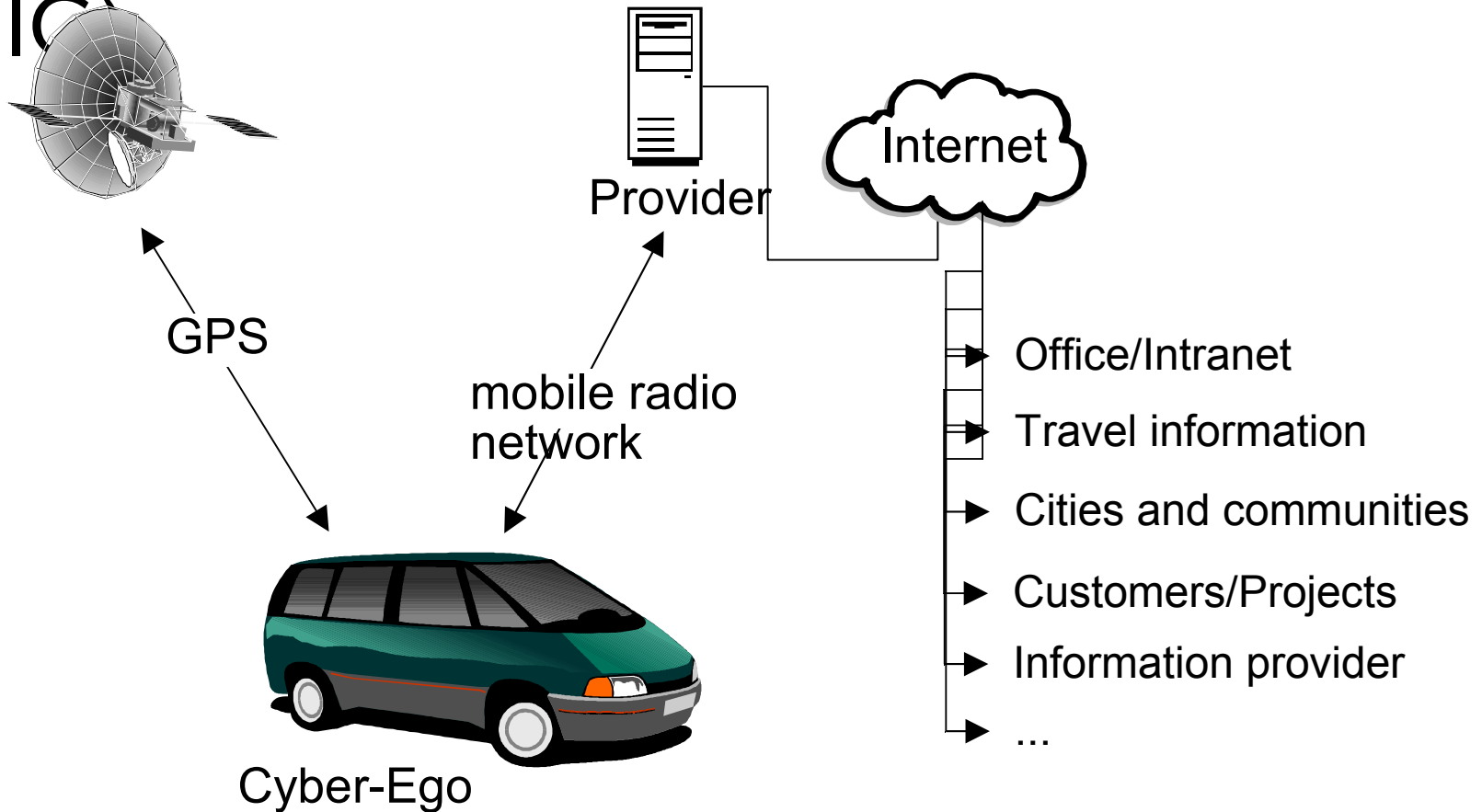
Payment Services

Mobile shopping

Mobile advertising

Mobile entertainment

Example for mobile powered E-Commerce: Personal Information Guide (PIC)

