



SAVE ENERGY

Grant agreement no.: 238882

DELIVERABLE

Deliverable D 5.2

SAVE ENERGY Serious Game Dashboard and Client

Document ID D5.2.31.08.10
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Workpackage: 05
Version: V1
Date: 31.08.2010
Project Coordinator: ALFAMICRO
Contract Start Date: 01.03.2009
Duration: 30 months
Dissemination Level: Public



Project co-funded by the European Commission within the ICT
Policy Support Programme

REVISION HISTORY

Date	Version	Author/Contributor	Comments
17.08.2010	V01	Aalto-CKIR	First version.
18.08.2010	V02	Aalto-CKIR	Filled out functionality chapter
25.08.2010	V03	Aalto-CKIR	Filled out testing chapter
30.08.2010	V04	Aalto-CKIR	Filled out conclusions
30.08.2010	V05	Aalto-CKIR	Clean up of document
31.08.2010	V1	Aalto-CKIR	Submission draft
31.08.2010	V1	Aalto-CKIR/Alfamicro	Final version

Statement of originality:

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EXECUTIVE SUMMARY

This deliverable describes the frontend for the SAVE ENERGY serious game, officially known as 'Green My Place' (GMP). The document briefly describes the frontend and lists its parts and where they can be accessed (online). The major concepts of the frontend, and brief guidelines for use, are included.

The frontend has been developed in a spiral model, in concert with iterative game and architecture design. Thus the various prototypes for the frontend are also described, illustrating how the interaction, graphic and functionality design has evolved.

The content of this deliverable is mainly schematic, explanations are kept to a minimum, given that the frontend itself is readily available and much more informative (pictures speak a thousand words).

INTRODUCTION

1.1 Abstract

The basis of the frontend is a web portal accessible from any computer, instantiating the meta-game as a set of Flash pages, containing a set of mini-games and pages of rich content, and connected to a social network. This is served from a commercial Virtual Private Server (VPS) that provides guaranteed remote access for online play, viewing of high scores and other personal information, and social networking.

1.2 Overview

The frontend work has been focused around getting a smoothly operating web portal, where players can find a lot of information and activities easily and without confusion – yet still have a deep experience of discovery and learning. The systems design of the frontend has also been a major issue, juggling data from the server to display user accounts, team stats and mini-game resources.

The graphics involved our artist polishing the meta-game user interface, and trying to integrate most functional operations into one visual ‘stage’. The visual style was tailored according to the perceived needs of our user group, which need to believe in the seriousness of our purpose without being turned off by a dull interface. For the mini-games, graphical polishing included rethinking the user interface of several games, using proper visual language and unified basic functional user interface and customized skins for different pilot building. These improvements help to lower the cognitive burden, smooth the game flow and increase motivation.

CKIR’s outreach to the students of local university and partner Metropolia, to contribute as formal game testers and mentor a team of students as a game development team, has been on-going. The students involved may not be capable of producing a high-standard game with other commitments, but the process has helped all involved anyway.

Localisation of the mini-games and portal is complete, and the new compelling Green My Place website will be visible at <http://greenmyplace.net/>. The software corresponding to deliverable 5.2 is available for review on the project management site TRAC, at <http://greenmyplace.net/trac> (authentication required).

HISTORY

The serious game was developed according to the spiral game design methodology, which is a risk-managing iterative approach. This means the project is conceived, designed, prototyped, tested, and the test results are put into the next iteration of the same steps. The spiral model is thus an evolutionary process, as shown in Figure 1 below.

The design process starts in the centre of the spiral with an idea. It proceeds outward clockwise through each of the five phases of design. Every return of the spiral to the "define" position starts a new iteration. Iterations produce a deliverable or prototype, and each prototype is closer and closer to the final production model in complexity and degree of completion. The process begins with an idea for a game, and continues as follows:

1. **Define** - define the new idea, make an outline, and hash out the basics of your design.
2. **Design** – start creating by writing the rules for the core mechanic and make the basics workable.
3. **Prototype** - build a working model and start to get the look and feel of the physical features of the game.
4. **Play test** - either a solo play test, an internal play test, or a blind play test.
5. **Feedback** - gather, collate, and synthesize the feedback.
6. **Redefine** - go back to the drawing board with what was learned and change the outline.

