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| **Institute of Technology Blanchardstown** |
| StreaMe |
| Live Streaming Cross-Platform Broadcasting Client |
|  |
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Submitted in part fulfilment for the degree of

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School of Informatics and Engineering,

Institute of Technology Blanchardstown,

Dublin, Ireland

# Declaration

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of Degree of **B.Sc. in Computer Science** in the Institute of Technology Blanchardstown, is entirely my own work except where otherwise stated, and has not been submitted for assessment for an academic purpose at this or any other academic institution other than in partial fulfilment of the requirements of that stated above.

Signed:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dated: \_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

# Abstract

# Contents

[Declaration 1](#_Toc351475538)

[Abstract 2](#_Toc351475539)

[Contents 3](#_Toc351475540)

[Illustration Table 5](#_Toc351475541)

[I. Chapter 1: Introduction 6](#_Toc351475542)

[I.1 Introduction 6](#_Toc351475543)

[I.2 Project Design 6](#_Toc351475544)

[I.3 Objectives 6](#_Toc351475545)

[I.4 Motivation 6](#_Toc351475546)

[I.5 Technologies 6](#_Toc351475547)

[II. Chapter 2: Literature Review 7](#_Toc351475548)

[III. Chapter 3: System Analysis 8](#_Toc351475549)

[III.1 Overview 8](#_Toc351475550)

[III.1.1 Uses case 8](#_Toc351475551)

[III.2 Functional requirements 8](#_Toc351475552)

[III.2.1 Create a project 8](#_Toc351475553)

[III.2.2 Configure the streaming platform and parameters 8](#_Toc351475554)

[III.2.3 Add media sources into the project 8](#_Toc351475555)

[III.2.4 Send the stream to a server 8](#_Toc351475556)

[III.2.5 Display stream in the software 9](#_Toc351475557)

[III.2.6 Display feedback of the streaming 9](#_Toc351475558)

[III.3 Use Cases 9](#_Toc351475559)

[III.3.1 Create a new project 9](#_Toc351475560)

[III.3.2 Load the source available 9](#_Toc351475561)

[III.3.3 Add a source into the project 9](#_Toc351475562)

[III.3.4 Remove a source from the project 9](#_Toc351475563)

[III.3.5 Choose a broadcasting platform 9](#_Toc351475564)

[III.3.6 Configure the streaming parameters 9](#_Toc351475565)

[III.3.7 Save the project 10](#_Toc351475566)

[III.3.8 Open a project 10](#_Toc351475567)

[III.3.9 Rename a project 10](#_Toc351475568)

[III.3.10 Start streaming 10](#_Toc351475569)

[III.3.11 Stop streaming 10](#_Toc351475570)

[III.3.12 Streaming display 10](#_Toc351475571)

[III.3.13 Streaming feedback 10](#_Toc351475572)

[IV. Chapter 4: System Design 11](#_Toc351475573)

[IV.1 User Interface Design 11](#_Toc351475574)

[IV.1.1 Main Window 11](#_Toc351475575)

[IV.1.2 Starting Assistant 12](#_Toc351475576)

[IV.1.3 New Project 13](#_Toc351475577)

[IV.1.4 Streaming Parameters 13](#_Toc351475578)

[IV.1.5 Advanced Parameters 14](#_Toc351475579)

[IV.1.6 Rename 14](#_Toc351475580)

[IV.2 Functional Design 15](#_Toc351475581)

[IV.3 Classes Design 15](#_Toc351475582)

[IV.3.1 Design Pattern MVC 15](#_Toc351475583)

[IV.3.2 Overall Class Diagram 15](#_Toc351475584)

[IV.3.3 Class Diagram 15](#_Toc351475585)

[V. Chapter 5: Implementation 16](#_Toc351475586)

[V.1 Prototype Implementation 16](#_Toc351475587)

[V.1.1 Video Capture 16](#_Toc351475588)

[V.1.2 Video Broadcast 16](#_Toc351475589)

[V.1.3 Video Display 16](#_Toc351475590)

[V.2 Linux Implementation 16](#_Toc351475591)

[V.3 Installer on Linux and Windows 16](#_Toc351475592)

[V.4 Others ??? 16](#_Toc351475593)

[VI. Chapter 6: Testing and Evaluation 17](#_Toc351475594)

[VII. Chapter 7: Conclusion and Further Work 18](#_Toc351475595)

[VII.1 Further Work 18](#_Toc351475596)