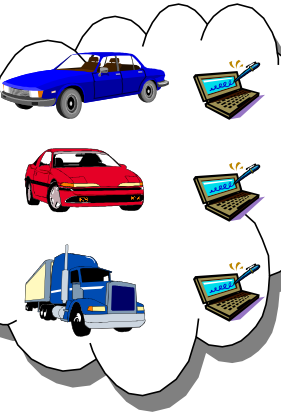


Scenario

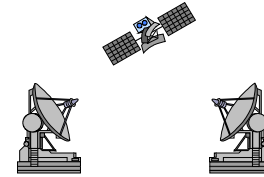
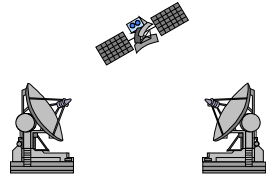
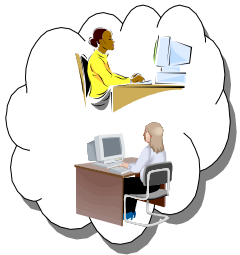
Clients

Service Providers

Mobile clients (MC)

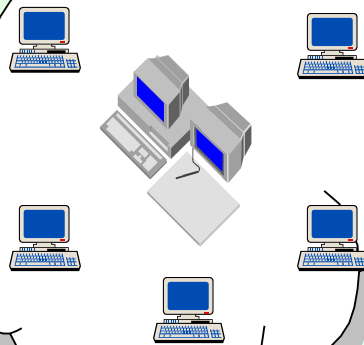


Stationary clients (SC)



*Mobile Phone Network
(GSM, GPRS)*

PIG Peer-2-Peer Network

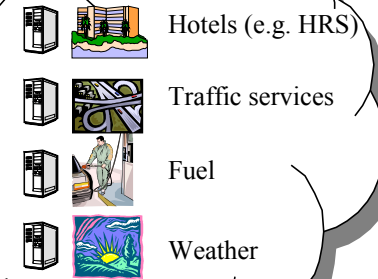


Internet

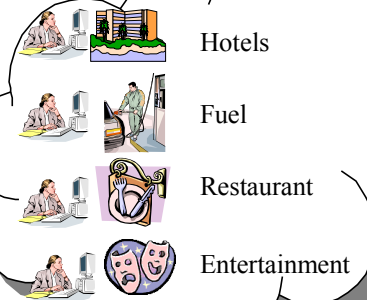


*Administration
and support (AS)*

Meta-Service Provider



Content Providers



Example Business Process

Mobile Client requests a service (e.g. Hotel reservation)

