



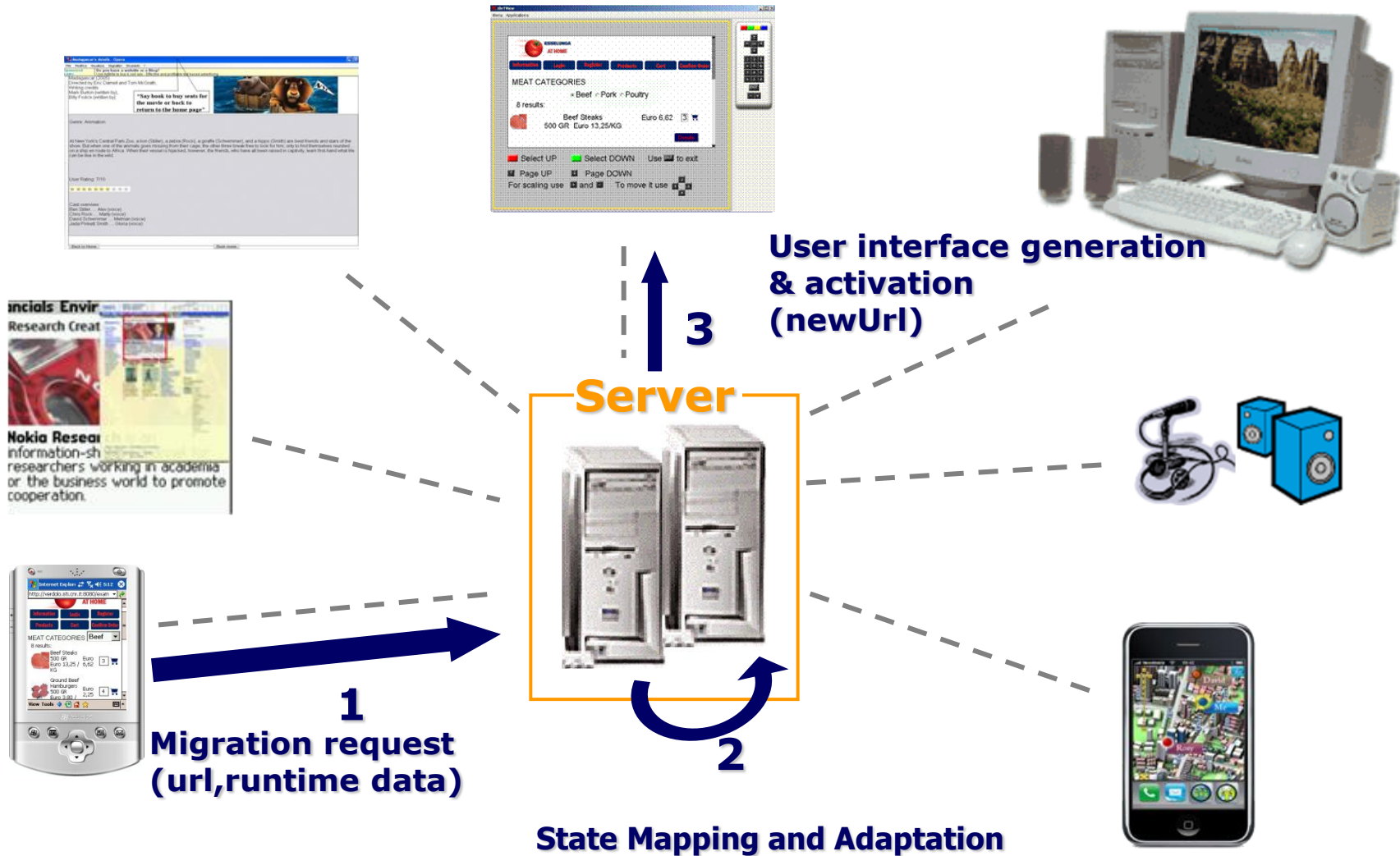
Exploiting MARIA Models at Runtime in Ubiquitous Environments

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Migratory Interfaces in Ubiquitous Environments

- Our life is becoming a multi-device experience
- One of the main source of frustration is that we need to restart for each device change
- Need for continuous access to interactive services across various devices
- Migratory user interfaces can transfer among different devices (from 'source' devices to 'target' devices), so as to allow the users to continue their tasks
- Application domains such as shopping, bids for auction on line, games, making reservations