[VII.2 Conclusion 18](#_Toc351475597)

# Illustration Table

[Figure III‑1 Use Case Diagram 8](#_Toc351471748)

[Figure 2 Main widow draft 11](#_Toc351471749)

[Figure 3 Starting assistant window draft 11](#_Toc351471750)

[Figure 4 New project assistant window draft 12](#_Toc351471751)

[Figure 5 Streaming parameters window draft 12](#_Toc351471752)

[Figure 6 Advanced parameters window draft 13](#_Toc351471753)

[Figure 7 Rename window draft 13](#_Toc351471754)

# Chapter 1: Introduction

## Introduction

Description of the project

## Project Design

Brief description of how the project is use

## Objectives

What the system should be able to do

## Motivation

## Technologies

Technologies use

# Chapter 2: Literature Review

# Chapter 3: System Analysis

## Overview

Main objectives and key functionalities

1. Create a project
2. Configure the streaming platform and parameters
3. Add media sources into the project
4. Send the stream to a server
5. Display stream in the software
6. Display feedback of the streaming

### Uses case

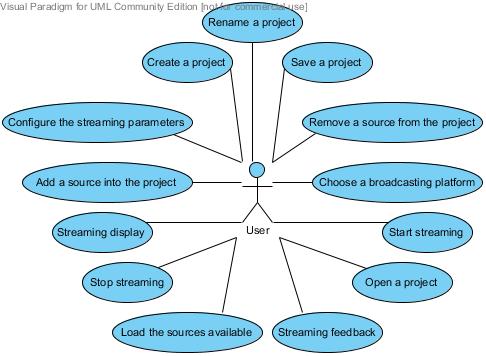


Figure III‑1 Use Case Diagram

## Functional requirements

One for each main functionalities of the project

### Create a project

### Configure the streaming platform and parameters

### Add media sources into the project

### Send the stream to a server

### Display stream in the software

### Display feedback of the streaming

## Use Cases

For each use case: description, diagrams (main use case first)

### Create a new project

The user wants to create a new project.  
The user clicks on the “File” menu and click on the “create new project “button in the interface.  
A new window appears and asks the user to give a name to the project.  
After clicking on the create button, the new project is created and the streaming configuration windows appears.

### Load the source available

When starting a new project the sources available are automatically load and appear in the sources list of the software

### Add a source into the project

When the user wants to add a source into his project he simply click on the source wanted in the source list and click on a button with an arrow to the right to add this source into the project, he can now see his selected source into the project source list call “Show”.

### Remove a source from the project

When the user wants to remove a source from the project he click on the source wanted into the source list of the project named “show” and click on the left arrow, he can see that the source is no more into the project list but in the source list.

### Choose a broadcasting platform

The user wants to choose a broadcasting platform. He clicks on the menu “Config”, then “Choose platform“, a window appear with the platforms he can choose, he can select a platform then enter a streaming key and click on the « ok » button. He can access to the streaming parameters too.

### Configure the streaming parameters

The user wants to configure the streaming parameters.  
The user clicks on the “Config” menu and click on the “Configure parameters” button in the interface.  
A new window appear witch allow the user to configure the broadcasting platform parameters (size, format, bitrate, speed). The user validate the changes by clicking on the ok button.

### Save the project

After configuring the project, the user can save it into a file, which can be reuse later. All parameters defined can be saved in the file like the sources selected, the configuration the platform chosen.  
To save the project, the user has to go on the “file” menu, he can save if a project file is already create, or save as if a file doesn’t exist.

### Open a project

The User want to open an existing project, he go on the “file” menu and select “open a project “, he has to select the file of the existing project and click on ok.

### Rename a project

The user can rename a project when he want to, he just has to go in the “edit” menu and click “rename” a new window appears where he can enter the new name of the project and click on “ok” to validate it.

### Start streaming

The user wants to start streaming. If he has selected some sources for his project and configure the streaming parameters he can click on the play button in the main window or in the “Show” menu, then the streaming start and after a few seconds the stream is displayed into the main window.

### Stop streaming

The user can at every-time stop the streaming, by clicking on the button stop in the main window or in the “show” menu. Clicking on stop will stop the display of the stream and the broadcast on the streaming platform. When the user stops the streaming, the project is still available. If he wants to stream again he just has to click on the play button again.

### Streaming display

When the user wants to stream the result of what he sent is displayed into the software with just a little delay, the user can control the sound of the output.

