



e-Business in a Peer-to-Peer Networked World

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Outline

- The rationale: ICT and Business
- Focus on Decentralised Networked Environments
- Component/Service-oriented Architecture and semantic integration
- Applying P2P Technology in a Corporate Trading Environment
- Process and Organisational level: Demonstration scenario in the Tourism and Travel domain
- Application in alternative markets
- Summary and discussion



ICT and Business

- **Networks** (e.g. Internet) → enabling many-to-many interactions beyond physical boundaries
- The very essence of **business** is about enabling people to interact to create value
- **e-Business** deals with similar subjects (collaborative commerce, supply chain management, e-markets, networked organisations, dynamic trading networks)
- Evolution is driven by:
 - The need for Industry consolidation
 - The requirement to move closer to customers, suppliers and partners
 - The growth of e-commerce – change “conventional” business models
 - The formation of “common interest” communities



ICT and Business

Technology Evolution Towards...

**Linkage of diverse
IT systems**

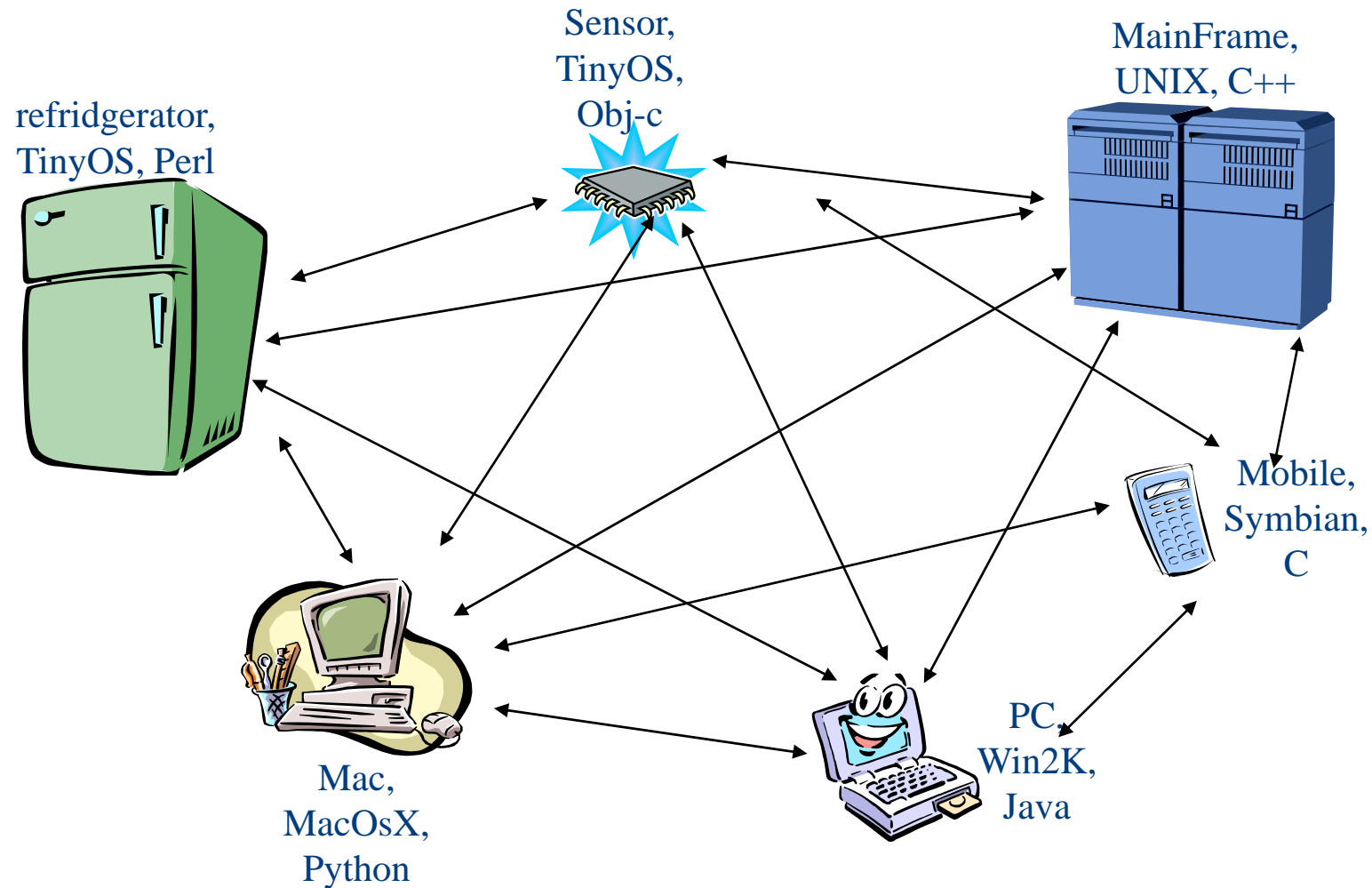
**Support of multiple
and
heterogeneous applications**

