Orchestrating Output Devices - Planning Multimedia Presentations for Home Entertainment with Ambient Intelligence

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Outline

- Smart Living Room
- Multiple Output Devices
- State of the Art
- DynAMITE Home Entertainment Demonstrator:
  - Approach
  - Architecture
  - Strategies
- Conclusion
Smart Living Room

Multiple Output Devices
Related Work

- **Pebbles:**
  - [Meyers et al., 2004]
  - Personal Remote Controller
  - Self-descriptions of applications
  - Automatic generation of GUI-speech interface
  - No multimedia output coordination

- **Peach:**
  - [Kruppa 2004]
  - PDA + public display
  - Animated character
  - Shared multi-user presentations

- **[Braun et al., 2004]**
  - Multi-device interfaces
  - XHTML-XFORMS, speech interface
  - No multimedia output coordination

- **[Kray, Krüger, Endres, 2003]**
  - Architecture for multi-device presentation planning
  - SMIL presentations
  - Central server

DynAMITE Demonstrator

- **Devices:**
  - TV Set, PDA, 17” Digital Picture Frame

- **Multimodal dialogue system**

- **User interface:**
  - Speech recognition, GUI
  - Animated character, speech synthesis
  - SMIL presentations

- **Application:** Movie information system
DynAMITE Demonstrator: Features

1. Character-picture-speech presentation
   - Dynamic layout generation

2. Text presentation
   - No pre-generated media

3. Ad-hoc adaptation:
   - New output device
     - display additional picture
   - Switch off TV output
     - reroute speech output

DynAMITE Presentation Strategy
Conclusion

- DynAMITE:
  - Home entertainment scenario
  - Planning approach
  - SMIL presentations
- Features:
  - Dynamic output generation
  - Multi-device presentations
  - Ad-hoc integration
- Future work:
  - User study
  - IO Preferences
- More about DynAMITE:
  - Middleware ➔ Michael Hellenschmidt, Friday, 10:20
  - Meeting Room Scenario ➔ Ali A. Nazari Shirehjini, Friday, 10:40
  - http://www.dynamite-project.org

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- Dynamite staff:
DynAMITE Presentation Strategy

(define-plan-operator
  :header (A0 (build-smil-pres ?rc-id ?im-url))
  :constraints
    (*and* ( ;; there is an output component of type agent
      (BELP(rc-type ?rc-id-2 agent))
      ;; which produces speech output
      (BELP(output-unimodality ?rc-id-2 "speech-type"))
      ;; in form of wav files
      (BELP(output-medium ?rc-id-2 wav ?om-url)))
  :inferiors ( ;; initialize a picture-speech presentation
    ;; solve constraints and generate smil file
    (A2 (start-mats "pres.smil"))
    ;; send smil file to output component
    (A3 (send-message ?rc-id "http://myip/pres.smil"))
  :spatial ( (centerh A1)
              (centerv A1) )
)

Multiple Output Devices: Work, Public, Home
DynAMITE Topology

Presentation Strategy

Demonstrator Architecture

Presentation strategies
# Modelling an Animated Character

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<th>lip movements</th>
<th>speech</th>
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<td>tv1.speakers</td>
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agent type | alc
---|---
param. | appearance