### Streaming feedback

When the user is sending a stream he also has a text feedback into the software that will tell the state of the streaming and of the source capture.

# Chapter 4: System Design

This chapter will outline how the software works in term of display and implementation; first we will take a look to the interface design.

## User Interface Design

The user interface must allow the user to create a project, select some sources, configure the streaming and start it.

To do that we have a few different window. Each window has its own functionality, but all the software is depending on one window, the main one, which we will describe first.

### Main Window

This window is the main window of the software, this is the most important window of the project, all the functionalities are depending on this window.

We have a menu where we can access to the project functionalities, the streaming parameters, the sources selection and where we can start and stop the streaming.

A list of the sources available is displayed in this window and we can add or delete a source to the show by clicking on the arrows between the two lists.

A player is also available where we have the streaming display, we can click on play and stop to play and stop the streaming, we also have a volume slider to control the sound in output.

The stream time is also displayed, this is the time since the stream is started.

And finally we have two tabs, one for the software feedback and one for the ffmpeg feedback (the streaming feedback), and we also have a status bar that display the streaming status (started, stopped).

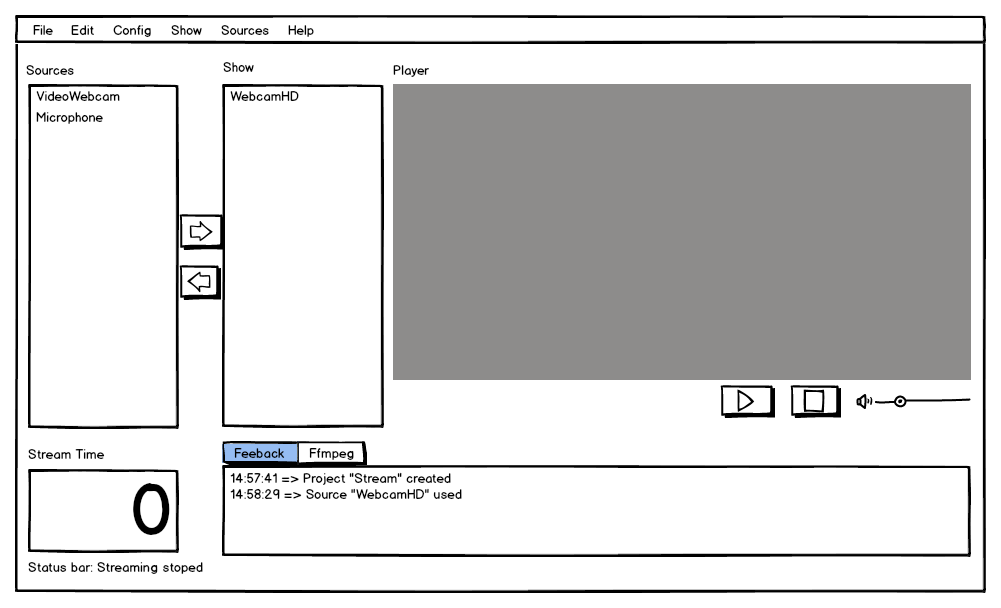


Figure Main widow draft

### Starting Assistant

The starting assistant window is a window that is automatically displayed when we start the project.

It simply propose to the user to create a project or to open one, the user can skip this window but everything in the main window is disable until a project is created or opened.

If create project is selected the new project window is displayed, if open project is selected the open project window is displayed.

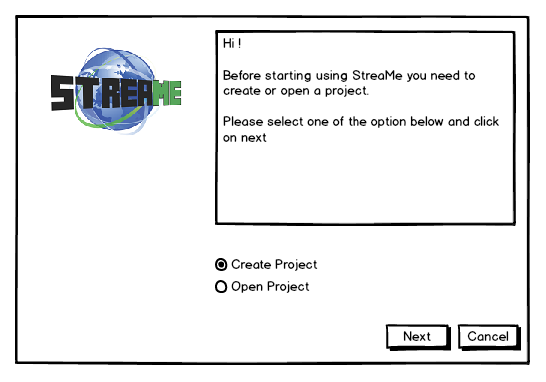


Figure 3 Starting assistant window draft

### New Project

The new project window is the window displayed when the user choose to create a project in the menu or with the starting assistant.

The user just has to enter a project name and click to next, that will display the streaming parameters window.

