University of Ottawa | Université d'Ottawa
GNG1103 | Fall 2021

GNG1103
Engineering Design
Course Professor: Dr. Rubina Lakhani
Deliverable G
Prototype II and Customer Feedback
Presented to: Abhilasha
Prepared by Group # 11

Team Members:

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Introduction:

Throughout the past few months, GNG1103 students in section G have been collaborating with Ross Video. This collaboration has been initiated for the goal of designing panels on DashBoard for the operators at the TD Place to display fresh content to engage and excite the fans. Among the concepts that RossVideo has provided us, group 11 has focused on creating a panel design for displaying fan birthdays and the team set ups at the start of the hockey game. Our main goal is to make the panels easily configurable for different birthdays and different teams, easy to set up and simple in design to limit "noise" (i.e. the presence of functions and buttons that make the panel difficult to understand or cluttered).

In this deliverable, the prototype created in the last deliverable will be evaluated and improved based on the client & peer feedback given. It will present a revised prototype testing plan and will include the revised prototype 1. The proof of concept has been done and shown that the design of the panel is indeed possible to achieve, and now the goal is to "bring the prototype to life" so to speak; to give it the functionality it should have based on the initial idea. Therefore, many of the components are expected to be at least somewhat more functional than they were in the first prototype.

The team will improve the prototype using basic functions on Dashboard and begin the programming phase of design, which includes an initial concept of configurability for some of the aspects of the panel design. To test the prototype, we will create an experimental model in which a simulation of the prototype will be executed to gain insight on how fast and how easy it is for the user to configure the panels. To do so, one of the team members will be executing the prototype as if he is the operator and he will time himself according to the prototype testing plan found below. Lastly, this report will include feedback and comments collected from the clients at RossVideo (which was received during our third client meet) and the feedback received from our classmates (which was collected on the team survey).

In the next prototype, the team will further utilize client feedback in regards to this prototype as well as feedback given by classmates and other potential users of the product in order to create a roughly finalized design. Our plan to finalize the design is to ensure full configurability of the panels on DashBoard. This will ensure that the measured functionality of the panel is optimal, such that it can finally be used by the operators during a hockey game. Lastly, the team will test prototype III by connecting the Dashboard Software to the presentation engine which Ross Video regularly uses (XPression) through the link with the university's provided presentation engine (Graphite) (which can be accessed by the "datalink" command on Dashboard) and then receive feedback on graphics timing, ease of presentation, and intuitiveness of use (however the graphics cannot be currently accessed since they have yet to be developed and linked to Graphite).

Prototype Test Plan :

Test ID	***Test Objective (What)***	***Description of Prototype used and of Basic Test Method (Why)***	***Description of Results to be Recorded and how these results will be used (How)***	***Estimated Test duration and planned start date (When)***
1	Configurability of the data (For both panels) - Are the panels configurable for different fan birthdays? - Are the panels configurable for different teams setups?	- The client requested the panels to be fully configurable for the user (the operator). -Primary and secondary colours, logos of the teams and team names need to be easily changeable by the operator. - For fan birthdays; names, personalized messages and pictures of fans, the amount of birthdays and the time allocated for the birthdays need to be easily configurable by the operator.	- After designing the panel, the results of the test will be recorded by acting as the operator and changing the information on the panels as if there was a game going on. - Thus, not only do we need to test if the Dashboard panel effectively accepts configurable data, but we also need to test how easy it is to configure the data, such that the operator does not need to search for the information he/she needs, but rather can find it directly at his/her fingertips. - The team will know if the results are effective if these two guidelines are answered. More precisely, to ensure that the search for information is done quickly and effectively, we will time ourselves as we go through the operator's task. If each task takes less than 15 seconds, we can progress through the other tests, if not, we need to modify the panel further.	- The configurability of data will was tested during the time frame of; November 4th to November 11th.
2	Engagement on the main screen	- It is important to not only satisfy the operator, but also satisfy the fans. The main screen should	- Once the graphics used in the hockey games are finished and configured with respect to the Graphite software (which serves	- This test will be done last, during prototype

	- Does the inputted data onto the fan birthdays panel display as expected on XPression? - Does the inputted data onto the team setups panel display as expected on XPression?	translate effectively what the panel design is implying, while also being done in a manner that is engaging. - We will test how our panels are displaying the information onto Ross Video's graphics by testing our prototype onto XPression.	to translate the commands given by DashBoard to XPression), the team will attend the on-campus makerspace laboratory and physically connect the computer running the panel on DashBoard to the Graphite application and from there the XPression platform using the "datalink" feature on DashBoard. The graphics will then display on whatever screen is selected, for example a television or projector	phase III, the date is within the time range of: November 11th To November 25th.

Prototype II:

Test ID	***Test Objective (Why)***	***Was it successful?***	***Description of Results to be Recorded***	***Additional information***
1	Configurability of the data (For both panels) - Are the panels configurable for different fan birthdays? - Are the panels configurable for different teams setups?	Yes	-The panels are functionally configurable for the different numbers of fan birthdays, their information (names, messages and images) and for the insertion of different team logos, primary & secondary colours and team names. -When operating onto the panel, it was clear the operator would find it easy to use, quickly configurable and concise. -All of our proof of concept ideas were implemented, the results are provided below.	-While configuring the teams' data automatically is a good idea, the fan birthdays will be configured manually in case of inappropriate messages or pictures. -The team added a preview feature to allow the operator to preview the image one last time before displaying it to catch any errors.