**Support of various
connectivity paths,
among numerous
access devices**

**Intelligent information
retrieval and sharing**

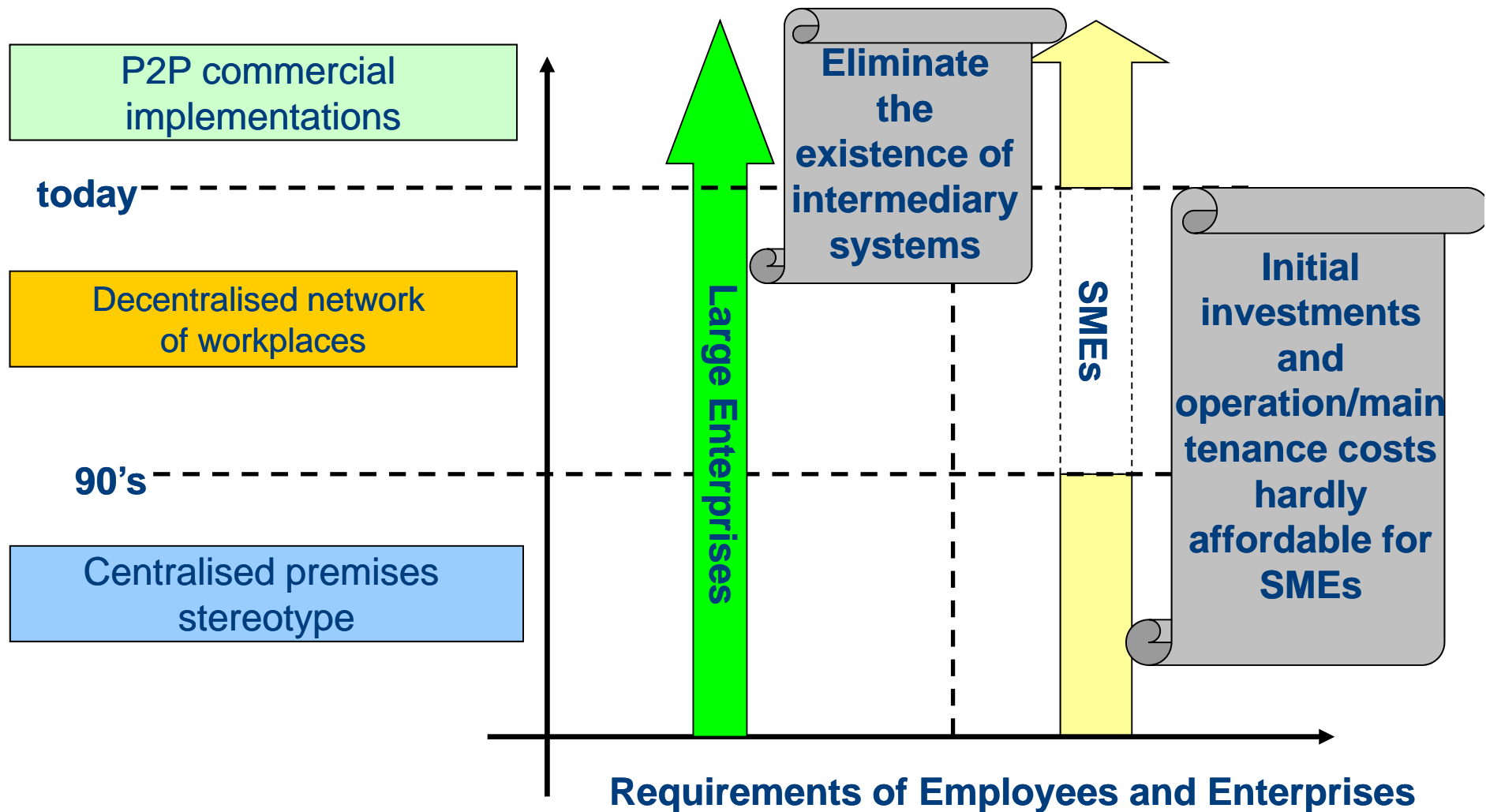


Decentralised Networked Environments





Decentralised Networked Environments



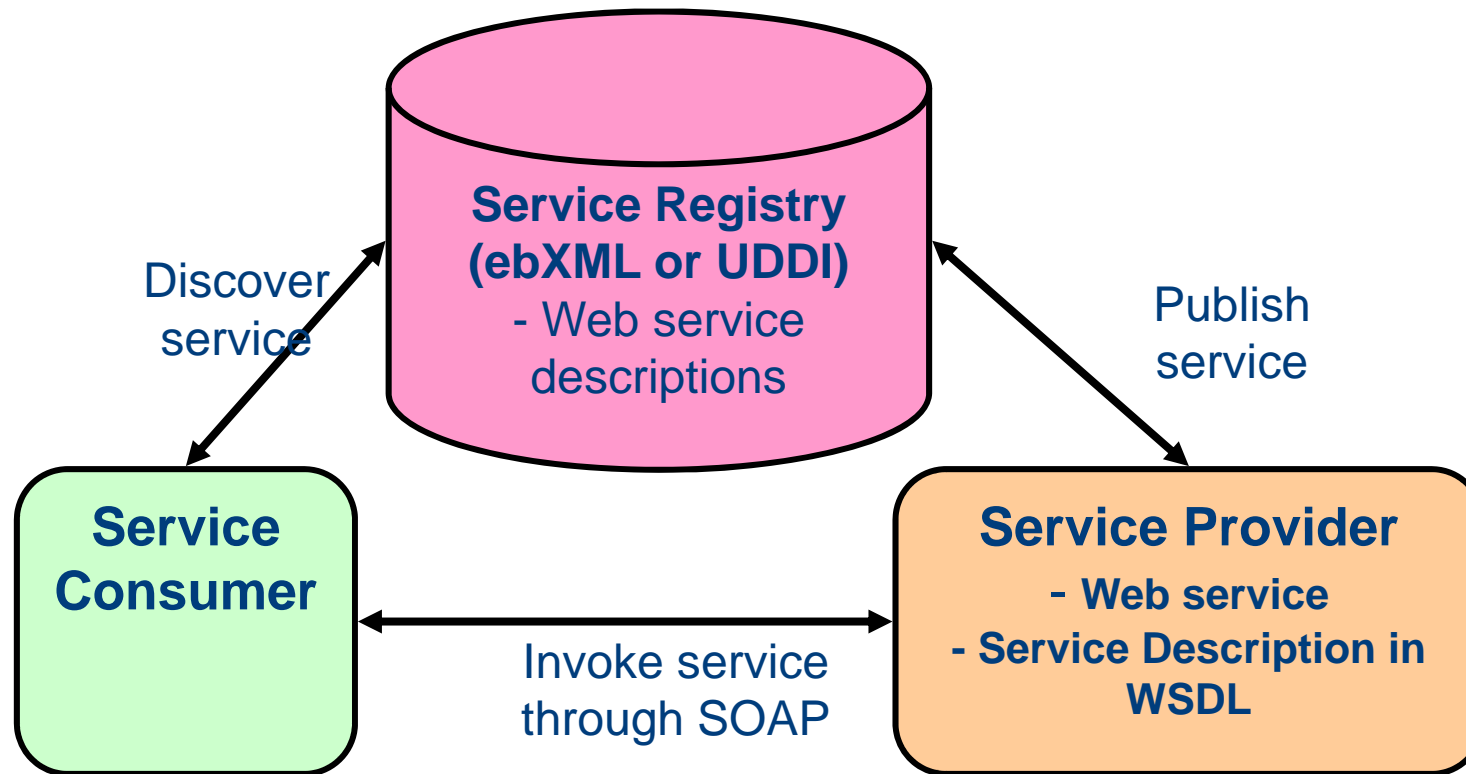


Component/Service-oriented Architecture and semantic interoperability

- Repositories and software systems are programmatically accessed by business processes
- The definition of interfaces and their access at runtime is not uniform at all
- Every enterprise uses different technology for the programmatic access
- **Web Services** are proposed as a uniform and universal technology for this problem

