

# Professional Practice Final Report

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## 1 Introduction

The aim of this report is to evaluate the interactions with the client/organisation and the work produced during the estimated 180 hours of placement at Sustrans (See Appendix 4). This report will provide background information on the company itself and its goals and my role in the company during my placement time. There will be an explanation of skills and outside resources used as well as skills gained from the time spent on placement. The work undertaken will include organising client meetings, conducting research, compiling documentation, designing a game to fit the clients needs, sourcing assets and programming (See Appendix 4).

### 1.1 Hosting Organisation

For the duration of my placement I was employed at Sustrans. Sustrans is a British charity with a large focus on active travel via cycling. There are several branches over Britain, the branch I was working at was the Edinburgh branch, these offices are located on Haymarket.

Sustrans Scotland work closely with communities, the Scottish government and local authorities to ensure the people of Scotland have access to a network of safe walking and cycling routes. Their main goals are to make local environments safe and attractive for walking and cycling and supporting and encouraging the community to partake in more active travel.

To encourage people to get more involved with cycling one of the things the company does is organise events. For example one of their events on display just now is a "Lands end to John O'Groats challenge ride" which entails cycling the full length of the UK over 18 days via cycling using iconic cycling routes. This is just an example of one of the many ways that Sustrans does to help reach their goals.

As a charity organisation they also take on volunteers for iBike which involves going around schools with a volunteer and iBike officer and dedicating slots of time to showing pupils correct cycling techniques and etiquette. This is the company trying to reach the future generations in order to promote active travel.

## 1.2 My Job/Role

This placement was one of the choices given to everyone enrolled in the module. There was a list of requirement specifications given to the class by a variety of different companies and we were to choose a project that stood out. To begin with the original project specification was based on the organisation wanting a calendar application that all of the Scottish branches could use to organise which iBike officers and volunteers were hosting events at schools. Initially I was unsure whether I could deliver on this software so I built a prototype over the course of 2 weeks before proceeding any further (see appendix 1 figure: 2). Doing this helped me realised I can't deliver this product as it requires working with databases one of my weakest areas. Instead during our initial meetings the clients and I agreed on developing a game which would promote active travel for a younger high school audience.

My duties on this project include initial research, designing the game mechanics, producing relevant documentation, sourcing sounds/music, sourcing graphical assets and programming the software/game.

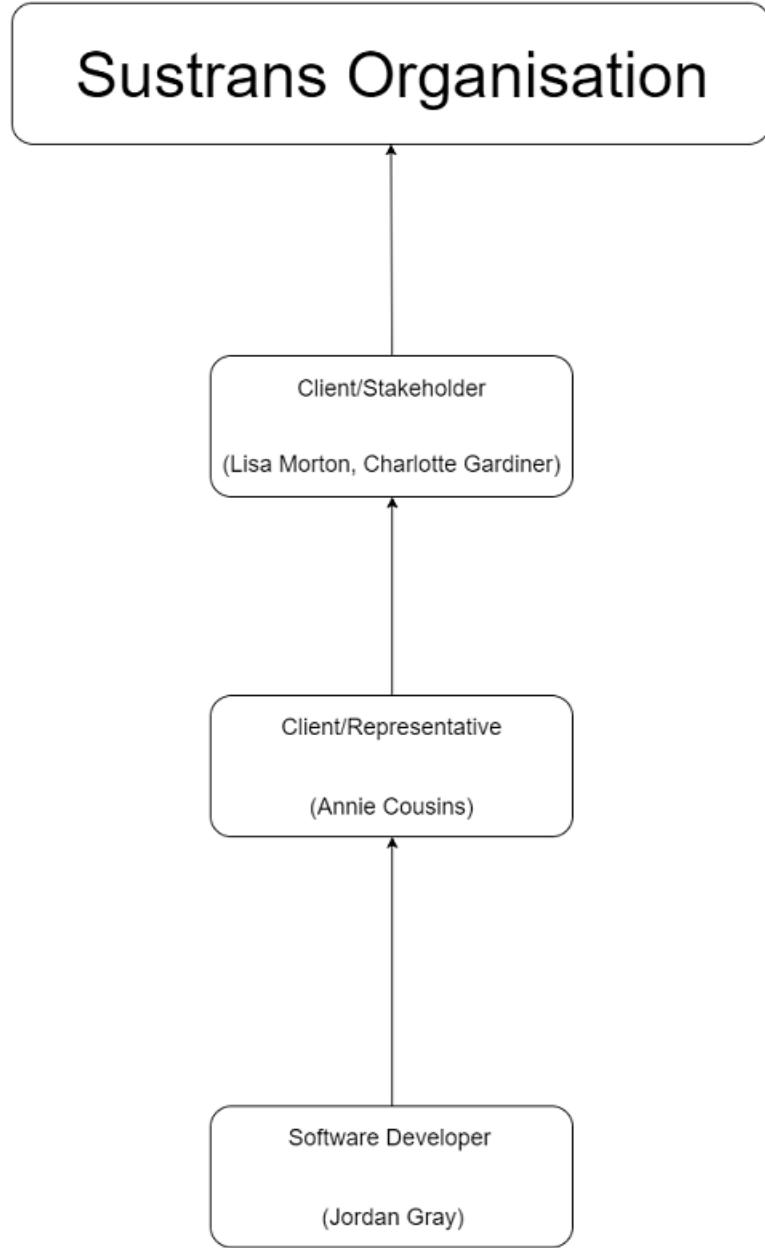


Figure 1: Representation of the structure in which the project was carried out

## 2 Skills Audit

One of the main reasons for the shift in project was my past experience in the games development field and being able to apply my developed skills in this area

to fully benefit the client. I have had experience before in building small games both alone and in a team before, the only difference this time was the scale. The scale of this project is far greater than any other solo project I have been a part to date and I took this upon myself as a challenge to test my skills and develop them even further. I also gained some experience in Java actually developing a prototype calendar application which took a couple weeks in pre-development to test my abilities in coding such an application before settling on doing a game project where I would be most comfortable.

In order to develop the desired product I have to expand my knowledge in games programming specifically in the Java environment. I have never developed a real game in this environment as I previously used C++ mostly but I wanted to really expand my knowledge in this area so I chose to develop using Java and developing a game of this scale will allow me to do so.

Another aspect this project allowed me to develop was my research skills. I have never done research for a game before and it really mattered here to give some initial ideas on how video games can influence behaviour. I compiled all of my researches findings into the one document and sent it to the clients (See Appendix 2). Ultimately this research proved useful and gave me the inspiration to come up with a well thought out game design idea with facts and research to back up its purpose.

Working with an organisation and clients in the working world has really allowed me to develop my communication skills further. Before this year I have never previously worked with a client in the working world so throughout this project I have really been able to see what it is like to communicate and share information with a real client(s). During the beginning of development I felt it was necessary to set the ground rule that I met with the clients on a bi-weekly basis and that we would communicate mainly via email whenever necessary. This really allowed me to keep the clients up-to-date on how development was going and allowed me to also show my progress around every two weeks.

Throughout this project I have had to develop my skills in producing meaningful documentation. One of the main pieces of documentation I had to produce at the initial stages was a PID (Project Initiation Document) (See Appendix 5). The purpose of this document is to outline any goals to be met for the clients, the scope and the time frame of the project, this is to then be signed off by the clients before development can begin. I transferred my skills in writing this document directly from another module I was enrolled in during the same period (Group Project) where I learned how to draft a professional PID amongst other documentation. Doing another PID draft for this project allowed me to develop my skills in producing a professional PID even further.

During the development period I had to source assets for the game including sounds/music and graphical assets. This meant I had to decide on which

assets to source, where to source them and what assets to create myself. I created some retro pixel art myself for placeholder graphics using Photoshop CS6 which took a lot of time but also vastly improved my skills using that software and allowed me express some of my creativity in the project (See Appendix 7). Other than this I had to outsource sounds/music due to time constraints.

Another skill I built on closely linked to communication with the client was building a professional relationship with the client. For example during the pre-development process the client suggested I join a colleague of theirs during an iBike visit to gather more research on the products intended audience. The visit took place at Forrester high school and I got to see what the organisation did first hand. This allowed me to better understand the organisations goals and allowed me to communicate with the products intended consumer and even receive some advice from the class' teacher at that time which helped with the products design.

### 3 Project Artifacts

The first thing I produced was the desired first product from the original Sus-trans brief, the calendar application (See Appendix 1). The brief specified wanting this application but the brief was later changed to suit a desired game product. I developed this prototype to test the limits of my abilities and to show the clients how the calendar would look and feel after developing this prototype. Screenshots and the code behind the application can be seen in appendix 1.

The next piece of documentation I produced was a research document (See Appendix 2). I created this document based on the research I did on how games can affect behaviour in people and their fitness levels to better understand how to design the game. I then emailed the document to the clients who looked it over and did some research on their own and sent me feedback. In this document I also included some initial ideas I had come up with for the game and how it could be designed to meet the clients desired goal. See appendix 2 for the document.

During the kick-off meeting I took notes of what the clients thought of my initial ideas and created a small document out of it (See Appendix 3). This contained what the clients wanted the game to mainly focus on and any features they wanted in the final product. We also discussed when to meet and I decided we should meet bi-weekly as mentioned in the document for update purposes. See appendix 3 for the document.

I came up with a development schedule for the project (See Appendix 4). This schedule goes week-by-week and outlines what I will be working on and where I think I will be in that point of development. This was created for the purpose of both showing the clients the time frame I will be developing in and as a schedule

to allow me to work from and try to stick to. See appendix 4 for the document.

