Experiences Developing a Collaborative Travel Planning Application with .NET Web Services

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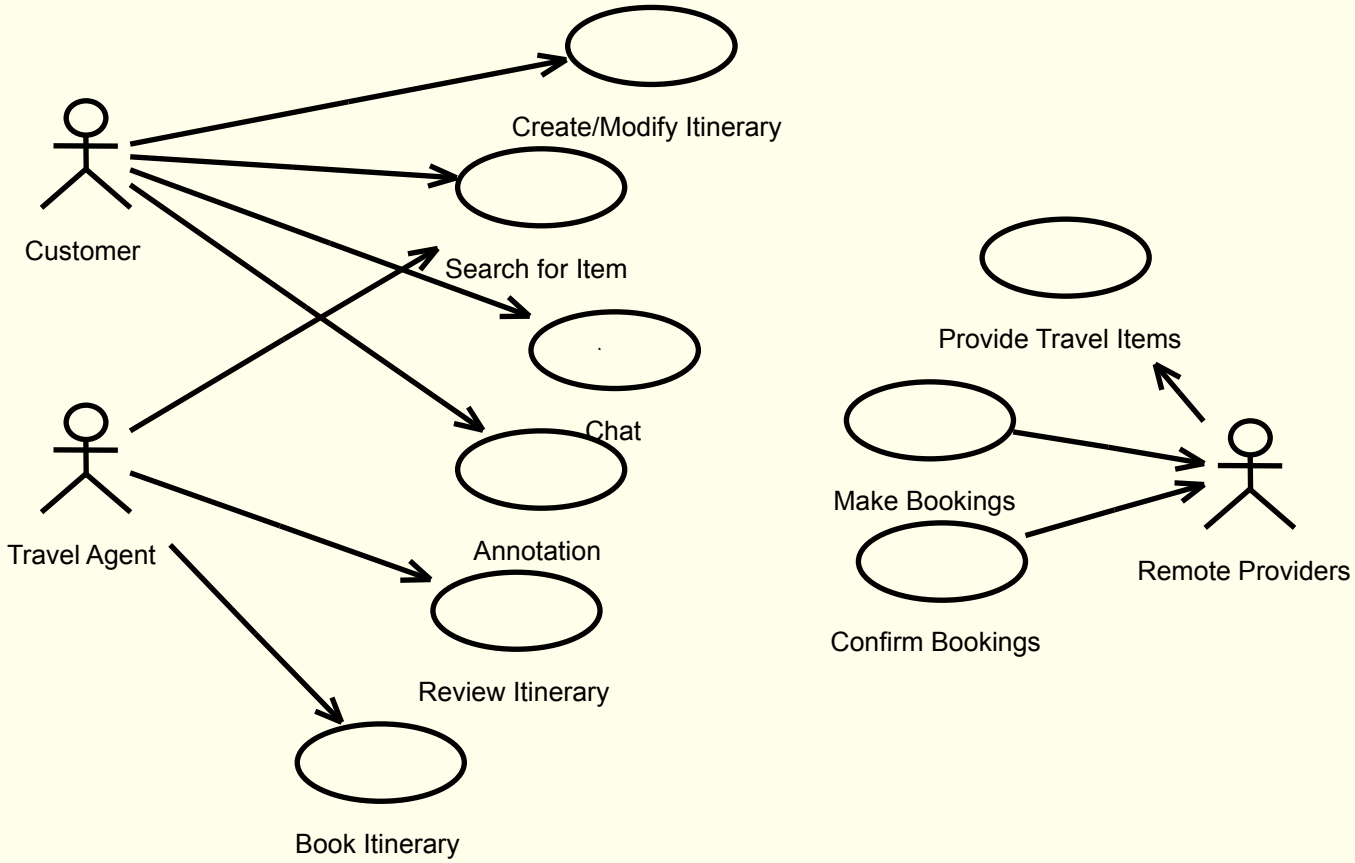
Outline

- Problem Domain
- Example Application
- Our Approach
- Design and Implementation
- Comparison to related work
- Future work

