

# Partial Web Interface Migration

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## ABSTRACT

We discuss our solution for partial Web migration from large screens to mobile devices. It is based on multiple UI abstraction levels and some transformations that allow the migration of selected UI components to another device.

## Categories and Subject Descriptors

H.5.2 [User Interfaces]

## General Terms

Design

## Keywords

Ubiquitous environments, Partial migration.

## 1. INTRODUCTION

Interactive migratory user interfaces offer the added value of enabling users to migrate across various types of devices while preserving the task continuity. In particular, with partial migration only a portion of the interactive application is moved to another device in order to better exploit its interactive resources. Our approach aims to provide a general solution for Web applications regardless of the authoring environments used by the developers. This is obtained through the use of reverse engineering techniques that create the logical descriptions of the Web pages accessed on the fly, which are then adapted for the target device.

## 2. THE ARCHITECTURE OF OUR SOLUTION

The architecture is based on some modules: the **Reverse Engineering** module builds the logical description of the source page considered represented in the MARIA XML language; the **Semantic Redesign** transforms the source logical concrete description into another one tailored for the target platform; the **State Mapper** associates the state of the current Web page to the logical description automatically generated for the target device; the **Generator** generates the corresponding implementation, with the state resulting from the interactions already carried out with

the source device; the **Proxy Server** is in charge of serving as an intermediate layer capturing the interactions between the user browser and the original web site; the **Migration Orchestrator** handles the communications with the different modules. When the user selects the migration options on the migration client, a Concrete User Interface (CUI) description associated to the current page is produced and parsed: the result is a list of UI components (displayed according to the hierarchical relations among them), which is sent to the source device, in order to let the migration client display the tree-like view of the page structure, from which the user will be able to interactively select the list of components to migrate. Based on this list, the Semantic Redesign generates an adapted CUI, from which the final UI for the target device will be dynamically built.

## 3. AN EXAMPLE OF PARTIAL WEB MIGRATION

The example considered deals with a game application: there is an IPTV, additional info just beside the IPTV, information on game positions, and a chatting area where users can connect and talk. In the bottom (left) part there is a betting area for selecting the driver to bet on, while the bottom right part shows the racing game. The goal is to finish a lap in the shortest time.

When the user decides to partially migrate the application to a mobile device, an additional window shows the tree-shaped list of migratable components. This list reflects the structure of the original page and has labels automatically generated from the attributes of the corresponding tags at implementation level. Then, the user can interactively select the user interface parts that should be migrated to the target device. After partial migration to a mobile device, such as an iPhone, in the resulting user interface there are some interactors that have been replaced by others which are more suitable to the current device, but have the same semantic.

## 4. CONCLUSIONS AND ACKNOWLEDGMENTS

We have presented our approach for partial migration of Web applications, with an example from large screen to mobile device. This approach can be useful for end user authoring of mobile versions of existing desktop Web application preserving the state of the user interactions across various devices.

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