One of the largest and main pieces of documentation I produced was the PID (Project Initiation Document). This document outlines the goals of the project, the scope, approach, the organisation, business case, constraints, stakeholders, risk assessment, project controls, reporting frameworks, schedule and finally the client sign off/agreement. This was a fairly important piece of documentation and acts almost as a contract between me and the clients and outlines the project as a whole. See appendix 5 for the document.

During pre-development I had to take in feedback from the clients on my initial game mechanics ideas and make some changes. After doing this I then drafted a core game mechanics document which is an overview of how the game will look, feel and play (See Appendix 6). This document goes over everything in terms of how the game should play when completed and how both me and the clients envision the game as a whole. Creating this document required some creativity on my part as I had to come up with the concept on my own from scratch based on my previous research and knowledge on current trending games. See appendix 6 for the document.

Throughout development I had to create some assets myself, mainly graphical assets (See Appendix 7). This involved me having to create some assets from scratch which I did using the Photoshop CS6 software. There are a few examples of the kind of art I created for the game both in-game art with a spritesheet and a menu user interface I created from scratch. See appendix 7 for these examples.

The main bulk of my time on the project was of course taken up with the programming and actual coding of the software itself in java (See Appendix 8). The final product has a vast number of classes each containing code and drawing from specific assets. For a couple of examples of the code see appendix 8 where the code for the Game class and Player class is held.

Throughout the development on this project from pre-development to post-development I have constantly had to communicate with the client(s) (See Appendix 9). This has involved both meeting in person at the Sustrans offices on Haymarket around every two weeks and via emails. It is through emails we have mostly kept in touch and allowed both parties to attach relevant documents to further the project. To see examples of the communication between the developer and client see appendix 9.

## 4 Logbook

The following is the logbook/dairy I kept over the course of development on the game.

# Professional Practice Personal Diary

SOC09108

Jordan Stephano Gray

18/01/2016 – 24/01/2016

## Personal Notes

- I emailed one of the clients Annie Cousins to set up a meeting date.
- I received the address from the client and set a date for a meeting.
- I was informed there would be three clients to meet with, Annie, Lisa and Charlotte.
- The meeting date was set for 21/01/2016 at 10am, Sustrans offices.
- I met with the clients today a little earlier than planned but it was fine.
- I dressed formally and brought my laptop in case they wanted to see some previous work I had done along with notebook and pen for notes.
- I learnt about the organisation from one of the clients and what they were about, helping kids get more exercise all over the country.
- We discussed the brief, I did not have a copy so it was worth discussing.
- There was some confusion on both sides as I had to undertake a project where my skills did not apply and the clients were not very informed on what the University wanted from them.
- The clients were not very technical so it was difficult for them to come up with an in depth brief, nonetheless there was enough there to inform me on what they wanted by the end.
- I informed them on my skills and experience as a Game Developer and they seemed interested in that area, it was discussed that maybe after a weekend of brainstorming coming up with a new project brief which incorporated my skills.
- I told the clients I would do some research to see if I could learn the necessary skills to do the initial project.
- Both parties were happy with these decisions and we ended the meeting.
- I started my final report, created a layout for it.
- I did some research into calendar applications which have to communicate with a database.

Professional Practice Personal Diary

SOC09108

Jordan Stephano Gray

25/01/2016 – 31/01/2016

Personal Notes

- I emailed one of the clients and arranged a date for the next meeting, Friday the 5<sup>th</sup> at 11am. This was changed a few hours later after I was contacted as some of the clients couldn't make it then so it was changed to 3pm instead on Friday the 5<sup>th</sup>.

Professional Practice Personal Diary

SOC09108

Jordan Stephano Gray

01/02/2016 – 07/02/2016

Personal Notes

- I began drafting a PID (Project Initiation Document)
- I had to draft two separate PIDs as I am not entirely sure yet what type of software the client has decided on.
- I finished creating a very basic calendar program that does not allow for edits, it only displays the months and dates with the current date highlighted.
- I did some research into games that encourage exercise and found out some interesting things.
- I decided to created a research document based on my thoughts and findings which I then would send to the client today as I have a meeting with them tomorrow.
- I finished the doc then emailed the client with the doc attached.
- Attended a meeting with the client.

Meeting Notes

- Discussed what the clients wanted from the game.
- Discussed art style and direction of the game.
- Discussed target audience for the game.
- Discussed core game mechanics.
- Discussed secondary game functions.
- Overall successful kick-off meeting.

# Professional Practice Personal Diary

SOC09108

Jordan Stephano Gray

08/02/2016 – 14/02/2016

## Personal Notes

- Received some feedback from the client on the PID:
  - o Don't include calorie counter.
  - o Use graphical sprites to indicate mental healthy-ness.
  - o Show gauge for activity level, don't use numbers in the game.
- Received a draft copy of PID with comments.
- Was asked to attend an activity day at a high school to ask the target audience what they think etc.
- Received some links to websites that encourage learning through games.
- I looked at 4 articles from the guardian about games that have an impact on the real world, charities and business' sent to me by Annie C.
- I revised the PID with the help of the feedback and sent the new draft back.
- I sourced some assets for the game from OpenGameArt.org. These assets are open source and include:
  - o JRPG OST Rev2 Licensed by CC-BY author Avgvst
  - o Grassy World by Mathew Pablo
  - o Summer Park by Daniel Stephens (Scribe)
  - o GUI SFX by Lokif
  - o RPG Sound pack by ArtisticDude
  - o Boy.jpg by prizzy96
- I took on board the feedback left by Annie about wanting a visual way of representing health rather than numbers i.e calories and have come up with a solution.
- I wrote up a core mechanics document for the game.
- I started up a source controlled project for the game using bitbucket and sourcetree.

Professional Practice Personal Diary

SOC09108

Jordan Stephano Gray

15/02/2016 – 21/02/2016

Personal Notes

- I expanded upon core game mechanics doc.
- I drew up some base storyboards.
- Decided to take some base game mechanics from previously developed software.
- Had a meeting with the client.
- I showed them the core game mechanics document and explained the ideas I had and asked for feedback.
- I received some helpful feedback and came up with a “Carbon Footprint” mechanic which tracks the players CF and influences their final score.
- I showcased some very basic game functionality.

# Professional Practice Personal Diary

SOC09108

Jordan Stephano Gray

29/02/2016 – 06/03/2016

## Personal Notes

- I met with Niall and an iBike volunteer today at Forrester highschool to see first hand what Sustrans do at schools.
- I had a chat with a few of the students although they were shy so I didn't get too much information from them, the students were in S4.
- I spoke to the PE teacher there which was helpful, she gave me some ideas in terms of who would enjoy the finished game. She suggested aiming it at a younger audience (Early highschool kids).
- I did some work on the game added basic player attributes.
- Had my interview assessment today. It went fairly well although Andrea pointed out that I may be taking on too much of a workload.
- I did some work on the game, changed the map layout and the screen res.
- I added in a menu state initialisation.
- I added in a settings state initialisation.
- I added in a how to play initialisation.

## Meeting

- Money is a good idea, implement money system.
- Testing before the final game.
- Could organise a test group with Niall.
- Weather feature. Determines how you travel.
- More focus on travel
- School, college, cinema etc.

Professional Practice Personal Diary

SOC09108

Jordan Stephano Gray

07/03/2016 – 13/03/2016

Personal Notes

- I added in entity collision.
- I fixed the order in which entities are rendered.
- I added in a mouse manager class.
- I am behind on the work by a fair margin, other modules are taking up my time and I lack motivation at this point for most of my work at university.
- I have run into some health issues that have hindered development.
- I am focusing largely on my group project module at this point in time as I have a lot to prepare for.
- I have begun working on the score system.
- I have looked into carbon footprint research.

Professional Practice Personal Diary

SOC09108

Jordan Stephano Gray

14/03/2016 – 20/03/2016

Personal Notes

- I haven't been able to do much work due to my current health conditions.
- All of my focus has been on my group project module unfortunately.
- I had to cancel my meeting at the Sustrans offices due to health problems.

Professional Practice Personal Diary

SOC09108

Jordan Stephano Gray

21/03/2016 – 27/03/2016

Personal Notes

- I have done some work on the game.
- I tried to implement some form of money system, it isn't up and running yet.
- I ran into some debugging problems whilst coding.
- I still haven't been able to dedicate much time to the development of the game.
- I have been regularly been keeping in contact with the client(s).
- Communication with the clients is of upmost importance.

Professional Practice Personal Diary

SOC09108

Jordan Stephano Gray

28/03/2016 – 03/04/2016

Personal Notes

- At this point in development I am very far behind.
- The health issues keep persisting, I have been put on the waiting list for counselling so I can be advised on what to do next.
- I had a meeting with Sustrans.
- They were talking about booking a test group of children to test the game out at some point.
- A WWF CO<sub>2</sub> indicator was suggested to help with the carbon footprint aspect of the game.
- The clients were asking about adding hints to the game based on real world facts and figures related to active travel.
- I told the clients the customisation options would be limited.
- Implemented base money mechanic in game.
- Next objective is to develop the graphics and aesthetics of the game.

Professional Practice Personal Diary

SOC09108

Jordan Stephano Gray

04/04/2016 – 10/04/2016

Personal Notes

- At this point in development I am quite anxious about delivering the final product.
- I feel I took on a project far too large in scope in the timeframe I had and to add to that I have had many personal issues including my health which have hindered development.
- I did include this in the risk assessment but did not include a solution to this problem if it occurred.

