Automatic Semantic Platform-dependent Redesign

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Multi-Device Interactive Services: Current Practice

- Manual solutions,
  - expensive
- Transcoders,
  - low cost/low usability
- Style sheets,
  - partial solution
Possible Views of an Interactive Systems

- Task and object – I want to select a work of art
- Abstract Interface – Single selection object with high cardinality
- Concrete Interface – List Interaction object with X elements
- Implementation – List object in Java or XHTML or ....

Use of Reverse Engineering

- Tasks and Objects
  - Abstract UI
  - Concrete UI
  - Final UI

Redesign

Platform X

Platform Y

Transcoding
TERESA Environment for Flexible Development

Task model for envisioned nomadic applications

System task model
- Cellphone (XML)
- Desktop (XML)
- ... (XML)

AbstractUI
- Cellphone (XML)
- Desktop (XML)
- Voice (XML)

ConcreteUI
- Cellphone (XML)
- Desktop (XML)
- Voice (XML)

XHTML MP, WML

Design Practice

Ordering

Relation

Grouping

TIMESONLINE

Important!
The Structure of the Abstract User Interface

User Interface

Presentation1
- Grouping
- Selection
- Edit
- Navigator

Presentation2
- Hierarchy
- Description
- Edit
- Multiple-selection

Semantic Redesign

- Use of abstractions to change the design for a new target platform
- Use of reverse engineering to obtain the abstractions
- Different possible solutions
Semantic Redesign with Forward Engineering

Reverse and Forward Engineering
Support for Redesign

- Page splitting based on the composition operators and the number of interactors
- Connections: original ones + those derived from page splitting
- Images: resize depending on target device keeping the same aspect ratio
- Tables for converting terms and labels

From Desktop to Cell-phone
**New connections creation**

- Original desktop connections are associated to the mobile presentations that contain the interactor triggering the transition
- Composition operators allocated to a new mobile presentation are substituted in the original presentation by a link to the new presentation
- When a composition of interactors is split into multiple presentations then we need to introduce new connections to navigate through them

**From Desktop to Cell-phone**
Another example of semantic redesign

Task-based Semantic Redesign
From Desktop to Cell-phone

1. Request: PDAPage
2. Request Desktop Page
3. Desktop Page
4. Redesigning Page Desktop to PDA
5. PDA Page
6. Request: Migration
7. Target Device Identification
   - Page Redesign Desktop to Vocal
   - Runtime State Recovering

The ISTI GeReMi Migration Tool
ReDesign Application
Conclusions and Future Work

- Semantic redesign
- Application in GeReMi migration server
- Application in TERESA authoring environment publicly available (http://giove.isti.cnr.it/teresa.html)
- Integration with tools providing information regarding device resources
- Semantic redesign for multimodal interfaces