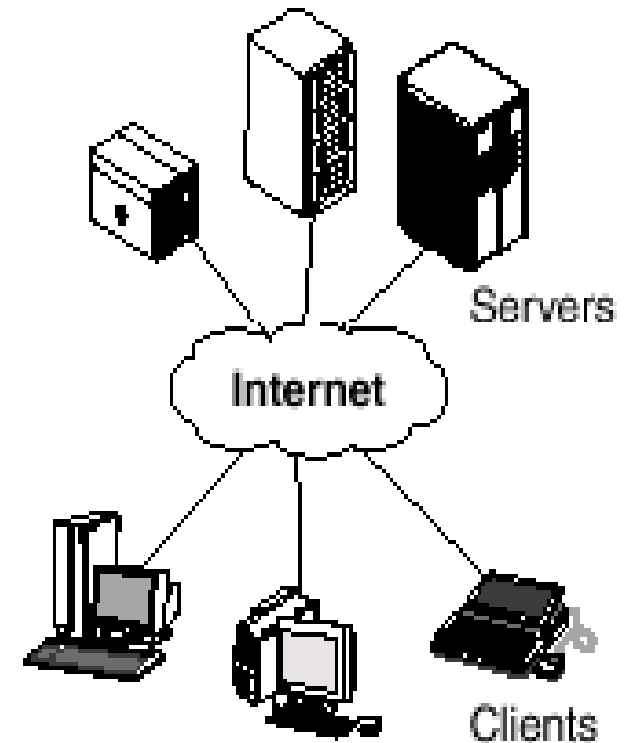


Web Services Model



The Rationale of P2P

- Discovery of resources (e.g. Napster, Gnutella)
 - What about security?
- Eliminating the single-source bottleneck
 - Use **P2P search** capabilities to
 - locate Web service registries
 - and also individual not registered services
- The enterprise can now participate in B2B marketplaces and directly collaborate with its suppliers



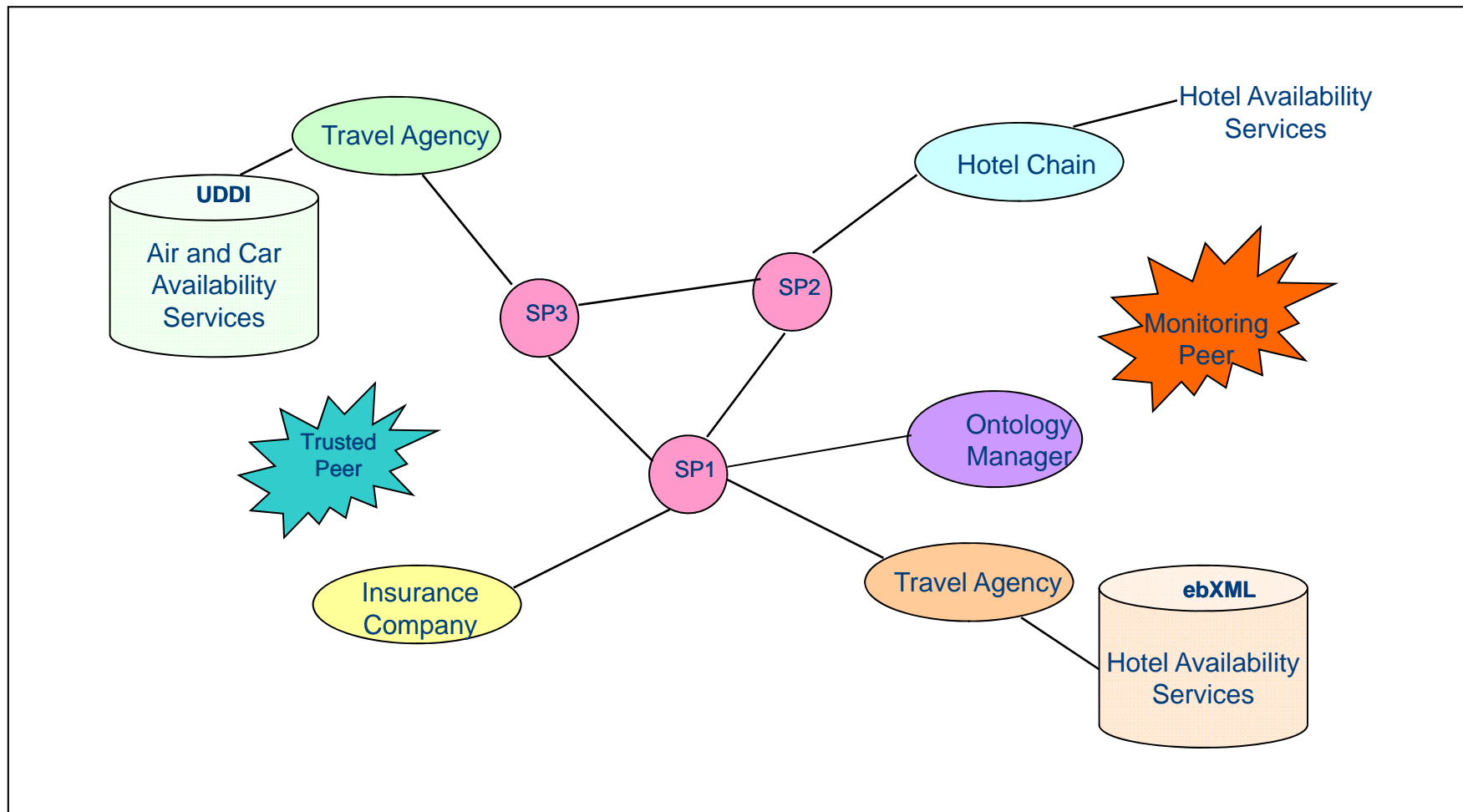


Turn networked Business standards more flexible through Semantics

- This can be possible by introducing semantics to Web services:
 - **By classifying Web services with well-known taxonomies, ontologies and controlled vocabularies**
 - management, retrieval and use easier and more accurate
 - **By introducing semantics to the messages exchanged**