Professional Practice Personal Diary

SOC09108

Jordan Stephano Gray

11/04/2016 – 17/04/2016

Personal Notes

- I had a meeting with the client.
- We discussed the current situation of the game and its development.
- We talked about perhaps continuing development on the game next year as part of my honours project.
- This could be a possibility that I am interested in as I am disappointed that I could not develop the game I wanted to develop.
- As I have a lot of other work on at the moment I may not be able to develop the game any further at this point.

## 5 Evaluation

During the very first stages from the project specification the project was initially changed and the focus was shifted from a utility application to a game application. This was fairly unexpected and only happened after meeting with the clients for the first time and discussing what they wanted from the project and what I could actually deliver. I came to this conclusion after developing a prototype of the calendar app the clients initially wanted and realising my expertise in that area were fairly limited and I wouldn't be able to produce the same level of work as I could if it were a game.

During the early stages of development/pre-production stages I was very productive and produced a lot of relevant work and documentation in order to move into actual development. This is evident through my research (see appendix 2) and my game design documents (see appendix 6). During this period I was on track with the schedule I had produced (see appendix 4) during the first few weeks. I initially followed my work plan/schedule very closely and was tackling the work week by week according to what I had written in the schedule in order to meet the clients requirements.

The clients trusted me to develop the game at my own pace and there was no real supervision involved. They offered me a place to work within the offices but it was easier for me to work at home and at the university as I had all the necessary resources and software at hand.

More of the goals that were set out for the game could have been achieved if there was more software engineering methods put in place. If I used my previous experience in developing use case diagrams, class diagrams and storyboards for the game then I feel the programming of the game would have taken up less time and gone a lot smoother.

In terms of skills I utilises to aid in the projects development I definitely used previous knowledge acquired from past modules I was enrolled in. My knowledge in Java for the basis of my programming from software development 2 and 3, utilising my knowledge of how professional documentation is produced from the group project module and experience in creating art assets from work on previous game projects.

The development process was hindered due to health issues amongst other problems but any time a problem became apparent in the project I would immediately communicate with the client to alert them of the situation. This was a key aspect in terms of updating the clients on how the project was coming along.

Overall all of the work that I set out to complete in the schedule was not achieved due to a few factors. This could have perhaps been handled better if I had produced a more comprehensive risk assessment at the start of development

and what action I should take if such problems had occurred. I could have also produced more documentation to aid with the development of the game, mainly software engineering documents which could have resulted in more structured code.

## 6 Appendices

### 6.1 Appendix 1

The small prototype calendar application I developed near the beginning of development.

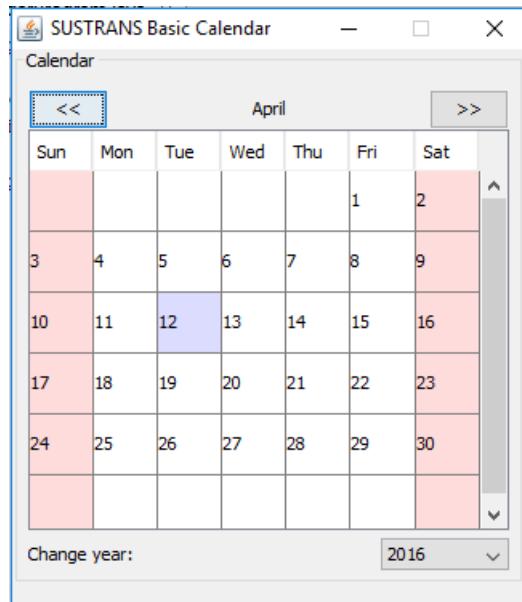


Figure 2: Display and UI for the prototype calendar I developed

---

```
package Cal;

/*Contents of CalendarProgram.class */
//Import packages
import javax.swing.*;
import javax.swing.event.*;
import javax.swing.table.*;
import java.awt.*;
import java.awt.event.*;
import java.util.*;

public class calendarProgram{
    static JLabel lblMonth, lblYear;
    static JButton btnPrev, btnNext;
    static JTable tblCalendar;
    static JComboBox cmbYear;
    static JFrame frmMain;
    static Container pane;
    static DefaultTableModel mtblCalendar; //Table model
    static JScrollPane stblCalendar; //The scrollpane
    static JPanel pnlCalendar;
    static int realYear, realMonth, currentYear, currentMonth;

    public static void main (String args[]){
        //Look and feel
        try {
            UIManager.setLookAndFeel(UIManager.getSystemLookAndFeelClassName());
        } catch (ClassNotFoundException e) {}
        catch (InstantiationException e) {}
        catch (IllegalAccessException e) {}
        catch (UnsupportedLookAndFeelException e) {}

        //Prepare frame
        frmMain = new JFrame ("Sustrans Basic Calendar"); //Create frame
        frmMain.setSize(330, 375); //Set size to 400x400 pixels
        pane = frmMain.getContentPane(); //Get content pane
        pane.setLayout(null); //Apply null layout
        frmMain.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE); //Close
        when X is clicked

        //Create controls
        lblMonth = new JLabel ("January");
        lblYear = new JLabel ("Change year:");
        cmbYear = new JComboBox();
        btnPrev = new JButton ("<<");
        btnNext = new JButton (">>");
        mtblCalendar = new DefaultTableModel(){public boolean
            isCellEditable(int rowIndex, int mColIndex){return false;}};
        tblCalendar = new JTable(mtblCalendar);
```

```

stblCalendar = new JScrollPane(tblCalendar);
pnlCalendar = new JPanel(null);

//Set border
pnlCalendar.setBorder(BorderFactory.createTitledBorder("Calendar"));

//Register action listeners
btnPrev.addActionListener(new btnPrev_Action());
btnNext.addActionListener(new btnNext_Action());
cmbYear.addActionListener(new cmbYear_Action());

//Add controls to pane
pane.add(pnlCalendar);
pnlCalendar.add(lblMonth);
pnlCalendar.add(lblYear);
pnlCalendar.add(cmbYear);
pnlCalendar.add(btnPrev);
pnlCalendar.add(btnNext);
pnlCalendar.add(stblCalendar);

//Set bounds
pnlCalendar.setBounds(0, 0, 320, 335);
lblMonth.setBounds(160-lblMonth.getPreferredSize().width/2, 25,
    100, 25);
lblYear.setBounds(10, 305, 80, 20);
cmbYear.setBounds(230, 305, 80, 20);
btnPrev.setBounds(10, 25, 50, 25);
btnNext.setBounds(260, 25, 50, 25);
stblCalendar.setBounds(10, 50, 300, 250);

//Make frame visible
frmMain.setResizable(false);
frmMain.setVisible(true);

//Get real month/year
GregorianCalendar cal = new GregorianCalendar(); //Create
    calendar
realDay = cal.get(GregorianCalendar.DAY_OF_MONTH); //Get day

realMonth = cal.get(GregorianCalendar.MONTH); //Get month
realYear = cal.get(GregorianCalendar.YEAR); //Get year
currentMonth = realMonth; //Match month and year
currentYear = realYear;

//Add headers
String[] headers = {"Sun", "Mon", "Tue", "Wed", "Thu", "Fri",
    "Sat"}; //All headers
for (int i=0; i<7; i++){
    mtblCalendar.addColumn(headers[i]);
}

```

```

}

tblCalendar.getParent().setBackground(tblCalendar.getBackground());
    //Set background

//No resize/reorder
tblCalendar.getTableHeader().setResizingAllowed(false);
tblCalendar.getTableHeader().setReorderingAllowed(false);

//Single cell selection
tblCalendar.setColumnSelectionAllowed(true);

tblCalendar.setRowSelectionAllowed(true);
tblCalendar.setSelectionMode(ListSelectionModel.SINGLE_SELECTION);

//Set row/column count
tblCalendar.setRowHeight(38);
mtblCalendar.setColumnCount(7);
mtblCalendar.setRowCount(6);

//Populate table
for (int i=realYear-100; i<=realYear+100; i++){
    cmbYear.addItem(String.valueOf(i));
}

//Refresh calendar
refreshCalendar (realMonth, realYear); //Refresh calendar
}

public static void refreshCalendar(int month, int year){
    //Variables
    String[] months = {"January", "February", "March", "April",
        "May", "June", "July", "August", "September", "October",
        "November", "December"};
    int nod, som; //Number Of Days, Start Of Month

    //Allow/disallow buttons
    btnPrev.setEnabled(true);
    btnNext.setEnabled(true);
    if (month == 0 && year <=
        realYear-10){btnPrev.setEnabled(false);} //Too early
    if (month == 11 && year >=
        realYear+100){btnNext.setEnabled(false);} //Too late
    lblMonth.setText(months[month]); //Refresh the month label (at
        the top)
    lblMonth.setBounds(160-lblMonth.getPreferredSize().width/2, 25,
        180, 25); //Re-align label with calendar
    cmbYear.setSelectedItem(String.valueOf(year)); //Select the
        correct year in the combo box
}