2	Engagement on the main screen - Does the inputted data onto the fan birthdays panel display as expected on XPression? - Does the inputted data onto the team setups panel display as expected on XPression?	- Not yet, we will utilize the equipment at the maker lab during the upcoming weeks to conduct this part of the testing phase.	- In the upcoming few weeks, we will utilize that equipment to test our panels onto XPressions and get a feel of what needs to be modified accordingly.	This step is the most uncertain step, while our design might be intuitive and easy to use, it is possible that it will not properly translate to XPression and thus the big screen. We will make sure to get a head start on this step in order to resolve any issues that might come up early on.

Analysis of Systems Included:

The prototype is divided into 2 different subsections:

- Fan Birthdays
- Team Setup

For Fan birthdays, critical components of the solution must include:

a) Programmability of the number of fan birthdays ✓
b) Ability to adjust the amount of time birthdays are displayed for ✓
c) Ability to spontaneously stop the program’s running (Next stage)
d) Ability to spontaneously pause the program’s running, in order to display something else on the screen and resume where paused (Next stage)
e) Automatic connection of a “Fan Birthday Box” to the desired displayed graphics in XPression (Next stage)
f) Ability to adjust the fan’s name, personalized message, and displayed picture (if any) in any birthday box displayed ✓

For Team setup, critical components of the solution must include:

a) Editability of the primary and secondarys colours, logos, and team name displayed in the XPression Graphic ✓
b) Graphics cues must be easily accessible and the time delay between the graphics must be editable (Next stage)
c) Editability of sound effects by the operator (Next stage)
d) Ability to spontaneously stop the program running ✓
e) Ability to spontaneously start the program ✓
   - In DashBoard, we allocated 1GB of RAM for the panels, while they are not yet finished, less than 7% of the 1GB was being used. Therefore, it is fair to assume that after the project is finished, 1GB of RAM will be more than enough to run the program.

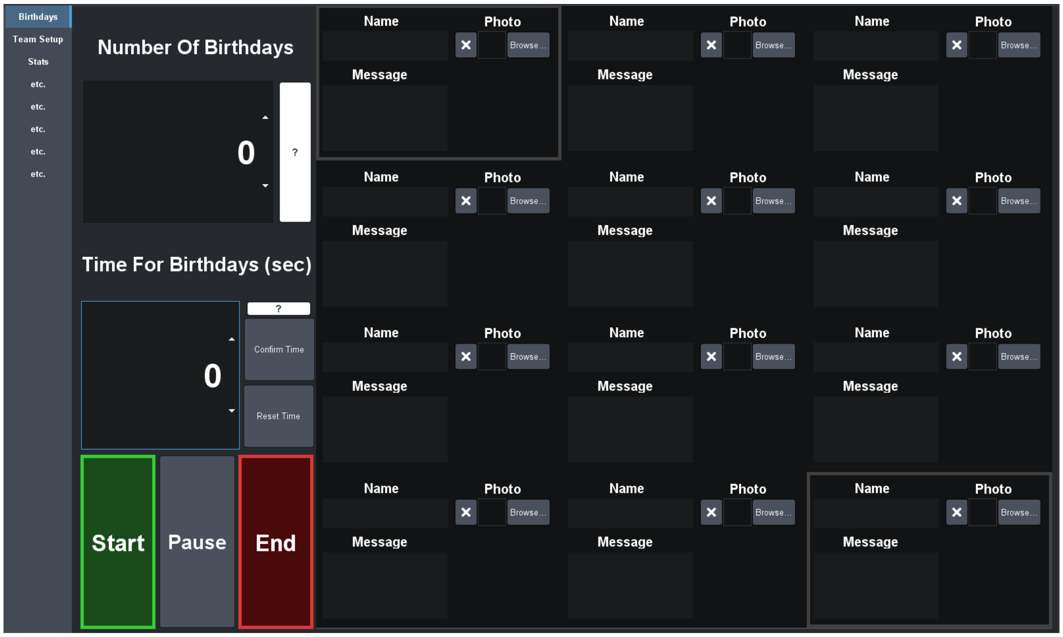
List of Materials:

For both prototype I and II, only DashBoard is needed. Thus, the original list of materials and BOM has not been modified.

