Trans-Modal Interface Migration

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Migratory Interfaces

- Interface can transfer among different platform, allowing the users to continue their interaction.
  - Interaction Continuity
  - Platform Adaptation
  - Interface Usability
Our Approach

- Logical description of the application interface obtained from TERESA.
  - Platform adaptation

- Runtime state of the interface.
  - Interaction continuity
Multilevel generation of Web interfaces

- Task Model
- Abstract User Interface
- Platform specific implementation
Migration Service Architecture

1. Migration request (url, runtime data)
2. Mapping & State extraction and Adaptation (static-runtime data)
3. Migration performance (newUrl)
Identification of the corresponding presentation

- From the current page -> abstract presentation -> Corresponding tasks

- Calculation of the most similar abstract presentation in the target platform

- The page supporting the most similar set of tasks

- In case of multiple similar pages -> the one with the last interaction is selected
Trans-Modal Migration

- Many devices supporting Internet access, offering various interaction capabilities
- Change modality of input depending on different contexts and environments
- Natural interaction
- Multichannel access
Louis is at Home and wants to organize a dinner with his friends for this evening. He turns on his personal computer.

While Louis is selecting the Mermaid restaurant main page, he realizes that it is getting late.

**Synthesiser:** “If you want phone number say *phone*, if you want to know the location say *address*, if you want to know the menu of the day say *menu*. If you want to book a table say *book*.”

Louis: “*book*”.

**Synthesiser:** “Say your name”

Louis: “*Louis*”

**Synthesiser:** “Say your surname”

Louis: “*Lestat*”

**Synthesiser:** “Say date of reservation”

Louis: “*2 June 2004*”

**Synthesiser:** “Say the time of reservation”

Louis: “*9 pm*”

**Synthesiser:** “How many people?”

Louis: “*three*”

**Synthesizer:** “Louis Lestat, you booked a table for three people on 2 June 2004 at 9 pm. Say confirm to confirm your booking and cancel to discard it”.

Louis: “*confirm*”.
Graphic-to-vocal Migration

Graphic Desktop

- TASKS
- AUI
- XHTML

Migration Server

- Task Mapping engine
- State extraction and Adaptation

Vocal

- TASKS
- AUI
- VoiceXML
Trans-Modal Runtime State Mapping

- Vocabulary
- Information organization
- Different concrete objects

- Not a simple one to one mapping
  - Task not Supported
  - Task implemented with different concrete objects
  - Adaptation of runtime data

<table>
<thead>
<tr>
<th>Sender</th>
<th>Subject</th>
<th>Date &amp; Time</th>
<th>Size</th>
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<tbody>
<tr>
<td>Luois lestat</td>
<td>Last minute offer</td>
<td>May 25 9:23</td>
<td>1k</td>
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<tr>
<td>George Clow</td>
<td>Re: Cameleon meeting</td>
<td>June 3 11:02</td>
<td>3k</td>
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<td>Luois Lestat</td>
<td>Learn about Java</td>
<td>June 5 12:20</td>
<td>2k</td>
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<tr>
<td>Mary Rex</td>
<td>Re: Cameleon meeting</td>
<td>June 7 10:00</td>
<td>1k</td>
</tr>
</tbody>
</table>
Task implemented by means of different concrete objects and task not supported

(grouping sound) Please say your name.

Please say your surname.

Please say the date of reservation.

What type of menu do you prefer: fish; meat; vegetable (grouping sound)

Your name is .... Your surname is .... You have booked a table on ... and You prefer...

(grouping sound) If you want to cancel the reservation, say delete; If you want to confirm the reservation, say ok (grouping sound).
Adaptation of runtime data

Your name is **Louis**. You have booked a table on **3 July**.

Please say your name.

Please say your surname.

Please say the date of reservation.

What type of menu do you prefer: fish; meat; vegetable (**grouping sound**)

Your name is .... Your surname is .... You have booked a table on ... and You prefer...

(**grouping sound**) If you want to cancel the reservation, say delete; If you want to confirm the reservation, say ok (**grouping sound**).
Conclusions and Future Work

- Migratory interfaces for more natural interaction in multi-device environments
- Extension for multi-modal interfaces under development
- Distributed migratory interfaces