```

```

//Clear table
for (int i=0; i<6; i++){
    for (int j=0; j<7; j++){
        mtblCalendar.setValueAt(null, i, j);
    }
}

//Get first day of month and number of days
GregorianCalendar cal = new GregorianCalendar(year, month, 1);
nod = cal.getActualMaximum(GregorianCalendar.DAY_OF_MONTH);
som = cal.get(GregorianCalendar.DAY_OF_WEEK);

//Draw calendar
for (int i=1; i<=nod; i++){
    int row = new Integer((i+som-2)/7);
    int column = (i+som-2)%7;
    mtblCalendar.setValueAt(i, row, column);
}

//Apply renderers
tblCalendar.setDefaultRenderer(tblCalendar.getColumnClass(0),
    new tblCalendarRenderer());
}

static class tblCalendarRenderer extends DefaultTableCellRenderer{
    public Component getTableCellRendererComponent (JTable table,
        Object value, boolean selected, boolean focused, int row,
        int column){
        super.getTableCellRendererComponent(table, value, selected,
            focused, row, column);
        if (column == 0 || column == 6){ //Week-end
            setBackground(new Color(255, 220, 220));
        }
        else{ //Week
            setBackground(new Color(255, 255, 255));
        }
        if (value != null){
            if (Integer.parseInt(value.toString()) == realDay &&
                currentMonth == realMonth && currentYear ==
                realYear){ //Today
                setBackground(new Color(220, 220, 255));
            }
        }
        setBorder(null);
        setForeground(Color.black);
        return this;
    }
}

static class btnPrev_Action implements ActionListener{

```

```

        public void actionPerformed (ActionEvent e){
            if (currentMonth == 0){ //Back one year
                currentMonth = 11;
                currentYear -= 1;
            }
            else{ //Back one month           currentMonth -= 1;

            }
            refreshCalendar(currentMonth, currentYear);
        }
    }

    static class btnNext_Action implements ActionListener{
        public void actionPerformed (ActionEvent e){
            if (currentMonth == 11){ //Foward one year
                currentMonth = 0;
                currentYear += 1;
            }
            else{ //Foward one month
                currentMonth += 1;
            }
            refreshCalendar(currentMonth, currentYear);
        }
    }

    static class cmbYear_Action implements ActionListener{
        public void actionPerformed (ActionEvent e){
            if (cmbYear.getSelectedItem() != null){
                String b = cmbYear.getSelectedItem().toString();
                currentYear = Integer.parseInt(b);
                refreshCalendar(currentMonth, currentYear);
            }
        }
    }
}

```

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## 6.2 Appendix 2

The following is a research document I produced during the pre development stage.

# Sustrans Exercise Game Research

Jordan Stephano Gray

Edinburgh Napier University

During my initial research I found this website called uknowkids.com (*See reference 1*) which addresses the issue of childhood obesity and recommends some current applications which encourage younger kids to exercise. Looking at some of these applications a lot of them don't really seem like games and fun at all and are mostly exercise applications for example number 3 on the list (*See reference 1*) just shows the user yoga positions. Another problem for me with these applications seem to be the mobile side of it, I have no experience in mobile app development and they all use the hardware aspect of the mobile too which isn't ideal, although this is the case I thought this resource was helpful just for getting some ideas.

Whilst reading through these the first item on the list of 9 caught my eye, an application called "Trainer". This app is a type of game that has the user looking after a virtual pet which of course needs some form of exercise, this is done by having the user exercise themselves in order to keep the pet fit. This will obviously use some sort of hardware that tracks movement which I have no real experience in but it is an interesting idea as gamers today generally feel strong connections to the characters portrayed in a virtual world.

Most of the games out there that encourage exercise are done using hardware, for example the use of a Nintendo Wii or Wii U. Unfortunately I can't develop software for these platforms using hardware as I have no experience in both console development and working with hardware sensors. My main focus is developing on a desktop PC platform so it's proving difficult getting some inspiration. This may be the case but there is a lot of research to support the fact that these types of games for the Wii and Wii U do not actually benefit the users more than regular games when it comes to exercise (*See references 2 and 3*).

## Personal Ideas

One idea I keep coming back to is the idea of having some form of virtual person that the user has to look after. The user/player gets to choose how the virtual person lives their life at an accelerated rate and there is a large element of cause and effect that will reflect the richness of the persons life. I feel the users will be encouraged to exercise as they micro manage the person they choose how time is spent and it can develop the idea of choice in the real world, they can decide how to spend their time and treat their bodies. For example they can choose to eat fatty foods/fast food in the game or have a healthy meal which can boost the in-game persons attributes like health or they can choose to watch TV, ride their bike or do something else active which in turn can affect the players final score of some sort and their persons appearance and attributes. The whole point of the game is to inspire the

player, maybe seeing that it is possible to take control of ones health and reach goals can inspire players to do the same.

There is evidence to suggest that these types of games have had some success with younger audiences with success as far back as virtual pets like Tamagotchi way back in the late 90's early 00's all the way to the current day with the popular game known as "Punch Club", a game with a similar idea but based on a boxers career and rising through the ranks (*See reference 4*).

### **Initial Ideas**

- A 2D sprite-based game.
- Some sort of score or currency in the game.
- Attributes may include physical health like Agility, Strength and even Intelligence which could encourage more study also.
- Player chooses how time is spent in the game.
- When the game finishes it awards some kind of end score, score is effected by how healthy the individual is at the end of the game and what goals they have accomplished.
- Can set some in-game goals such as running marathons or doing an iron man etc which can only be achieved if the players character is fit enough.

### **References**

- 1) <http://resources.uknowkids.com/blog/games-apps-that-encourage-kids-to-get-physical>
- 2) <http://www.zdnet.com/article/do-wii-games-encourage-kids-to-exercise/>
- 3) <http://www.geek.com/games/wii-fitness-games-dont-encourage-exercise-1472353/>
- 4) <http://store.steampowered.com/app/394310/>

### **6.3 Appendix 3**

These are the notes I took from the kick-off meeting.

## Meeting Notes

05/02/16

- More focused on cycling and walking, maybe running.
- High school aged audience, older side 13-16.
- Some sport.
- Player sprite customisable avatar teenager. Different ethnicity, style personalities.
- Ride different types of bicycle, skateboards etc.
- Week of 2<sup>nd</sup> of May deadline.
- Focus on travel.
- Add in cycle signs.
- Customisable everything.
- Home setting, Amenities such as cafes cinema etc.
- Attributes, weight heart health mental health. Emotional face avatar. Display feelings of discomfort when unhealthy etc.
- Mountain bike adventures.
- Calorie monitor, heart monitor sprite.
- Encourage healthy eating, maybe not a calorie counter for teens under eating etc.
- Meeting dates:
  - o Wednesday 17<sup>th</sup> 10am
  - o Thursday the 3<sup>rd</sup> March 2pm
  - o Thursday 17<sup>th</sup> 2pm
  - o Friday the 1<sup>st</sup> April 2pm
  - o Wednesday 13<sup>th</sup> April 2pm
  - o 6<sup>th</sup> May. Final Meeting.
- Teenagers may want to play adults.
- Maybe putting in self attributes like weight and height.
- Sustrans branding

## **6.4 Appendix 4**

This is the schedule I came up with in pre development.

Date	Week	Plan
11/01/16	1	<ul style="list-style-type: none"> <li>- Acquire a project.</li> <li>- Contact client.</li> </ul>
18/01/16	2	<ul style="list-style-type: none"> <li>- Client Kick-off meeting.</li> <li>- Research Calendar applications.</li> <li>- Learn about the organisation.</li> </ul>
25/01/16	3	<ul style="list-style-type: none"> <li>- Further calendar research.</li> <li>- Research games/applications which encourage exercise.</li> <li>- Program standard calendar application.</li> <li>- Create PID first draft.</li> </ul>
01/02/16	4	<ul style="list-style-type: none"> <li>- Continue to develop calendar application.</li> <li>- Second client kick-off meeting.</li> <li>- Cement software requirements.</li> <li>- Initial game ideas fixed.</li> <li>- Finish final PID draft.</li> </ul>
08/02/16	5	<ul style="list-style-type: none"> <li>- Begin sourcing assets such as sound and art.</li> <li>- Expand upon main mechanics.</li> <li>- Begin planning out software development, create diagrams.</li> <li>- Start project.</li> </ul>
15/02/16	6	<ul style="list-style-type: none"> <li>- Begin developing core game engine.</li> <li>- Have basic sprites showing.</li> <li>- Refine mechanics ideas.</li> </ul>
22/02/16	7	<ul style="list-style-type: none"> <li>- Continue to develop core mechanics.</li> <li>- Some of the very early stages of the game working.</li> <li>- Perhaps have some base customisation working.</li> </ul>
29/02/16	8	<ul style="list-style-type: none"> <li>- Continue to work on</li> </ul>

		customisation aspect. <ul style="list-style-type: none"> <li>- Work on art assets.</li> <li>- Refer to clients on development.</li> </ul>
07/03/16	9	<ul style="list-style-type: none"> <li>- Work on core mechanics more, tweaking.</li> <li>- Add in some more customisation options.</li> </ul>
14/03/16	10	<ul style="list-style-type: none"> <li>- Have all assets ready.</li> <li>- All required sounds are sources.</li> <li>- All required graphical assets sourced.</li> <li>- Core mechanics should be finished with tweaking exceptions.</li> </ul>
21/03/16	11	<ul style="list-style-type: none"> <li>- Easter Break</li> </ul>
28/03/16	12	<ul style="list-style-type: none"> <li>- Easter Break</li> </ul>
04/04/16	13	<ul style="list-style-type: none"> <li>- Begin development on secondary functions.</li> <li>- Slight tweaks to core mechanics may be required.</li> <li>- Tweak customisations options.</li> </ul>
11/04/16	14	<ul style="list-style-type: none"> <li>- Further develop secondary functions.</li> <li>- Refer to clients.</li> </ul>
18/04/16	15	<ul style="list-style-type: none"> <li>- Tweaking of secondary functions.</li> <li>- Add in possible last minute tertiary functions.</li> <li>- Game should be mostly complete.</li> <li>- Bug fixes.</li> <li>- Testing.</li> </ul>
25/04/16	16	<ul style="list-style-type: none"> <li>- Adding in tertiary functions.</li> <li>- More testing.</li> <li>- Bug fixes in code.</li> </ul>
02/05/16	17	<ul style="list-style-type: none"> <li>- Final tweaks.</li> <li>- Game development complete.</li> <li>- Present to clients.</li> <li>- Hand-over to clients.</li> </ul>

### Professional Practice Schedule

Jordan S Gray

## **6.5 Appendix 5**

This is the PID I drafted during pre development.