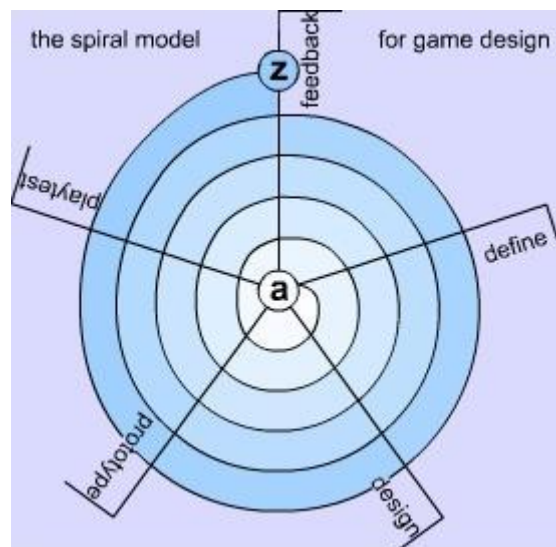


Figure 1: The spiral model of game design

The production of prototypes is an important part of the spiral design methodology. To illustrate this, we described a list of the highlights of the prototyping process in the site portal, which is included below in Appendix A.



FUNCTIONALITY

The frontend serves as both a platform for the dissemination of activities such as mini-games, and a collocation of all those involved in the pilots, in order to subserve the competition between them to be the best energy savers.

The frontend is composed of two sets of web pages, those developed in Flash which form the core, and those developed in the site framework Ruby on Rails and which wrap the Flash. This list is not comprehensive, as it only includes pages accessible to the public user. It is included below in Appendix B.

In order to fully understand the system, it is recommended to follow carefully the tutorials and help messages (including story) that are available for the game. The tutorials are described in D3.8, while the help messages appear in every Flash page below the main part of the screen.

TESTING

The frontend was user-tested with special focus groups, both from the pilots and groups specially-recruited for the task from local university and partner Metropolia. The primary frontend developer, Eva Szadeczky-Kardoss, was responsible for overseeing the testers. A test protocol was developed to help guide the testing process, which was distributed to testers to normalise their efforts.

This testing protocol is included as Appendix C. The response of 1 tester is included in Appendix D as an exemplar of the feedback received. Example test responses can also be found on the project management site at <http://greenmyplace.net/trac>

The primary output of this testing protocol was a direct feedback loop between the developers of game mechanics/ graphics, and a representative set of users.

CONCLUSION

In summary, the Green My Place frontend exists at <http://greenmyplace.net> and can be accessed in limited manner as a guest, or in full via registration and log in. Tutorials exist for the description of the frontend and game system to novices. The client is platform and browser independent, as any web page. It is upgradeable with only modifications server-side, freeing the user from any knowledge or interaction requirement before benefitting from updates.

The interface design reflects the considered combination of expert design in game mechanics and graphics with user testing and feedback from a broad range of user types.



APPENDIX A

The list of prototype screens are accessible here:

<http://serious-games.community.ict4saveenergy.eu/2010/04/05/website-evolutionwebsite-evolution/>

APPENDIX B

The list of Pages in the Green My Place website, and screen shots where appropriate.

Ruby on Rails Pages:

1. Intro Page – Figure 2 – contains:
 - a. Slideshow game story.
 - b. Link to the SAVE ENERGY about page.
 - c. Log in functionality.
 - d. ‘Create New Account’ button.



Figure 2 Introduction page including game story

2. Registration pages – Figure 3 – containing (in order):
 - a. Choose a pilot´.
 - b. Enter username, password and choose an Avatar.
 - c. Enter email, age group, relationship to pilot and place of work or study.

