Gestural and Tangible Prototyping Interface Tools

for **CATGames**

to be applied towards Educational Purposes



IAT 334 D101 Team #1

Project 1 Report

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Project Team Members & Responsibilities:

Nathan Waddington

project manager research visual communication writing Shanna Walters research visual communications writing

Andrew Nip

project manager, assistant research visual communication writing Evan Miller coding conceptualization research

Jason Boileau CATGames Advisor

Veronica Zammitto CATGames Project Manager

Design Brief:

To create an interface for the Creativity Assistive Tools for Games' (to be referred to as "CATGames") gestural and tangible prototyping tool as described in Part 6 of the CATGames' proposal – Practical Application of Research Results¹. The objective of this project is to produce a tool that developers, such as Redhat² and Pentagram³, and non-governmental organizations (NGOs), such as One Laptop Per Child⁴, can utilize to assist in meeting their organizational mission statements.

The Project Team (the "Team") will be working in partnership with Jason Boileau who will be the Team's primarily point of contact with CATGames and Veronica Zammitto, the CATGames Project Manager at Simon Fraser University (SFU).

The Project and Team will be creating a balance between meeting IAT 334 Interface Design's project requirements, producing a GTP interface tool that is beneficial to CATGames and producing a product that meets one of the UN's Millennium Goals.

4 http://laptop.org



¹ CATGames Complete Project Proposal, 2007, http://wiki.iat.sfu.ca/CATGames/images/0/06/Proposal-Complete.pdf (accessed September 12, 2008) 2 www.redhat.com

³ http://pentagram.com/en/

Description & Analysis:

The Gestural and Tangible Prototyping (GTP) Interface Tools for CATGames to be Applied Towards Educational Purposes (the "Project") is designed to be applicable towards the United Nations' Millennium Goal #8 – to Develop a Global Partnership for Development (the "Goal"). Within the Goal, we will be focusing on Target #5 (the "Target") – in cooperation with the private sector, make available the benefits of new technologies, especially information and communications.

The purpose of the CATGames is to "focus on creativity tools that enhance interactive games and entertainment for a wide variety of platforms, including the Internet, consoles, mobile devices … that focus on authoring tools and processes to better support the creative development of interactive games and digital entertainment.⁵"

Gestural and tangible prototyping tools are moving to the forefront of research efforts for interface design. As interaction, in video games and otherwise, is moving towards an area where the lines between human gestures, objects and social interaction are becoming blurred⁶, the Project has an objective to take a serious look into this new area of research and design. There resulting benefits of creating a new GTP interface would be three-fold: the tool will be easy to use, easy to learn and creates an "intuitive interface that utilize natural motion input."⁷ The goal of the project team is to assist CATGames in producing an interface for a gestural and tangible prototyping tool that can be applied to the Goal and the Target.

The Project hopes to create TGP interface tools that will enable developers and NGOs the opportunity to create tools and programs that will provide quality education, easy and high mobility of these tools and general accessibility for the demographic groups around the world that require access to basic education. The incidental ramification of the Project would be providing an additional tool for developers and NGOs to begin tackling targets within the UN Millennium Goal #2 of Achieving Universal Primary Education.

⁵ CATGames Complete Project Proposal, 2007, page 2

⁶ CATGames Complete Project Proposal, 2007

⁷ CATGames Complete Project Proposal, 2007, page 8

Currently, the net enrollment of children in sub-Saharan Africa is only at 71 percent compared to over 90 percent for many other countries; that percentage translates to approximately 38 million children who are not enrolled in school.⁸ It is the hope that the Project, along with global partnerships, will be able to provide greater access to tools and educational infrastructure for school-aged children who currently do not have basic education.

However, there are some factors that can affect whether a child can attend school. These factors can include poverty, political instability and war. The UN High Commissioner for Refugees estimates that currently there are over 1.5 million school-aged refugee children in developing countries and are the least likely to have access to adequate education.⁹

Our belief is that if we can build a system, which will allow developers to rapidly build other systems, the added speed of development will enable new and dynamic ideas to develop. When applied to educational gaming specifically, this gestural and tangible prototyping interface tool could help to educate people in a more intuitive way, allowing for a tangible interface rather than a traditional keyboard and screen modality.



⁸ The Millennium Development Goals Report, 2008 9 The Millennium Development Goals Report, 2008

Interview Subject:

For our interview subjects, we have had a number of informal discussions with Jason Boileau, the Graduate Student the GTP project within CATGames at SFU. Jason is an expert in tangible gaming and we had a formal interview with Jason on September 24, 2008 to ask him questions on what he thinks game developers may want from a rapid prototyping tool for game development. Here is an excerpt from the interview that pertains specifically to the goals of CATGames.

NW: What is the over all goal of the CATGames GTP project?

JB: To have [developers] "play" with our tangible tools, rapidly prototype [and build] games and to test ideas and [get] a [better understanding] of the concepts, [and whether or not it] would be useful [to] take [those concepts] further.

[The goal is to] rapidly prototype these games, there is not really a field of tangible electronic games, but the screen is getting a bit old, and we want to see where it's going, and we think that tangibles are where it's going.

NW: What makes a game, rules and outcomes (we thought). We think the interface should be a rule-set generator

JB: [I envisioned the] final outcome I want the dice to do [X, Y and Z] {this this and this}, so then you program it, and you say, ok does it do [X]{this}, and how does it (X) work, then you'd set the program, and you'd play the input output part.

Hierarchical Task Analysis:

Task #1: Get Current Position of Die #1
1. Access Specific Die

1.1) Locate Correct Die
2. Get Position of Die
2.1) Choose the input you want
2.2) Receive Input

Task #2: Set Rule to Check for "Snake-eyes"
1. Find Rule-Setting Interface
2. Create a New Rule

2.1) Select die to monitor
2.2) Choose property you want to monitor
2.3) Set condition for that property

3. Wait for Condition to be Met

Task #3: Output a Series of Dots on LCD on "Snake-eyes" 1. Create a Condition

1.1) Set to wait for "Snake-eyes" alert

- 2. Create the Response
 - 2.1) Select an output device
 - 2.2) Select a message

Wireframes:



Task #1: Get Current Position of Die #1





Task #2: Set Rule to Check for "Snake-Eyes"



