Making the mainstream accessible: what’s in a game?

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Making the Mainstream Accessible
What's in a Game?

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Research School of Informatics
Department of Computer Science
Loughborough University

13th July 2006
The Past of Accessible Gaming

This talk concentrates on sight loss but could be applied to other disabilities.

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.
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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
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The Future of Accessible Gaming

AGRIP Developments

“Implicit Accessibility”

Level design

Audiogames and Accessible games gain weight in industry

Definition: “accessible games” vs. “audiogames”

John Carmack’s Keynote point

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
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Local Navigation

- Lowest level
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- Technique: “Devices” [GMA Games, 2001]
Overview
Structure Adaption and Filtering

- Overview
- Domain-Specific Solutions
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- Case-Study: The ESR
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- Case-Study: The ESR
- Generalisation
Overview

Accessibility by "Piggy-backing"

Model used by a lot of AT (Screenreaders, PDF, ...)

Much effort required to interpret layout [Hanson and Richards, 2004, Pontelli et al., 2000]

Information gap

Obsolescence

Need for decoupled rendering
Overview

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Domain-Specific Solutions

▶ Necessity-based rendering
▶ Avoids information overload
▶ User-centred flexibility
▶ Even within disability groups, needs and preferences may vary significantly
▶ Appropriate adaptation of existing information [Brewster and Brown, 2004, Smith et al., 2004]
▶ Little/no need to invent extra information in many cases
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Detects other creatures in the game (enemies, monsters, teammates)

Sound scheme

Perceived need for “fairness”

Give blind players positional information for enemies

In reality... confusion and information overload [Brewster, 1997]

Local and global navigation don’t mix

“fair advantage” not necessary?
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- Application of these techniques in other areas
Overview
Serialisation and Prioritisation

- Overview
- Domain-Specific Features and Solutions
Overview

Universal route to making a medium accessible (e.g. [LAMBDA Project, 2005])

...though not necessarily usable (e.g. screenreader serialisation of tables)

Serialisation and Prioritisation

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Imagine a series of channels, each having certain bandwidth. Information is streamed to the user over a particular channel. Channels correspond to output devices directly, or many-to-one. AudioQuake and other accessible games (GMA Games, 2001, ESP Softworks, 2001) often use many-to-one. Principles developed include periodic rendering by priority, sub-domain prioritisation, multimodality across domains, and cross-domain prioritisation.
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AudioQuake used to "test the water" [ICC Committee, ]

Areas for future work

Application to other 3D engines and applications

Collaboration

Use in other forms of navigation

Direct use in educational settings (e.g. [Laird, 2001], or as a replacement for accessible programming systems [Sánchez and Aguayo, 2005])
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Final Thoughts

- User Survey
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- Further Work
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- Further Work
- Conclusions
This survey covered 20 users of AudioQuake.
Further Work

- Improve existing techniques
- Generalisation & relation to other current research
- Accessible map editing
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- Brief overview of non-game aspects
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  - Workarounds for information overload
- Brief overview of non-game aspects
- Tried and proposed educational uses
Acknowledgements

- id Software

Final Thoughts  Acknowledgements  20 of 26
Acknowledgements

- id Software
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Acknowledgements

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- The Quake & QuakeWorld community
- The AGRIP community
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- The Grundy Educational Trust
Thanks for listening!
Any Questions?


