Towards mobile tour guides supporting collaborative learning in small groups

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- Motivation
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- However, only 5 % of museum visitor go to the museum alone, while 20 % go with friends, 30 % with their family and 45 % participate in a guided tour [1]

References

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- Modern mobile tour guides support individual users by adapting to specific user interests
- However, only 5 % of museum visitor go to the museum alone, while 20 % go with friends, 30 % with their family and 45 % participate in a guided tour [1]
- Members of these groups of friends or families are either forced into isolation when using a mobile tour guide or have to agree on a tour

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- supports the collaborative learning potential within small groups by encouraging group discussions based on the different material presented to each user
- utilizes virtual characters to support the social interaction among the individual group members

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- Mobile learning incorporates two mayor advantages:
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  - Mobile devices can offer context- as well as location sensitive services
- Mobile technology supports face-to-face collaboration [2] and it supports scenarios where learning itself is spread throughout space

References

1. Stanton and Neale: Designing mobile technologies to support collaboration, In Technical Report Equator-02-208 (2002)
2. Danesh et.al: Designing a collaborative activity for the palm handheld computer, In Proceedings of CHI, Conference on Human Factors in Computing Systems (2001)

Informal mobile learning with virtual characters

- Studies have addressed the positive impact of virtual characters on learning [1]

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- The possible effects virtual characters may have in mobile learning have not yet been evaluated on a larger scale
- The mere presence of a virtual character results in a reduced task difficulty perception [2] (persona effect)

References

1. Mayer et.al: Multimedia Learning in an Interactive Self-Explaining Environment: What Works in the Design of Agent-Based Microworlds?, In Journal of Educational Psychology (2003)
2. Mulken et.al: The Persona Effect: How Substantial Is It?, In Proceedings of HCI on People and Computers XIII (1998)

Informal mobile learning with virtual characters

- Providing a learner with a variety of perspectives promotes knowledge construction [1] (constructivist learning)

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Informal mobile learning with virtual characters

- Providing a learner with a variety of perspectives promotes knowledge construction [1] (constructivist learning)
- The use of virtual characters in constructivist learning environments has proven to improve knowledge acquisition [2]

References

1. Oliver and Herrington:Exploring Technology-Mediated Learning from a Pedagogical Perspective, In Journal of Interactive Learning Environments (2003)
2. Moreno and Mayer: Pedagogical Agents in Constructivist Multimedia Environments: The Role of Image and Language in the Instructional Communication, Paper presented at the annual meeting of the American Educational Research Association (2000)

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- Peoples behaviour depends on the group of people they are with (e.g. a family with small children will base the decision for a specific tour on the needs of the children rather than on the needs of the parents) [1]

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- Peoples behaviour depends on the group of people they are with (e.g. a family with small children will base the decision for a specific tour on the needs of the children rather than on the needs of the parents) [1]
- A fair amount of literature has constributed to modelling heterogenous groups in various domains, but theres little work in museum settings