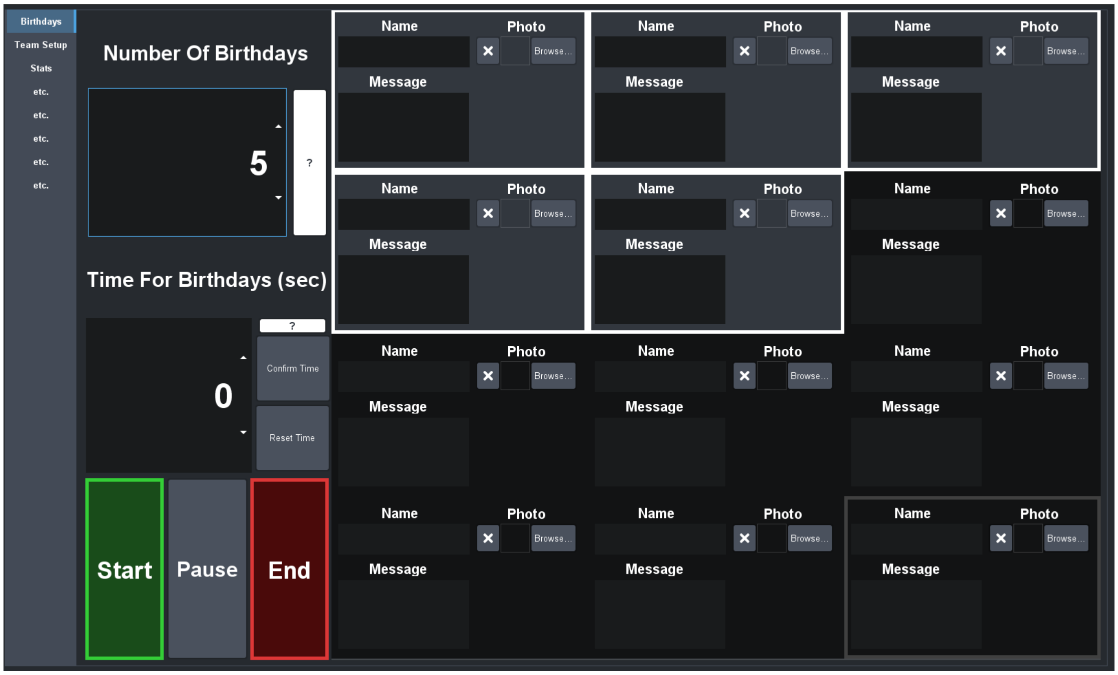
Prototype II:

Lay Out of the Panels (Operator's View)

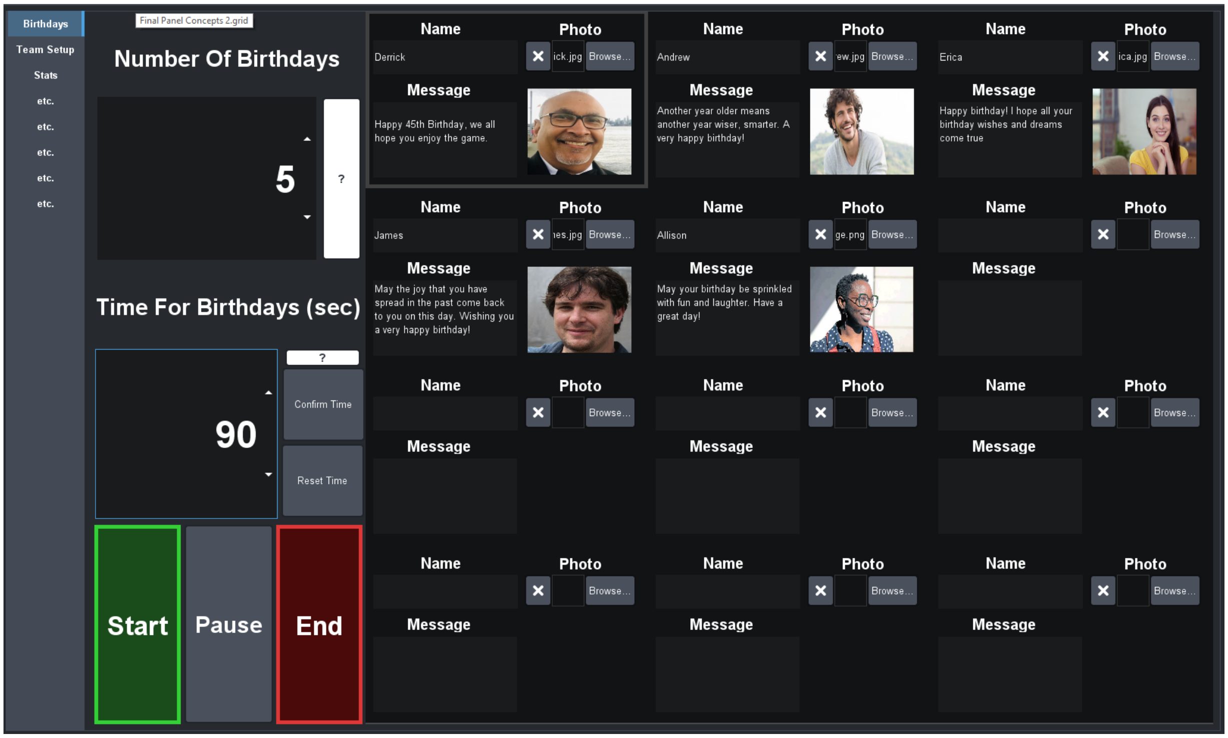
Fan Birthdays Panel Layout



When the panels file is opened on DashBoard, this will be the operator's original view, there will be no boxes on the right side of the screen to input any fan birthdays yet.



5 boxes have been lit up when the operator has increased the amount of birthdays needed. While all of the boxes are editable, the ones that have been lit up will be considered.



Number Of Birthdays: 5

Time For Birthdays (sec): 90

Name: Derrick
Photo: ick.jpg
Message: Happy 45th Birthday, we all hope you enjoy the game.