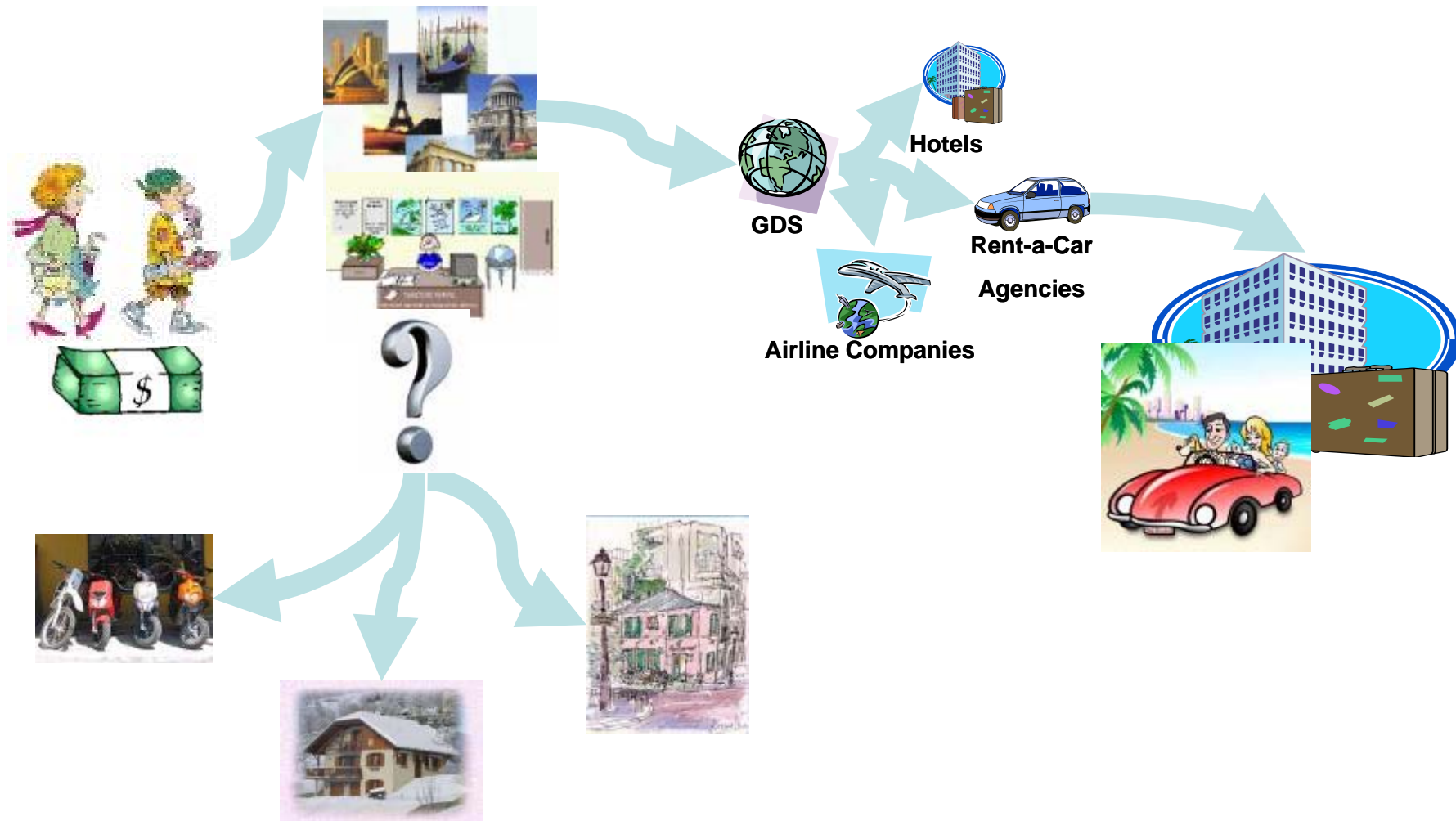


Process and Organisational level



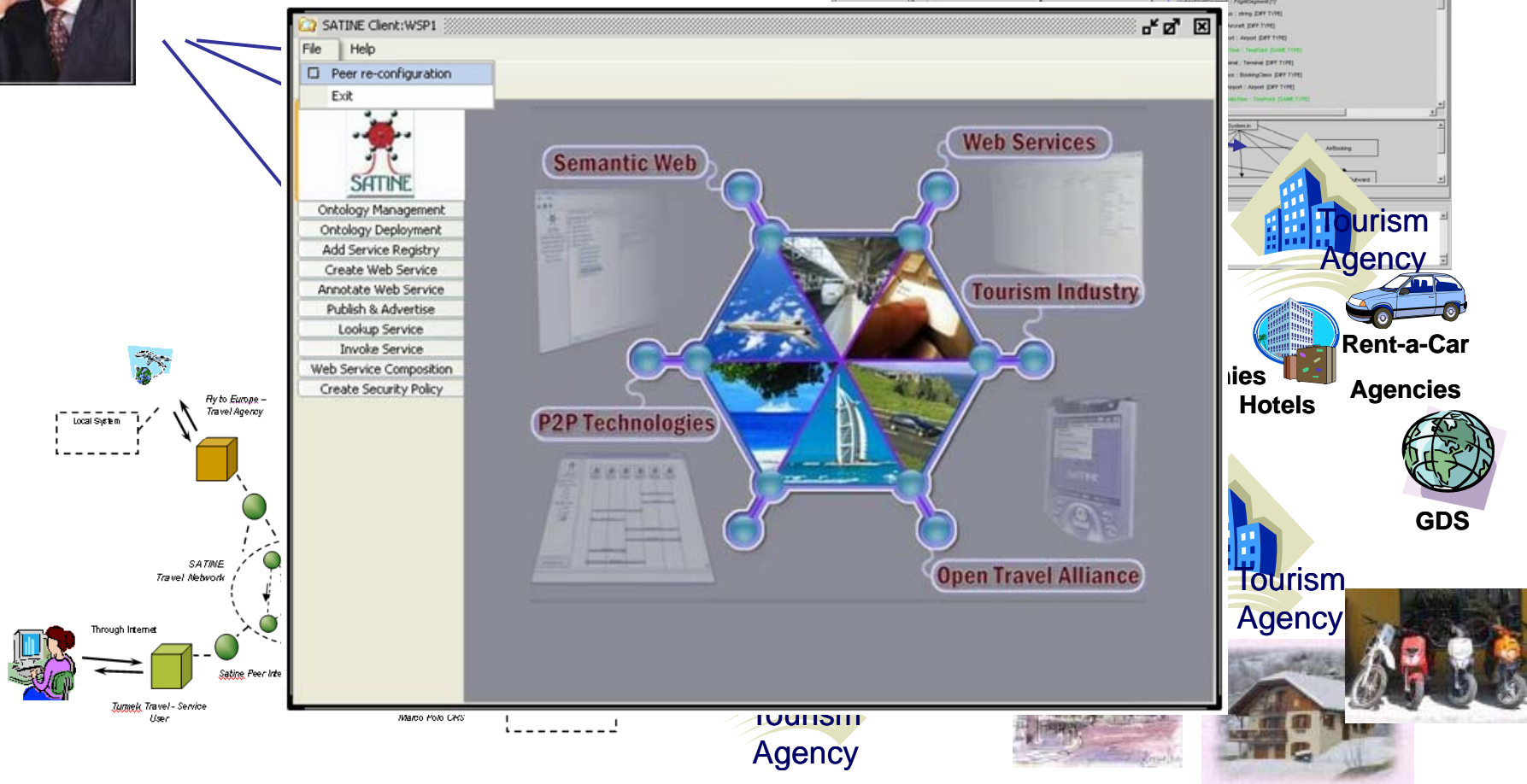
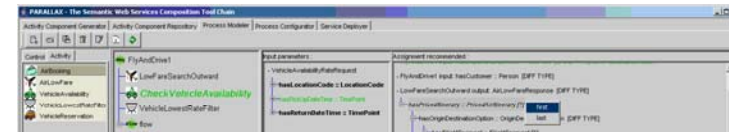


Process and Organisational level – As is





Process and Organisational level – To be





Process and Organisational level – To be

- Find Available Flights