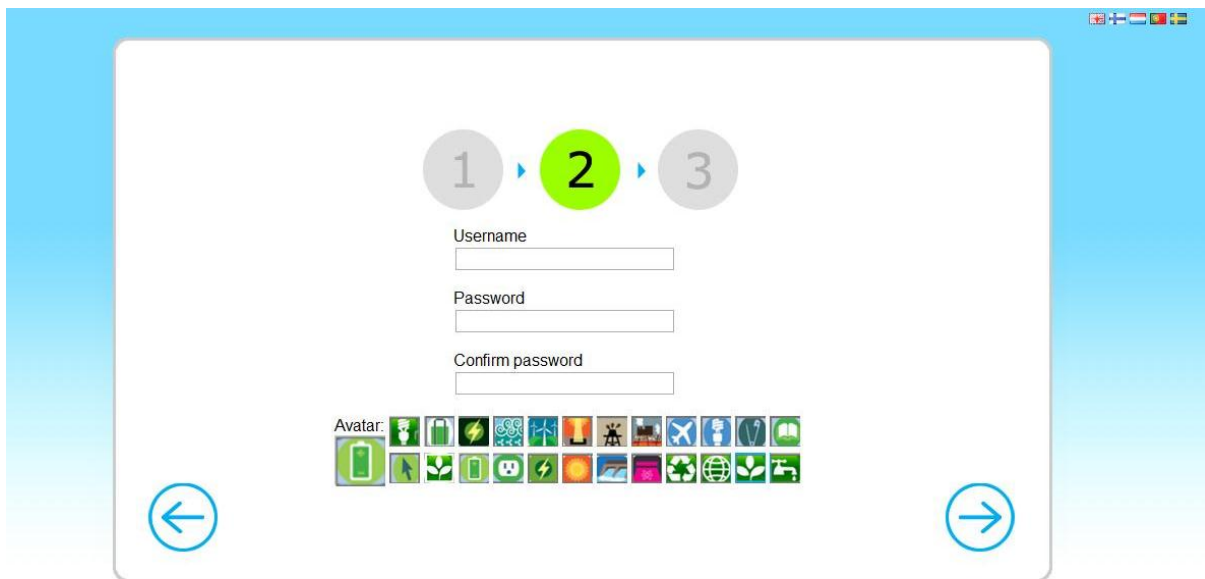


Figure 3 Registration page 2

3. Learn More Page – contains:
 - a. Link to pilot local website displaying real-time energy-use data.
 - b. 1 or more ‘knowledge items’ drawn from a repository.
 - c. 1 ‘energy saving tip’ drawn from a repository.
4. Quiz page – contains:
 - a. A short quiz designed to assess the player’s energy use behaviour and knowledge.

Learn More and Quiz pages are still in development, pending provision of the energy efficiency knowledge content by partners. Thus no screenshots are given. Flash Pages:

1. Account page – Figure 4 – contains:
 - a. The player’s key personal details, including points, rank, avatar and pilot.
 - b. History of player activity, including games played, best score obtained, number of Greener medals obtained, and knowledge items seen.
 - c. Message wall, where player activity prompts event messages.
 - d. Team list, where players can see each other’s score, name and rank.

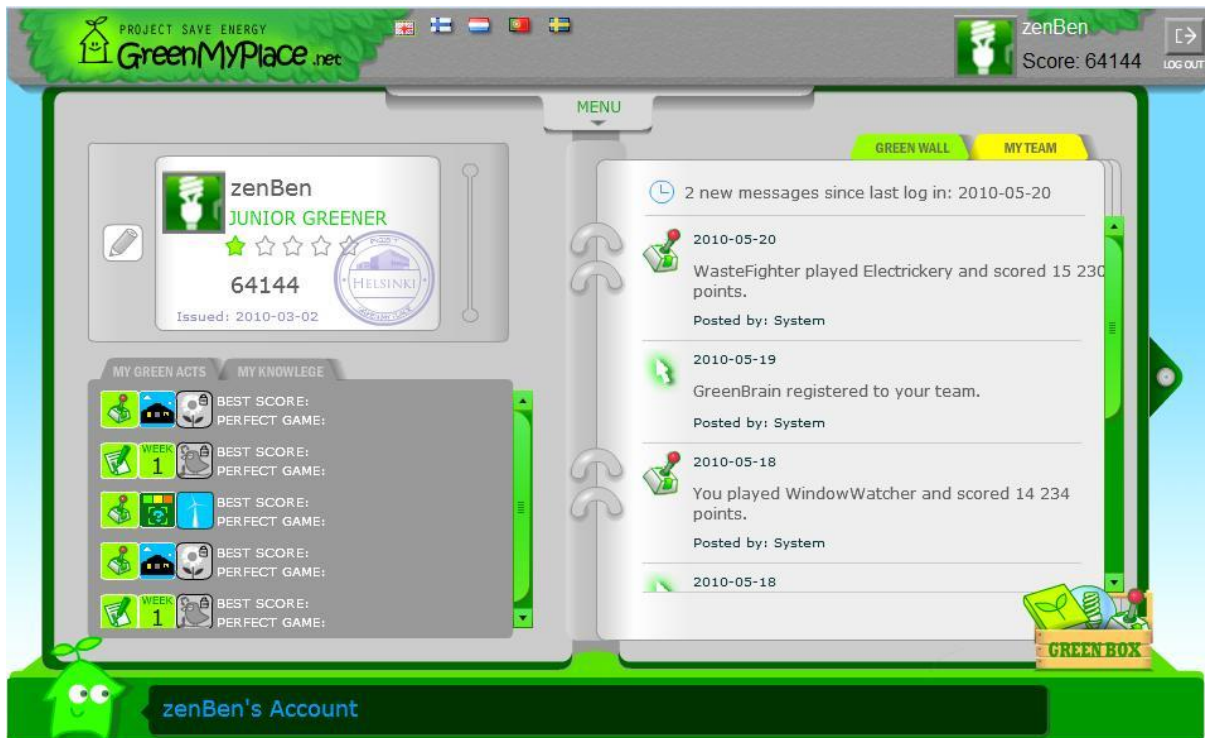


Figure 4 Player's account view

2. Europe page – Figure 5 – contains:
 - a. All 5 pilots buildings shown on a map of Europe, each linking to pilot page.
 - b. A comparison area allowing any 2 pilots to be compared in situ.
 - c. A graphical representation of the energy waste using cables.