Name: Andrew
Photo: ew.jpg
Message: Another year older means another year wiser, smarter. A very happy birthday!

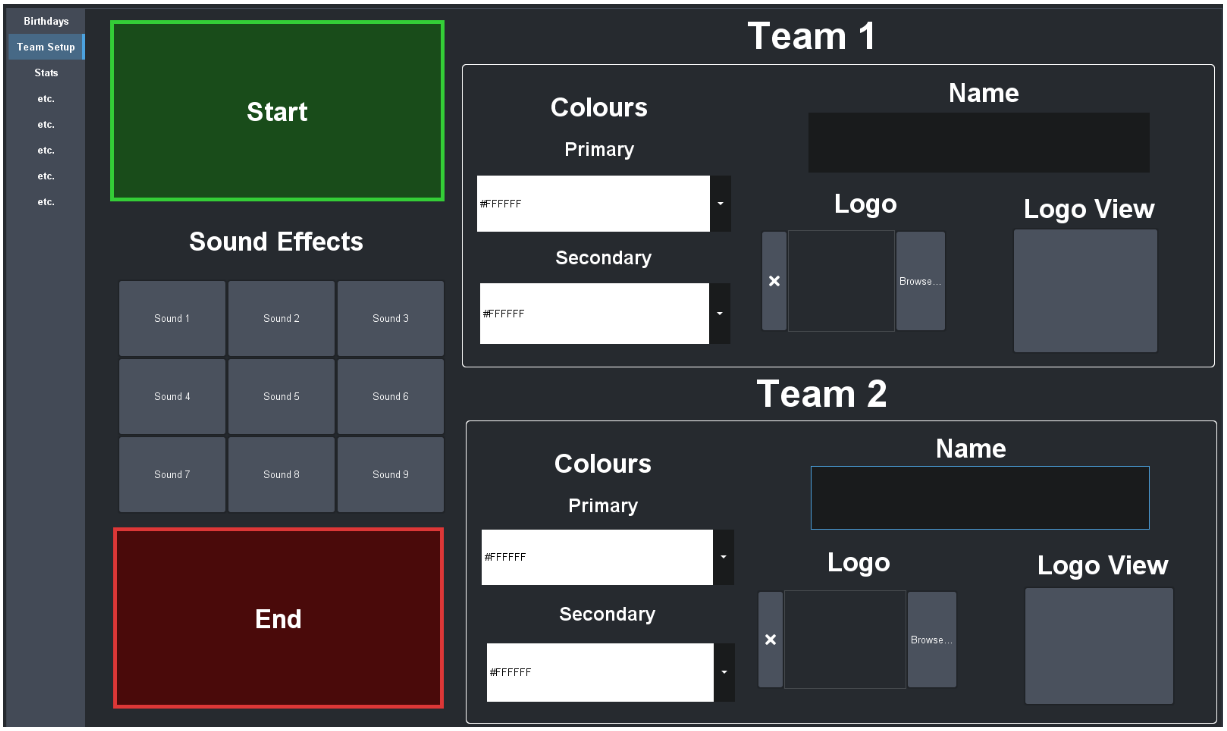
Name: Erica
Photo: ica.jpg
Message: Happy birthday! I hope all your birthday wishes and dreams come true

Name: James
Photo: es.jpg
Message: May the joy that you have spread in the past come back to you on this day. Wishing you a very happy birthday!

Name: Allison
Photo: ge.png
Message: May your birthday be sprinkled with fun and laughter. Have a great day!

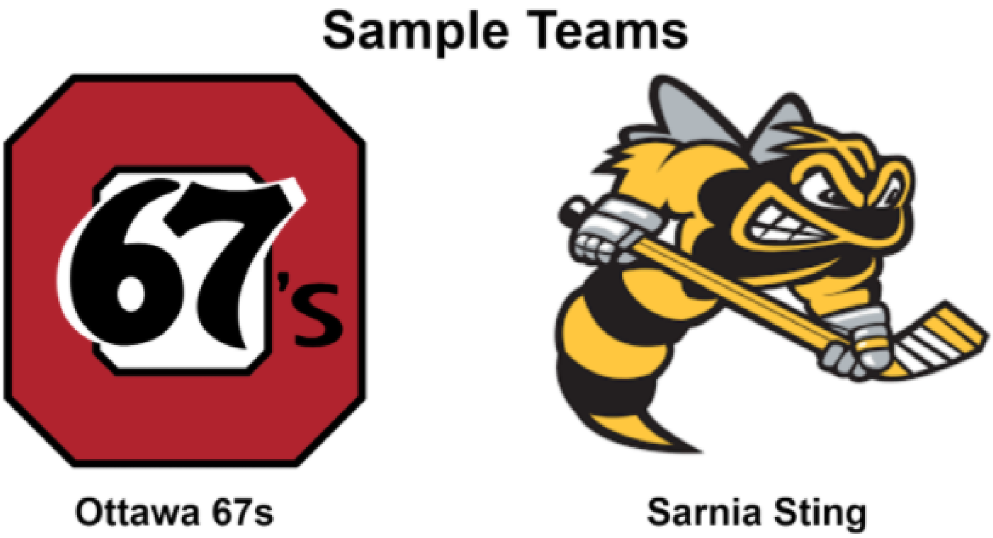
For a video demonstration on how to use the panel use the link: https://youtu.be/69VjieaSnJ8