- Get Flight Information
- Reserve Flight
- Search Hotels
- Get Hotel Information
- Check Hotel Availability
- Book Hotel
- Etc.



Demo scenario in the Tourism & Travel Industry



**Mr. Brown is on
travel for work in
Cyprus**



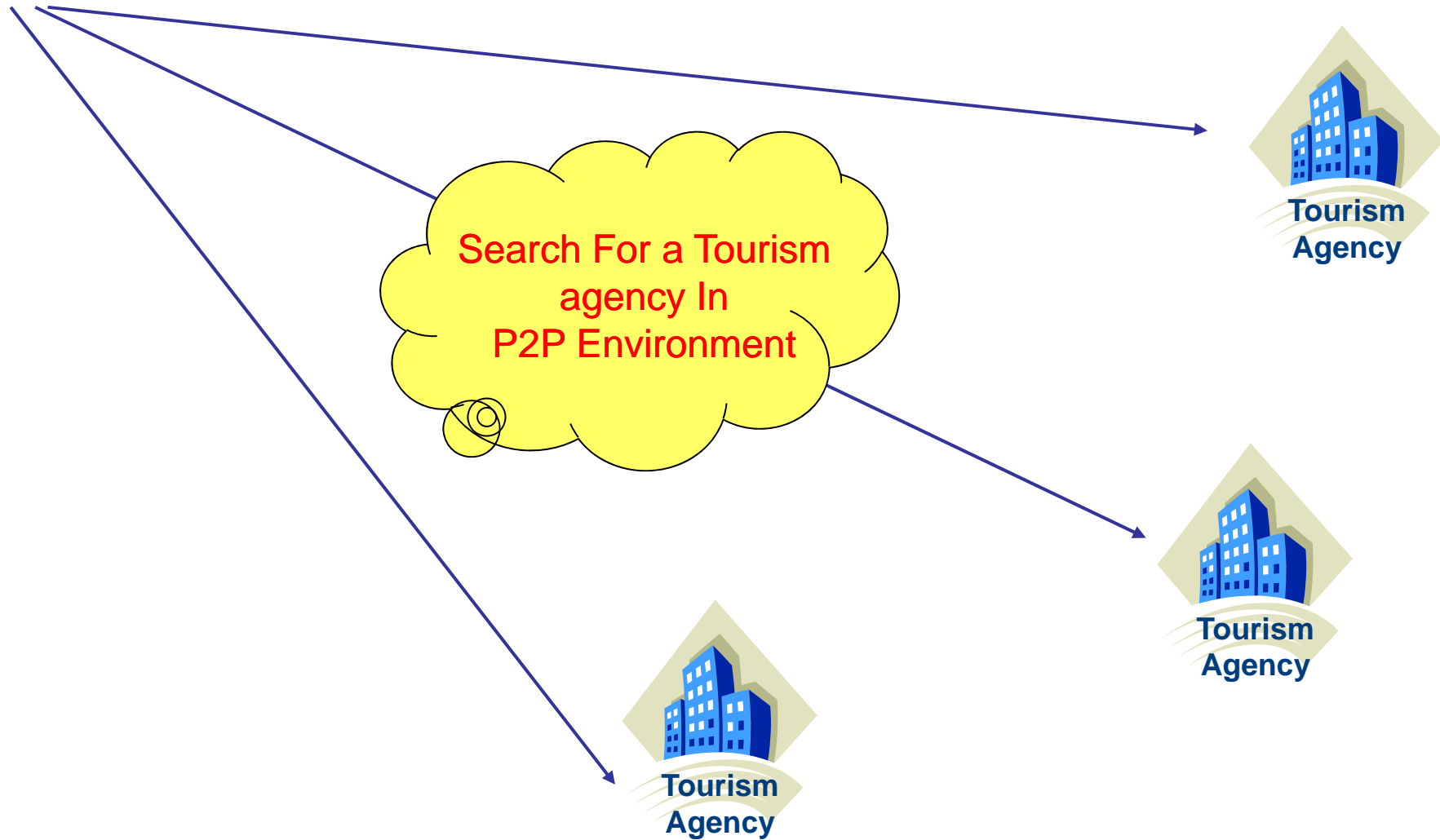
**Receives a call from
The central office**