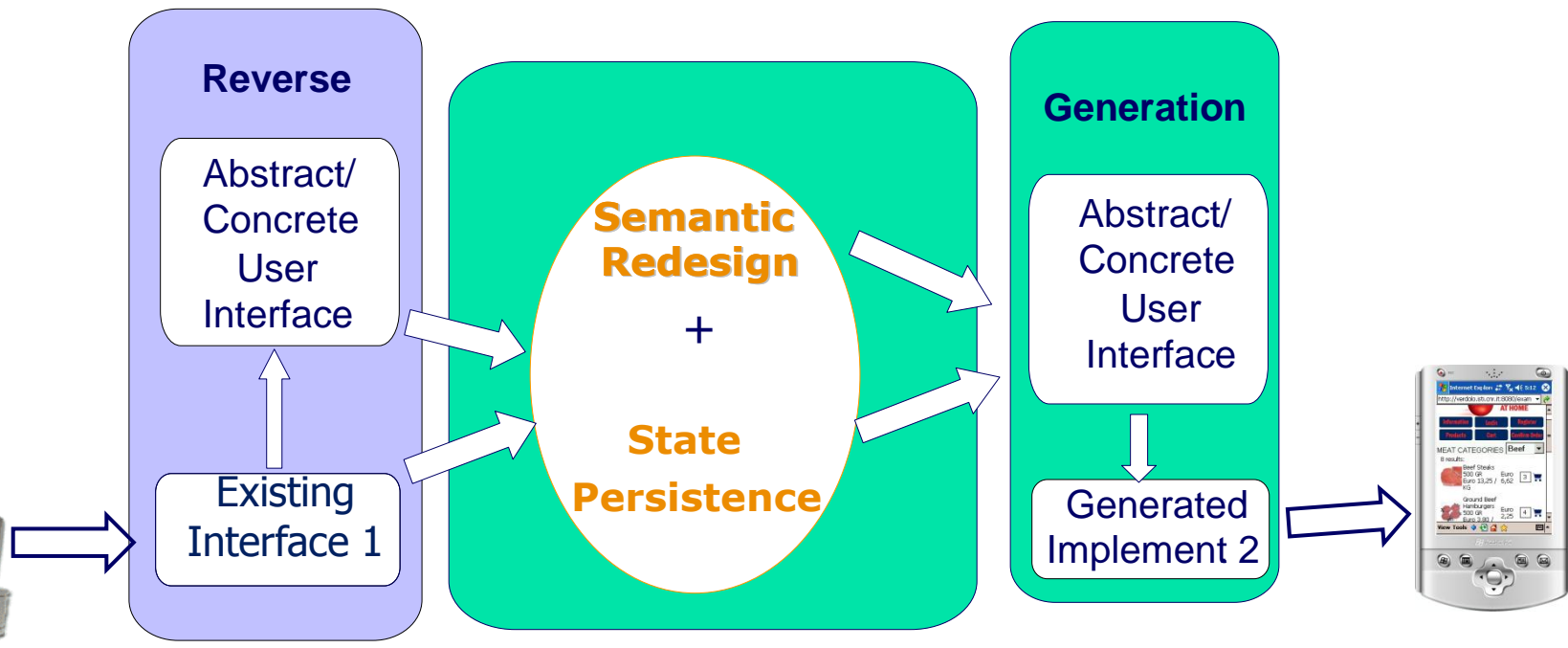
Support for Ubiquitous Migratory Interfaces



