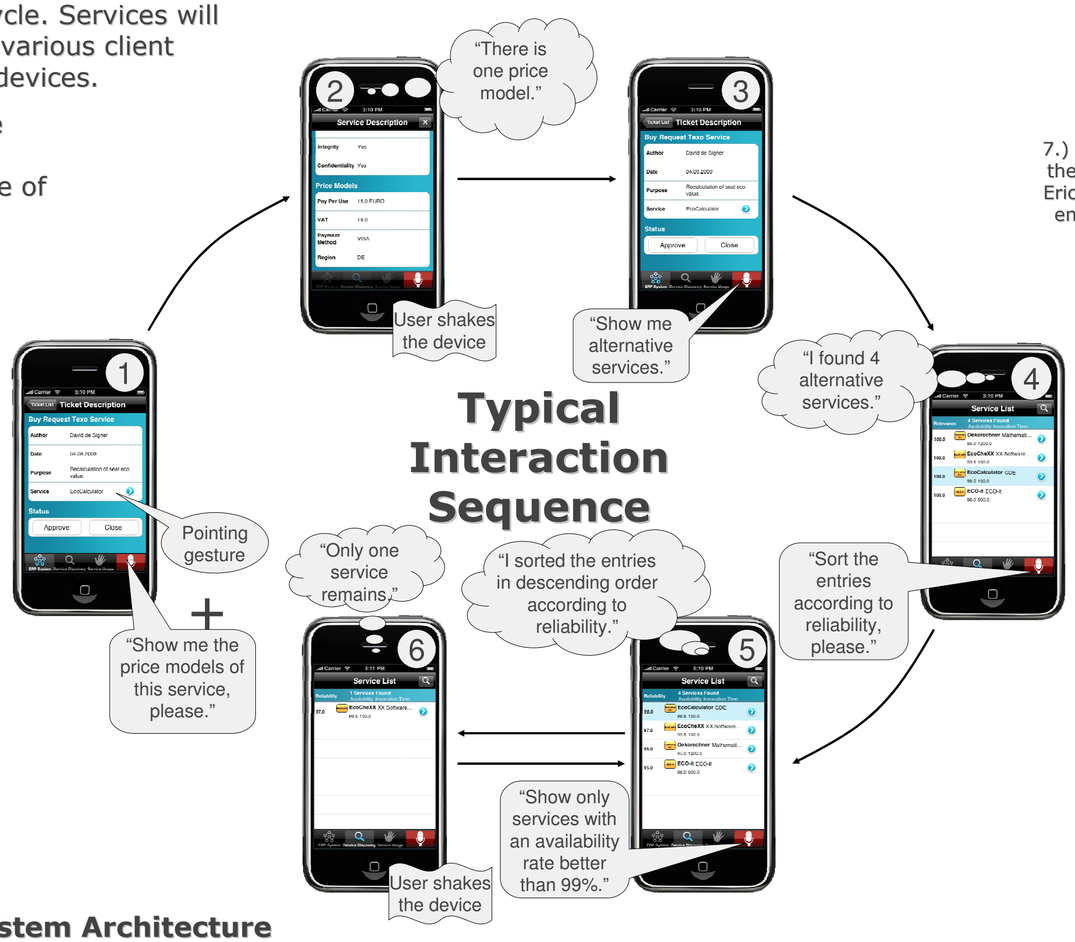
TEXO - Business Webs in the Internet of Services

The THESEUS-TEXO project will provide an infrastructure for the Internet of Services. It aims at supporting the full service lifecycle. Services will become tradable, composable, and accessible from various client platforms. Our client platforms also include mobile devices.