**He has to cancel his
work in Cyprus and
has to go to
Copenhagen urgently**



He sends a query to find a tourism agency





SATINE Contribution

- Technology involved: Web services, Semantic Web and P2P in the travel domain
- Innovation: Discovering services through their semantics and P2P search mechanisms in the travel domain



Ask for Availability

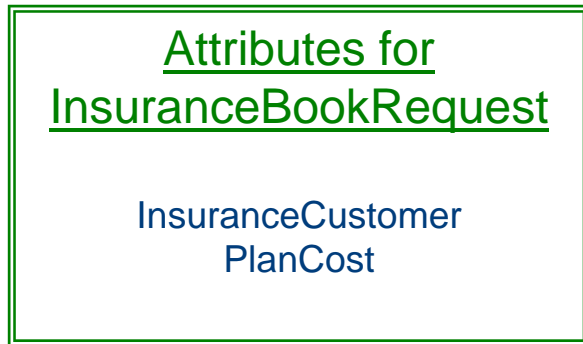


Reservation is performed



InsuranceBookRequest Message

Insurance request for the passenger
(Mr.Brown)



InsuranceBook
Response Msg

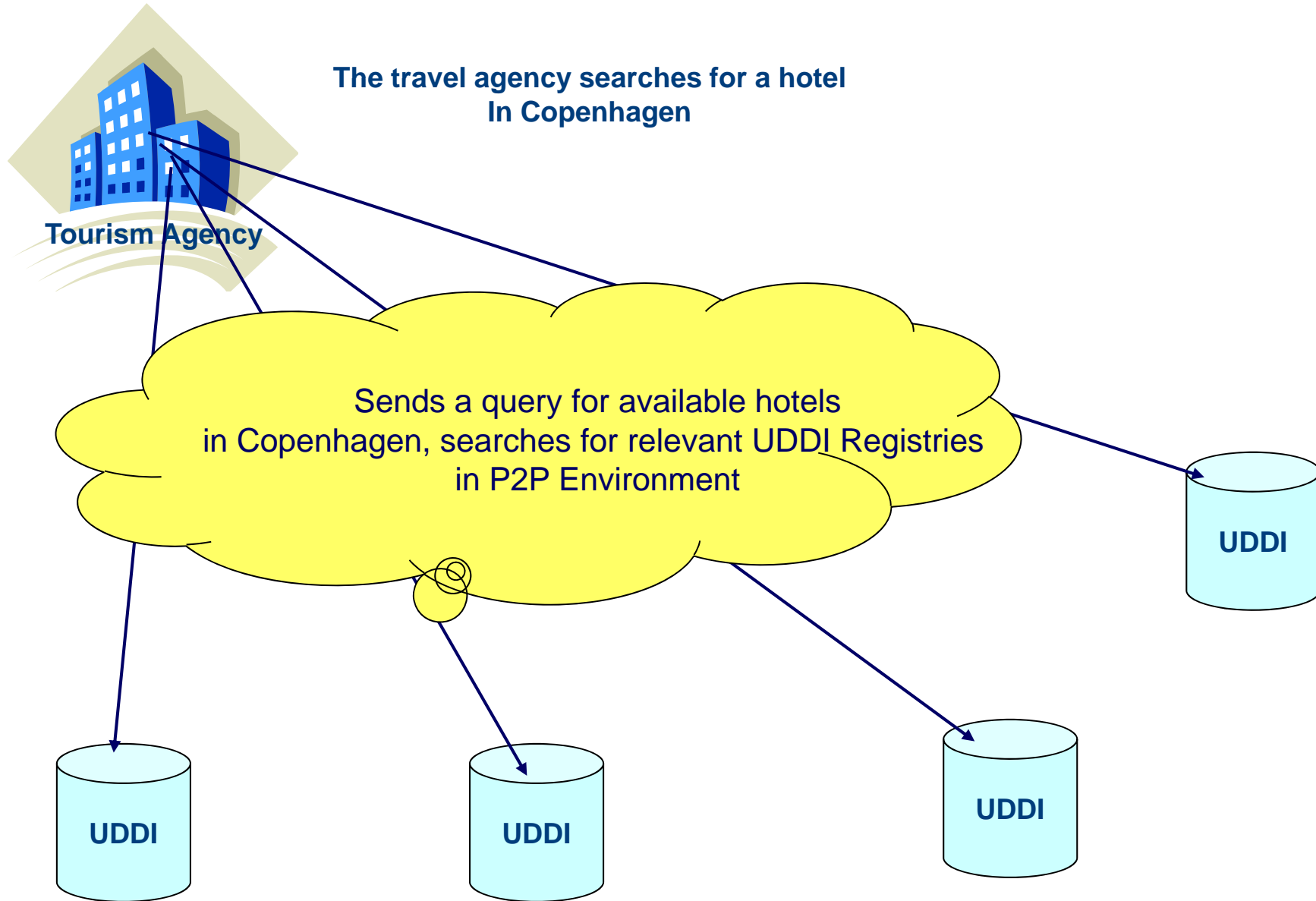
Insurance is
approved





SATINE Contribution

- **Interoperability** between the insurance company and the airline company is achieved through Web service technology
- **Composition** of Web services into workflows using the semantic definitions