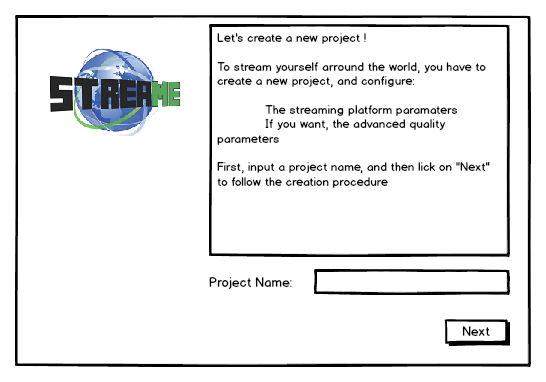


Figure 4 New project assistant window draft

### Streaming Parameters

The streaming parameters window make the user choose a streaming platform and enter the streaming key to send a stream on this platform, the streaming key is something a platform gave to a user when he create an account on it, it is obligatory to send a stream on a platform.

After selected a platform and enter the streaming key the user can validate by clicking on ok or configure the advanced parameters by clicking on advanced

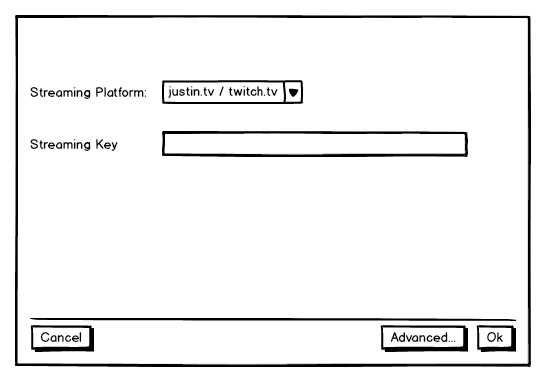


Figure 5 Streaming parameters window draft

### Advanced Parameters

The advanced parameters window allows the user to configure the parameters he want for his streaming.

He can select the size and the format of the video.

He can enable or not the auto configuration, if it is enable he just can change the upload speed, if the auto configuration is disable he can change more parameters like the video bitrate, the audio bitrate and format (mono, stereo).

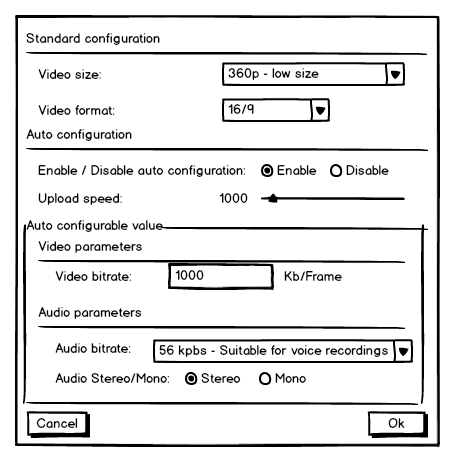


Figure 6 Advanced parameters window draft

### Rename

The rename window simply allows the user to change the name of the project, he can enter the new name and click on ok to validate, or click on cancel to cancel.

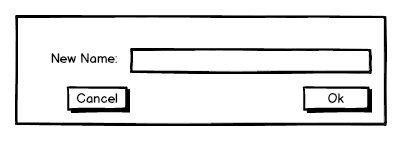


Figure Rename window draft

## Functional Design

Description of the interactions ([Interaction overview diagram](http://en.wikipedia.org/wiki/Interaction_overview_diagram" \o "Interaction overview diagram) )

## Classes Design

### Design Pattern MVC

Description of the MVC and why we use it

### Overall Class Diagram

Description of classes

|  |  |
| --- | --- |
| Camera |  |
| Controller |  |
| Microphone |  |
| Project |  |
| Source |  |
| StreamThread |  |
| StreamTools |  |
| WinavTools |  |
| *ChooseCreateOpenProject* |  |
| *MainWindow* |  |
| *NewProjectAssistant* |  |
| *PlatformSelectionWindow* |  |
| *RenameProjectWindow* |  |
| *StreamingParametersConfigurationWindow* |  |

### Class Diagram

Class diagram

# Chapter 5: Implementation

## Prototype Implementation

One subpart for each main functionalities, explain of each is implemented

### Video Capture

### Video Broadcast

### Video Display

## Linux Implementation

Description how the software is implemented on linux

## Installer on Linux and Windows

## Others ???

# Chapter 6: Testing and Evaluation

# Chapter 7: Conclusion and Further Work

## Further Work

## Conclusion