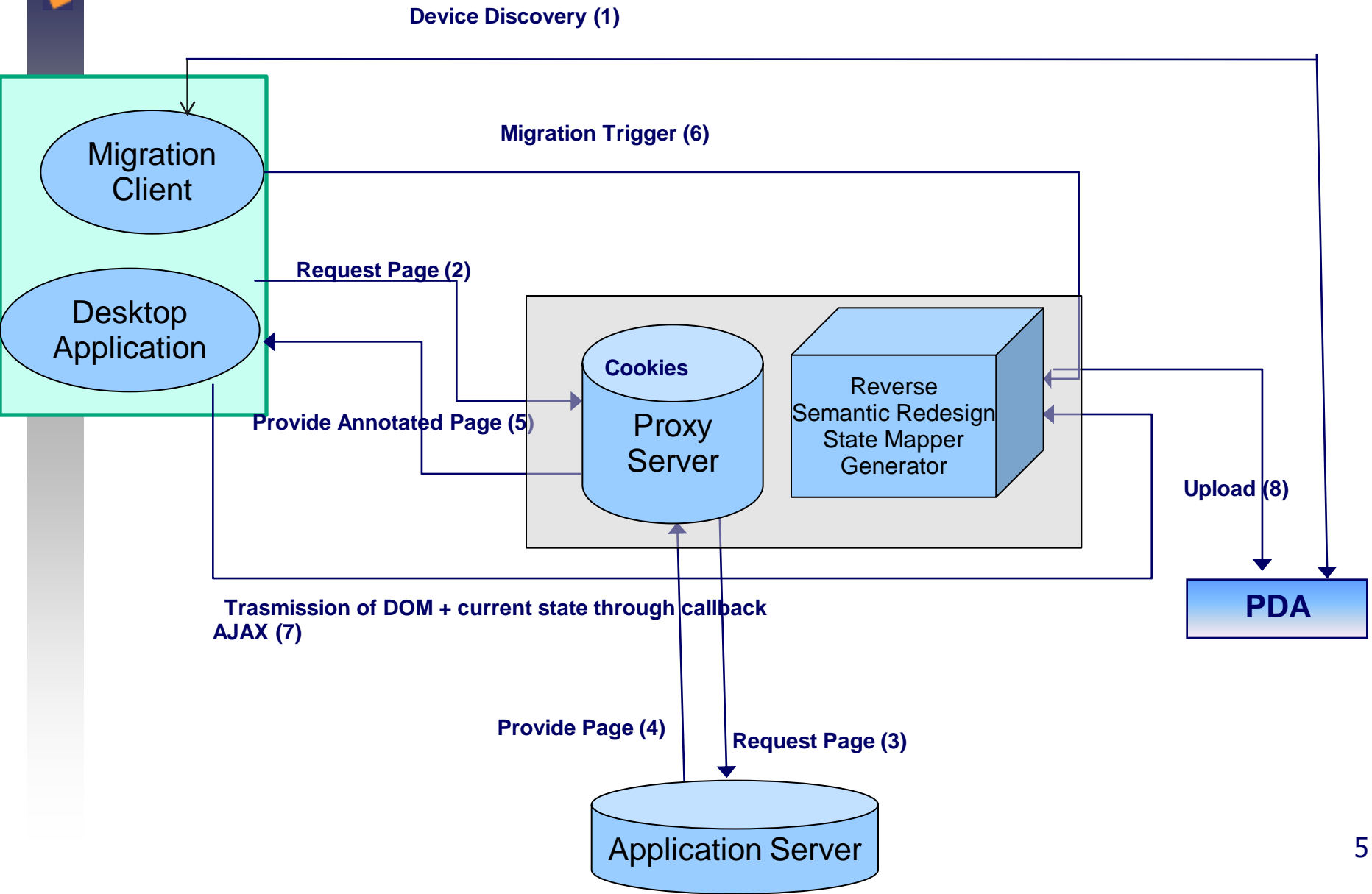
Dynamic User Interface Migration

- Use of Logical Description Languages
- Existing Web desktop Applications
- Automatic user interface generation
- Possibility of targeting a variety of interaction platforms