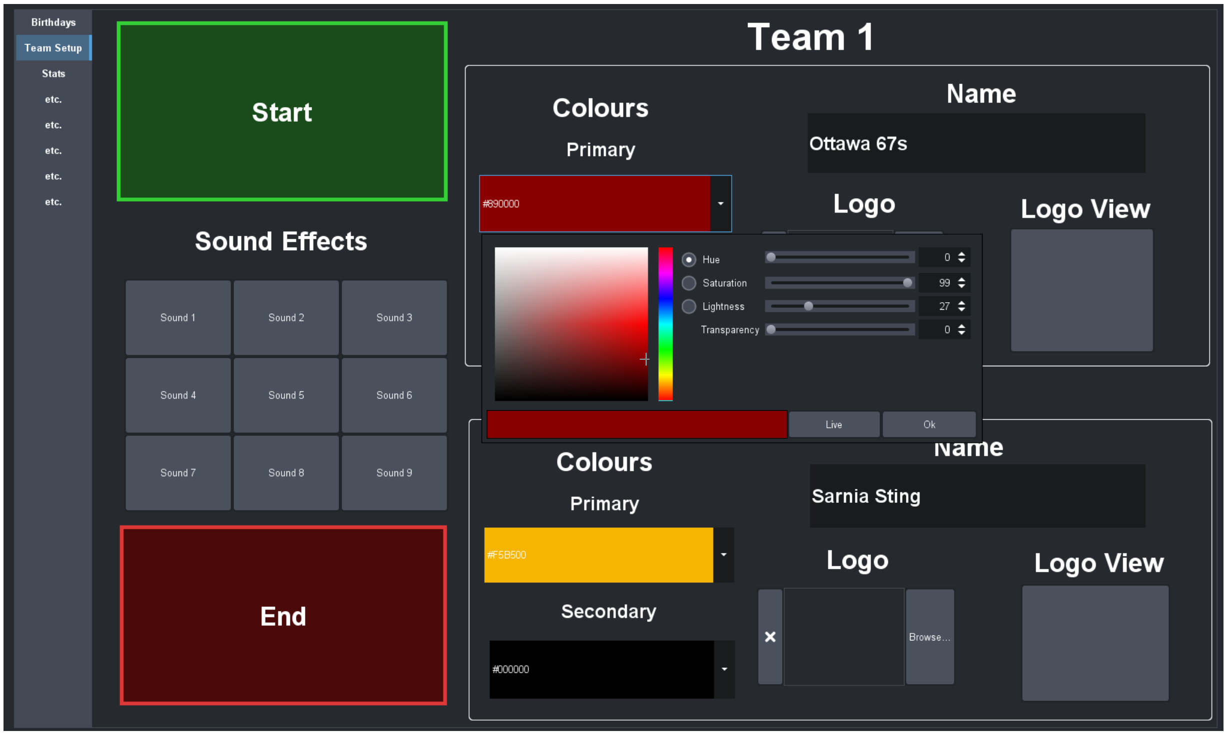
Team Setup Panel Layout



Team 1 Primary: #FFFFFF
Team 1 Secondary: #FFFFFF
Team 2 Primary: #FFFFFF
Team 2 Secondary: #FFFFFF

When the Team Setup panel is opened, this will be the operator’s original view, there will be no team names, colours or logos yet.





