Forschungszentrum Telekommunikation Wien

[Telecommunications Research Center Vienna]

The MONA Project

W3C Workshop on Multimodal Interaction

19/20 July, 2004, Sophia Antipolis, France
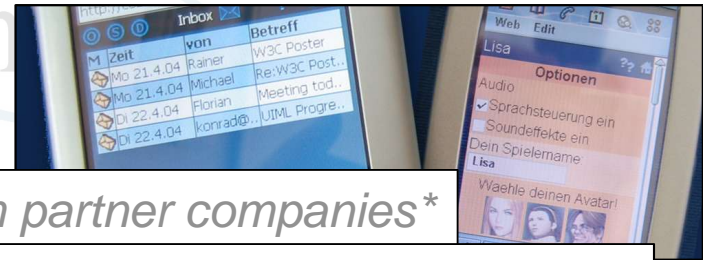
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The MONA Project
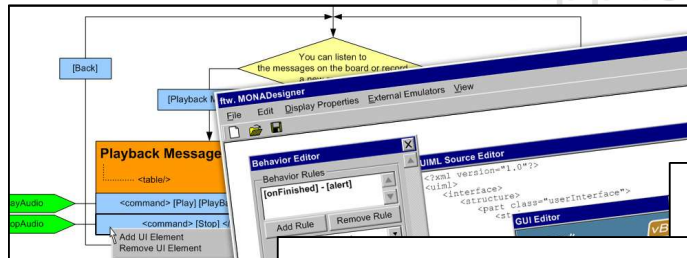
experimental XML UI description language

modality- and device-independent UIs

integration of technology from partner companies*

prototype presentation server and two example applications

prototype editing tool

concepts for single authoring methods and tools

Kplus
Kompetenzzentren-Programm

UI Description Language

★ Structure, style, content in 5 hierarchical levels

User Interface Level	
Task Unit Level	
Widget Grouping Level	
Abstract Widget Level	
Content/Grammar Level	