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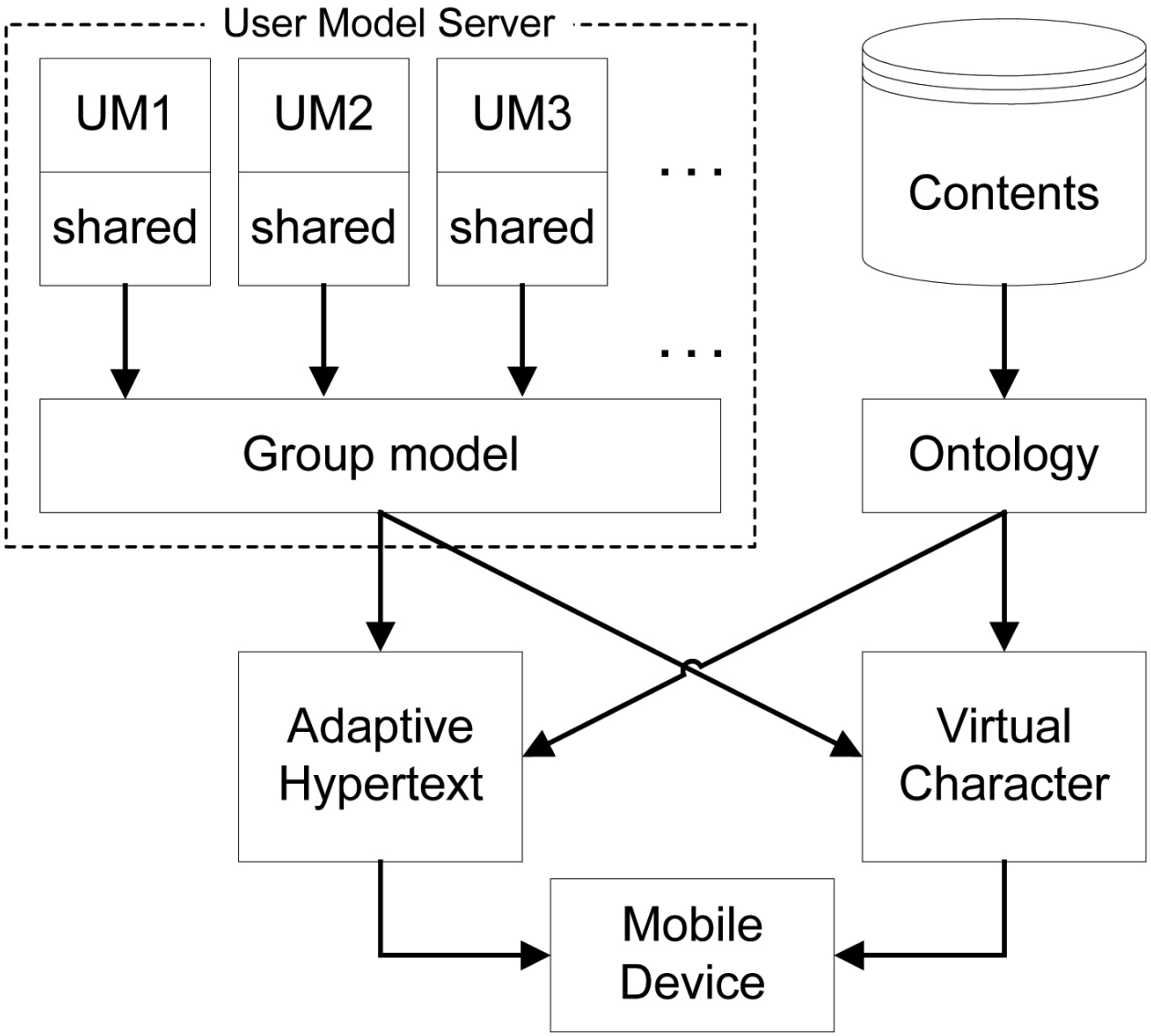
System architecture



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- Intelligent customizations may be performed based on the relationships between concepts

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- We plan to use the user modelling server Personis [1] which allows adaptive systems to easily manage evidence for user models

References

1. Kay et.al.: Personis: A server for user models, In Proceedings of Adaptive Hypermedia and Adaptive Web-Based Systems (2002)

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System architecture - User model server

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  - Build a group model based on the individual user models
  - Model each homogenous subgroup extracted from the group [1]
  - Interpret individual models to take account of interaction between people [2]

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- The virtual character engine will be based on the technology developed within the scope of the PEACH [1] project

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- The character engine is script driven and remotely controllable

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System architecture - Virtual Character Engine

Version for large displays

Version for small screens

Proposed experiment

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- Hypothesis: Participants with a virtual character are expected to have lower perception of task difficulty and higher knowledge gain

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Proposed experiment - Settings and methods

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- The experiment will take place during during regular school class visits in the Nicholson Museum
- We envision the experiment to be a 2x2 research design:

	With Character	Without Character
Experts	25 subjects	25 subjects
Novices	25 subjects	25 subjects

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- The experiment is concluded by a questionnaire handed to each participant inquiring aspects on learning effectiveness

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- We presented a theoretical background of a proposed mobile tour guide supporting collaborative learning within small groups
- Based on the results of the proposed experiment we hope to build a museum tour guide system which will improve the learning experience and enjoinment of each group member