Team 1

Colours

Primary: #890000

Name: Ottawa 67s

○ Hue 0
○ Saturation 99
○ Lightness 27
Transparency 0

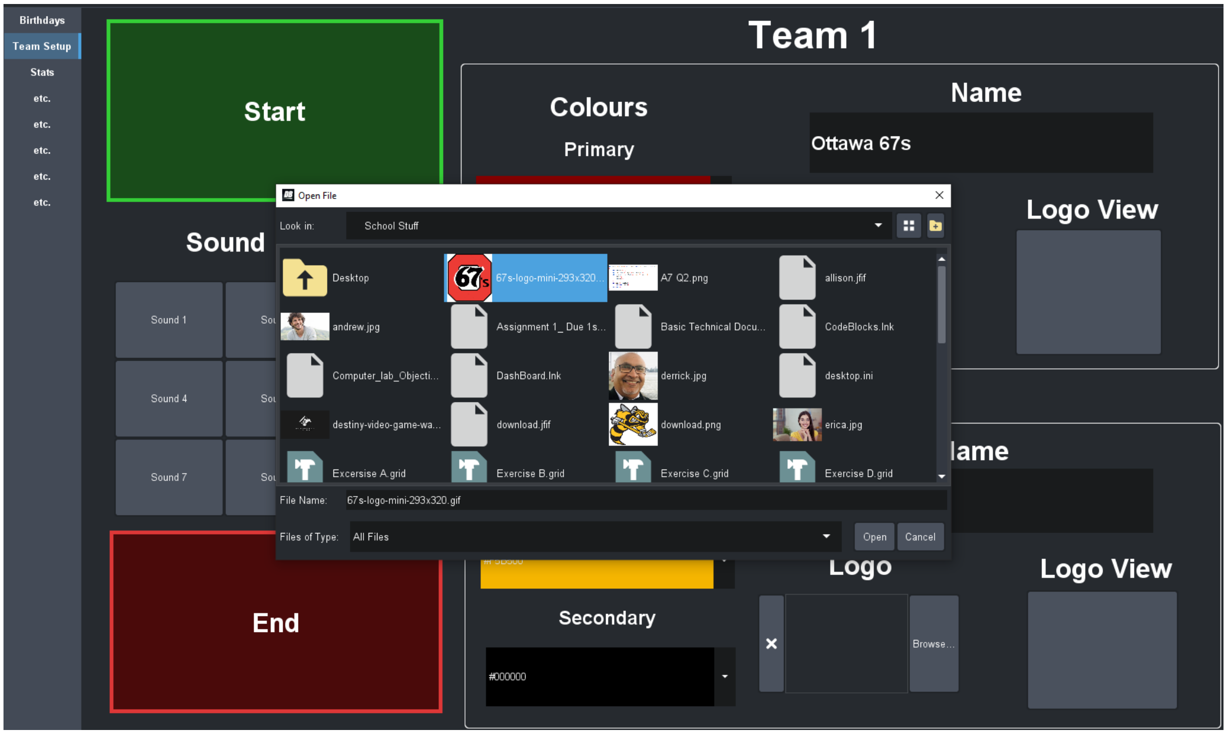
Colours

Primary: #F5B500

Secondary: #000000

Name: Sarnia Sting

The operator has inputted team names as well as the primary and secondary colours.