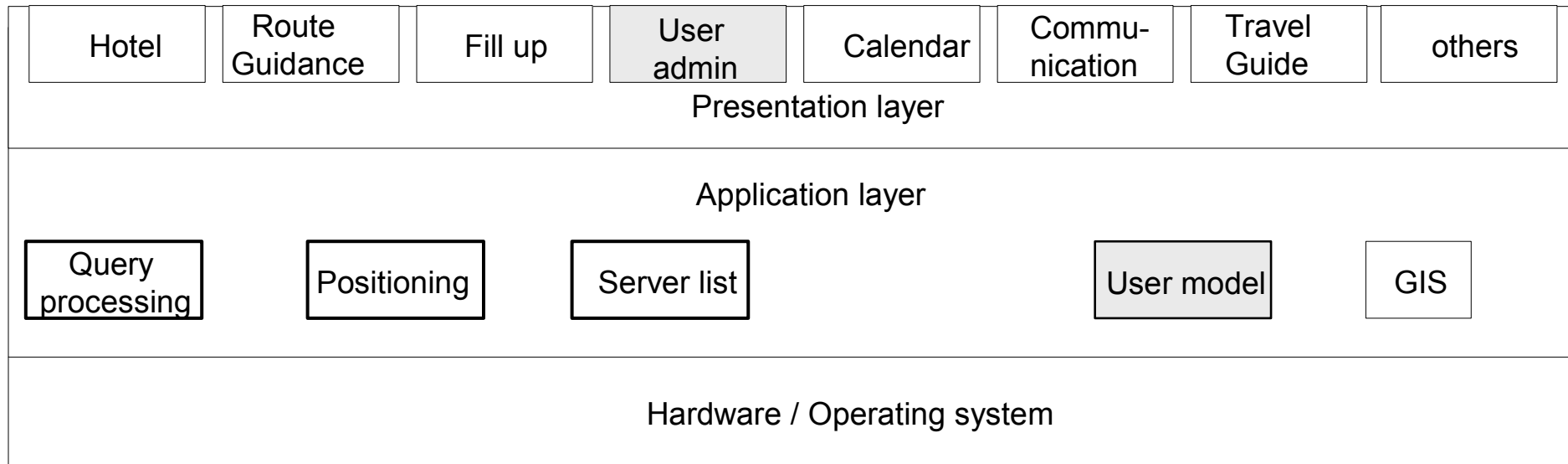
GPS or GSM service provides location