User Interface Level
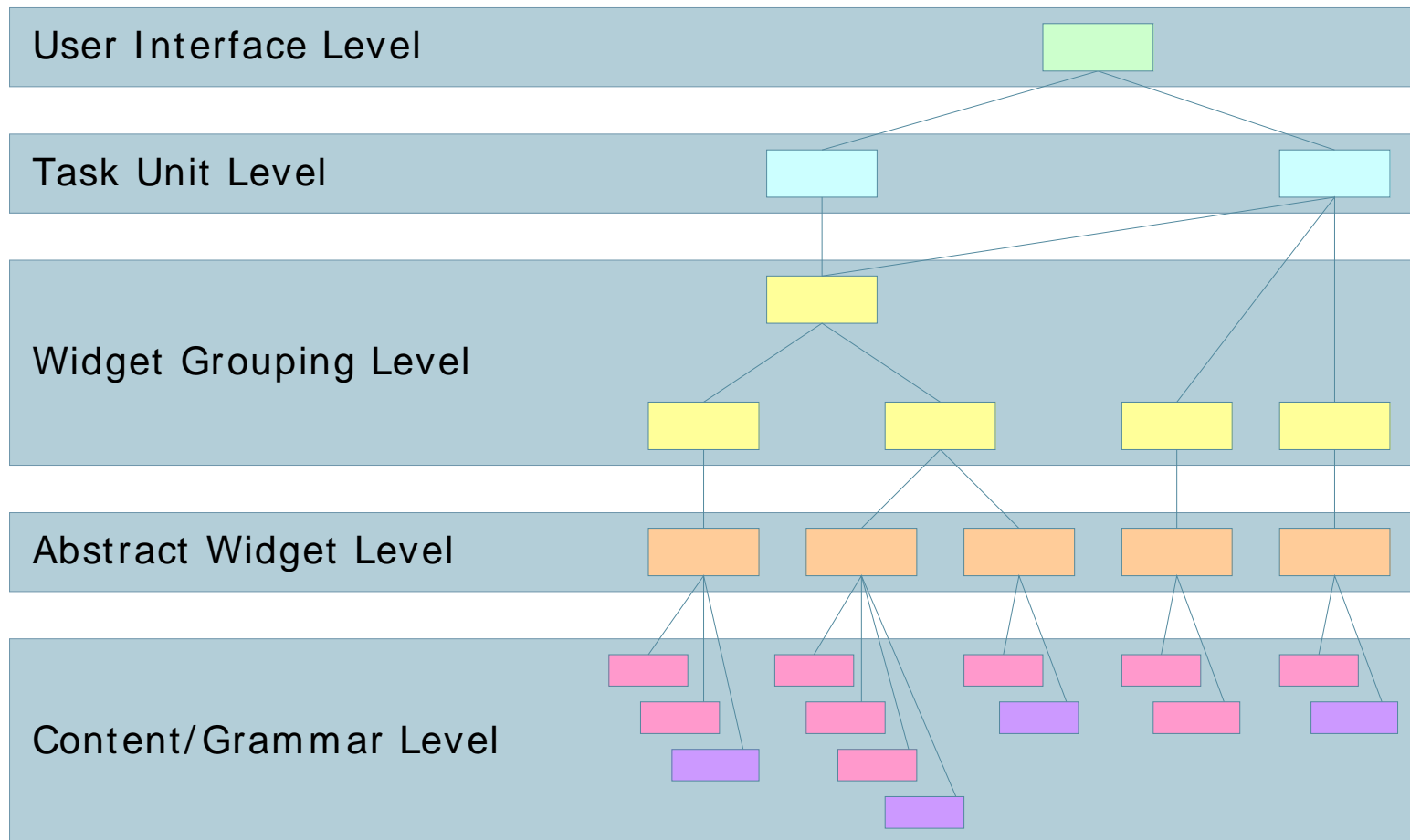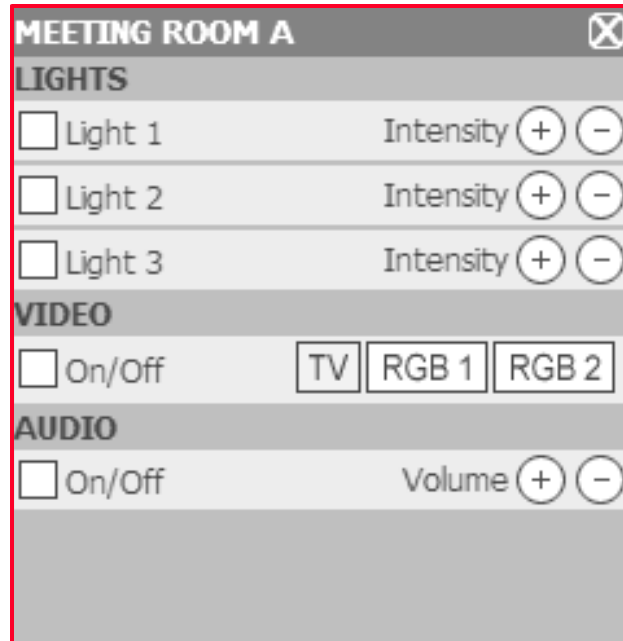
Global UI attributes

★ Title

★ Suggested GUI background color or skin

★ Voice reprompt and no-input phrases

★ Global grammar for triggering voice help

Task Unit Level (work in progress)

MEETING ROOM A ☒

LIGHTS
- ☐ Light 1   Intensity ⊕ ⊖
- ☐ Light 2   Intensity ⊕ ⊖
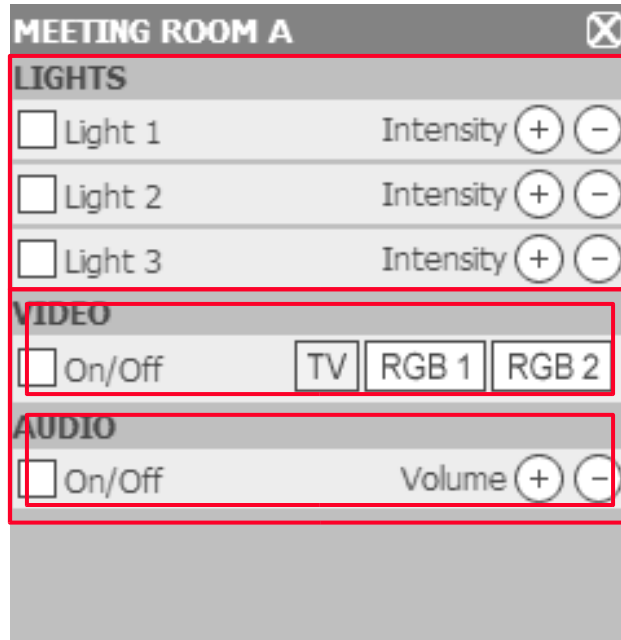- ☐ Light 3   Intensity ⊕ ⊖

VIDEO
- ☐ On/Off   [TV] [RGB 1] [RGB 2]

AUDIO
- ☐ On/Off   Volume ⊕ ⊖

★ **Pagination** properties

★ **Global voice dialogue** flow

- *flat* vs. *deep*

- *direct-manipulation* vs. *dialog*

- *user-* vs. *system-initiated*

"Do you want to control the room lights or the A/V system?"

