Towards Universal Declarative User Interface Definition Languages

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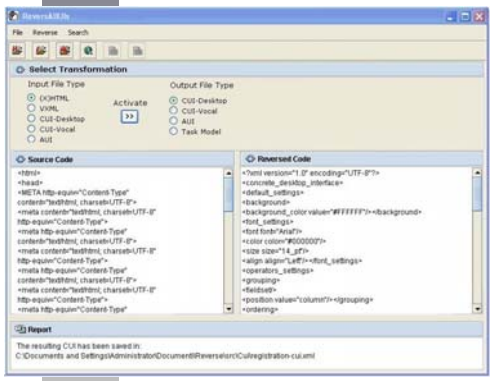
Abstraction Levels and Transformations

Reverse

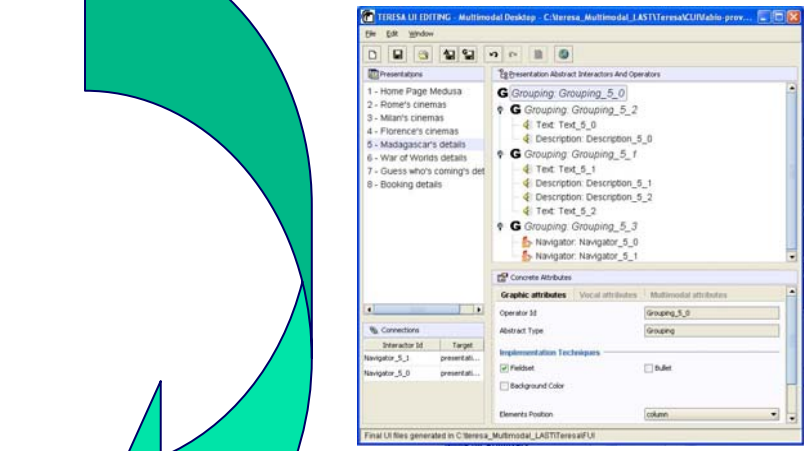
Forward

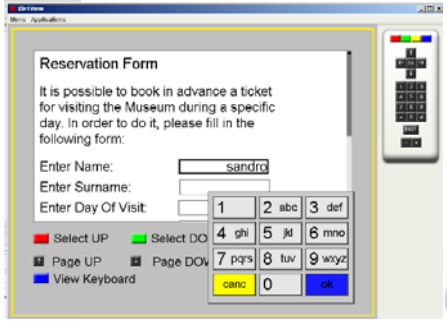


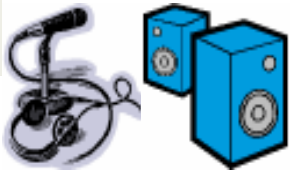
Task and Object

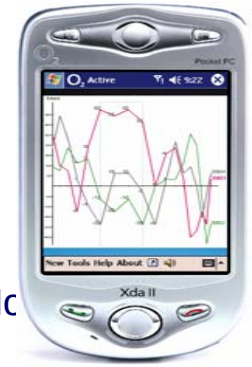
Abstract Interface

Concrete Interface

