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Accessibility: A Case of “Us and Them”?

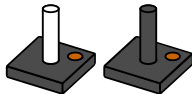
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Outline

Context

- Then

- Now

- Future

Rendering: Defining the User's Experience

- Signals, Symbols and Earcons

- Auditory Icons and Implicit Accessibility

Capability and Multimodality

3D Structure Representation and Modification

- Overview

- Not Just Games

Final Thoughts

- User Survey

- Further Work

- Conclusions

- Acknowledgements

References

The Past of Accessible Gaming

- ▶ (Paper presented an overview of our work; this is more technical)
- ▶ Many individuals and some small companies started developing accessible games for disabled people
- ▶ Suddenly blind people were no longer limited to one genre (Interactive Fiction)
- ▶ Most of the games were conversions of puzzles or classic arcade games
- ▶ Some developers have been more original
- ▶ **Drawback:** Segregation

Ethos of the AGRIP Project

- ▶ Provide access to not only mainstream games, but their surrounding online community and development tools
- ▶ Give people Freedom to use and modify the game, support infrastructure and tools
- ▶ AudioQuake
 - ▶ An “Accessibility Layer” for Quake (id Software)
 - ▶ A system for playing Internet multiplayer games
 - ▶ A platform for programming modifications
 - ▶ Only possible due to Open Source nature
 - ▶ **Provides and promotes inclusion**
- ▶ AGDev and other developments

The Future of Accessible Gaming

- ▶ AGRIP Developments: Level Design
- ▶ Audiogames and Accessible games gain weight in industry
 - ▶ **Definition:** “accessible games” vs. “audiogames”
 - ▶ John Carmack’s Keynote point
 - ▶ “Implicit Accessibility”
 - ▶ Potential mobile market
 - ▶ Work of IGDA, AudioGames.net, AGDev and others
- ▶ Education and Games get together
 - ▶ EA and NESTA study on games in education [NESTA and EA, 2005]
 - ▶ Potential to augment existing practises and assist in teaching
- ▶ Research

Rendering: Defining the User's Experience

- ▶ Signals, Symbols and Earcons
- ▶ Auditory Icons and Implicit Accessibility
- ▶ Capability and Multimodality

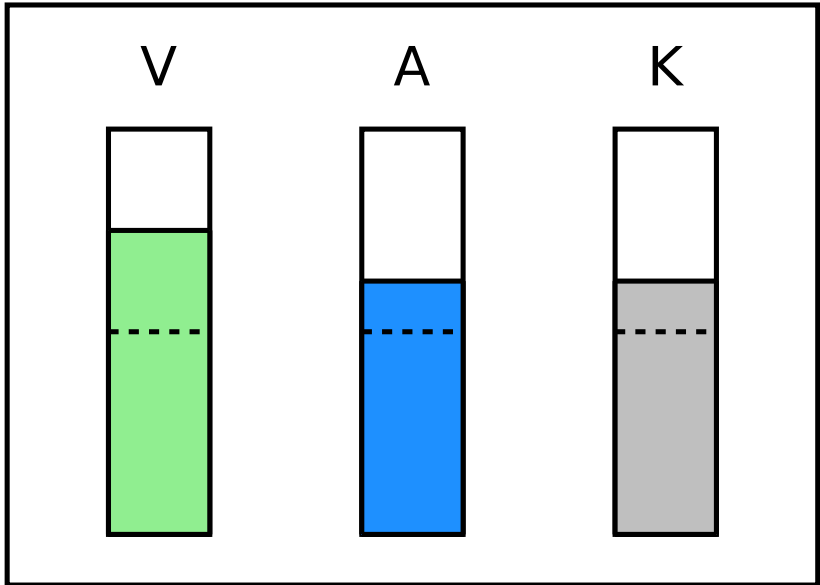
- ▶ Earcons [Brewster, 1994] are used in AudioQuake
 - ▶ **Definition:** Structured sounds, often obeying musical conventions, that are designed to alert the user to an object or event. They do not “sound like” their referents.
 - ▶ Time-efficiency
 - ▶ Well-defined structure aids recognition
- ▶ **Goal:** Fast-paced gameplay
- ▶ Sound design techniques used to achieve this
 - ▶ Consistency within referent types
 - ▶ Variations across referent types
 - ▶ Natural reference points embedded in the sounds (as in [Holland et al., 2002])

Auditory Icons and Implicit Accessibility

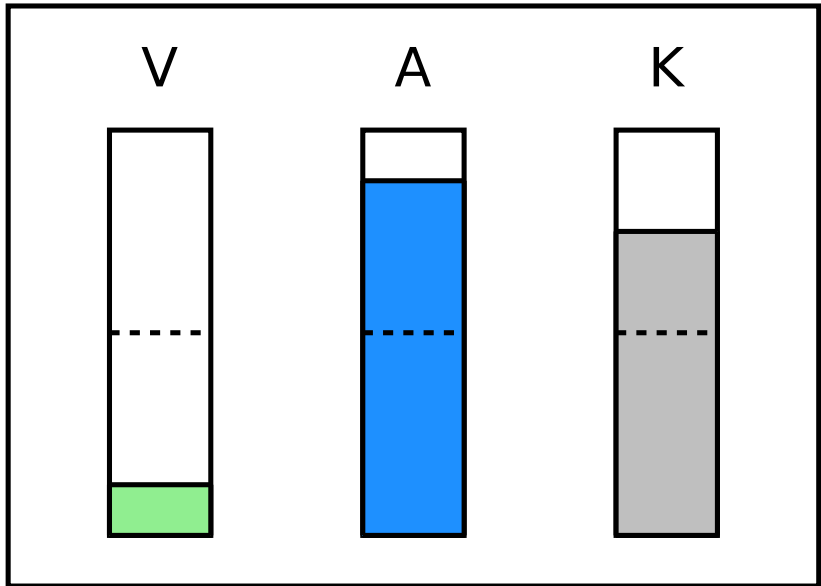
- ▶ An opposing rendering style
 - ▶ Auditory Icons
 - ▶ **Definition:** Sounds that map intuitively to the real-world concepts/items they refer to [Mynatt, 1994]
 - ▶ Use of special and spacial effects to separate such sounds from in-game events
- ▶ Increased fun through immersion
 - ▶ Play is more intuitive due to believable audio atmosphere [Röber and Masuch, 2004]
 - ▶ Information supplied by subtle environmental effects – e.g. wind direction in Shades of Doom [GMA Games, 2001]

