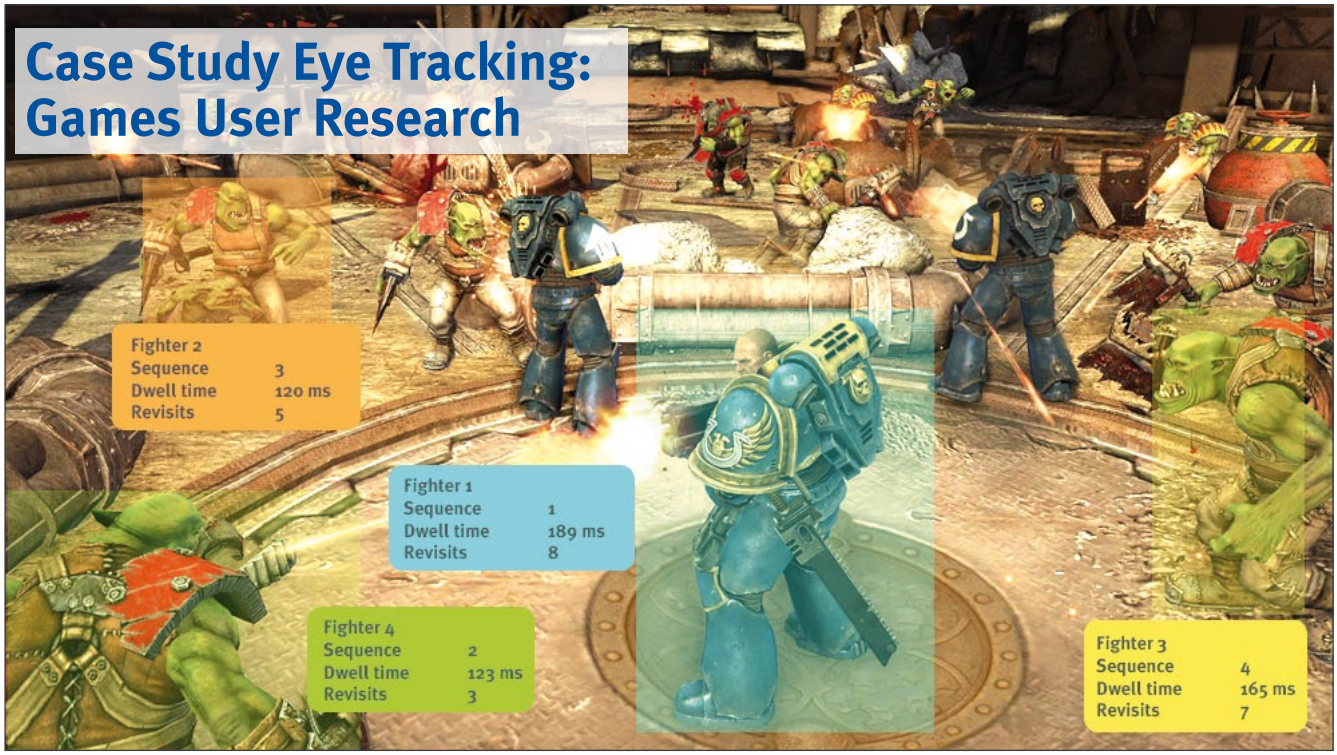
SMI
SensoMotoric Instruments

Keylime Interactive

Case Study Eye Tracking: Games User Research



The usability research firm Key Lime Interactive partnered with video game publisher THQ, Inc. for an eye tracking-based usability study on a 3D game. The eye tracking data provided game designers insights about the effectiveness of key elements in the 3D game world.

BACKGROUND

Usability studies for games need to take into account certain characteristics:

First, the user experience is the primary purpose of the game. Second, part of the appeal of games is overcoming challenges. And third, gamers represent an increasingly diverse group.

Key Lime Interactive, a usability research firm, partnered with video game publisher, THQ Inc, for an eye tracking-based usability study on a forthcoming action-adventure title.

THQ decided to rerun the study with eye tracking because they needed additional insights to determine why players were having difficulties that were not discernable using observation and "Think Aloud" techniques.

www.thq-games.com
www.keylimeinteractive.com

CHALLENGE

With methods like observation and "Think Aloud", usability specialists can observe if a player is having difficulties, e.g. if he or she fails a task. But in order to gain additional insights into why a player is failing a task, these methods face some limitations.

Many gameplay issues are related to the player's ability to notice and understand in-game cues and objects. Typical usability techniques do not always provide adequate information regarding player awareness and understanding of these elements.