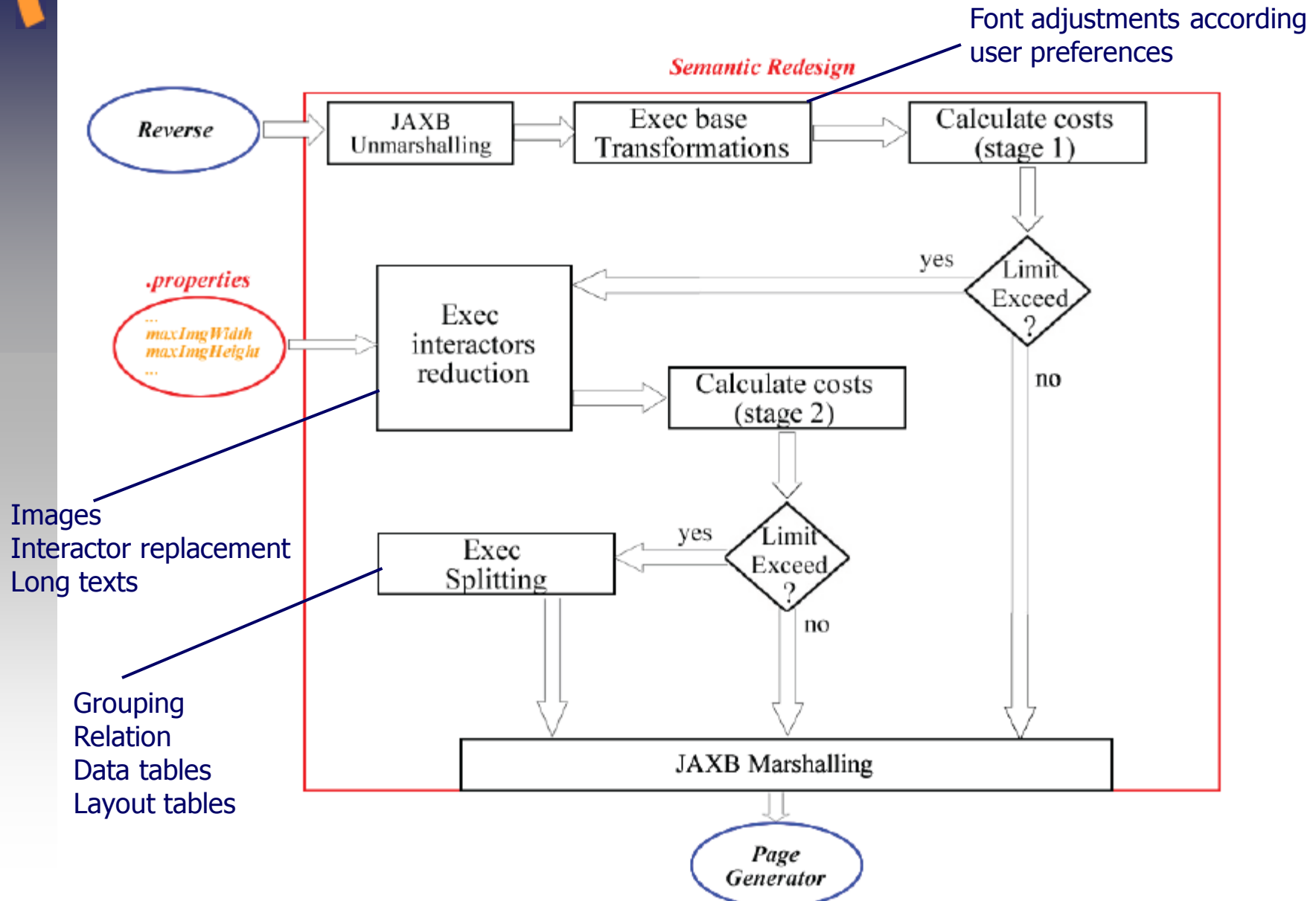
UI Migration Server (Run-Time)



Architecture Migration



Parametric Bidimensional Cost-based Semantic Redesign



Adaptation Customization

Desktop - Mobile mapping table

Font properties

Minimum font size

Maximum font size

Measure unit pixel
 em

Radio button properties

Transform radio button

Radio button threshold

Radio button mapping

List box properties

Transform list box

List box threshold

List box mapping

Other objects properties

Long text limit

Max image width

Min image width

Max image height

Min image height

Horizontal tolerance

Vertical tolerance

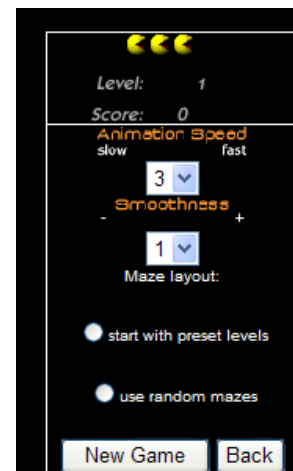
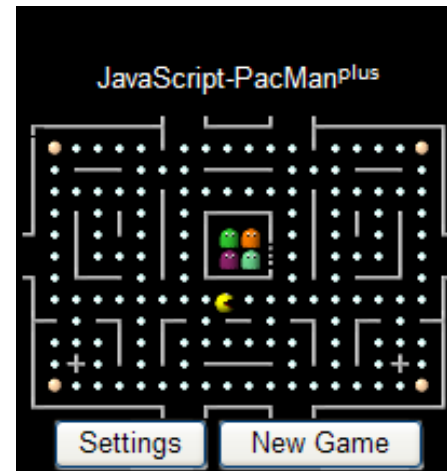
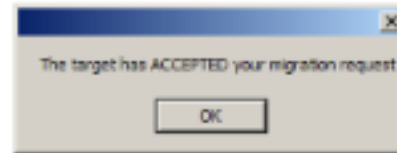
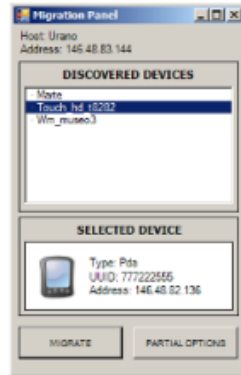
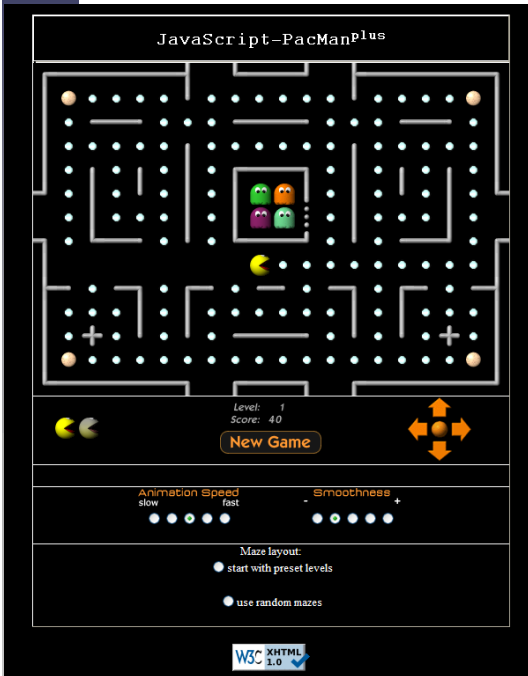
Table tolerance