Figure 5 Europe view showing all 5 pilots and comparisons between them

3. Pilot pages (1 for each pilot) – Figure 6 – contains:
 - a. Links to the pilot pages 1 place higher and 1 place lower in rank.
 - b. Schematic graph of the energy savings being achieved – this expands to show more detail.
 - c. Schematic graph of the awards being achieved – this expands to show more detail.
 - d. Graphical representation of the pilot building and all the awards players achieved.



Figure 6 Pilot view showing Lisbon. Boxes for Energy Saving % and Awards & Players can be expanded

4. Green Box and Menu (these are intrinsic to each Flash page) – Figure 7 – contains:
 - a. Menu: links to account and pilot views for player, plus Europe view.
 - b. Green Box: list of activity links available to the player, ordered by months, described by short text. Lists top scoring players and awards available for activity.



Figure 7 Green Box, allowing selection of activities with which one may support and succour ones team

APPENDIX C

The test protocol for the Green My Place game is shown below.

Tweak Tester's Guide to Game Tuning

1 OVERVIEW

This document is for tweak testers/game tuners working on the Green My Place game for the SAVE ENERGY project.

You must be under Non-disclosure agreement with CKIR/Aalto to operate as an independent Tweak Tester.

2 SET UP

The Green My Place game works on two levels – at the top level Green My Place is a social competition between teams around Europe, mediated by a webpage. Within Green My Place there are also a number of Flash mini-games and quizzes. Your current task is to play and test the mini-games *and any other content given by the QA Lead.*

2.1 Quality Assurance (QA) Lead

One member of the development team will be your QA Lead. This is the person in charge of all game tuning and QA tasks. All communications should be with this person. Your QA lead on this project will be Eva Szàdeczky-Kardoss, Eva.Szadeczky-Kardoss@hse.fi

The QA Lead will periodically give you a link to a mini-game, and you will complete the testing process for that game as it is described in this document, from section 3 on.

2.2 Software

All software, along with most documentation files you may need, will be provided online with web links sent by your QA Lead at the appropriate time.

These softwares remain legally the property of CKIR/Aalto, and under the terms of your NDA you are bound by law **NOT to COPY these materials, or DISTRIBUTE them in ANY way.** To do so is to break the law, and you may be severely fined (and black listed in the games industry) if you are found to have distributed pre-release game materials. Most game builds contain a fingerprint to trace any leaked source code to particular sources.

Reference material and tutorials are included in the games themselves.



2.3 Credits

If your contribution to tweak testing is sufficient, you will earn a game credit. Under ideal circumstances, your name will be included in the CKIR team credit for the game.

In general, about 3 stages of Tweak Testing and 4 blind tests combined is sufficient to qualify for a credit. Whether or not you obtain a credit in the game, *we will provide a letter recording your involvement in the game*. You are still entitled to claim the game credit if you receive such a letter, even if your name is not listed in the game itself.

3 FIRST IMPRESSIONS

From here on describes the testing process you will follow *for each mini-game* you are given.

Based on your first experience with the game, you will provide a *First Impressions* report. Here is the process:

1. Treat the mini-game as a demo of a game that is to be released soon.
2. Begin in the way you would usually approach a new demo.
 - a. *If you always read the manual before playing, view the game tutorial and reference screen.*
 - b. *If you usually just start playing and turn to the manual later, follow this pattern with the mini-game and return to the instructions if needed.*
 - c. *Play the game through at least once. Try to achieve up to 20 minutes of play in the first session – so play as many times as you need to master the controls and see more than 1 round. Record the amount of time spent on this.*
3. Time your first impressions of play. Record your thoughts *briefly*:
 - a. After finishing each game session.
 - b. After about 5 minutes of play
 - c. After about 20 minutes of play
4. You should play the game as you would play a demo. If you feel the need to stop for some reason do so, but record why you stopped playing in your notes.
5. Write up your impressions in a mainstream Windows compatible document format (eg. TXT or DOC), and submit to your QA Lead contact.
6. First impressions will include:
 - a. Initial reactions to presentation / looks of the game
 - b. Any difficulties (or positive reactions) arising from the front end / menu system
 - c. Any confusion (or positive reactions) regarding game content / control systems / goals etc.
 - d. General ease of use
 - e. General enjoyment

Any thoughts that arise during play should be reported.

