Model-Based UI

Interaction Domain Meeting, 8 Feb 2011
Dave Raggett <dsr@w3.org>

W3C

Service Front Ends

- Front-end and Back-end as ways to characterize how applications are split

  – Front-end provides user interface

  – Back-end implements application level services

- Both may be distributed

  – Front-end deployed as mix of client and server-side scripts, with multiple servers involved

- Need to support context awareness

  – Dynamic adaptation to changing circumstances

The Problem

- Application developers face increasing difficulties

  - Variations in device capabilities

  - Variations in standards supported

  - Need to support assistive technology effectively

  - Demand for richer user interfaces

  - Evolving sets of languages/libraries to learn

  - Limited budget for development & maintenance

Authoring Tools

- Underdeveloped market for authoring tools for Web applications and SFEs

  – Expensive Design Tools with proprietary formats

  – Programming language specific APIs

  – Lack of interoperability

  – Emergence of popular libraries (e.g. jQuery) demonstrates developer demand

- Need to decouple different aspects of design and implementation tasks

Separation of Skills

- If you are focusing on the usability or styling of a user interface, you shouldn't need to deal with the lower level details of how this will be realized on a given device or platform.

- Recognize that people have different areas of expertise
  - Business requirements, interaction flow, graphics design, typography, usability, security, implementation languages & standards

Model-Based Design

- Split design effort into separate kinds of concerns

  – Application domain and task models

  – UI independent interaction flow

  – Design choices for broad classes of devices

  – "Skinning" the UI

  – Implementation details for specific devices/platforms

Model-Based UI at W3C

- Incubator Group report, May 2010

  - http://www.w3.org/2005/Incubator/model-based-ui/XGR-mbui-20100504/

- W3C Workshop on standardization of MBUI, Rome, May 2010

  - http://www.w3.org/2010/02/mbui/report.html

- Follow up meeting at Lyon Tech Plenary

  - http://www.w3.org/2010/11/MBUI/

- EU Project Serenoa: W3C role is to support standardization relating to MBUI Design

Proposed Scope

- Formal meta-models applicable across authoring tools

- Markup language as an interchange format for such meta-models

- Use cases, requirements, test suite, primer

- Open source implementations

Out of Scope

- Markup and APIs for direct interpretation by web browsers

  - HTML5 is an example of a delivery target for model-based UI design tools

    - But the MBUI WG should be able to specify abstractions to support dynamic adaptation, where this can be realized by web page scripts on top of existing mechanisms

Who is interested?

– Based upon participation in MBUI XG, Rome Workshop and Lyon Technical Plenary

Boeing
CNR-ISTI
DAI-Labor, Technische Universität Berlin
DFKI
ENSMA
ETRI
Fundación CTIC, Spain
Honeywell, Czech republic
LG Electronics
NTT Information Sharing Platform Laboratories
prodevelop, Spain
PUC-RIO
SAP Research, Germany
Telecom Italia
Telefónica
Università di Udine, Italy
Université catholique de Louvain (UCL), Belgium
W4-Lyria, France

Input to Standards

- Who is ready to contribute work?
  - DFKI ready to contribute UseML (task modeling) and DISL (abstract UI model)

  - Telefonica contributed IDEAL2 to UsiXML for the concrete UI level

  - CNR-ISTI CTT for task models, MARIA for abstract and concrete languages and meta-models