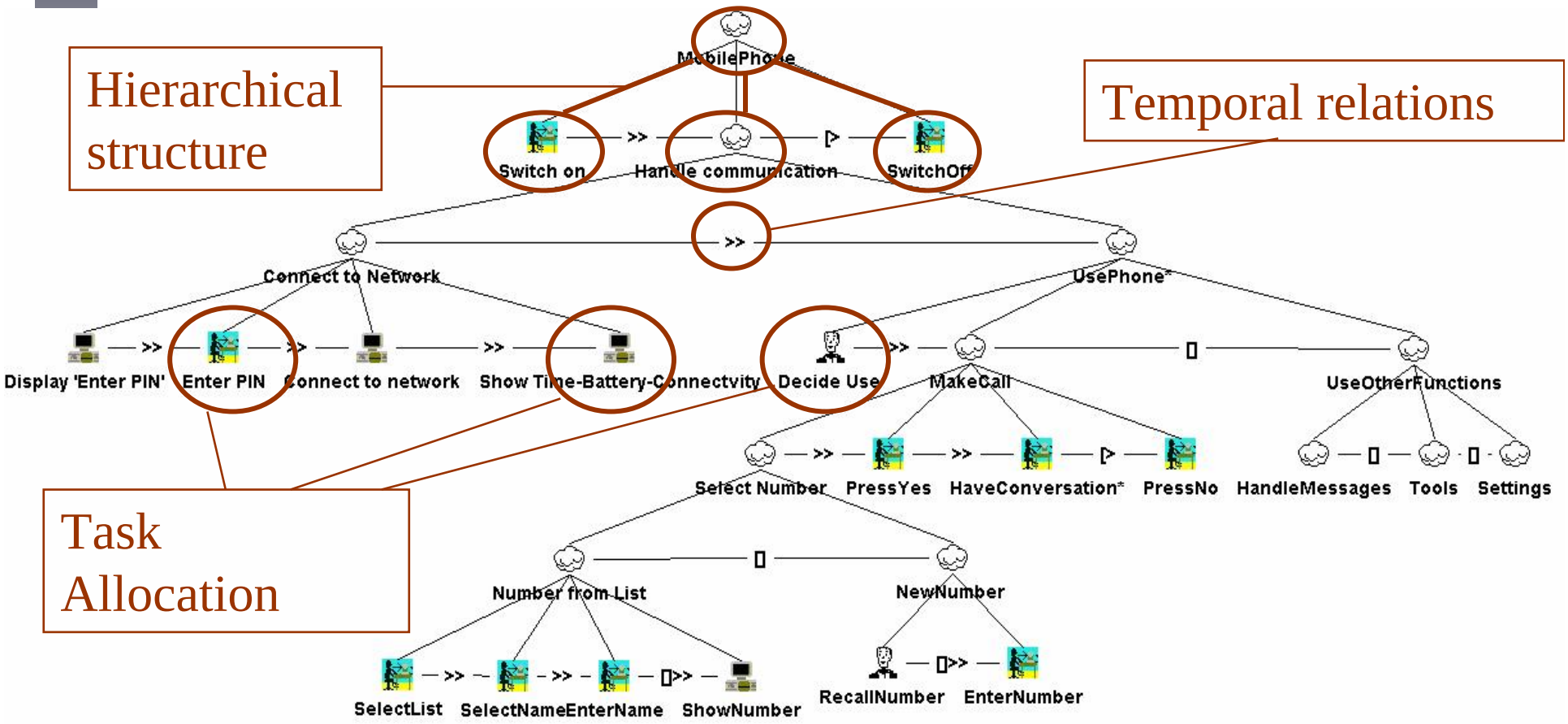








The ConcurTaskTrees Notation for Task Models



ConcurTaskTrees

- Publicly available tool at giove.isti.cnr.it/ctte.html (7000 downloads)
- CTT has become a defacto standard for task modelling, and has been widely used at the international level in various universities and companies
- We propose to make it a W3C standard in the activities of the new W3C group on model-based approaches