After carrying out your First Impressions report, all further feedback is considered Tweak Testing.

4 QA + TWEAK TESTING

4.1 Overview

Most of your participation will be in QA, and game tuning or ‘tweak testing’. QA is about finding bugs. Tweak testing is about getting the gameplay and narrative elements correct. Both are reported in the same manner, using the QA report form we provide.

Note that you will not have access to full game documentation – still, you should not make guesses as to how the game should be. Instead, you should contact your QA Lead, who will have access to design materials – feel free to raise any queries with them.

4.2 Tasks

Your main tasks are:

- Ensure that the story elements within the game are correctly presented. Note anything that is hard to understand or that fails to make sense.
- Ensure that the game-play flows in a sufficiently smooth fashion. Pay attention to the game interface, for ease of use. Note any feature of gameplay which causes confusion and frustration, and why. Feel free to make comparisons with other games of the same type.
- Comment on the relative difficulty of different sections of the game-play – especially note how the difficulty changes over the course of the game.
- Comment on the relative enjoyment experienced in different sections and/or aspects of the game-play.

You should also report any QA type issues including:

- Fatal bugs
- Anything that is clearly incorrect
- Identify any bugs

4.3 The QA Report

You will be provided a blank spreadsheet (Excel document) to use as your QA report. Each entry, or row, in this report is called an ‘issue’ or a ‘Bug’. Each column is an attribute of the Bug. The following table describes these attributes in detail – become familiar with them so you can quickly describe bugs:

Column	Meaning	What it means for you...
ID	This is a number that uniquely identifies the issue or bug. The initials of everyone known to be contributing to each QA report should be on the Key page.	Ignore Your QA Lead will assign ID numbers – leave this blank
Priority	A: Fatal bug, or issue that prevents the game from being completed B: Serious design error, bug or problem - to be fixed immediately if possible	Choose Select the degree of priority you feel applies from the following degrees.



	<p>C: Significant problem. Must be attended to at some point.</p> <p>D: Low priority problem - should be fixed before release</p> <p>E: Cosmetic problem, or minor enhancement - address if there is time</p> <p>F: Ignore/Observation only; these are just reported in case there is an issue to be addressed later</p>	<p><i>Any personal opinions you submit are Priority F – e.g. opinions on game difficulty, or enjoyable elements</i></p>
Found	The initials (e.g. BC for Ben Cowley) of the person who reported the issue or bug.	<p>Add your Initials</p> <p>Before starting you must check with your QA Lead that your initials are unique on the project!</p>
Type	<p>Bug: code error or similar mistake</p> <p>Art: problem with graphics</p> <p>Audio: problem with audio</p> <p>Interface: problems with the interface</p> <p>Map: problem with the contents of a level or map</p> <p>Text: problem with game text (not dialogue or cut scene script e.g. menu text)</p> <p>Script: problem with the script/dialogue</p> <p>Help: issue with the game help, tutorial or reference</p> <p>Idea: a possible change (priority E or F only)</p> <p>Opinion: an observation about personal experience of playing the game (priority F)</p>	<p>Choose</p> <p>Select the category that best fits where possible – or just create a new category if necessary.</p> <p>Feel free to list as two types e.g. Bug/Script.</p>
Description	<p>A description of the bug or problem</p> <p>QA Lead will email/speak to you about the Description to clear up any unclear elements.</p>	<p>Comment</p> <p>Provide as complete a description of the problem as can be achieved concisely. Specifically note the location of the problem in such a way as it may be located by someone else; level, location, situation etc.</p>
Suggested Solution	The suggested solution.	<p>Comment or Ignore</p> <p>If you have a suggested</p>

	solution, list it. However, you may leave this section blank.
Last Date Modified	Update Change this date to the date you made an addition or change.

5 BLIND TESTING

You should next gather some friends or other contacts who play games of the style being tested, in order to run some blind testing sessions. In the case of Metropolia students, it will be very helpful to use the game developer students as blind testers, if they have time. The testers should play until they wish to stop, *but playing for less than 10 minutes is probably insufficient to form a good impression of most of the games*. The guideline for these sessions is as follows:

- The purpose of Blind Testing is to see how someone reacts to a game. Their response for the first 5 minutes to 10 minutes of play is the most important, although you may go for longer. Your role is to observe them, and report on their enjoyment and problems.
- If possible, it is ideal for blind testing sessions to be recorded. The final output of blind testing sessions are written reports, which can be enhanced if you watch the recording, as it is easy to miss things during the actual test.
- Once the blind test begins – *you act as if you aren't there*. Just observe.