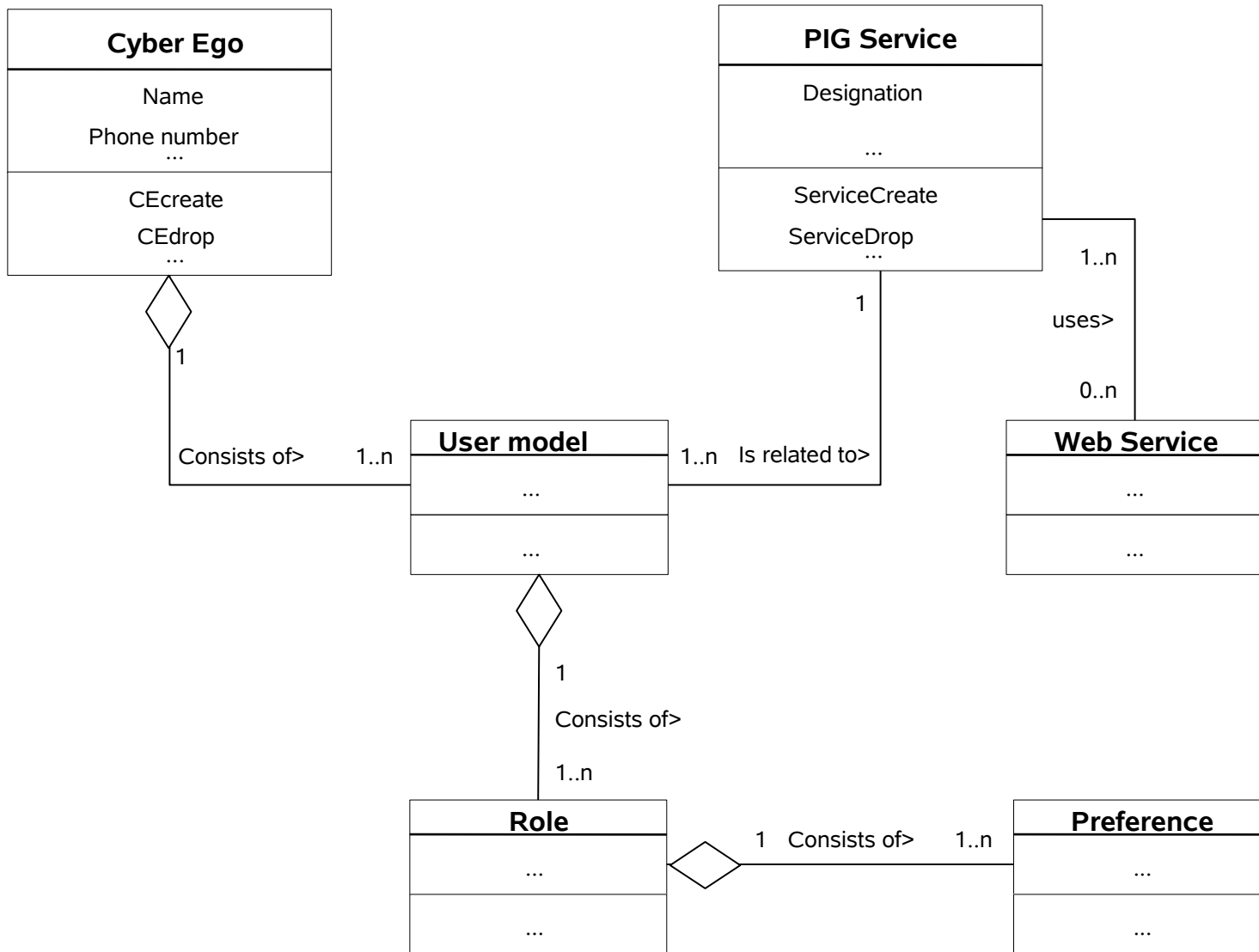
Location and service request is sent via mobile network to PIG Server