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# Sustrans Game Application Project

## Initiation Document

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Approved by Sustrans  
05/02/2016  
Author Jordan Stephano Gray  
Edinburgh Napier University

## Table of Contents

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- 1) Project Goals
- 2) Scope
- 3) Approach
- 4) Project Organisation
- 5) Business Case
- 6) Constraints
- 7) Stakeholders
- 8) Risks
- 9) Project Controls
- 10) Reporting Frameworks
- 11) Schedule
- 12) PID Sign Off

## 1. Project Goals

---

The main goal of this project is to develop some software, primarily a game for Sustrans aimed at a younger audience which will encourage the users to make more active travel journeys.

## 2. Scope

---

The overall goal is to have an interactive piece of software for kids to play which will encourage them to be active and healthy. The game should also provide entertainment for the users.

1. Do some research into games that encourage exercise.
2. Source assets such as graphics (Sprites) and sound.
3. Program core mechanics of the game.
4. Add in secondary functions.
5. Add in tertiary functions.
6. Present the game.
7. Game hand-over.

## 3. Approach

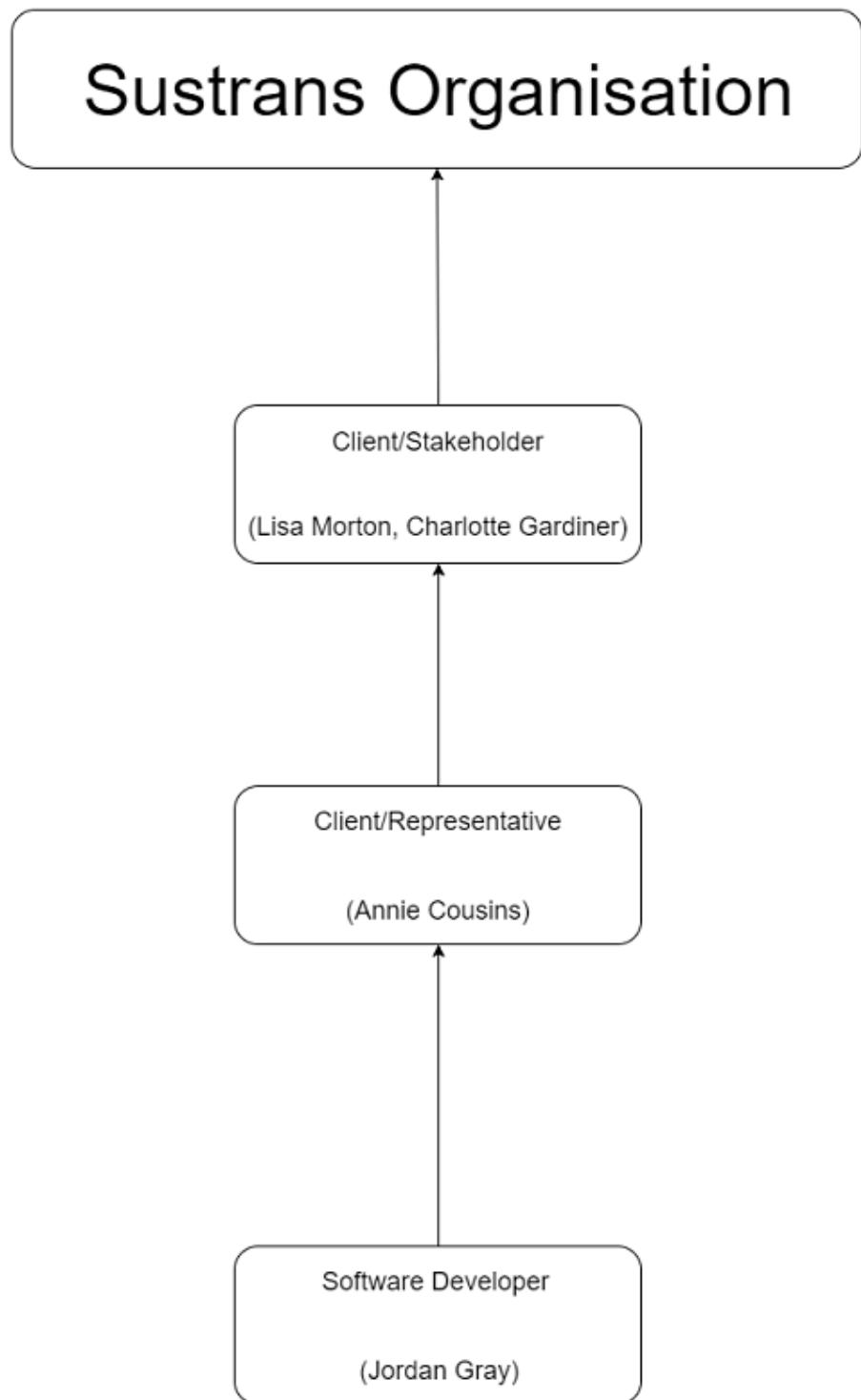
---

In order to carry this project out there are some essentials I will need. A suitable language to program in and an IDE to go along with the language. To meet these requirements I will be coding using the Java programming language and I will primarily be coding in the Eclipse environment. I will also need the program Photoshop CS6 to help with sprite and art asset creation. I may also use free open source assets from an open source game asset provider online opengameart.com. I will have to source sounds and music from this website also.

I will mostly be using resources provided on my own such as my laptop and desktop computer at home. I have the choice to work in the offices but feel more comfortable working in both the Edinburgh Napier University environment and in my home environment, that way I won't take up any of the organisations resources.

#### 4. Project Organisation

There are three members of the Sustrans organisation I communicate with during meetings. Outside of meetings I only communicate with Annie Cousins, a stakeholder via email to organise meetings etc. The following diagram shows the structure.



## **5. Business Case**

---

The completion of this project will benefit the organisation in many ways. One of the initial benefits will be the helping of the organisations main goal of encouraging kids to make more active travel journeys and to get them motivated.

## **6. Constraints**

---

As there is in most projects there will be some constraints, the initial constraints that will be most prominent during the development of this software will consist of:

- Time, I won't have an extensive amount of time to develop this software. The latest I could possibly have as a deadline would be around 25<sup>th</sup> of April - 2<sup>nd</sup> of May 2016.
- Solo project, I will not be receiving any support so I am working on this project on my own from the beginning and have to come up with all of the assets, documentation and manage the project alone.
- Scope, I have never developed a game quite this size in terms of scope especially as a solo project.

## **7. Stakeholders**

---

Annie Cousins  
Lisa Morton  
Charlotte Gardiner

## **8. Risks**

---

1) Not acquiring the required software and hardware to complete the project:

Chance: 1  
Risk Level: 5  
Total: 5

2) Finished project won't meet the deadline:

Chance: 3  
Risk: 4  
Total: 12

3) Software developer will become ill:

Chance: 1

Risk: 3

Total: 3

4) Learning curve is too steep:

Chance: 3

Risk: 3

Total: 9

5) Risk of losing project progress:

Chance: 1

Risk: 5

Total: 5

## **9. Project Controls**

---

In order to ensure a smooth development cycle there will be some basic project controls put in place. These will consist of:

- Meeting bi-weekly with the clients to give progress updates and to communicate any changes in development.
- Creating a Gantt Chart and sticking to the cycle as closely as possible.
- Using source control to make sure code is up to date and can be accessed from anywhere via source tree and bit bucket.
- Make sure I communicate with the client via emails regularly and address any concerns if need be.

## **10. Reporting Frameworks**

---

The only documents to be produced by the end of this project are:

- Reflective report.
  - User Guide.
-

## 11. Schedule

---

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02/05/16	17	<ul style="list-style-type: none"> <li>- Final tweaks.</li> <li>- Game development complete.</li> <li>- Present to clients.</li> <li>- Hand-over to clients.</li> </ul>

## **12. PID Sign Off**

---

To: clients

*I have reviewed the above document.*

- I accept the documents contents as correct and sign it off.
- I accept the documents contents as correct and sign it off, subject to attached documents.
- I do not accept the documents contents and cannot sign it off.

Or other comments as appropriate.

Developers Signature:

---

Client Signature:

---

Client Signature:

---

Client Signature:

---

Date:

---

## **6.6 Appendix 6**

This is the initial core game mechanic ideas I drafted.