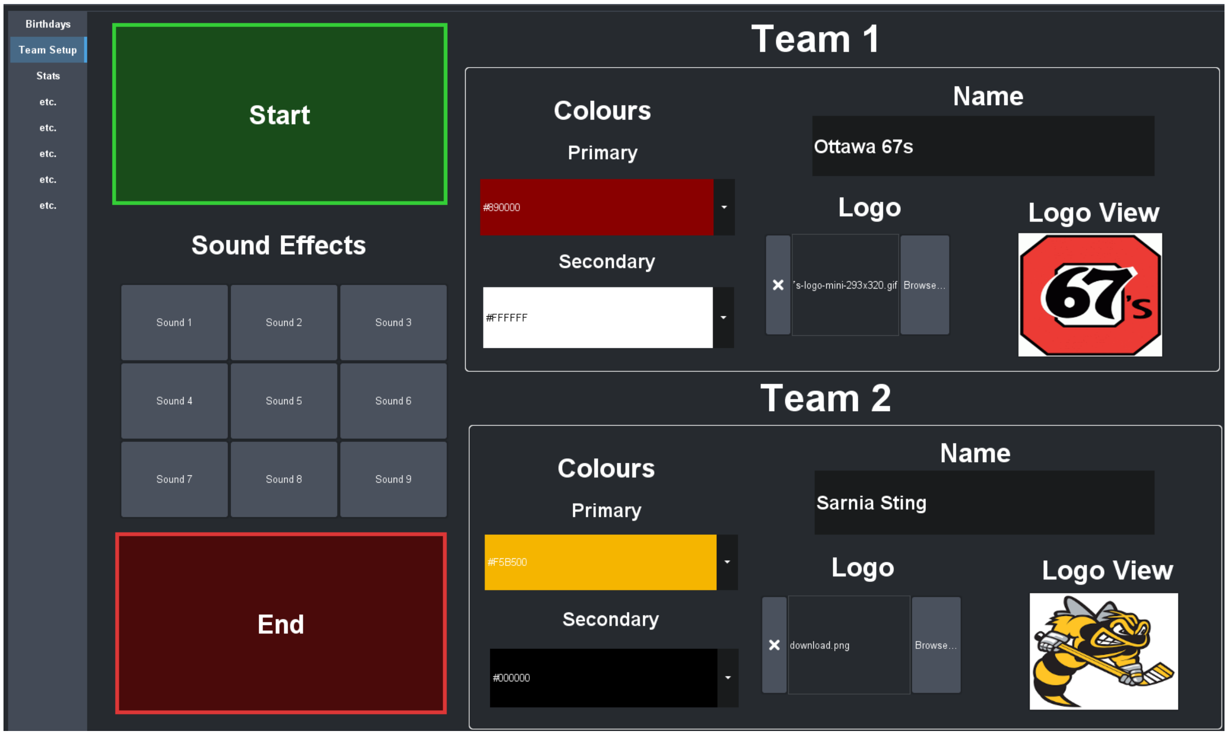
Name: Ottawa 67s

Look in: School Stuff

File Name: 67s-logo-mini-293x320.gif

Files of Type: All Files

Secondary: #000000



Team 1

Name: Ottawa 67s

Primary: #890000

Secondary: #FFFFFF

Logo: 's-logo-mini-293x320.gif

Team 2

Name: Sarnia Sting

Primary: #F5B500

Secondary: #000000

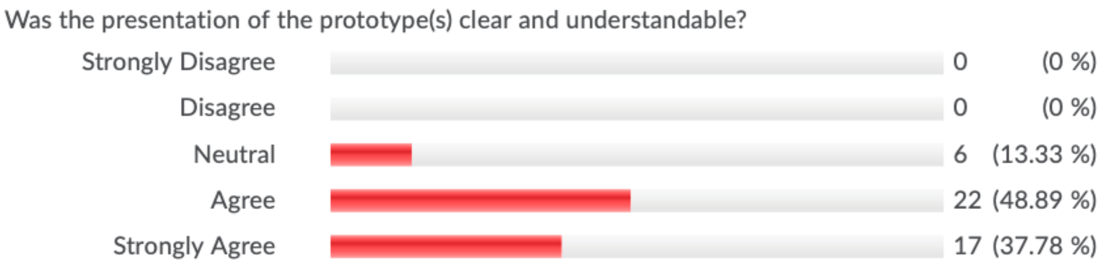
Logo: download.png

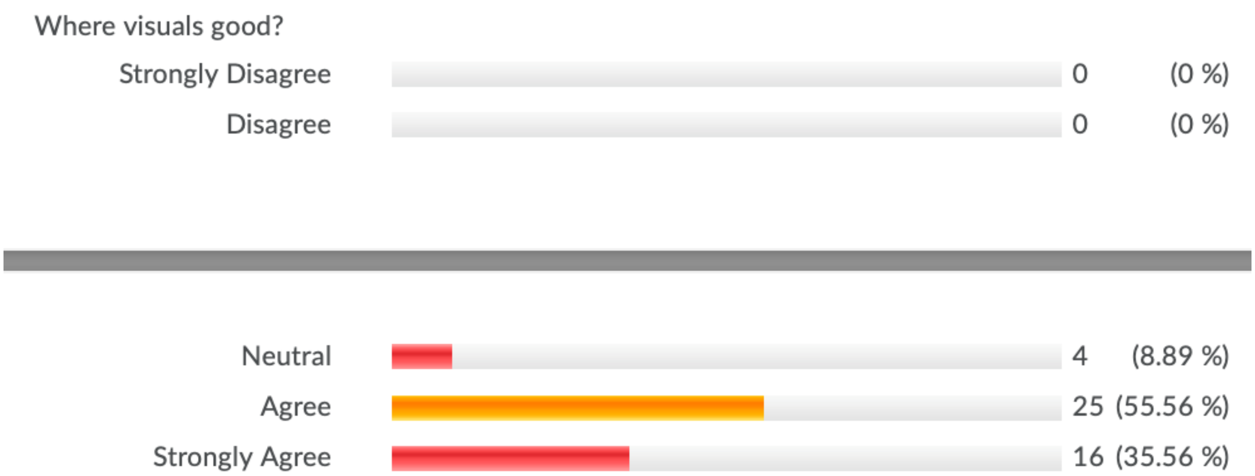
This is the final panel when having entered all of the necessary inputs. For a full video demonstrating the process, please use the link: https://youtu.be/-wesfRz96sY

Documentation of Prototype Testing Plan, Analysis and Results:

Gathered Feedback On Prototype II:

- The team has asked one of the RossVideo employees, Matt Marion, on how to incorporate a type of “preview” button that can be used as a fail-safe for the operator so that he/she can know what he is previewing on the big screen before it is actually shown on the big screen. His feedback was insightful and helped us gather a new perspective on how to answer the needs of the operator, such that it becomes easier to operate and that the operator does not encounter any errors during the game. Thus, we have taken into account Jakob’s 4th and 5th Usability Heuristics: “Error Prevention” and “Error Handling.” Matt Marion has given us the idea to incorporate a take button so that the workflow becomes a process of two steps: the operator picks the scene (which is essentially what our Prototype I was based on- the layout) and then the operator hits the take button (which is big and red, often in the bottom corner). This feedback will be addressed in the third prototype once we connect our Dashboard panel to Xpression and Graphite since Matt further explained that the take button is best incorporated once the graphics demo has been completed. In other words, the operator should be able to pick the scene, take it to the Preview and then switch it to the PGM (what people see on the screen)
- According to the team survey done on November 9th, this is what we received from our classmates:

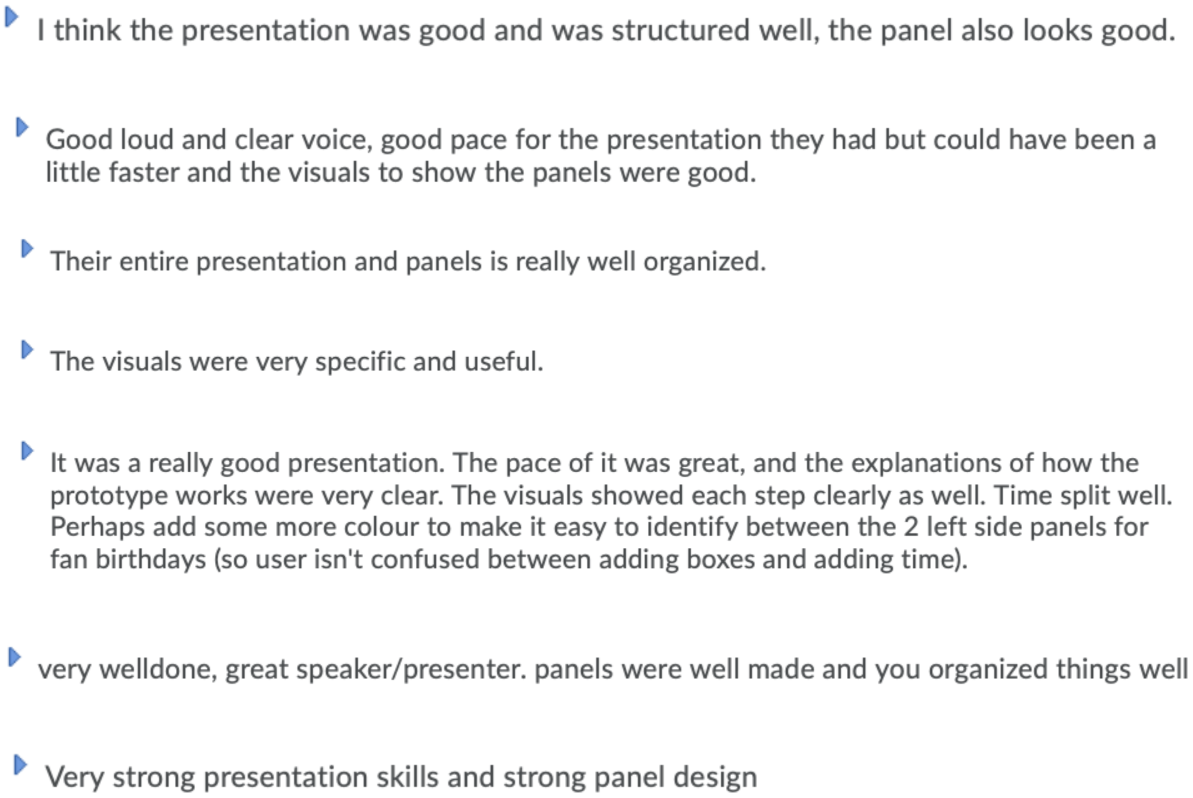

Was the presentation of the prototype(s) clear and understandable?



Where visuals good?

Strongly Disagree	0	(0 %)
Disagree	0	(0 %)
Neutral	4	(8.89 %)
Agree	25	(55.56 %)
Strongly Agree	16	(35.56 %)

- The comments of our presentation are as followed:



- I think the presentation was good and was structured well, the panel also looks good.
- Good loud and clear voice, good pace for the presentation they had but could have been a little faster and the visuals to show the panels were good.
- Their entire presentation and panels is really well organized.
- The visuals were very specific and useful.
- It was a really good presentation. The pace of it was great, and the explanations of how the prototype works were very clear. The visuals showed each step clearly as well. Time split well. Perhaps add some more colour to make it easy to identify between the 2 left side panels for fan birthdays (so user isn't confused between adding boxes and adding time).
- very welldone, great speaker/presenter. panels were well made and you organized things well
- Very strong presentation skills and strong panel design

- We can infer from the above feedback that 86.67% of our classmates agree or strongly agree that our prototype is clear and understandable and that 91.12% agreed or strongly agree that the overall visual of our prototype was good.
- With over 80% of our classmates who either agree or strongly agree on these two aspects of our prototype, we can deduce that our prototype is clear and

understandable to users who may not be as familiar with Dashboard, which in turn means that it will be easy to use for the operator, who has more familiarity and experience in this field. Thus in effect, we tested the usability of our prototype and have taken into account the user perceptions about the ease-of-use of the product.

- The advice given by one of our classmates was also taken into account and we have modified our fan birthday panel, such that the start and end buttons now have different colors to ensure that the operator (who already has to work under immense amount of pressure) can easily differentiate the start and end buttons laid out.
- For experimental model analysis, the video links provided show that even someone who lacks knowledge with operating DashBoard is able to configure both panels within a short period of time. It took less than 15 seconds to configure each of the fan birthdays and less than a minute to configure the team setup panel. Therefore, based on the metric we set for ourselves within the prototype test plan, the experimental test for this prototype is successfully completed.

Overall the prototype was well received by the people who viewed it during the presentation, and it exceeded the targeted 80% average that was set. There are still a few things that need to be accomplished before testing the panels onto DashBoard, however we are making great progress. By November 25th, we hope to have tested our panels onto XPression and be ready and on our way to deliver a great product.

Conclusion:

In this deliverable, group 11 refined the functionality of the panels designed for Ross Video. The analysis results of the layout in terms of “noise” (ie screen clutterness) and usefulness were used to develop a more improved panel layout. Presenting our idea to the professor, the personnel of Ross Video, and our own classmates provided us with great ideas on how to move forward. Feedback from the professor and peers were taken into consideration and implemented wherever possible. The configurability of the birthday and team setup panels is almost done except with a few minor functions.

Over 90% of the people surveyed approved of our first prototype, which was centered on the layout of both panel designs. Based on our prototype testing plan, this reaches our desired result and therefore, we can proceed to the next step (Prototype III). For prototype II, the videos show an experimental analysis of how long it takes for someone unfamiliar with DashBoard to operate the panels. The analysis was successful since it takes less than 15 seconds to fill in the information for each of the fan birthdays and also less than a minute to fill in the team set up panel.

In the final, comprehensive prototype, we will ensure functionality of the revised panel that we’ve designed in this deliverable and test the panels in XPression and assess graphics timing, ease of presentation and intuitiveness of use, as mentioned in our prototype testing plan. The deadline for this prototype will be on November 25th.