Short Problem Statement

**2 Button Games**

/ Design lab project

Physical handicaps can have huge influences on a person’s quality of life. This does not only concern limitations to productivity for society, but also limitations of relaxing activities and hobbies. In this project we want to develop a game for a handicapped person to support social interactions and for spending free time.

Here we present the case of Jeroen, who has virtually no control over the muscles of his extremities; he can only –to some extent- control his head movements. His head is supported by a headrest which contains two movable parts at the left and the right sides of his head. By pushing his head against those movable parts micro switches are activated, the signals of which are input into a tablet or PC.

In this project a game should be developed, in which Jeroen has full control over all relevant aspects of the game. The other players (minimum 1, max 3) control their part of the game in the same way as Jeroen does, but they use a different controller instead of the micro switches.

Introduction

Jeroen (1976) had a shortage of oxygen at birth which resulted in cerebral palsy and severely reduced voluntary control over his muscles, and he cannot speak. He communicates through a speech computer which he controls with two micro switches mounted in his headrest. Although communication takes quite some time, it is clear from this that Jeroen’s mental capacities are more than would be expected based on motor control only.

He loves to play games! Back in the 80’s his father wrote a series of computer games in DOS. While they are sufficiently functional for Jeroen, they are not very well supported by modern computer systems, and on a new platform (for instance) it requires some knowledge of old-fashioned programming language to install the relevant software and make the programs work. Jeroen’s father fears the moment that he can no longer support such installation processes with the prospect that Jeroen can no longer spend his free time on games.

This is the reason a series of games need to be developed within a modern engine, so the games can be useful for Jeroen for many years to come. While working versions of a series of programs are available (in BOS-QBasic), it is necessary to redevelop the programs entirely.

There is no doubt that this will be extremely valuable to Jeroen, but likely also to other handicapped people with similar discrepancy between their physical abilities and mental functioning. The system for speech that is used by Jeroen, the Tobii with Communicator5 is used by many people.

There is a community of users that inform each other of applications constructed or obtained by them and make them available to others. Given that not many people have handicaps like Jeroen, there will not be many potential users of the software, but even if there are just a few, for them the games will be extremely valuable. This means that the way in which the games use input can be altered to fit as many people with disabilities as possible.

Expectations

Jeroen expects to obtain a fully functional game or series of games, in which all the rules of the game are automatically taken care of. The actions to be taken by Jeroen need to be minimal in number (because of the required effort for him) while at the same time he needs to have full control over the game, just like the other players have.

*Note: Jeroen has better/faster control over the right micro switch. The left micro switch requires more effort.*

1. The games are simple to understand and control.
2. The games have settings to be applicable to different amounts of players.
3. The games have adaptable input methods to fit different kinds of disabled people.
4. The games have a fitting business case to ensure multiple games can be built.

Themes

* Product development
* Value proposition design
* Business model canvas
* Interaction design
* Game design
* User Centered Design

Project requirements

Students who are working on this assignment should have affinity with:

Sensor technology, Custom input systems, Interaction design, Game Design, Product development, Entrepreneurship, Healthcare.

Clients

Jeroen Beersma is the primary client. Throughout the project he will commonly be represented by his father, Domien Beersma.