# Sustrans Base Game Mechanics

## **Core Mechanics:**

- Menu Screen at the beginning with music, select sounds and graphics. The choices will consist of “Play”, “How to Play” and possibly “Settings/Options”.
- The user will then be able to create a character which will consist of customisable Name and a customisable appearance.
- The players character will then be placed into a home setting. The character will be associated with an array of attributes and the players stats will be tracked. This includes:
  - o A sprite of a face displaying an emotion to portray mental health/happiness.
  - o A sprite of a heart displaying emotion to portray overall physical health.
  - o A score which varies depending on the health of the players character over the course of the game.
  - o Hunger/Thirst levels.
  - o Carbon level/money saved stat tracks.
- The player will then be able to make a number of choices based around the locations of the game world. The aim is to encourage travel via bike in the game so there should be an array of locations with things to do at those locations. In between travel may include snippets of bike travel info and tips or if there's time even small mini games.
- The score could double as a currency if money in the game is out of the question.
- If a money mechanic is introduced then it could possibly work as follows: The player has an “allowance” every day for example £20 each day. How the player spends it is up to them whether they want to save it for the next day is also up to them. This allows for the game to show the benefits of travelling via walking/cycling as it'll be far cheaper in the long run and will encourage the player to do so.
- Could include buying accessories to improve stats such as a better bike/better shoes etc.
- Choices in both what the player chooses to consume and how they choose to travel will influence the health of the player.
- The game will end after a certain number of days (Maybe number of days to play can be chosen at the start i.e. Fast game = 15 days, Med game = 30 days, Long game = 60 days).
- Each decision made in-game will cost time, for example there may be 16 hours in a day due to the player having to sleep and choosing to cycle to school may cost 20 minutes of time whereas walking may deduct 1 hour from the day.

## 6.7 Appendix 7

This is the initial place holder sprite sheet I created in Photoshop CS6.

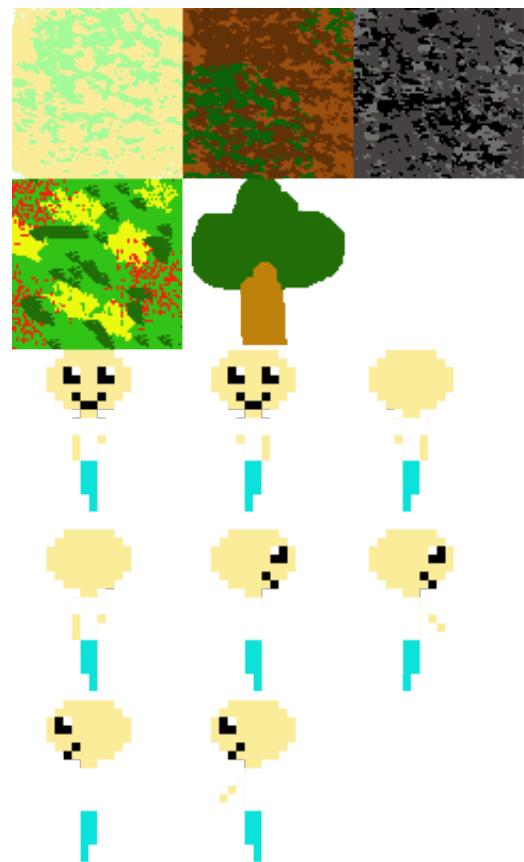


Figure 3: Basic placeholder graphics spritesheet.

This is the menu user interface I created in Photoshop CS6.



Figure 4: Basic menu screen I created.

## 6.8 Appendix 8

Here are some examples of code I produced.

The main Game class.

---

```
package SusGame;

import java.applet.*;
import java.net.*;

import java.awt.Color;
import java.awt.Graphics;
```

```

import java.awt.image.BufferStrategy;
import java.awt.image.BufferedImage;

import javax.sound.sampled.AudioInputStream;
import javax.sound.sampled.AudioSystem;
import javax.sound.sampled.Clip;

//Main class of the game. Start, run etc...
public class Game implements Runnable{

    //Create private display object.
    private Display display;
    //Width, height and title variables.
    private int width, height;
    public String title;

    //Create new thread object.
    //Everything in this class runs separately to rest of app.
    private Thread thread;
    //Create running boolean for the game loop
    private boolean running = false;

    //A way to draw to the screen.
    //Buffer is a hidden screen but only holds data doesn't display
    private BufferStrategy bs;
    //Create graphics object.
    //Like a paint brush
    private Graphics g;

    //STATES**
    public State gameState;
    public State menuState;

    //INPUT**
    private KeyManager keyManager;
    private MouseManager mouseManager;

    //CAMERA**
    private GameCamera gameCamera;

    //HANDLER**
    private Handler handler;

    //-----
    //-----

    //Create default Game constructor.
    public Game(String title, int width, int height) {

```

```

        this.width = width;
        this.height = height;
        this.title = title;

        keyManager = new KeyManager();
        mouseManager = new MouseManager();

    }

//-----
//-----

//An initialise method to initialise the graphics etc.
private void init() {

    //Create new display object upon being called.
    display = new Display(title, width, height);
    //Adds key listener to the display.
    display.getFrame().addKeyListener(keyManager);
    //Add mouse listener to display.
    display.getFrame().addMouseListener(mouseManager);
    display.getFrame().addMouseMotionListener(mouseManager);
    display.getCanvas().addMouseListener(mouseManager);
    display.getCanvas().addMouseMotionListener(mouseManager);

    //Initialise assets from assets class.
    Assets.init();

    handler = new Handler(this);

    gameCamera = new GameCamera(handler, 0, 0); //Initialise game cam
    at 0, 0

    //Set initial states up. set to game state.
    gameState = new GameState(handler);
    menuState = new MenuState(handler);
    State.setState(menuState);

}

//Update method. Update variables.
private void tick() {

    keyManager.tick();

    //If state does not = null
    if(State.getState() != null) {
        //Get the states tick method
        State.getState().tick();
    }
}

```

```

    }

    //Increment player movement by speed based on key pressed.
    if (handler.getKeyManager().up) {

        State.setState(gameState);
    }

}

//render method. Draw to screen
private void render() {

    //Sets buffer strategy object to the game canvas.
    bs = display.getCanvas().getBufferStrategy();
    //If canvas does not have buffer strategy.
    if(bs == null) {
        display.getCanvas().createBufferStrategy(3); //Use 3 buffers
        return;
    }
    //Create paint brush.
    g = bs.getDrawGraphics(); //Set graphics object to buffer graphics.

    //Clear screen for each render.
    g.clearRect(0, 0, width, height);

    //Draw here****

    //If the state the game is in doesnt = null
    if(State.getState() != null) {
        //Get the current states render method.
        State.getState().render(g);
    }

    //End draw****
    bs.show(); //Show graphics

    g.dispose(); //Graphics object disposed of
}

//This is the main run method.
public void run() {
    //Only runs once.
    init();

    //Initialise and set frames per second to 60.
    int fps = 60;
    //Theres 1,000,000,000 nano seconds in a second
    //1 second divide by fps.
}

```

```

double timePerTick = 1000000000 / fps;
double delta = 0; //Amount of time we have to call tick and render.
long now; //Current computer time
long lastTime = System.nanoTime(); //Return current computer time.
    Nano secs
long timer = 0;
int ticks = 0;

//The game loop
while(running) {
    //Set now to current time nano secs
    now = System.nanoTime();
    //
    delta += (now - lastTime) / timePerTick;
    timer += now - lastTime; //Adds to time since last block of
        code was called.
    lastTime = now;

    //If delta is >= 1 tick and render.
    if(delta >= 1) {
        tick();
        render();

        ticks++;
        //Increments ticks.
        delta--;
        //Subtract from delta.
    }

    //If timer is >= 1 second, print ticks and frames.
    if(timer >= 1000000000) {

        System.out.println("Ticks/Frames: " + ticks);
        ticks = 0;
        timer = 0;
    }
}

stop(); //Stop running.
}

//Synchronised to work with threads
public synchronized void start() {

    //The the game is already running then return out of method.
    if(running)
        return;

    //When started set running to true
    running = true;

    thread = new Thread(this); //Set new thread object to run game
}

```

```

        class(this).
    //This calls the run method.
    thread.start();
}

//Stop thread safely
public synchronized void stop() {

    //If game has stopped then return.
    if(!running)
        return;

    running = false;

    try {
        thread.join();
    } catch (InterruptedException e) {
        e.printStackTrace();
    }
}

//-----
//-----

//Getters
public KeyManager getKeyManager() {

    return keyManager;
}

public MouseManager getMouseManager() {

    return mouseManager;
}

public GameCamera getGameCamera() {

    return gameCamera;
}

public int getWidth() {

    return width;
}

public int getHeight() {

    return height;
}

```

}

---

Player Class.

---

```
package SusGame;

import java.awt.Color;
import java.awt.Graphics;
import java.awt.image.BufferedImage;

public class Player extends Creature {

    //Animations
    private Animation animDown, animUp, animLeft, animRight;

    //Physical and mental health.
    private float mentalHealth;
    private float physicalHealth;

    // Default constructor
    public Player(Handler handler, float x, float y) {
        // Call creature constructor.
        super(handler, x, y, Creature.DEFAULT_CREATURE_WIDTH,
              Creature.DEFAULT_CREATURE_HEIGHT);

        //Set up player bounding box.
        bounds.x = 16;
        bounds.y = 32;
        bounds.width = 15;
        bounds.height = 32;

        //Setting Physical and mental health attributes.
        mentalHealth = 50;
        physicalHealth = 50;

        //Animation
        animDown = new Animation(300, Assets.player_down);
        animUp = new Animation(300, Assets.player_up);
        animLeft = new Animation(300, Assets.player_left);
        animRight = new Animation(300, Assets.player_right);
    }

    // Update variables.
    @Override
    public void tick() {

        //Tick animation
        animDown.tick();
        animUp.tick();
    }
}
```

```

animLeft.tick();
animRight.tick();

//Calls this method.
getInput();

//Got from creature class.
move();

//Center camera on player.
handler.getGameCamera().centerOnEntity(this);
}

// Gets player input.
private void getInput() {

    xMove = 0;
    yMove = 0;

    //Increment player movement by speed based on key pressed.
    if (handler.getKeyManager().up) {

        yMove = -speed;
    }
    if (handler.getKeyManager().down) {

        yMove = speed;
    }
    if (handler.getKeyManager().left) {

        xMove = -speed;
    }
    if (handler.getKeyManager().right) {

        xMove = speed;
    }
}

// Update screen.
@Override
public void render(Graphics g) {

    // Draw player.
    g.drawImage(getCurrentAnimationFrame(), (int) (x -
        handler.getGameCamera().getxOffset()), (int) (y -
        handler.getGameCamera().getyOffset()), width, height, null);

    //Display physical and mental health
    g.drawString("Physical Health: " + String.valueOf(physicalHealth),
        10, 10);
}