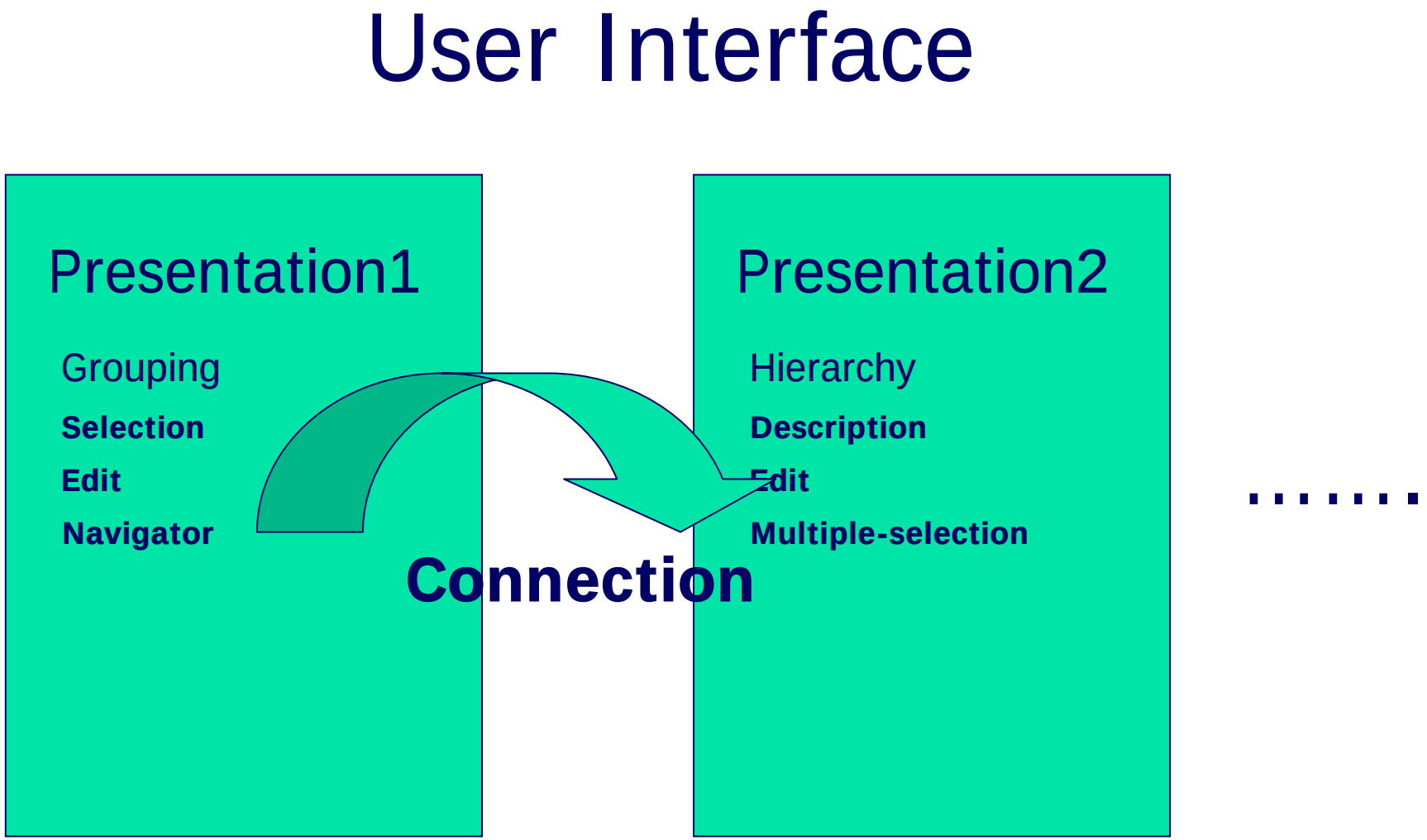
XForms

- XForms represents an example of how the research in model-based approaches has been incorporated into an industrial standard.
- In the same notation both abstract and concrete descriptions are included (vocabulary and constructs in abstract terms, and then presentation attributes and data types are described in concrete terms).
- However, (as its name indicates!) only the form-based interaction style for desktop and mobile devices are supported through the appearance attribute.
- This means that the notation is unsuitable to address other interaction modalities (such as vocal or gestural interaction).