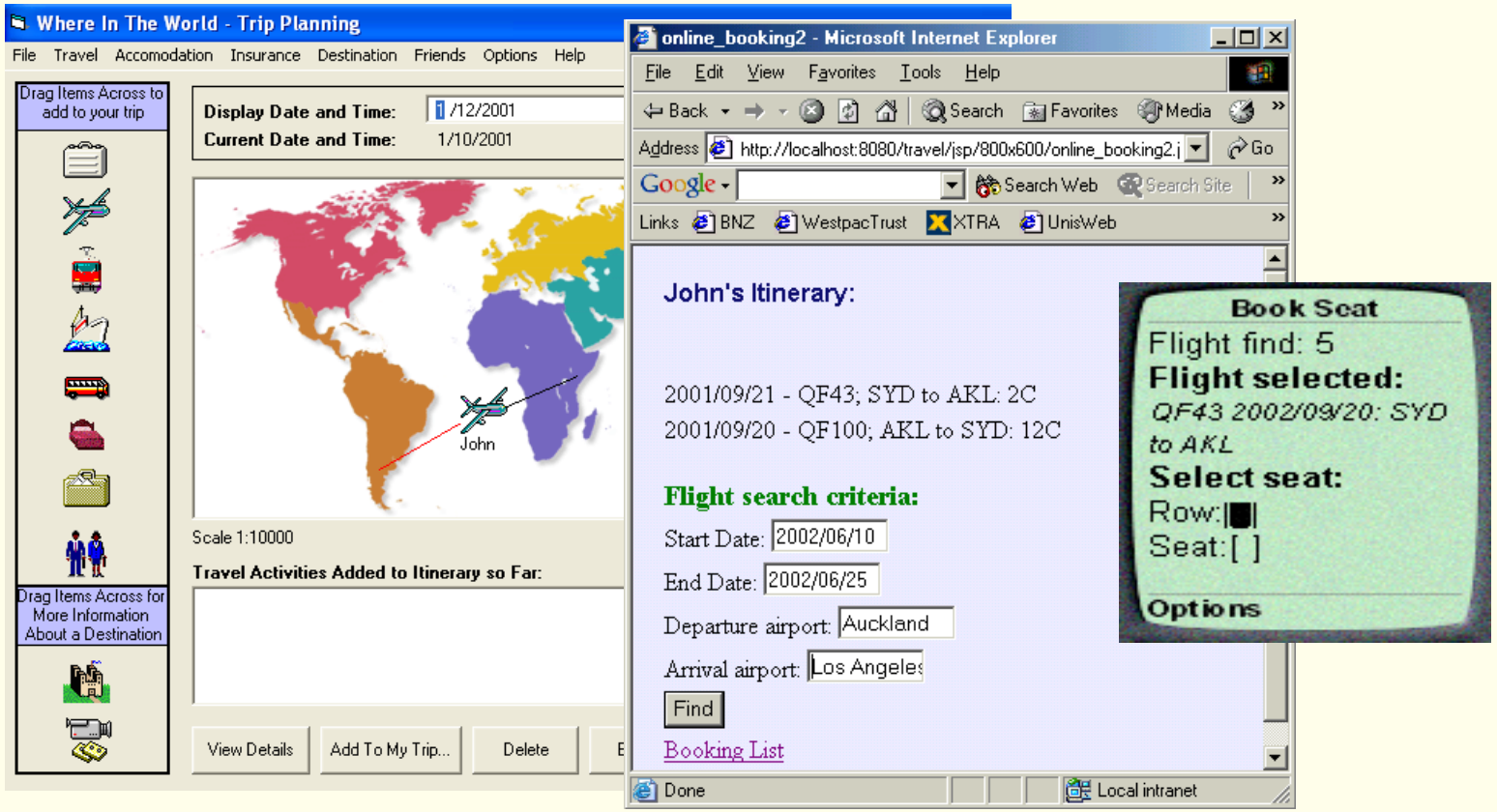
Problem Domain

- Highly distributed systems integration
- Service-oriented systems architecture
- Heterogeneous user interfaces
- Good end-user system performance, reliability, open architectures are required
- Exemplar: collaborative travel planning

