

CARDIFF UNIVERSITY SCHOOL OF COMPUTER SCIENCE

ONE SEMESTER INDIVIDUAL PROJECT

INITIAL PLAN

40 CREDITS

A requirements analysis with feasibility study for
a design of a pervasive Leisure Centre and Gym
designed specifically for its members

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Project Description

As the popularity and practicality of pervasive technology increases, there is a high demand for businesses to be at an advantage over their competitors, and the use of the latest technology has become an incentive for customers to receive the best of the services available.

(1)The term “internet of things” has become well known in the modern world and refers to the ability to provide unique identifiers to objects and people to transfer data without the need of human to computer interaction, which has become appealing to various customers and companies to improve all round experience.

The project I have chosen will involve me investigating the current availability of existing technologies within Leisure centres and gyms, and the problems that many members of such associations have when using the available services. I will research the technologies that are soon to be introduced to these centres and their impact on both the company and the customers/members in order to design my own pervasive environment for these centres combining a range of embedded systems.

Health and fitness has become an increasing trend amongst individuals, and many forget the seriousness of putting too much stress on their body, which can cause serious harm. I am hoping that my investigation will provide new insights into how this can be monitored so that individuals are exercising in a sensible manner that will be better for them in the long run. I will be looking into the ways in which these centres can introduce full monitoring to ensure that the health and safety is of the highest standard.

Brief Outline of the Project

I will be interviewing and surveying to discover what the key issues are involving the use of particular machinery within fitness suites, including ways to solve air conditioning problems, fitness monitoring and the health and safety of all users of the services. I will research ways in which these issues can be addressed and solved to a high standard, using the current technology that perhaps has not yet been considered by these companies.

The research I will be undertaking will identify a range of existing technologies relating to the health and fitness of individuals which I can then model into a design of a pervasive centre suitable for members. Once I have completed my research I will be able to identify the requirements needed in order to complete this to a high standard, whilst taking into account the issues that arise from the interviews and surveys I have produced.

If successful, the requirements fulfilled shall produce a big improvement in the problems that current members are not satisfied with. If more members become more satisfied with the outcome, then this will prove that my project has been a success.

The feasibility study that I will develop will be assessing the current attempts to create an environment such as what I intend, and comparing this to the requirements I have developed from my research, to see whether the members (and their health and safety) have been fully taken into account with these existing environments, and have not just been introduced to gain as many customers as possible. I will be looking into the investments that companies have made so far in order to develop more pervasive environments.

(2)I will be producing an SSM model which will follow the 7 following stages:

1. Identifying the problematic situation that it is desired to intervene in
2. Researching the situation and building a 'rich picture' of it
3. Selecting perspectives and building 'root definitions'
4. Developing a conceptual model of the change system
5. Comparing the model with the real-world situation
6. Defining the changes to be implemented
7. Taking action.

Included within the SSM model is the CATWOE approach (Clients, Actors, Transformation, Worldview, Owner and Environmental Constraints) which I will use to make sure I have a fully established design, and in doing so will assess the efficacy, efficiency and effectiveness of my design.

Aims and Objectives

- Identify the current main uses of leisure centres and gyms to identify a focus
- Identify problems in existing gyms and centres
- Identify potential improvements to these problems with health and safety as key consideration.
- Discuss the need of Ethics within this project
- Consider health and safety in relation to project
- Produce SSM models and Use cases of problems
- Discover and identify the technology that is available as a resolution to the addressed problems
- Identify whether these technologies are feasible to apply to leisure centres and gyms whilst maintaining required standards such as health and safety
- Give a detailed description of the pervasive gym and leisure centre design
- Explain the subsystems involved in the pervasive design and how these interlink with one another.
- Complete a list of requirements of a pervasive leisure centre and gym.
- Perform a requirements analysis of the list described.
- Analyse the feasibility of the design produced taking into account all external factors.
- Evaluate the completed project identifying the problems, solutions and improvements for the future.

Ethics

I fully understand the importance of ethics to ensure confidentiality of all information given by individuals, and may be necessary when using personal details whilst conducting my research. As my project will only require information from individuals regarding their opinions, which I will get consent for, it is not necessary for my work to be reviewed for ethical approval.

Work Plan

The work plan that I have produced takes into account all of the tasks which I have outlined above, and some relevant subtasks linked to these. I will be ensuring that I keep to the plan as much as possible and that tasks are completed fully at each step. I have given myself some time at the end of the project to fully review the entire design and make amendments where possible, to ensure that the project is fully completed by the submission date.

Week 2 - 2nd – 8th February 2015

- Research and document the outline and scope of the project
- Identify and document stakeholders
- Research the health and safety requirements in Gyms/ Leisure centers

Week 3 – 9th – 15th February 2015

- Research existing questionnaires to develop ideas
- Design own questionnaire
- Distribute Questionnaire

I have given myself a substantial amount of time in order for the questionnaires to be distributed and filled out. I understand that this can be a time consuming process as some individuals may take longer than usual to complete the survey/ questionnaire

Week 4 – 16th- 22nd February 2015

- Produce research of technologies that could be used
- Produce an initial list of requirements as a guide
- Research and document the relevance behind the science of surveying.
- Meeting with supervisor to discuss project

Week 5 – 23rd February- 1st March 2015

- Collect the results from the distributed questionnaires
- Distribute more questionnaires if necessary
- Generate a small report of the results to analyze (MILESTONE)
- Research answers given within surveys and investigate if there is availability to implement suggested changes.
- Research the relevance of interviews and document
- Design an interview plan
- Progress meeting with supervisor (**project review**)

Week 6 – 2nd – 8th March 2015

- Book interview appointments with relevant members of the public
- Conduct interviews (MILESTONE)
- Review results of interviews and document the highlights.
- Make amendments to potential requirements as a result of the interviews and surveys conducted

Week 7 – 9th -15th March 2015

- Research into the health and safety surrounding addressed problems
- Find technologies that will help to fulfil the issues addressed in the surveys and questionnaires and all research made.

I have given myself a little less work for this week, as I am aware that I have a piece of coursework to submit for a different module on this week. I want to make sure I have time to complete both to a high standard

Week 8 16th – 22nd March 2015

- Provide descriptive information about the technologies that have been found and their advantages and disadvantages. (MILESTONE)
- Produce full design of leisure centre/gym (MILESTONE)
- Design the requirements needed for leisure centre/ gym
- Progress meeting with supervisor (**project review**)

Week 9- 23rd- 29th March 2015

- Produce a requirement analysis of the design.

I have given just one task for this week, as I will have a number of requirements to analyze and this may take some time.

Week 10- 30th – 5th April 2015

- Review the requirements analysis and analyse the feasibility of the design (MILESTONE)
 - Identify costs
 - Identify availability
 - Research technology advances

Week 11 6th – 12th April 2015

- Evaluate the requirements produced against the analysis
- Progress meeting with supervisor (**project review**)

Week 12 - 13th- 19th April 2015

- Evaluate the project against the initial plan
- Evaluate the full complete project identifying its strengths and weaknesses. (MILESTONE)

Week 13 20th – 26th April 2015

- Collate project and review
- Meeting with supervisor to review all work (**Final progress review**)

Week 14- 27th April – 3rd May 2015

- Final amendments to project and preparation for submission

5th May 2015

- Submit final project (MILESTONE)

REFERENCE

(1) Internet of Things

Last updated: June 2014, Margaret Rouse, Contributor: Ivy Wigmore
<http://whatis.techtarget.com/definition/Internet-of-Things>

(2)SSM 7 stages

Soft systems methodology, Stan Lester, April 2008
<http://www.sld.demon.co.uk/ssm.pdf>