

# Turn that Noise off!

Making your sound effects accessible,  
(even when they're not heard)

## What's the big deal about sound?



Sound increases reaction time\*

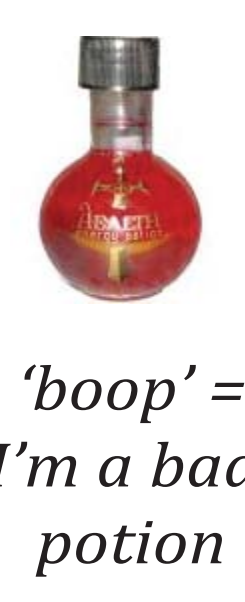
\*Jørgensen K (2008) 'Left in the dark: playing computer games with the sound turned off'. In: Collins K (ed.) From Pac-Man to Pop Music: Interactive Audio in Games and New Media. Ashgate, Aldershot, pp 163-176

### Sound tells us about:

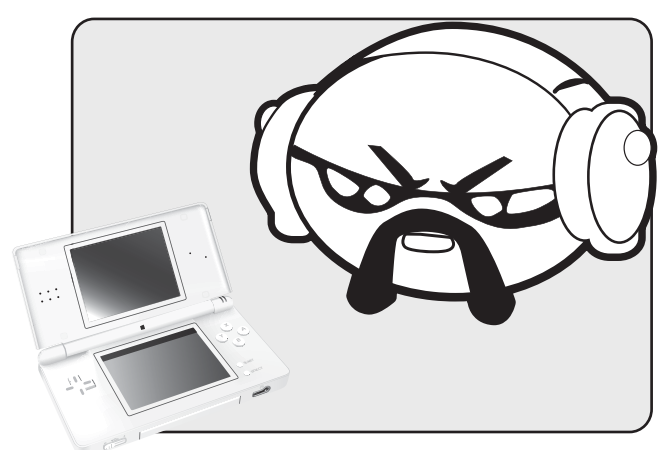
- player status
- NPC status
- objects
- off-screen action



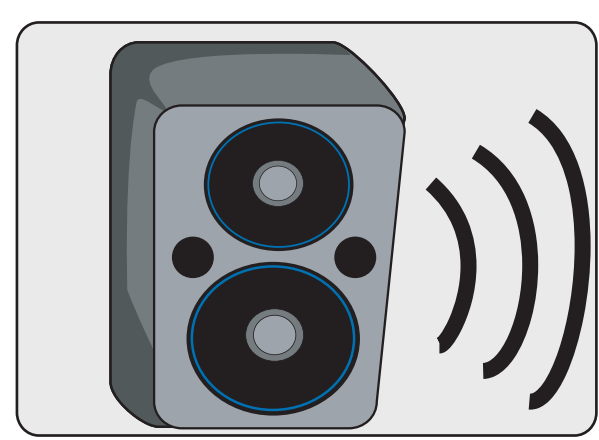
For example



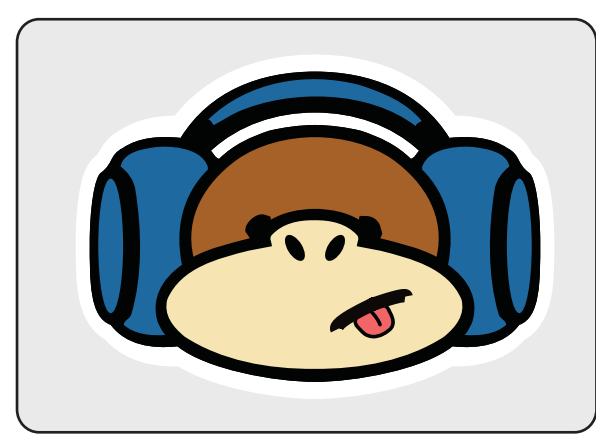
## So, why would I want an alternative to sound?



sound can be intrusive



background noise  
may interfere



noise is tiring



accessibility for hearing impaired

- + increase accessibility
- + increase playability
- + increase marketability
- + increase sales!

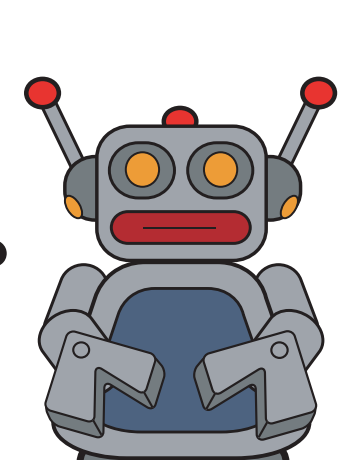
## What can I do to provide an alternative to sound?



action captions



speech  
balloons



[CC]  
captions



visual images  
(like Halo 2's radar, shown)



icons and symbols

We invented a system, SoundSign, combining icons with positional info, with the following goals:

easy to implement  
intuitive  
symbolic



scalable  
language independent  
faster to read than words



## Can icons with positional info actually substitute for sound?

Using eye-tracking technology, our tests show that when we turned the sound off in a game with SoundSign:

- 70% of users had longer fixations on icons
- 8% of overall gaze spent on icons
- ~40% increase in time looking at icons\*



Here's what our test subjects said:

"I think you'd be pretty useless at the game without it"



"It did pretty much the same thing as the sound"



"I had to look at it to see where the opponent was shooting me from."

## Where can I get more info?

See a video or download a demo game at:  
[www.GamesSound.com/ss.htm](http://www.GamesSound.com/ss.htm)

\* A copy of our research paper is available on the above site.  
2009. K. Collins and P. Taillon "Archetypal Sound Effect Icons for Improved Multimedia Accessibility" HC2009: The 12th International Conference on Humans and Computers. University of Shizuoka, December 9-11.

Accessibility: [IGDA Accessibility SIG](http://IGDA.org), [GameAccessibility.Org](http://GameAccessibility.Org), [DeafGamers.com](http://DeafGamers.com), [GameAccessibility.NL](http://GameAccessibility.NL)

SoundSign R&D: [Dr. Karen Collins, collinsk@uwaterloo.ca](mailto:Dr.Karen.Collins@uwaterloo.ca) [www.GamesSound.com](http://www.GamesSound.com)

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Phone: (519) 888-4567 x38678 E-mail: [e2luviso@uwaterloo.ca](mailto:e2luviso@uwaterloo.ca)

Vector Graphics from DJ Monkey Boy.