Example Application



Example Operation



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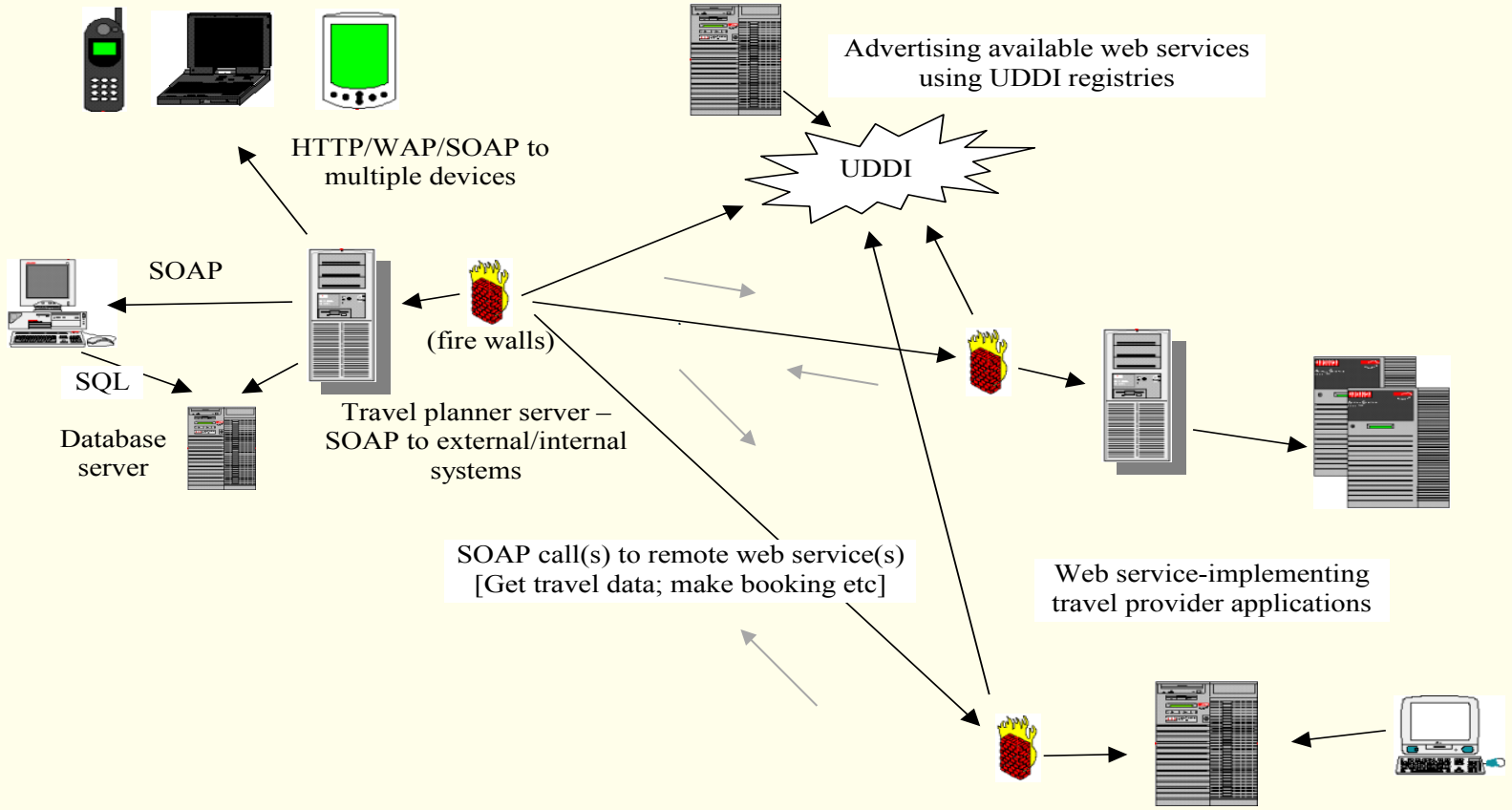
Our Approach

- Travel planner client architecture with heterogeneous clients supported
- Integration via web services with wide variety of remote services with different data formats, protocols, business processes
- Provide good performance and reliability for users despite the distributed nature of system
- Common, consistent integration infrastructure

Architecture



Design

- Communication with remotes via web services: UDDI/WSDL for locating + adapting to remotes
- Data replication of e.g. flight schedules, hotel rooms, cars etc from remote systems – "cached" by travel planner server for performance, reliability
- Booking operations form "long running transaction" across travel planner + multiple remote systems
- Combinations of sync/async interactions supported

Implementation

- C# and .NET web services
- Discovery of services via UDDI
- Description of services via WSDL
- Adaptor architecture to determine required parts of messages in WSDL; SOAP to communicate
- Data synchronisation with remote systems
- BTP to co-ordinate updates across remote systems

Comparison to other Approaches

- COM, CORBA
- EDI, XML messaging
- Virtuoso™
- BizTalk™, Vitria™

- Combination of data replication+asynchronous transactions; UDDI/WSDL for discovery, integration

Future Work

- Developing generic data integration engine & integration agents (for WS and other technologies) – see our IC'03 paper…
- Developing better support for good end-user dynamic configuration of systems
- Extending WSDL/UDDI for more powerful description, discovery, adaptor-based integration
- Possibly make use of more automated discovery; what is the degree of integration possible?

Summary

- Want to provide client with wide range of distributed systems integration necessary
- Combination of data-oriented brokering; service-oriented integration solution
- Successful prototype with wide range of integration strategies supported
- Variety of issues using web services - description, location, adaptation, configuration, performance and reliability - still to improve

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