Blind testers do not need to be under NDA – as long as express permission for blind testing has been given - but should not be left alone with the game materials.

Some Do's:

- **Make it clear to the blind tester before you start that you cannot help them with game elements.** Read them the following intro text (or paraphrase something similar):
 - *Thank you for volunteering to test NAME OF GAME. This is a pre-release version of the game and should not be construed to be the standard of the finished product.*
 - *I will be taking notes during the blind test, which will last up to 20 minutes. You are free to stop playing at any time.*
 - *Although I will help you start the game, and help you if the game crashes, I will not tell you about the game-play or help you in any way – you're on your own.*
 - *Feel free to voice your thoughts as you work through the game.*
- **Point out the help features to the blind tester.** Do not ask them to read the reference or watch the tutorial, just point out to them where they are.
- **Sit to one side, where you can see both their face and the screen.** You are as much interested in the state of their face as you are what is going on in the game – look for furrowed eyebrows and other signs of stress, or laughter and smiles. Any overall indication of emotional response.
- **Take copious notes, then write up a concise report of the key points.** Record the time of each observation relative to when they started (e.g. "0:39 (round 2): looking confused"). Have a watch or clock handy for this.

- **Both positive and negative responses are vitally important.** Of particular interest is the process of learning – did they start the game confidently and work out the details later, or flail around confused for a while? Anything they get stuck on is of particular interest.

And some Don'ts:

- **You must not help them if they are stuck with game elements.** This will be hard. You will want to help. You will want to say “oh, that’s not right yet, just do this...” – however, if you do so you will have contaminated the study. Only respond to questions that have nothing to do with the gameplay.
- **Don't direct them to the manual because you know the answer is there.** Again, this may be frustrating. You gave them the manual, but you are not supposed to provide any help, including directing them to the manual.
- **Don't ask questions.** You may be tempted to ask a question, but to do so would be to contaminate the study.

At the end of the blind test (around 30 minutes usually – it may be shorter or longer), you may take their thoughts and feelings on the experience – make it clear in your notes what information is your observation and what is their comment afterwards.

Don't ask questions – again, you will contaminate the study. Just ask for their thoughts and their feelings on the experience.

When you are finished, write up a concise report and submit to your QA Lead. We will be grateful for each and every blind play test – especially if the blind tester had problems with the game.

6 ADDITIONAL NOTES

6.1 Questions

Feel free to ask questions of your QA Lead! If you're unsure, just ask. It's not true that there's no such thing as a stupid question (example: “what does this big red button that says ‘eject’ do?”), but on the other hand nobody actually cares whether a question is stupid or not. The best guideline is: *It's better to ask than to assume.*

The QA Lead is there to answer these questions (about anything!) and asking them questions is often an excellent way of discovering new bugs and issues!

6.2 Submitting QA Reports

Send a fresh QA report each time you submit new issues.

APPENDIX D

Testing response of 1 Metropolia tester, Nguyen Danh.