TERESA XML

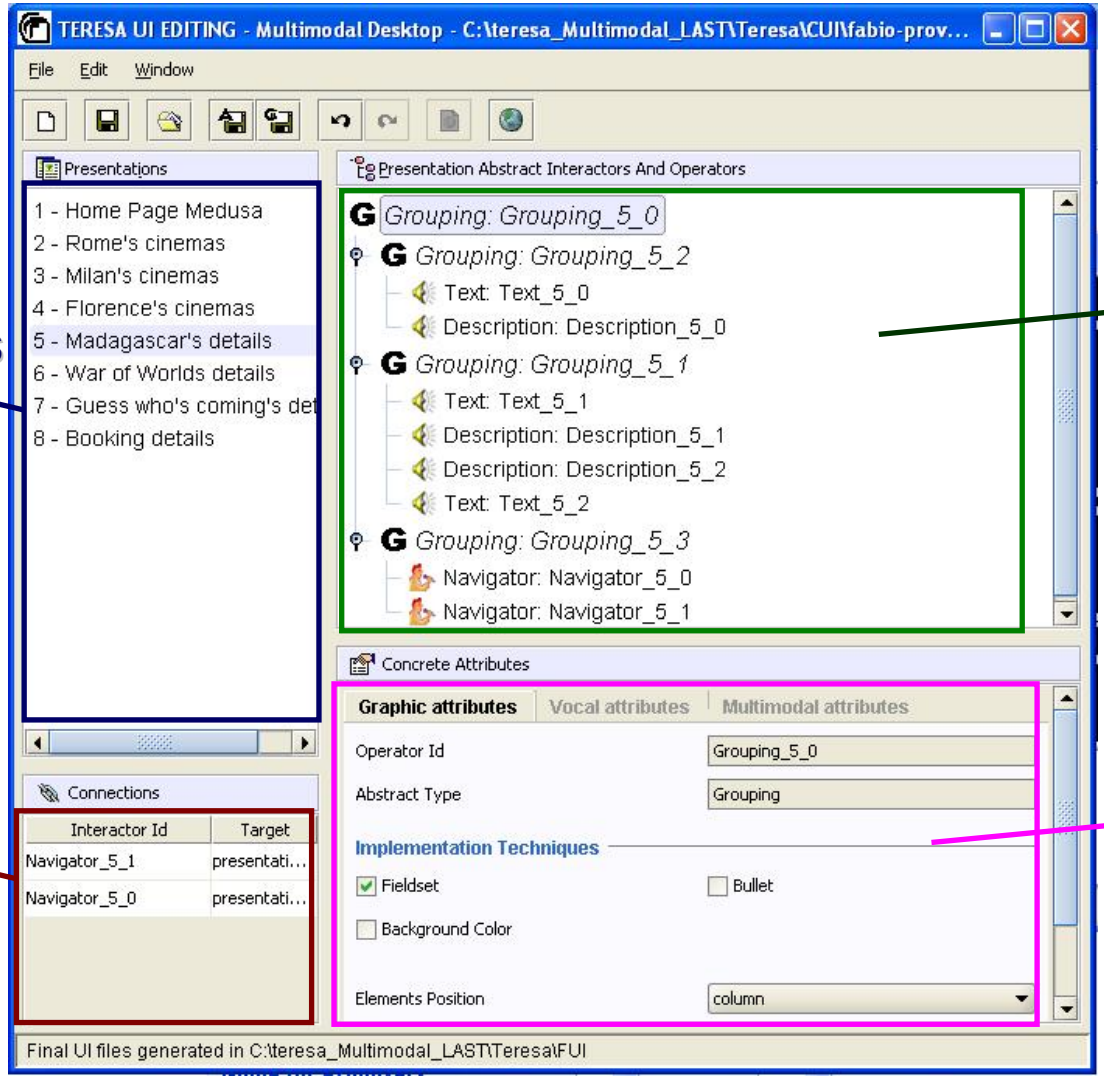
- Two platform-independent languages : task (CTT) and abstract interface
- One level (concrete interface) represented through a number of platform dependent languages
- Designers aware of the potential platforms (not devices) early on in the design process
- Method allows developers to avoid dealing with a plethora of low-level details (transformation from concrete description to implementation is automatic)
- Easy to add support for new implementation languages