```

```

        g.drawString("Mental Health: " + String.valueOf(mentalHealth), 10,
                     30);

        /*
        //Display players bounding box.
        g.setColor(Color.red);
        g.fillRect((int) (x + bounds.x -
                          handler.getGameCamera().getxOffset()),
                   (int) (y + bounds.y - handler.getGameCamera().getyOffset()),
                   bounds.width, bounds.height);
        */
    }

    private BufferedImage getCurrentAnimationFrame() {
        if(xMove < 0) {           //If moving left
            return animLeft.getCurrentFrame();
        }
        else if(xMove > 0) { //Moving right
            return animRight.getCurrentFrame();
        }
        else if(yMove < 0) { //Moving up
            return animUp.getCurrentFrame();
        }
        else {                  //Moving down
            return animDown.getCurrentFrame();
        }
    }
}

```

---

## 6.9 Appendix 9

This is proof of communication with the client via emails.

---

 **Graybo Stephano** <graybostephano@gmail.com>  
to annie.cousins ▾

Jan 20 ★ ↻ ▾

Hi,

I'm not sure whether Andrea Scott has got in contact yet but I'm the 3rd year student that has chosen this project. This is just an email regarding when we should have some sort of meeting to discuss the project.

Thanks.  
Jordan S. Gray  
Edinburgh Napier University

---

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
✉ to me ▾

Jan 21 ★ ↻ ▾

Hello Jordan,

Many thanks for getting in touch. I'm really pleased that you've chosen this project!  
I haven't yet heard from Andrea Scott, but she may well have contacted my colleague, Lisa, who originally sent through the proposal.

It would be great to meet up – what's your timetable like? Let me know some times to suit you, and if you're happy to come into our office that would be good. We're next to Haymarket station, full address below.

Many thanks,

Annie

Figure 5: Initial emails 1 of 3.

 **Graybo Stephano** <graybostephano@gmail.com>  
to Annie ▾ Jan 21 ★ ↻ ⏹

Hey,

Well this week I can do Friday morning, Saturday all day, Sunday all day. Most weeks I'll be able to do Wednesdays Thursdays and Fridays all day unless I have a group meeting scheduled for then.

Thanks for the address, I should be able to make it there fine.

Regards,  
Jordan

\*\*\*

---

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
✉ to me ▾ Jan 21 ★ ↻ ⏹

Hello Jordan,

Thanks for your quick reply. I'm free tomorrow morning – would 10 am be ok for you? My colleagues, Lisa Morton and Charlotte will come along too. Lisa manages the community volunteering programme and Charlotte manages the I Bike schools officers, so it's helpful for you to meet them, and for them to have input into the project.

Thanks,  
Annie

Figure 6: Initial emails 2 of 3.

 **Graybo Stephano** <graybostephano@gmail.com>  
to Annie ▾ Jan 21 ★ ↻ ⏹

Hey,

Tomorrow at 10am sounds good, see you then.

Thanks,  
Jordan

\*\*\*

---

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
✉ to me ▾ Jan 21 ★ ↻ ⏹

Hello Jordan,

That's great – see you then

Thanks,  
Annie

Figure 7: Initial emails 3 of 3.

 **Graybo Stephano** <graybostephano@gmail.com>  
to Annie ▾ Jan 25 ★ ↗

Hey,  
I was just hoping to arrange another meeting for this week. Unfortunately I am only really free on Wednesday but I am free all day. I hope this isn't an inconvenience.

Thanks,  
Jordan

---

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
✉ to me ▾ Jan 25 ★ ↗

Hello Jordan, Thanks for getting in touch. We're all in a team meeting all day on Wednesday unfortunately, so do you want to suggest some times you are free the following week?  
Cheers, Annie

Figure 8: 26th of January emails 1 of 5.

 **Graybo Stephano** <graybostephano@gmail.com>  
to Annie ▾

Hi sorry about the late reply.  
I'll be free Wednesday, Thursday and Friday all day if any of those days suit you?  
Jordan.

\*\*\*

---

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
✉ to me ▾

Hi Jordan,  
Great - How about next Friday, 5<sup>th</sup> March at 11 am?  
Thanks, Annie

Figure 9: 26th of January emails 2 of 5.

 **Graybo Stephano** <graybostephano@gmail.com>  
to Annie 

Jan 26  

Hi,  
I can do next Friday at 11am.  
Thanks,  
Jordan  


---

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
 to me 

Jan 26  

Thanks! Look forward to seeing you then. Just so we know where we're all up to, how did you get on with researching the calendar project?  
It's totally fine if that one's not up your street. – we're having a think about potential games projects too.  
Cheers, Annie

Figure 10: 26th of January emails 3 of 5.

---

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
 to me 

Hi Jordan,  
Would you able to make 3pm on Friday 5<sup>th</sup> instead? Sorry, we can't all make 11am after all!  
Thanks, Annie

Figure 11: 26th of January emails 4 of 5.

---

 **Graybo Stephano** <graybostephano@gmail.com>  
to Annie 

Hey,  
That's fine with me.  
Regards,  
Jordan  


---

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
 to me 

Thanks!

Figure 12: 26th of January emails 5 of 5.

Game Research

**Graybo Stephano** <graybostephano@gmail.com>  
to Annie Feb 4

Hey.

I've been doing some research into what type of games can encourage kids to exercise. It sounds quite strange but after doing some research it is possible and I wrote up a small document that I thought would be good to send over in case you were having some trouble with ideas since we have our meeting tomorrow.

Regards,  
Jordan S Gray

Figure 13: 5th of February emails 1 of 4.

**Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
 to Lisa, Charlotte, Lynn, Niall, me Feb 5

Hello Jordan,

This is great, thanks for taking the time to do this research. I really like your idea! I've copied this so the my colleague can take a look before we meet this afternoon.

Looking forward to seeing you later,

Thanks,  
Annie

Figure 14: 5th of February emails 2 of 4.

PID

**Graybo Stephano** <graybostephano@gmail.com>  
to Annie Feb 5

Hi again,

I wrote up a rough first draft Project Initiation Document, some of the details are missing but that will be sorted by the meeting today. I'll attach a copy to this email and see you at 3pm.

Thanks,  
Jordan

Figure 15: 5th of February emails 3 of 4.

**Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
 to me

Great! Thanks for that  
See you at 3,  
Annie

Figure 16: 5th of February emails 4 of 4.

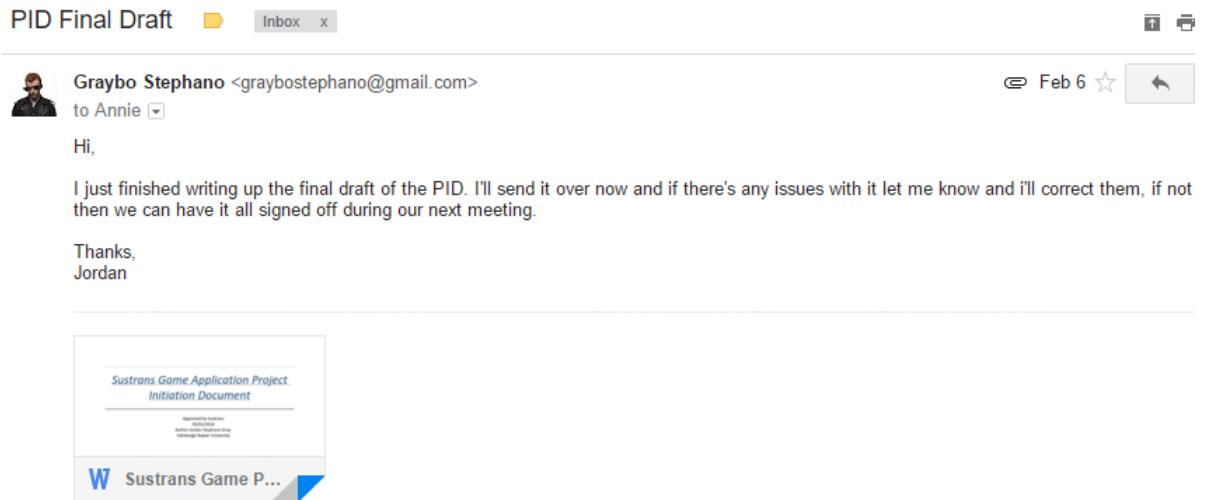


Figure 17: 8th of February emails 1 of 4.