Electronic agent gets user's cyber-ego and requests meta and content services

Results are received by agent, evaluated and returned to the mobile client

PIG mobile Client Architecture





PIG Server Technology

Basic technologies

- Agents
 - stationary
 - collaborative

- Peer-to-peer network
 - Content Addressable Network

- XML
 - Servicetype description
 - Communication between agents

PIG Agents

User agent

- Can be distributed redundantly over the network
- Takes over the cyber ego
- Activates current role
- Accepts location information and query parameters

Host agents

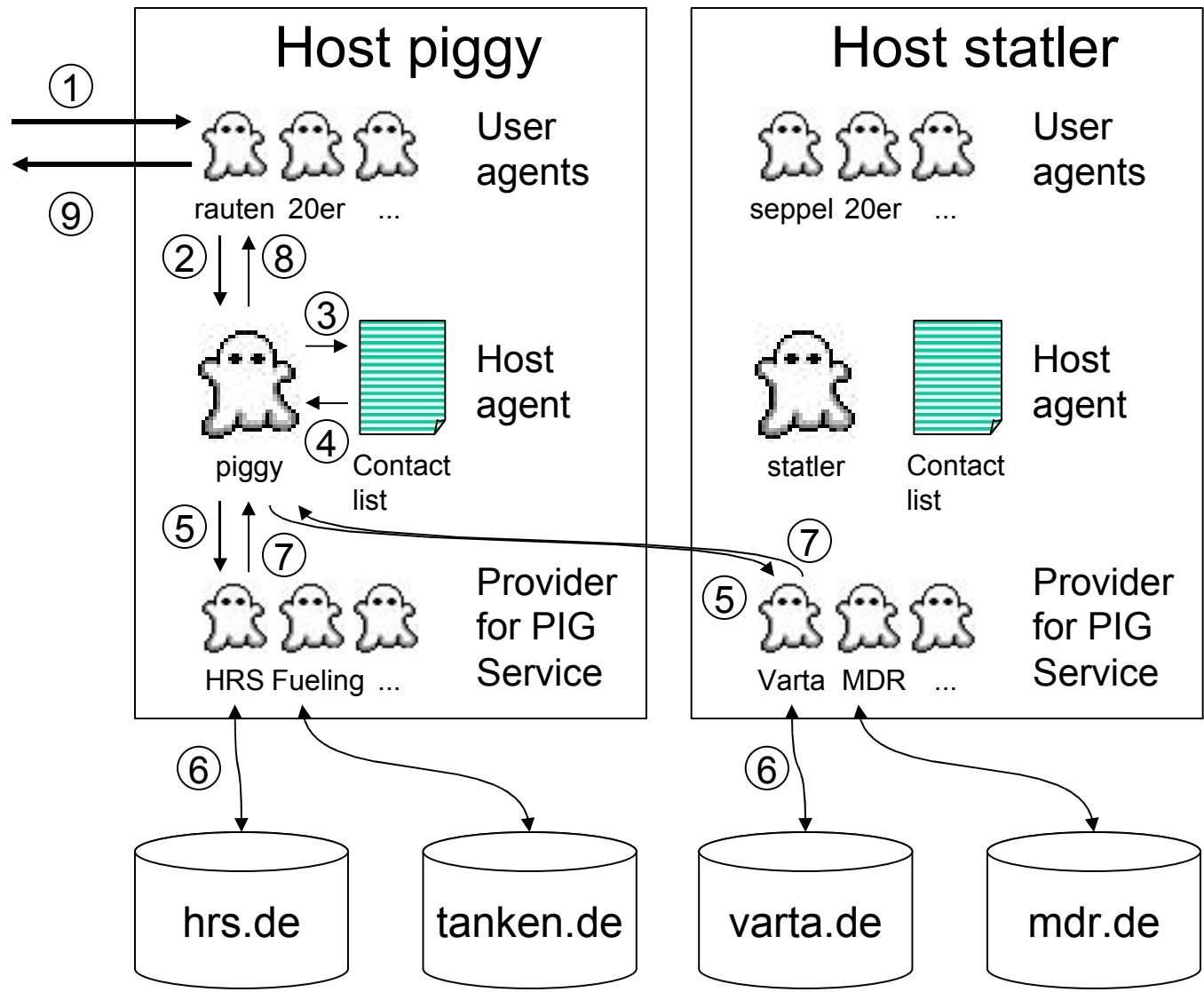
- One agent for each network node (host)
- Manages communication between user agent and provider agent