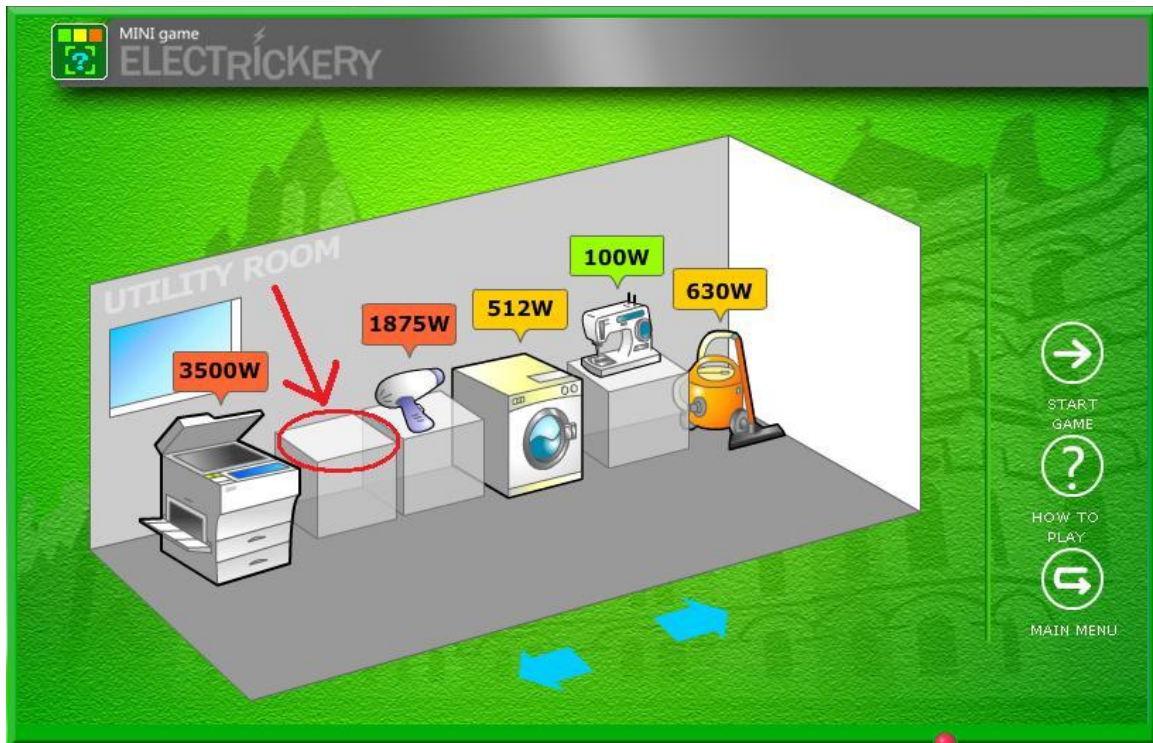
After continuously playing Electrickerly for around 30 minutes, I realize that this game is more perfect than the previous game, WindowWatcher. The composition and color are acceptable. The drawing is simple, yet beautiful and interesting. Electrickerly also requires players to estimate the sum of power of each option. Therefore, we can learn more about the power of a large number of electrical devices and practice the skill of quickly guessing and calculating. However, there are four drawbacks of Electrickerly relating to the game playing process, the reference, the interface and the audio.

Firstly, I realize that in the round 1, the option on the right side is always correct. In addition, in the round 2, the correct choice is always the option on the right side or the option at the bottom. The possibility of the bottom option is much higher than the right option. Therefore, if a gamer found this rule, he can achieve a large number of scores without considering the sum of power.

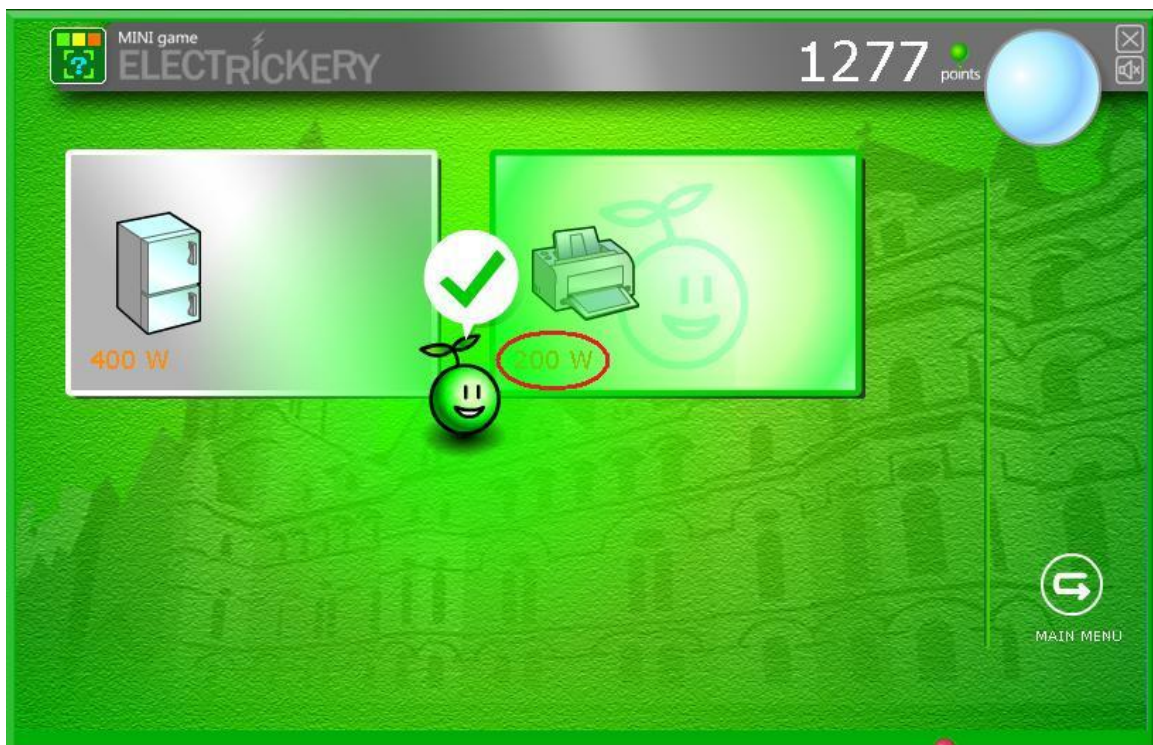
Secondly, I can not find the fluorescent in the reference section, although it is shown in the gameplay, as can be seen in the screenshot 1. Besides that, according to the screenshot 2, I think the position to which the red arrow points is intended for the fluorescent.