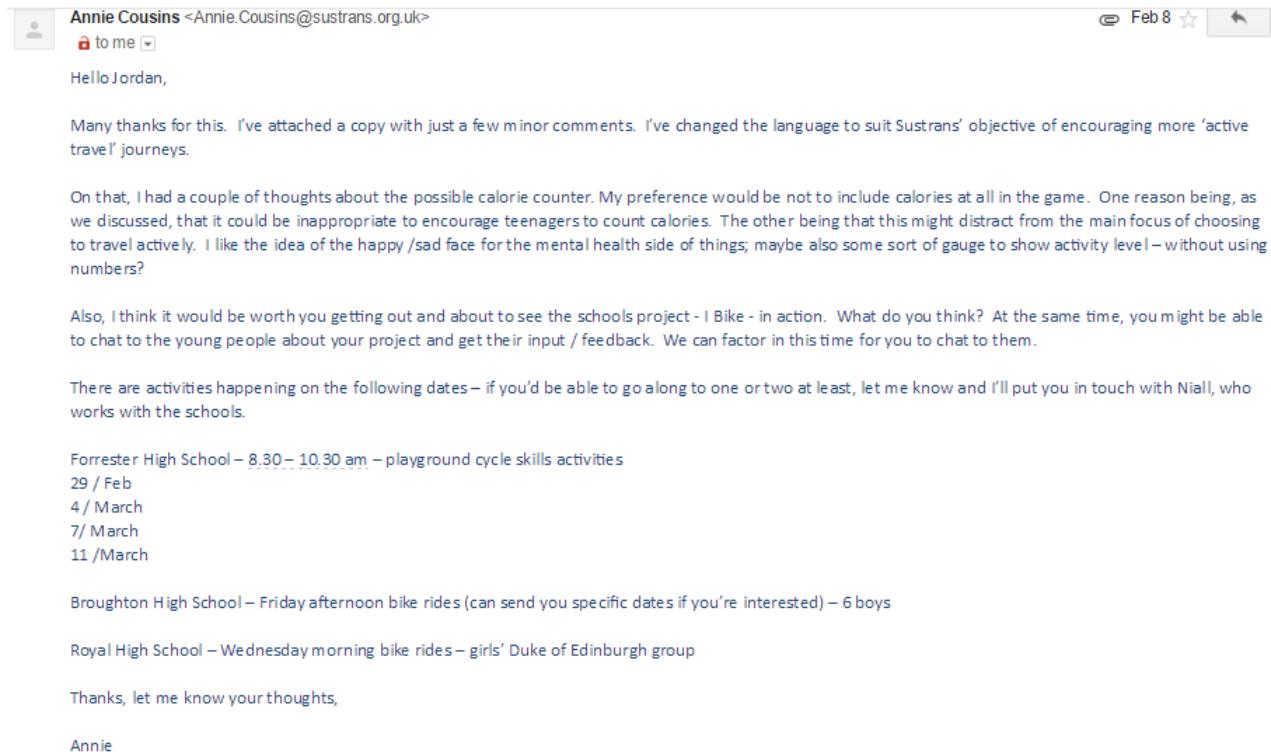


Figure 18: 8th of February emails 2 of 4.

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
 to me

Feb 8  

Hi Jordan,  
My colleague, Cecilia, has passed on these articles (4 links below) after we were chatting about your project. Could be some helpful background info for you, if you've not seen them before.

I'm also going to forward another email from Cecilia. In it, she answers some questions about the potential benefits of gamification to Sustrans. Could be useful too.

Any questions, let me know

Cheers, Annie

Figure 19: 8th of February emails 3 of 4.

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
 to me

Hi Jordan,  
As per my other email – here are Cecilia's answers...  
Thanks, Annie

Figure 20: 8th of February emails 4 of 4.

 **Graybo Stephano** <graybostephano@gmail.com>  
 to Annie

Feb 8  

Hey Annie,

Thanks for the links to those articles, I've read through them all and have a better understanding of what you are trying to achieve with the game.

I could attend the activity at Forrester High School on Monday the 29th of February at 0830, it'd be good for the project for me to see in person what you guys do and have a chat with the kids about the game.

I have also revised the PID and attached it to this email, again thanks for the feedback let me know if there is any other necessary changes that I maybe missed.

Regards,  
Jordan

Figure 21: 11th of February emails 1 of 3.

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk> Feb 8  

to Niall, me

Hi Jordan,

Great, thanks for all this. I'll take a look at your PID again tomorrow, as I'm heading out very soon.

I've copied Niall into this email so that you two can be in touch about your visit to Forrester on 29th. Niall, if there's a bit of time for Jordan to chat to the group about the game he's developing, that'd be great :0)

Cheers,  
Annie

Figure 22: 11th of February emails 2 of 3.

 **Niall Shannon** <Niall.Shannon@sustrans.org.uk> Feb 8  

to Annie, me

Hi Jordan,

This sounds good – looking forward to hearing more about the game.

Great that you can make the session on the 29<sup>th</sup> – it will be my first session with a group so may not be the most interesting of sessions, but it will give you a chance to see some of what we do and can definitely give you a chance to chat and ask questions.

Is there anything else I can do to assist at this stage?

Thanks,

Niall

Figure 23: 11th of February emails 3 of 3.

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk> Feb 29  

to me

Hello Jordan,

Hope all's well. Just wondering if you'd mind if we changed our meeting on 17<sup>th</sup> March? Are you free any time on the Friday 18<sup>th</sup>? I'm now going to be up in Perth for most of the 17<sup>th</sup>.

Cheers, Annie

Figure 24: 29th of February emails 1 of 2.

 **Graybo Stephano** <graybostephano@gmail.com>  
to Annie

Hey,  
Yeah I can do the 18th that's fine for me, what time did you have in mind?  
Regards,  
Jordan

[redacted]

---

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
 to me

Great, thanks for that – I'm around all day – so whenever suits you.  
See you Thurs  
Cheers, Annie

Figure 25: 29th of February emails 2 of 2.

 **Graybo Stephano** <graybostephano@gmail.com>  
to Annie

Hey,  
Sorry it took me so long to send this, I've attached the core game design doc to this email.  
Regards,  
Jordan

---

**Sustrans Base Game Mechanics**

**Core Mechanics:**

Mono screen at the beginning with menu, select mode and graphics. The choices will be limited to start the game or exit. The user will be able to create a character which will consist of name and gender. The player will be able to move around the screen using the arrow keys. The player character will then be placed into a theme setting. The character will be able to move around as well as attack and dialogue will also be included. The character will be able to move around as well as attack and dialogue will also be included.

• A game of the first displaying an animation is going to receive feedback responses.

 [Sustrans Base Ga...](#)

---

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
 to me

Thanks for this

Figure 26: 1st of March emails 1 of 1.

Sustrans branding guidelines   

?

Annie Cousins <Annie.Cousins@sustrans.org.uk>  
 to me

Mar 3   

Hi Jordan,  
Good to catch up, hope it was helpful. I've attached the branding guidelines and the Sustrans logos in various formats.  
With the guidelines, hopefully it'll help you a bit, but of course these are aimed at publications so just take a look see how any of it fits with the game.  
I'll send the moving logo in another email.  
Cheers, Annie

Figure 27: 3rd of March emails 1 of 2.

?

Annie Cousins <Annie.Cousins@sustrans.org.uk>  
 to me

Mar 3    

Hi Jordan,

Please see below – some examples of signs that you could incorporate into the game, if you think that would work.  
You can cut and paste any of these apart from the map style one, as Robert says.

There's a copyright statement that would need to be put in somewhere too.

Any questions give me a shout

Cheers, Annie

---

**From:** Robert Weetman  
**Sent:** 03 March 2016 15:00  
**To:** Annie Cousins  
**Subject:** Signs

Some images of potential cycle / NCN signs.  
Note the copyright information link.  
Note the less obvious third design (rectangular with an arrow).  
The last image is a 'map style' sign. Please don't use this particular image – I'd want to see one done properly and this has some technical errors. I've included this just to prompt thinking about what signs are needed. The simple designs are quick to produce – unless we end up with complex destination information on them – that gets messy. The map style sign is a pain in the neck to produce.  
Robert

Figure 28: 3rd of March emails 2 of 2.

Friday 18th March   x

---

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
to me ▾

Mar 4  

Hello Jordan,  
What time would suit you to meet on Friday 18<sup>th</sup> March? (instead of Thurs 17<sup>th</sup>)  
I'm in the office all day.  
I've invited my colleague Cecilia along too, as we've had a few chats about your projects, and I think her input would be really useful.  
Thanks, Annie

Figure 29: 5th of March emails 1 of 2.

---

 **Graybo Stephano** <graybostephano@gmail.com>  
to Annie ▾

Hey,  
Pretty much anytime that day is okay with with me, so if you have a preferred time?  
Thanks,  
Jordan

...

---

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk>  
to me ▾

Thanks – how about 10 am?  
Cheers, Annie

**From:** Graybo Stephano [mailto:[graybostephano@gmail.com](mailto:graybostephano@gmail.com)]  
**Sent:** 04 March 2016 10:50  
**To:** Annie Cousins  
**Subject:** Re: Friday 18th March

...

---

 **Graybo Stephano** <graybostephano@gmail.com>  
to Annie ▾

10am is fine with me, see you then.

Figure 30: 5th of March emails 2 of 2.

 **Annie Cousins** <Annie.Cousins@sustrans.org.uk> Mar 8 ★ ↻ ↽

to me ▾

Hi Jordan,  
A bit more feedback on the game – see Lisa's thoughts below.  
Cheers, Annie

---

**From:** Lisa Morton  
**Sent:** 07 March 2016 16:30  
**To:** Cecilia Oram; Annie Cousins  
**Cc:** Charlotte Gardiner; Lynn Stocks  
**Subject:** RE: Sustrans Base Game Mechanics

Hello Annie

I agreed with Cecilia that it would be good to include money. The mental health/happiness score could be called 'health and happiness' to avoid a specific reference to mental health. This would avoid sigma associated with mental health. I don't know what other people think of this.

Cheers

Lisa

Figure 31: 8th of March emails 1 of 1.