The Structure of the Abstract User Interface



The Authoring Environment

giove.isti.cnr.it/teresa.html



TERESA XML

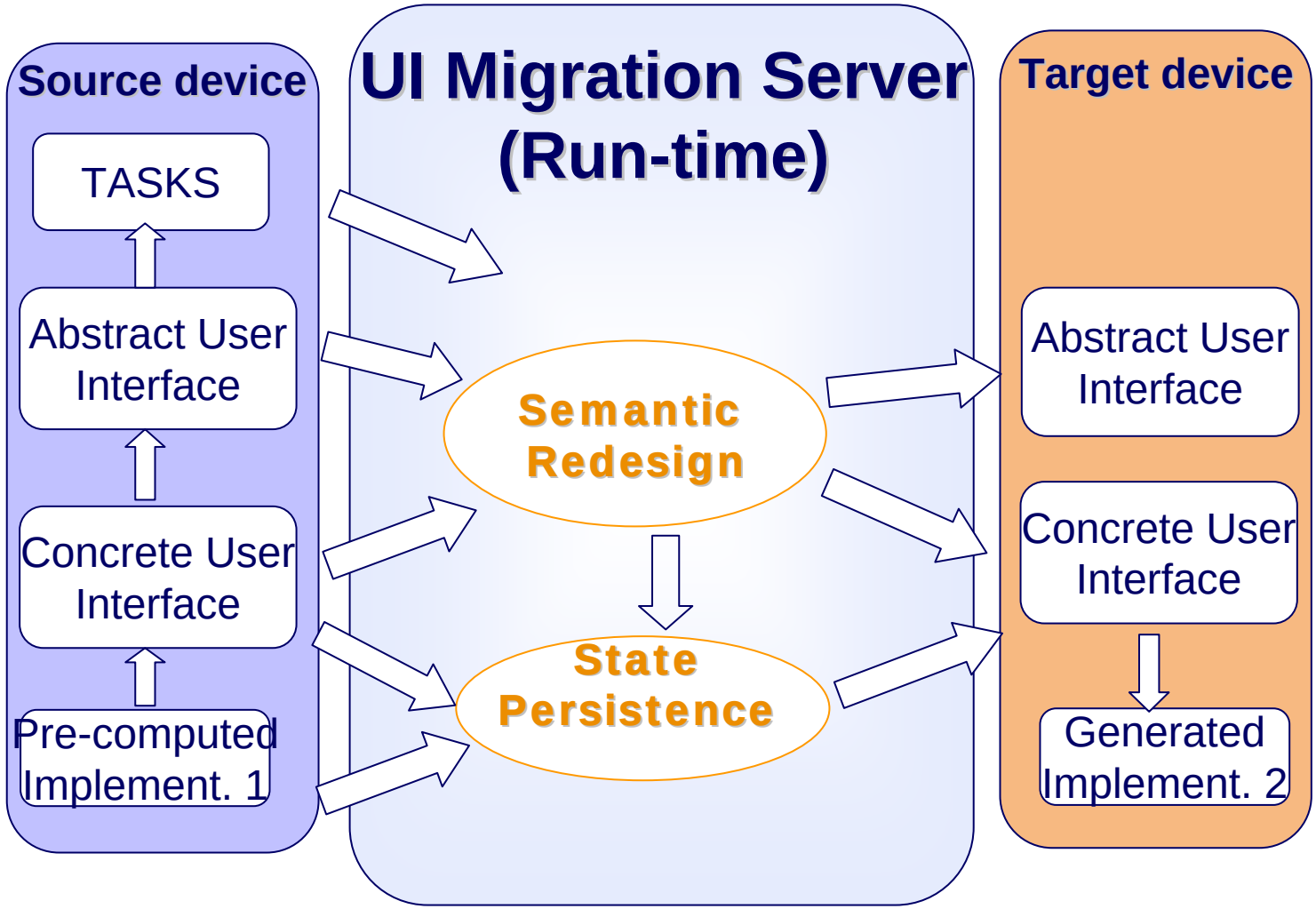
- Support for various platforms:
  - Form-based desktop/mobile (XHTML/MP XHTML+Javascript)
  - Direct manipulation desktop/mobile (SVG/HTML javascript)
  - Digital TV (Java Xlets)
  - Vocal (VoiceXML)
  - Multimodal (X+V)
  - Tilt +Graphics (C# + tilt libraries)

Relevant Active EU Projects

- **ServFace** (http://www.servface.eu/) aims to create a **model-driven service engineering methodology** for
  - the design of user interfaces for applications based on web services (primary goal); and
  - the composition and integration of user interfaces for applications based on web-services (secondary goal)
- **OPEN** (http://www.ict-open.eu/) aims to deliver seamless and transparent support to users in carrying out their tasks when changing services and/or devices, even in multi-user applications
  - **Migration = Device Change + Adaptation + Continuity**

OPEN Project

Migratory Interactive Services



MARIA XML

- New language based on TERESA experience
- Support for Abstract Data Types
- Support for complex events processing
- Able to generate user interfaces including complex Javascripts and Ajax scripts
- More engineered and powerful language (for complex domains such as games and business applications)

MARIA Authoring Tool

- New Authoring Environment
  - Integrated Support for Web Services
    - Mappings WSDL/Logical user interfaces
    - Generation/Refinement
  - Not only traditional top-down approaches
  - Transformations not hard-coded but defined externally and performed with XSLT
  - Integration of BPMN/BPEL with Model-based UIs.