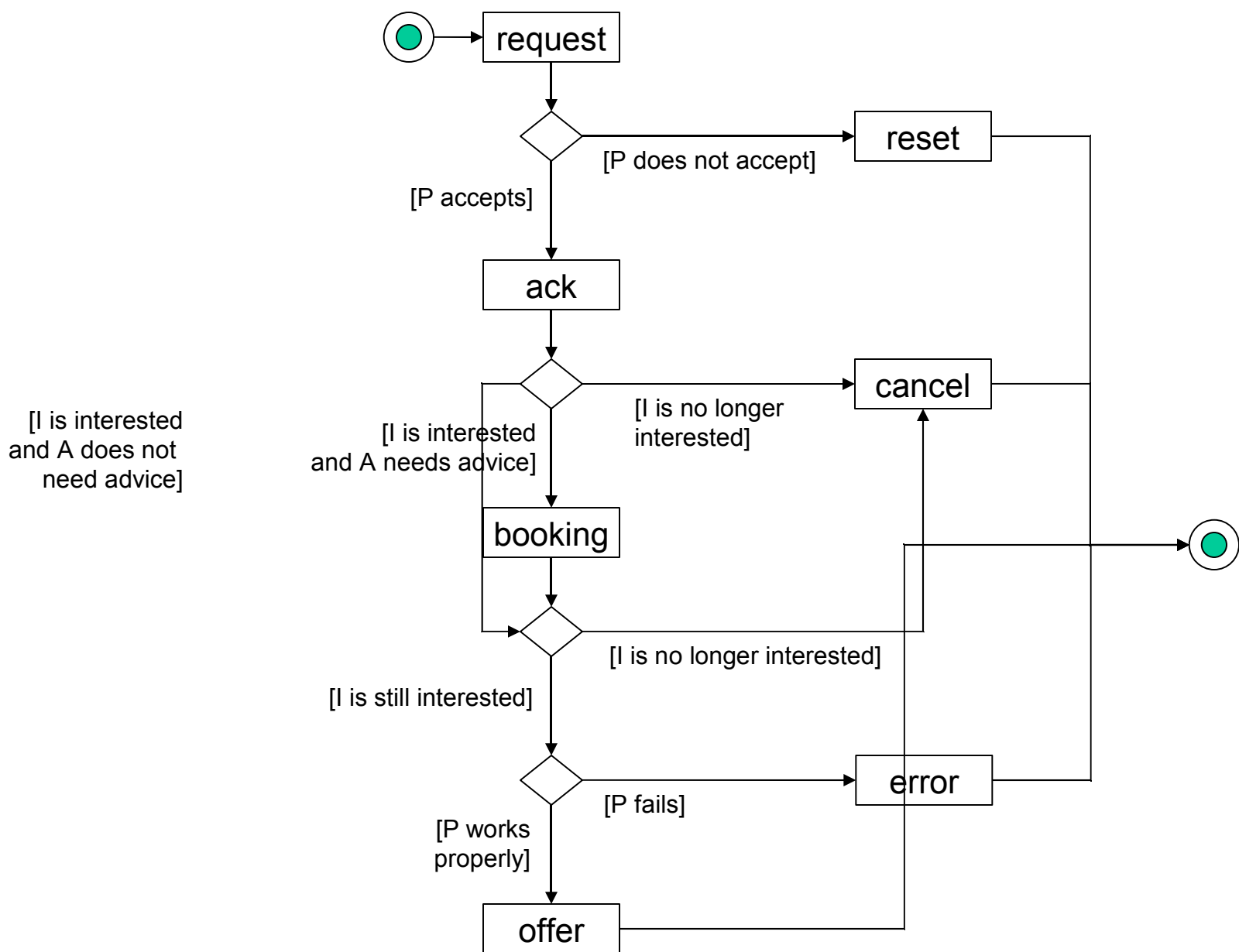
Provider agent

- Can be distributed redundantly over the network
- Anonymous actor for access to web services
- Translates web service to PIG service



PIG mobile Client





Agents' Phonebook: Contact Lists

| User Agents Contact List | | | |
|---------------------------------|---------------------|-------------------------|---------------|
| <i>Agent Name</i> | <i>Phone Number</i> | <i>Server</i> | |
| Rauten | 0172123456 | piggy | |
| Rauten | 0172123456 | statler | |
| 20er | 0172654321 | piggy | |
| 20er | 0172654321 | waldorf | |
| ... | | | |
| Services Contact Lists | | | |
| <i>Agent Name</i> | <i>PIG Server</i> | <i>Service Provider</i> | <i>Server</i> |
| Varta | Hotel Search | Varta.de | piggy |
| HRS | Hotel Search | HRS.de | Statler |
| Orakel | Traffic | MDR.de | Statler |
| Orakel | Gas | Clever-Tanken.de | Statler |
| ... | | | |

Communication User Agent ↔ Host Agent ↔ Provider

Host agent services

- Routing service
 - Accepts the user agent's query as
 - XML document
 - Individual document type definition (DTD)
 - XML scheme being defined for every service
- Resolve service
 - Evaluates the contact lists

Processing

- Selected providers all receive the XML document with the search query
- Search results are reported back again to the host agent's routing service as an XML document
- Forwarded from there to the querying user agents
- User agent processes the search result and sends it back to the querying PIG client

Communication Provider ↔ Web Service

Possibilities for communication between providers and Web services

- PIG protocol
 - Data is transmitted over its own PIG protocol
 - Realization on both sides by its own agents, which exchange XML documents
- HTML scraping
 - Provider analyzes and parses the Web service's HTML pages
 - Converts the results into the PIG XML document format

Pros and cons

- PIG protocol
 - Standardized communication
 - Changes at Web sites do not influence communication
- HTML scraping
 - Web sites do not have to be change for PIG access

PIG P2P Network

Properties of PIG pure P2P network

- All network nodes are equal
- Every network node can take the initiative to communicate
- The network nodes communicate directly with one another
- Access control and authorizations are managed in the P2P network
- The Internet or Intranet serve solely as a transmission medium
- The computers participating in the P2P network can join together to computer farms in order to merge the performance of the individual computers into a high-performance virtual shared system