Screenshot 1. The fluorescent displayed in gameplay.



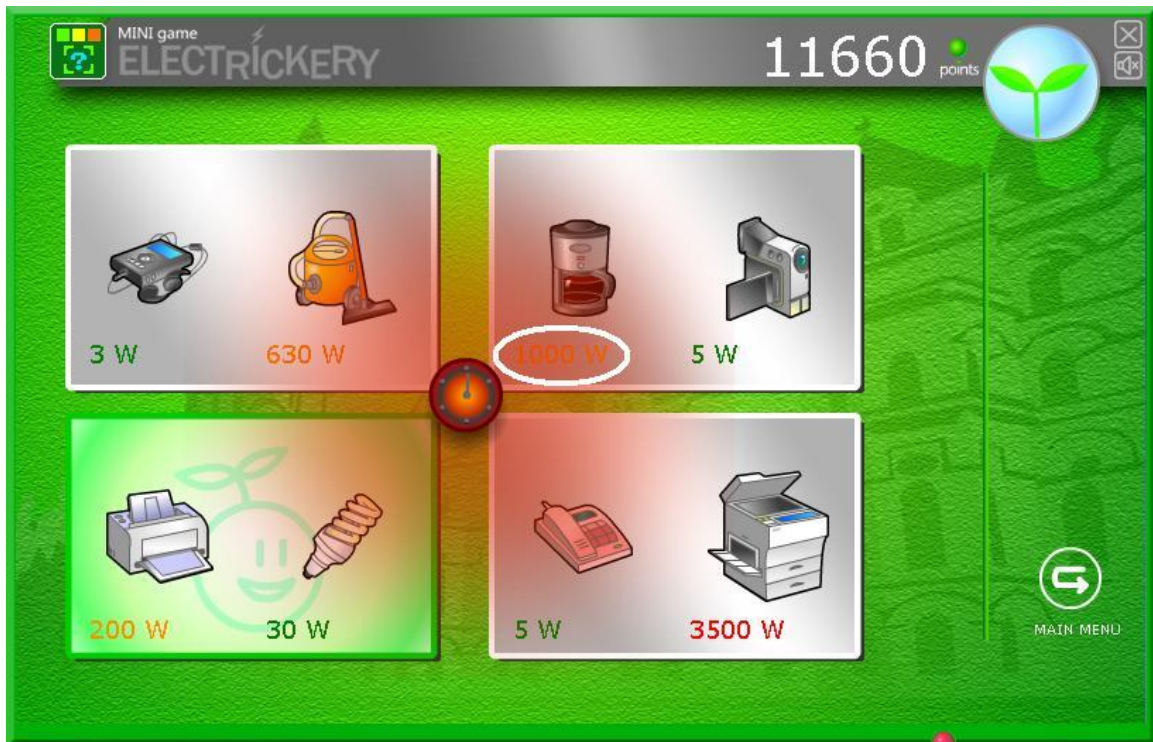
Screenshot 2. The intended position for the fluorescent.



Screenshot 3. The drawback of showing the power.



Screenshot 4. The drawback of showing the power.



Screenshot 5. The drawback of showing the power.

Thirdly, as can be seen from the screenshot 3, 4 and 5, the background color blurs the power value displayed below the device. Thus, I would like to suggest putting the power value on another background as it used to be in the reference section.





Finally, in order for Electricker and WindowWatcher to be more interesting, there should be background music.

I have just finish showing my opinions about Electricker, after continuously playing for around 30 minutes. Personally, the game has an acceptable composition and color and simple yet beautiful drawing as well as providing an opportunity to players to practice quickly guessing and calculating. However, there are four drawbacks needing to be dealt with, including the rule of getting high scores in round 1 and 2, the missing of the fluorescent in the reference, the power value shown below each device in each game, and background music.