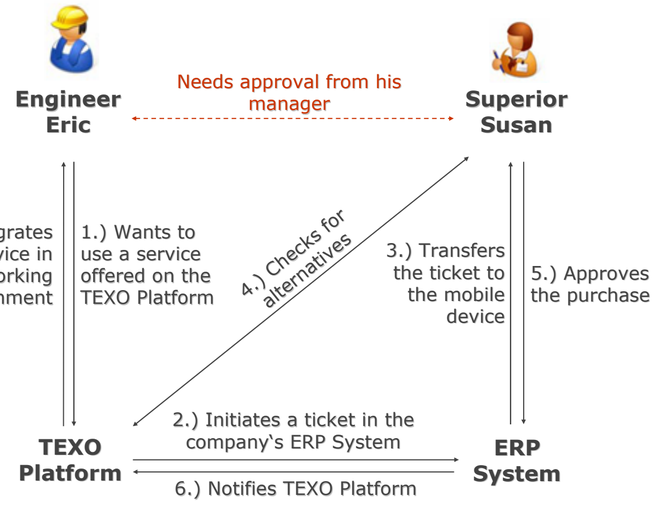
Implementing a reliable, trustful, and usable mobile interface for decision support in business-critical situations is challenging. As a solution, we make use of a distributed multimodal dialogue platform.

The approach we explore uses a multimodal mobile client for the iPhone, intended to ease the access to an emerging online marketplace for electronic business web services while on the go.

Scenario



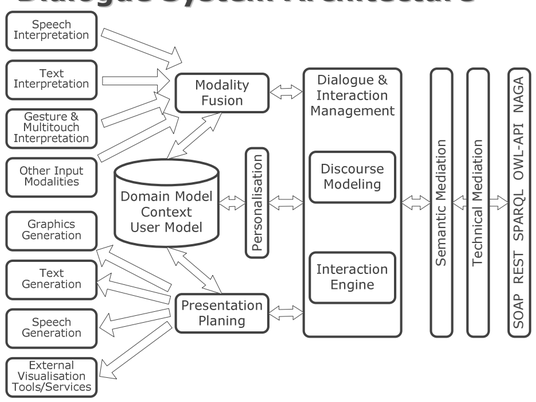
Typical Interaction Sequence



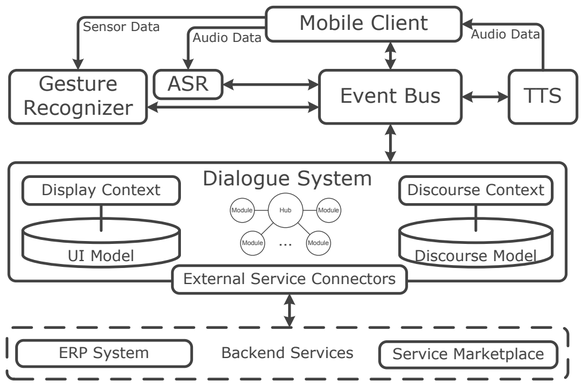
The Ontology-based Dialogue Platform (ODP)

- Distributed platform for implementing multimodal user interfaces
- Generic interfaces to 3rd-party components
- Model-based application development
- Separation of application and interaction logic
- Scalable, Java-based runtime environment
- Hub and Spoke Architecture

Dialogue System Architecture



B2B System Architecture



Benefits & Future Work

Users can intuitively search for and select services using touch gestures and natural language interaction. While incorporating the iPhone's accelerometer data, we included more passive input modes towards a perceptual mobile interface. Our next steps include more fine-grained multimodal fusion rules for the passive input modes, i.e., context-sensitive interpretations of the "shake".

Multimodal Interaction Sequence

(1) U: *Moves the device closer to his mouth.*
(2) S: Automatically activates the microphone and waits for speech input. The microphone button turns green.

Turn (1) and (2) are performed before every speech interaction.

(3) U: *"Show me the price models of this [+ pointing gesture on the service name] service, please."*
(4) S: The service description is shown with a focus on the price model information. *"There is one price model."* (Figure 2)
(5) U: Reads the description and *shakes* the device.
(6) S: Discards the service description and restores the former display context. (Figure 3)
(7) U: *"Show me alternative services."*
(8) S: The retrieved services are shown in a list. *"I found 4 alternatives."* (Figure 4)
(9) U: *"Sort the entries according to reliability."*
(10) S: *"I sorted the entries in descending order according to reliability."* (Figure 5)
(11) U: *"Show only services with an availability rate better than 99%."*
(12) S: *"Only 1 service remains."* (Figure 6)
(13) U: Does not agree to the remaining choice and *shakes* the device again.
(14) S: Removes the applied filter and shows the whole list again. (Figure 5)