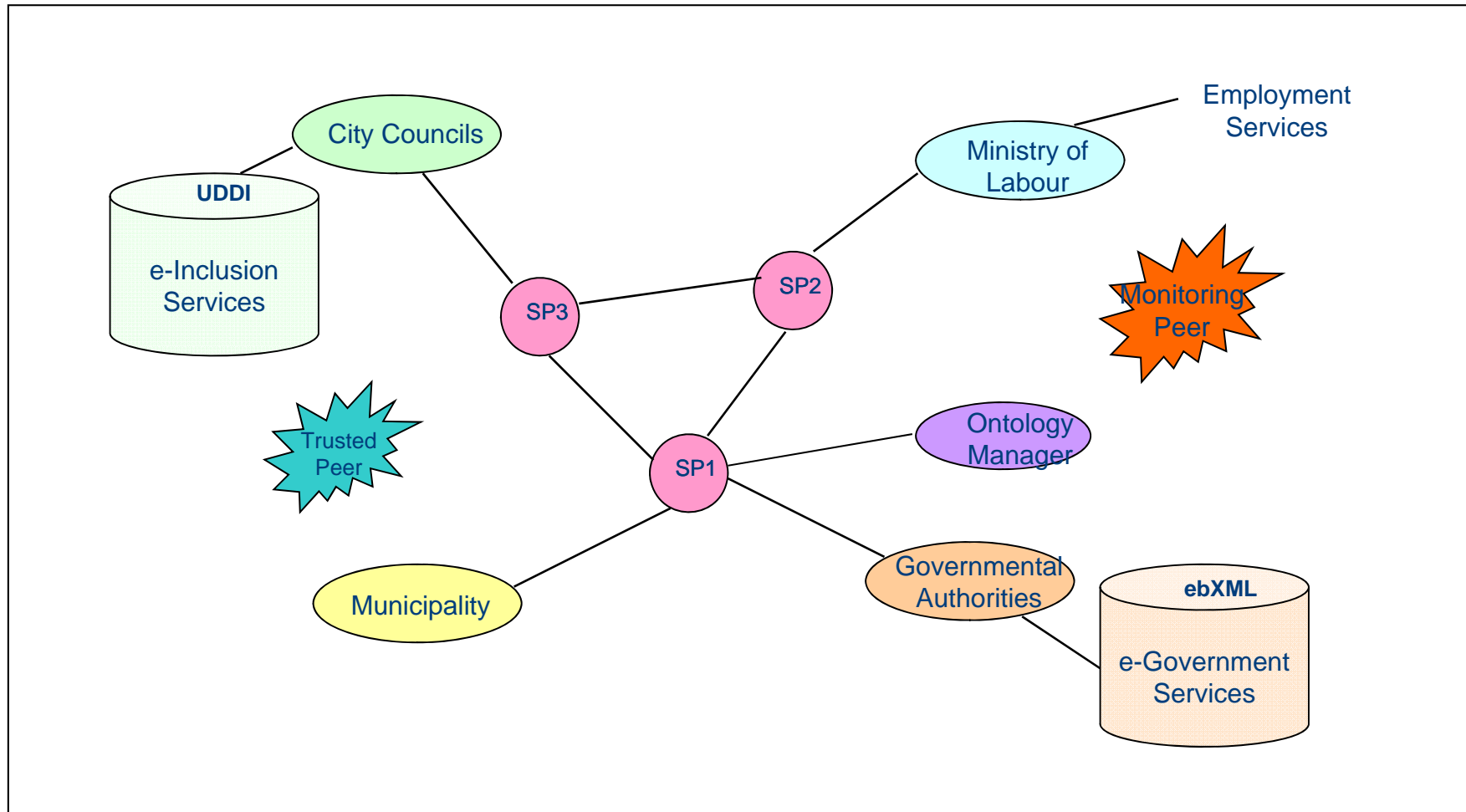


SATINE Contribution

- **Distributed** Web service registries
- Semantic routing of the queries
 - Discovery of the Service Registries in the P2P environment based on the semantic information published in the P2P environment