Benefits

- High performance
- High availability
- Low costs

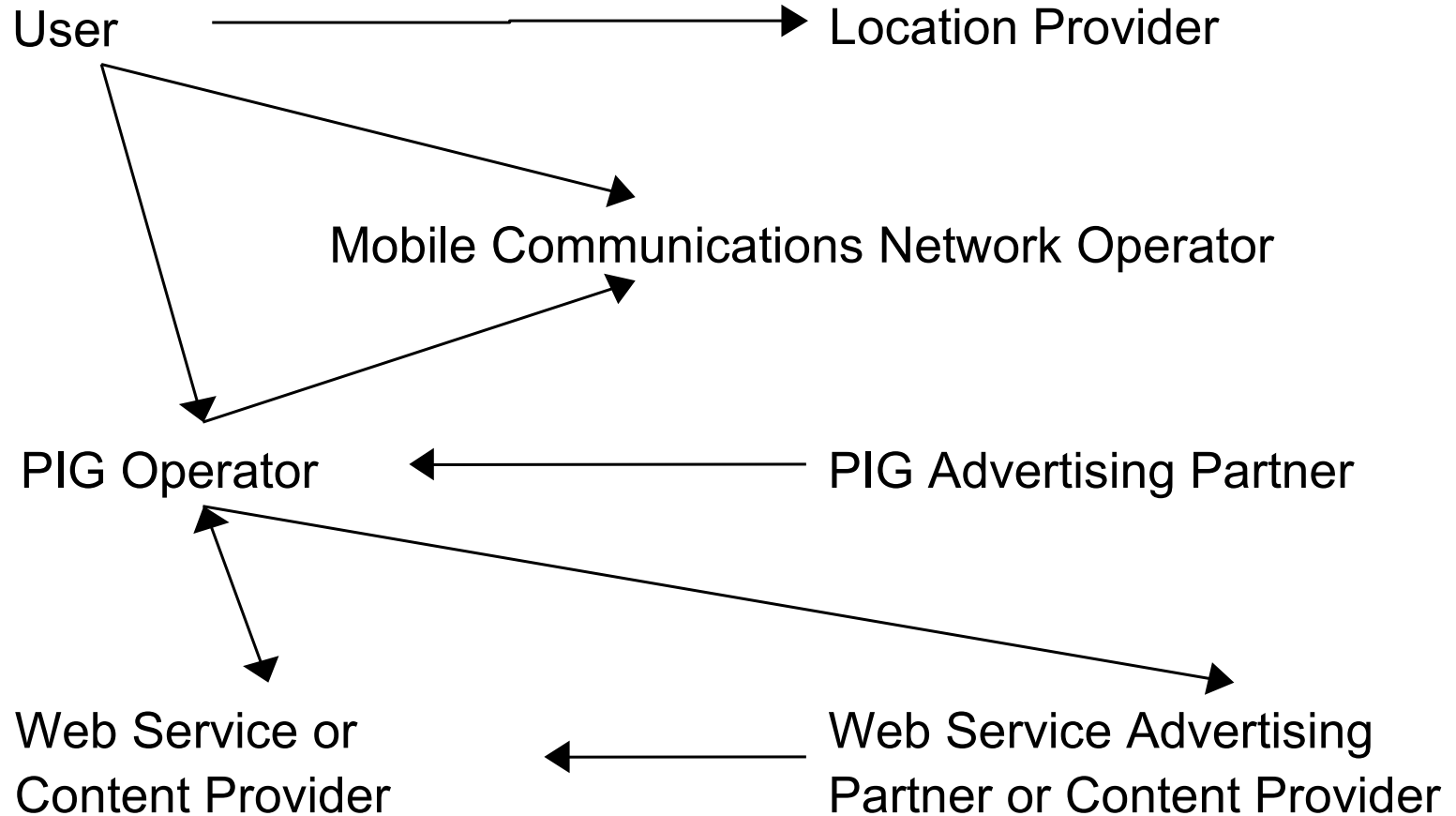
Business Model

Market participants

- User of mobile device
- Provider of location information
- Provider of PIG Services
- Provider of web services
- Advertising partners
 - of PIG Services
 - of Web Services
- Provider of mobile networks

Who pays for what??

Payment flows



Summary

Technology mix

- Mobile devices
 - Agents
 - P2P
 - XML

Benefits

- High flexibility
- High availability
- High performance
- Low costs

To Do

- Integration of Technologies
- Car Computer
- Navigation system
- Mobile devices

Thank you for your
attention!

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