  - UCL contributions on meta-modals for the task, abstract and concrete levels of the Cameleon framework
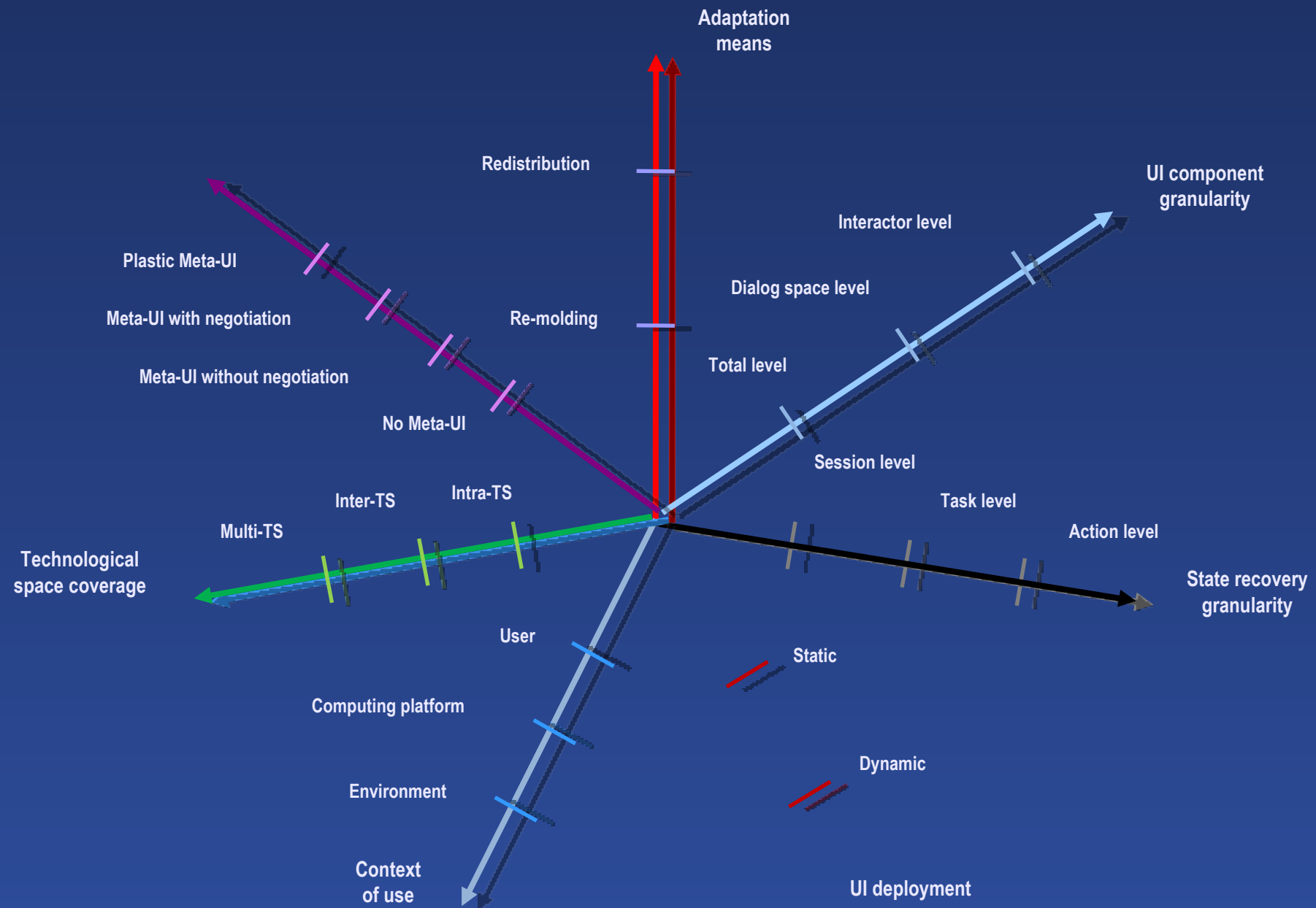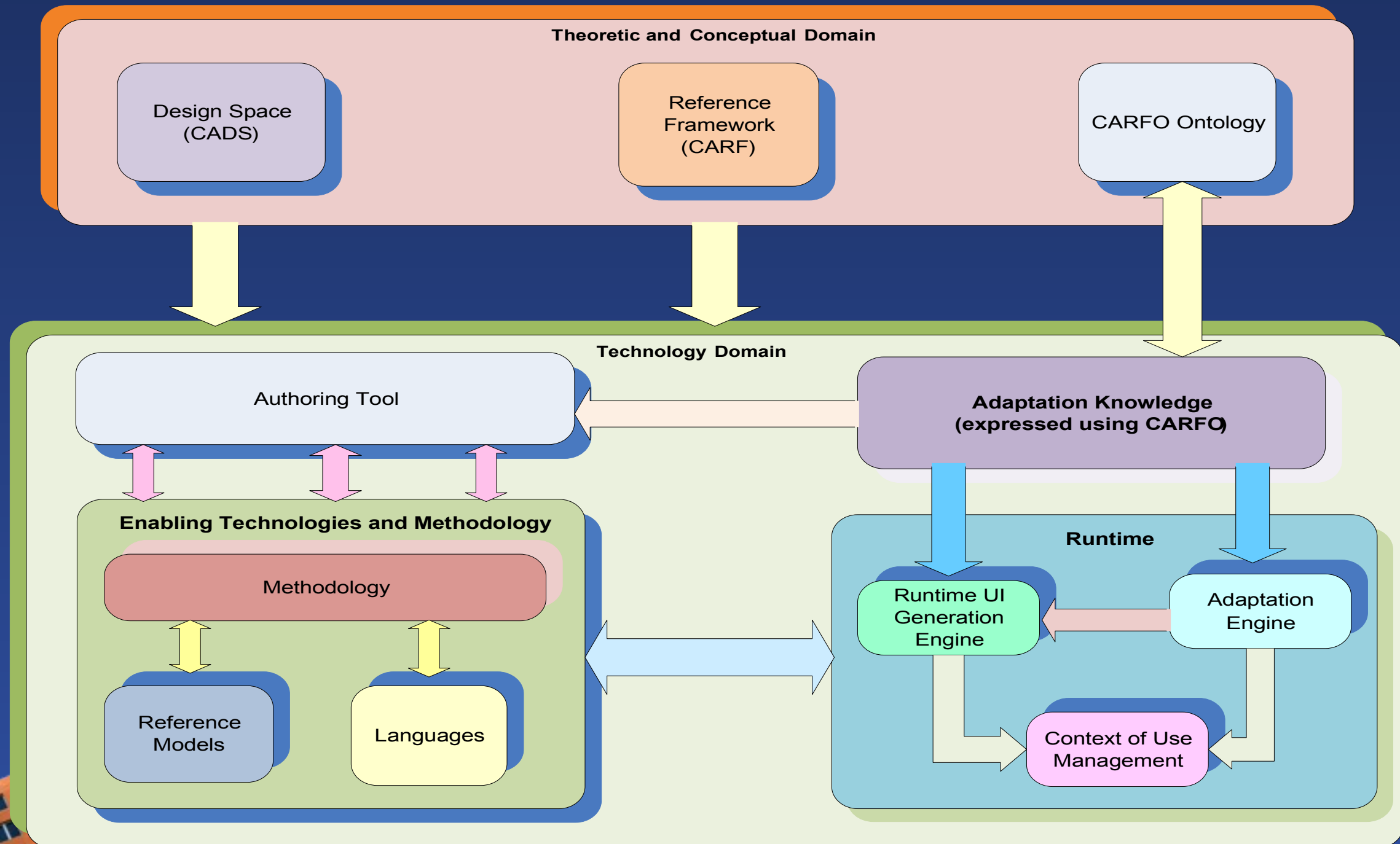
What is Serenoa

- EU Project for research on platforms for creating context sensitive SFEs

  - Adapting UI to a person's devices, tasks, preferences and abilities

  - Users can intervene in the adaptation (e.g. by controlling, suggesting, accepting/rejecting adaptations, requesting better adaptations) and the system can learn from users (e.g., by observation, by sensing, by machine learning)

  - Building upon many years of previous work in other research projects and industry experience

Adaption Space

Architecture

Theoretic and Conceptual Domain

Design Space (CADS)

Reference Framework (CARF)

CARFO Ontology

Technology Domain

Authoring Tool

Adaptation Knowledge (expressed using CARFO)

Enabling Technologies and Methodology

Methodology

Reference Models

Languages

Runtime

Runtime UI Generation Engine

Adaptation Engine

Context of Use Management

Where are we now?

- Preparing to send advance notice to AC

- Initial draft working group charter

  - http://www.w3.org/2011/01/mbui-wg-charter.html

- Mailing list of interested people willing to help refine the charter for in preparation for AC review

- EU Funding by Serenoa through August 2013

dsr@w3.org

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