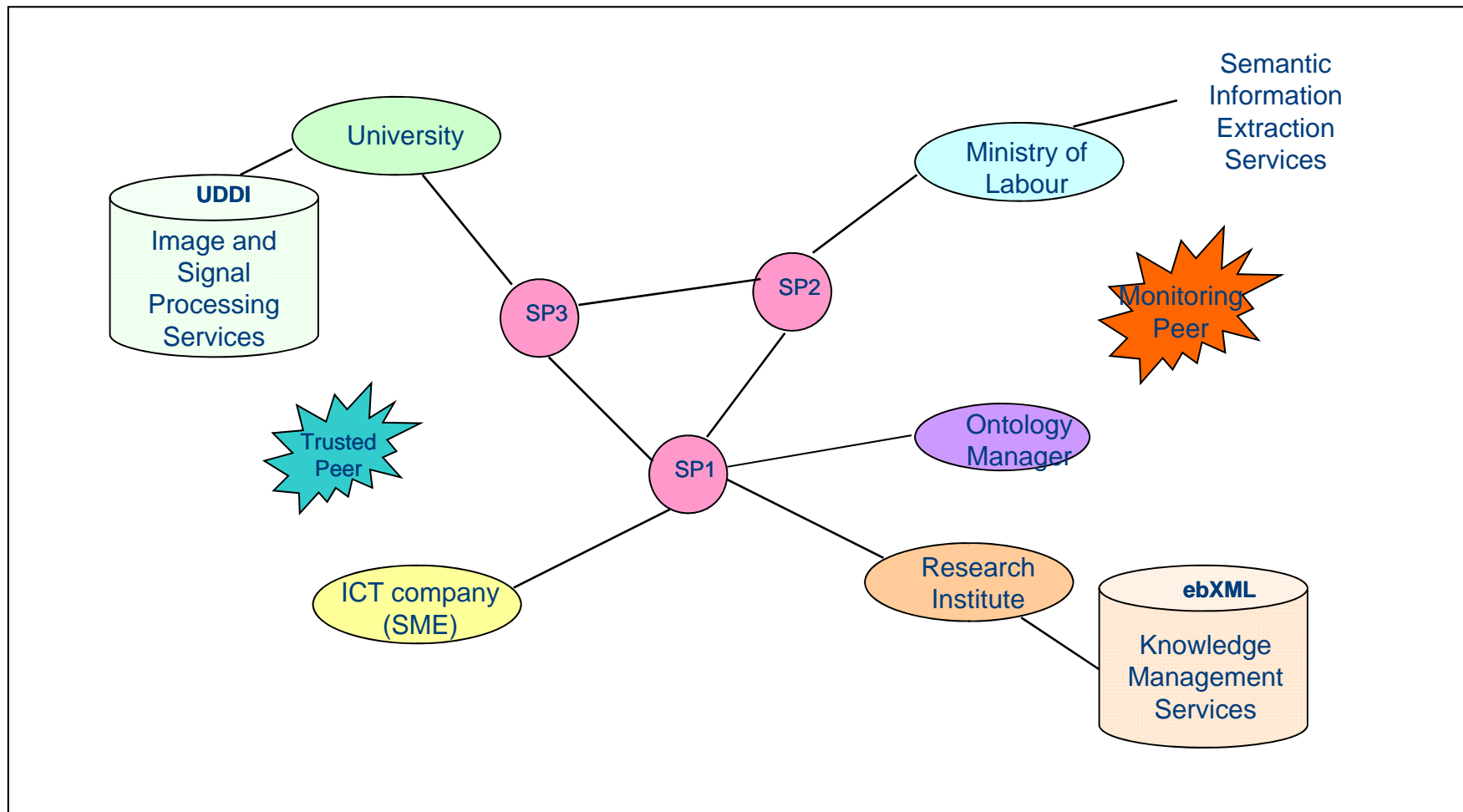


Application in alternative markets e-Government



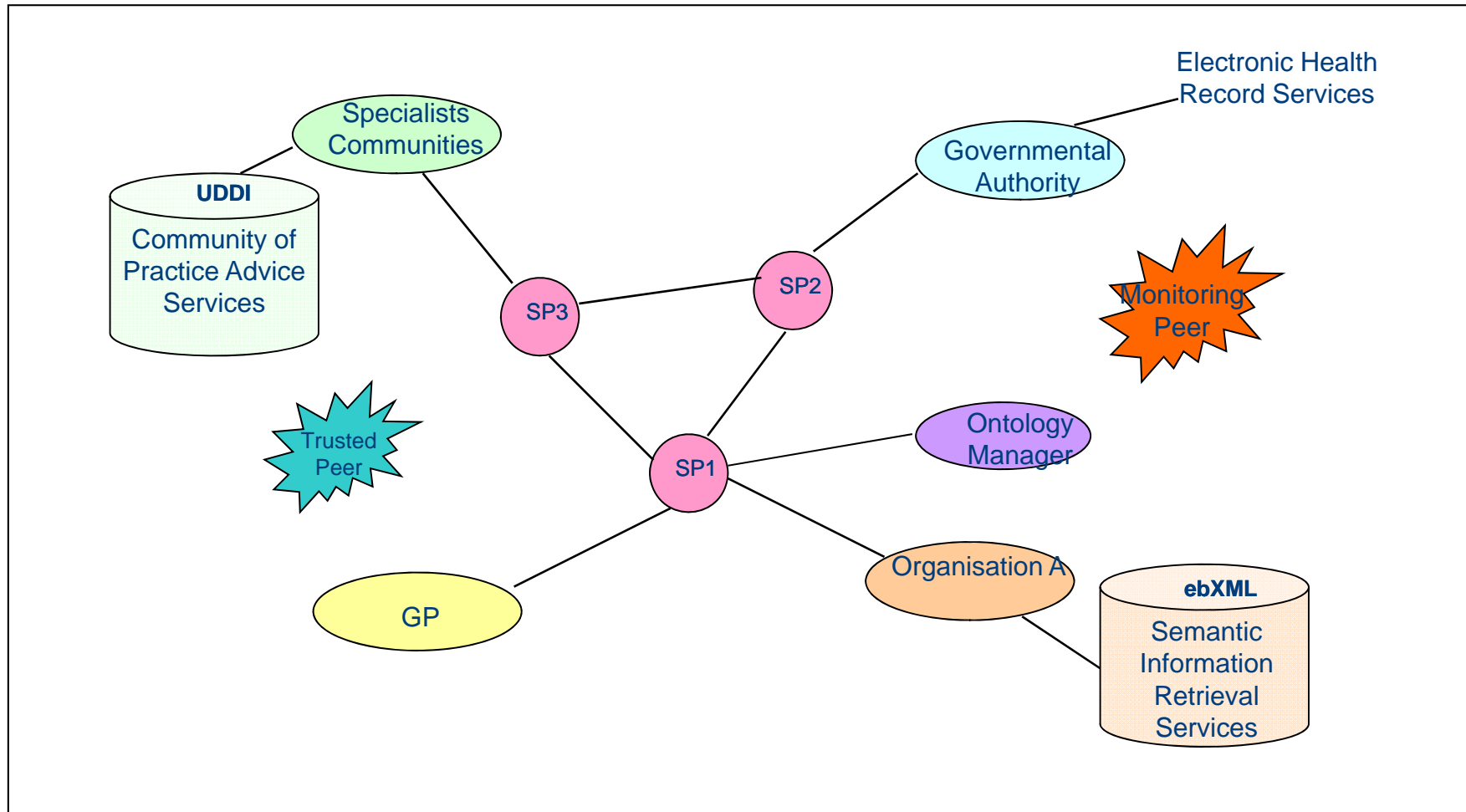


Application in alternative markets e-Science





Application in alternative markets e-Health





Summary and discussion

- **From the Infrastructure Provider viewpoint:** A Semantic Web Service based toolkit using P2P discovery mechanisms to locate the Web service registries and Web services
- **From Business User viewpoint:** Tools that facilitate the advertisement and discovery of their Web Services especially for SMEs
- **From End User viewpoint:** Easy discovery, composition and invocation of services

The Consortium Partners:

1.  **SRDC, Middle East Technical University, Turkey (Coordinator, Prime Contractor)**
2.  **Fraunhofer Institute, FOKUS, Germany**
3.  **European Dynamics, Greece**
4.  **Oxymel, France**
5.  **Intro Solutions, Turkey**
6.  **Royal Melbourne Institute of Technology (RMIT), Australia**



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Thank you!

Questions & Discussion

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