Splitting options

Scrolling to avoid (priority): Horizontal scrolling (default)
 Vertical scrolling

Splitting selection rule: Lowest cost interactor composition
 Highest cost interactor composition

Example Migration



Customizable Partial Migration

- Migration Client should allow user to select Partial/Total Migration
- When partial migration is triggered the client should provide the logical structure of the interface considered with the main sections selectable
- The user selects the parts of interest
- The parts not relevant are removed from the logical interface
- The remaining parts are composed in a complete logical interface and sent to the adaptation process

Example Partial Migration

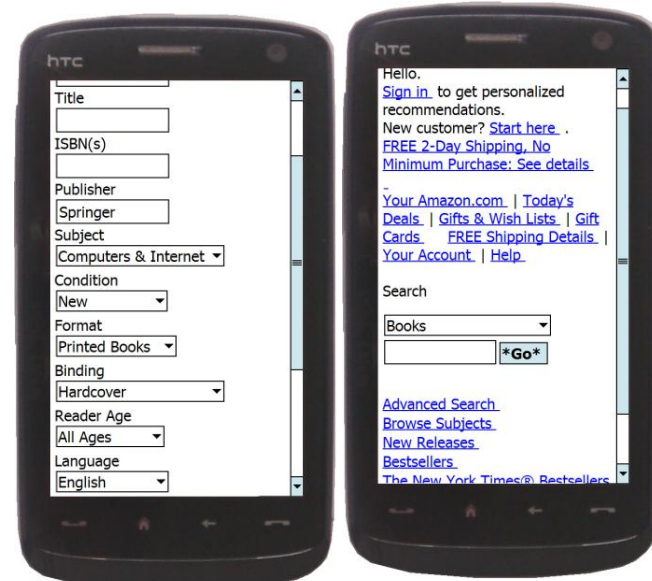
The screenshot shows the Amazon.com Advanced Search page. The search criteria are:

- Keywords: user interface design usability
- Condition: New
- Format: Printed Books
- Binding: Hardcover
- Reader Age: All Ages
- Language: English
- Pub. Date: After Jan 2006
- Sort Results by: Publication Date

 The 'Partial Migration' dialog box is open, showing a tree view of search results. Several items are highlighted in green, including:

- Obj_13 (grouping)
- Obj_18 (grouping)
- navCrossshop (grouping)
- navShopAllButton (grouping)
- Obj_57 (grouping)
- navCategoryBtn (grouping)
- navSubnav (grouping)
- no-name_Form1 (form)

 The dialog also shows a 'Selection color' field set to yellow and a 'Max depth' of 7. Below the dialog, the 'Your Recent History' section is visible, with the text: 'After viewing product detail pages or search results, look here to find an easy way to navigate back to pages you are interested in.'



The 'Migration Panel' window displays the following information:

- Host: Urano
- Address: 146.48.83.144
- DISCOVERED DEVICES**
 - Marte
 - Touch_hd_18282
 - Wm_museo3
- SELECTED DEVICE**
 - Type: Pda
 - UUID: 777222555
 - Address: 146.48.82.136
- Buttons: MIGRATE, PARTIAL OPTIONS



Conclusions & Future Work

- Extension to Migration of Multi-User Applications
- Privacy and Security Issues
- Usability Evaluation