"A/V system!"

"Video beamer or audio system?"

"Video system."

"You can switch the beamer off or select the video source."

"Video source to RGB 1, please."

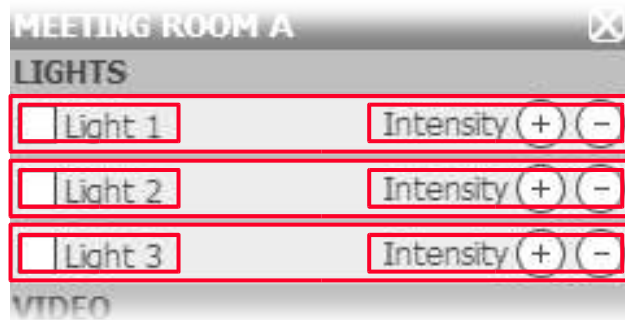*"Do you want to control the lights or the A/V system?"*

"A/V system!"

"Video beamer or audio system?"

"Video beamer on please."

"Light 1 brighter, please!"

Widget Grouping Level

★ Layout optimized for screen width

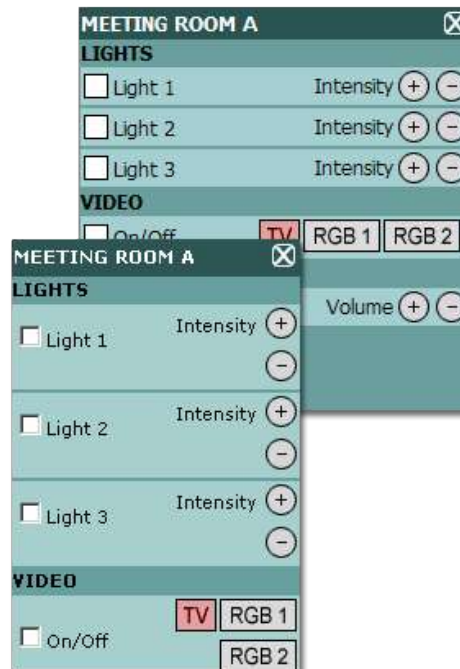★ Set of simple layout rules

left-aligned

right-aligned

centered

justified

left-aligned list

right-aligned list

centered list

Abstract Widget Level

★ Describing intention rather than appearance

 - *output, command, choice1ofN, ...*

★ Transformation to widget micro-dialogue

★ Transformation to a suitable visual representation

Content/Grammar Level

★ Content – collection of multiple alternative contents for different modalities (text, image URL, TTS output, audio URL)

★ Grammar – keywords and phrases that activate widgets/micro-dialogs.

MONA Behavior Vocabulary

★ **Simple processing model**

Implementation as required for MONA sample applications

- Navigation

- Passing of parameters and (binary) content (e.g. recorded voice) to application

★ *Events* and *actions* – *based on UIML model*

- *alert*

- *restructure*

- *submit*

- *"post"*

★ Translation to markup or JavaScript by the presentation server

UIML

★ **User Interface Markup Language**

- Generic XML syntax for building a UI description language

- Standardization by OASIS

★ **MONA UIML vocabulary**

- Language elements mapped to UIML *<part>* classes

- Behavior vocabulary mapped to *<call>* elements

```
<part class="...">
    <style>...</style>
    <behavior>...</behavior>
    <part class="...">
            <style>...</style>
            <behavior>...</behavior>

            <part>...</part>
            <part>...</part>
            ...
    </part>
</part>
```

- *Positive:* Freedom to develop new UI language from scratch without ignoring all standards

- *Negative:* Verbose, some MONA requirements not satifsied

★ **MONA language concept** not restricted to UIML

MONA Authoring

★ **"Natural" design workflow** as a key requirement

   - Use cases, scenarios, pen-and-paper sketches

★ **Bottom-up** in the MONA language hierarchy

   - Concrete GUI sketch

   - Identify widgets, groups and layout rules, task units

★ **Tools** to compensate for lack of predictability

   - WYSIWYG GUI previews, visual representation of voice dialog

   - Interactive editing in all views with real-time feedback in all other views

   - Option to import HTML

   - Concept and prototype tool under development

http://mona.ftw.at/

QUESTIONS?