- ▶ Reinforcement in other modalities of the primary rendering medium (usually graphics) can...
 - ▶ provide some implicit error-correction [Suhm et al., 2001]
 - ▶ aid cognition [Röber and Masuch, 2004]
 - ▶ increase immersion and, therefore, enjoyment [Velleman et al., 2004]
- ▶ Capability modelling technique
 - ▶ Model users based on what they can do, in conjunction with properties of device.
 - ▶ Choose appropriate rendering method based on these properties.
 - ▶ (More in paper)

Capability and Multimodality II



Capability and Multimodality II

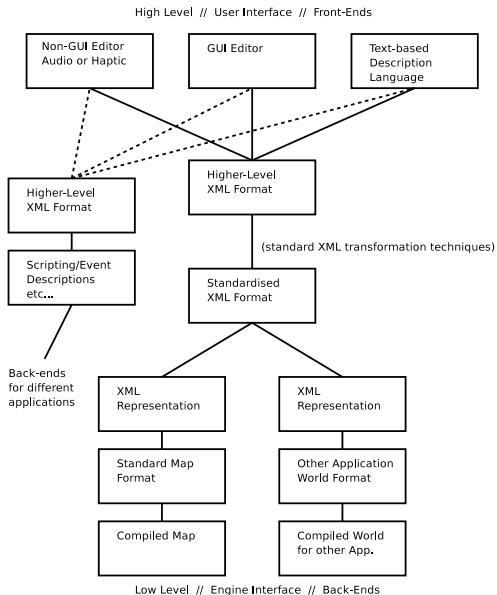


3D Structure Representation and Modification

- ▶ Overview
- ▶ Not Just Games

- ▶ 3D environments and Collaborative Virtual Environments (CVEs) are of increasing importance in society
- ▶ Techniques described in this paper and other literature go a long way to making these accessible
- ▶ Little work has been done on allowing blind/vision-impaired people to **create** 3D environments
- ▶ A preliminary architecture of an adaptable level description and editing system has been developed

Overview II

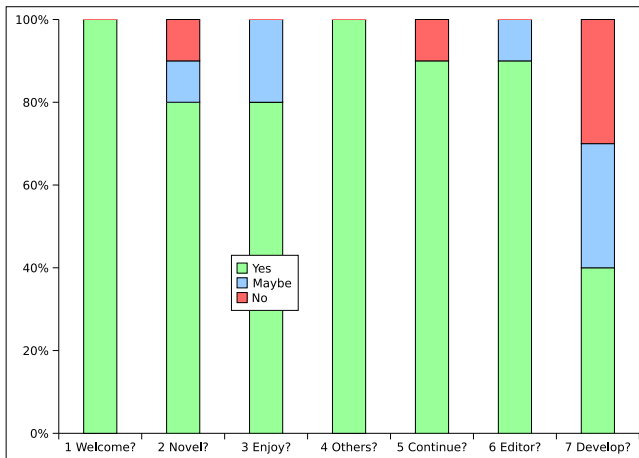


- ▶ A major goal of the AGRIP project, as with other literature, is to develop generally applicable techniques
 - ▶ to improve the experience for all users
 - ▶ to improve accessibility in other areas
- ▶ Permeation of game-like technologies in society; education and the workplace
- ▶ Importance of ensuring such technology is as accessible as possible to as many potential users as possible **before** it becomes mainstream
 - ▶ problems of existing work environment [Brock et al., 2003]
 - ▶ collaborative navigation ([Yang and Olson, 2002]) is an area of ongoing research for AGRIP

Final Thoughts

- ▶ User Survey
- ▶ Further Work
- ▶ Conclusions

User Survey



This survey covered 20 users of AudioQuake.

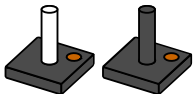
- ▶ Improve existing techniques
- ▶ Ongoing: generalisation...
 - ▶ Application to other types of user
 - ▶ Application to academic and other non-game material [Atkinson et al., 2006]
 - ▶ Increasing inclusion in education
- ▶ Accessible map generation and validation

- ▶ What accessible (and audio) games are
- ▶ How mainstream (even time-critical) games may be rendered in an accessible way
- ▶ Different rendering styles and how they may be of use to a wider range of users
- ▶ Experience gained from other literature, user feedback
- ▶ Our ongoing work and ideas for future work
- ▶ Potential benefits for other users and in other areas

Acknowledgements

- ▶ id Software
- ▶ The Quake & QuakeWorld community
- ▶ The AGRIP community
- ▶ The Grundy Educational Trust

Thanks for listening!
Any Questions?





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