SOLUTION

To determine why players were having difficulties that were not discernable using observation and „Think Aloud" techniques, Key Lime Interactive repeated a previous study using SMI eye tracking technology.

CONCLUSIONS

The eye tracking data helped quantify player perception of game components, such as heads-up display elements, as well as specific objects within the 3D world.

BENEFIT

Rerunning the study with eye tracking provided additional insights into players' gaze and awareness.

This enabled game designers to assess the effectiveness of key elements in the 3D world and to optimize the placement and visibility of in-game cues and objects.

Karl Steiner, Ph.D. Manager of Usability Research, THQ Inc.:

"...Eye tracking added value to our usability study because it provided additional insight into players' awareness of in-game-cues and objects..."

www.smivision.com/egts

Case Study

STUDY DESIGN

Key Lime Interactive conducted an eye tracking study aimed at gathering eye tracking data and usability insights into object dwell time and awareness of visual elements in the 3D world such as:

- What objects in the 3D world are noticed?
- When during gameplay are they noticed?
- What objects in the 3D world are missed?

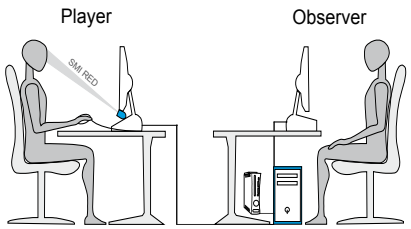
The test was performed by observing a sample of 8 players (7 males and 1 female), each with 3rd person shooter experience, selected to be representational of typical gamers.

The study was conducted on one day of testing. Each user session lasted 60 minutes including uninterrupted gameplay with natural stopping points for debriefing.

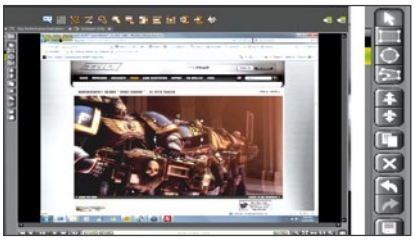
During analysis, researchers familiar with the game highlighted Areas of Interest (AOIs) to track the frequency (visits) and duration (dwell time) of time each AOI was viewed.

Dwell time is the summary of time spent within an area whether in fixation, saccade, or smooth pursuit, and is a good way to quantify attention on a moving object.

THQ study lab



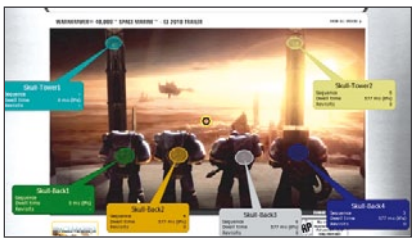
Set up games user research



AOIs can be any shape

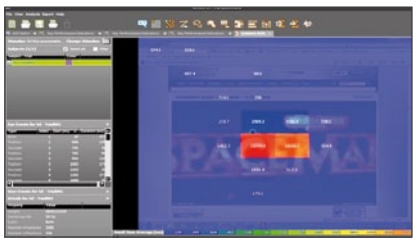
FINDINGS

1 Eye tracking data on visual cues



Eye tracking data displayed on Areas of Interest that have been defined for visual cues and objects in the 3D world of the game.

2 Red color highlights long dwell time



Gridded AOI's are similar to heatmaps but with quantitative parameters. Here, the average dwell time within areas of the game is visualized.

3 Increase effectiveness of key objects

Eyetracking enabled designers to replace and redesign key elements in the 3D world for better effectiveness in the game flow.

SMI EYE TRACKING

Eye tracking data was collected using the SMI RED remote eye tracking system networked with a high-end gaming machine. For tests on game consoles, SMI offers the External Video Package (EVP) allowing players to use the game in a natural setting.

The hardware provided by the SMI External Video Package connects external video sources like Playstation, Xbox, Wii as well as MAC or PC based software. They can be displayed on the integrated 22" monitor, a connected TV or via projection.

SMI RED with External Video Package

Contact Information

SensoMotoric Instruments GmbH
Warthestr. 21
14513 Teltow
Germany
Phone: +49 (0) 3328 – 39 55 – 10
Fax: +49 (0) 3328 – 39 55 – 99
E-mail: sales@smi.de

SensoMotoric Instruments Inc.
28 Atlantic Ave
236 Lewis Wharf
Boston, MA 02110 USA
Phone: +1 - 617 - 557 - 00 10
Fax: +1 - 617 - 507 - 83 19
E-mail: sales@smivision.com

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