

GNG1103
Design Project User Manual

MAKER MAP

Submitted by:

GROUP A5

Kayla Phillipps, 300063237

Andrew Goudreault, 300113517

Farid Nastaran Tehrani, 300119183

Matthew Lannigan, 300131694

Zsombor Czoma, 300136144

Date: December 7, 2019

University of Ottawa

Abstract

The MapMaker is product developed for the CEED space using Ross Video Dashboard. The MakerMap is a free software based solution that allows users to use their time and space more effectively. It provides the users with the layout of facilities and informs them of what machines are in use or are free.

This paper outlines how the MakerMap was made, how it functions, how it can be maintained and the next steps in the design process.

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List of Acronyms

Acronym	Definition
CEED	Centre for Entrepreneurship and Engineering Design

1 Introduction

CEED required an interactive system that informed its users of the layout of the space and what machines/devices are free or in use. The MakerMap, an interactive map using Ross Dashboard, was therefore created to fill this gap in CEED. It allows user to access a map of the space prior to arriving stating what is in use or available. Users will no longer have to come directly to the space to be disappointed that the devices they require are all in use. The MakerMap allows users to use their time and space more efficiently, as well as solves CEED's traffic problem. The MakerMap is built on free software, has no hardware and requires no maintenance.

This document explains, in detail, how the prototype was made, how it functions, how it can be maintained and grow with the space, as well as suggestions for future work.

2 How the Prototype is Made

Our prototype was made with simplicity in mind. The prototype only has a software material as we believed it was the most cost effective method of solving the problem that CEED was facing. As a result, the prototype was completely free to build. The software component of our prototype was run solely on Ross' Dashboard program. The Dashboard application provided all the features that we needed to solve the problem. The most heavily used features from Dashboard in our prototype were the buttons, labels and counters. The buttons provided us with a way to toggle a machine in Brunfield between In use and available and also allowed us to intertwine multiple pages such as a language selection page, both Makerspace and Brunfield maps and machine information pages. The coding abilities of Dashboard were also showcased in the toggle button feature which allowed the buttons to change from green to red depending on availability. Coding was also used to connect each Dashboard panels as well as connecting Eventbrite machine training pages.

2.1 Materials

This prototype requires two separate computers and Ross Video Software.

2.1.1 Instructions

Step 1: Create a series of custom Dashboard panels, This will set up the user interface that the customers and employees will use.

Step 2: Become familiar with where the machines are inside the Brunfield and Makerspace and create a map for both spaces using labels

Step 3: Gather information about all the machines in both spaces and whether training is needed for them and create a machine information page. The page should include a short description of the machine and a back button.

Step 4: Using Dashboard's code, link the Eventbrite training page if one is offered for that machine.

Step 5: Add availability buttons to each machine and allow them to switch between red and green using the toggle button feature.

Step 6: Create a language selection page that allows users to pick between English and French.

Step 7: Create a CEED title page

Step 8: Using a counter, create a meter that measures how busy the CEED spaces are in order to account for customers only using tables.

3 How to Use the Prototype

The MakerMap functions on two separate devices, a computer in the desired CEED space and the personal computer of the CEED user. As devices are used, CEED staff monitor the space and simply press a button corresponding to a specific device on the staff Dashboard. When the button is pressed, it changes from green, with text stating “Device Name ## - Free”, to red, with text now saying “Device Name ## - In Use”. When the device is no longer in use the staff simply retouches the same button and the changes revert. The staff is also able to update the overall business level of the space with the usage bar on the left of the screen. As the staff pulls the bar up or down, the colour changes, representing the level of business of the space.

As the CEED staff makes these changes based on the current usage of the space, the connected CEED user pages updates in real time, allowing them to be informed on the usage of the space. The user page also provides access to additional information. If the “Machine Information” button is selected, it directs users to new Dashboard page allowing them to select the machine in which they would like to receive more information. Once a machine button is selected, users are directed to an information page containing an integrated website with the corresponding MakerRepo training or CEED training session. Each page also contains back buttons, prompting users back to the language page, or map selection page.

When users first access the Dashboard, they are directed to the language page, prompting users to select either english or french. The second page allows users to choose either the MakerSpace or Brunsfield Center. Once either option is selected, users are taken to an accurate and labelled map of their desired space. From this map they are able to select the information button and are directed as described above.

Both user and staff must have Ross Dashboard, a free software, installed on computer devices to have access to the MakerMap. It can be downloaded at no cost from Ross Video's website (<https://www.rossvideo.com/support/software-downloads/dashboard/>). Both parties must also have this specific Dashboard downloaded onto their devices.

Figure 1: Map selection page of MakerMap

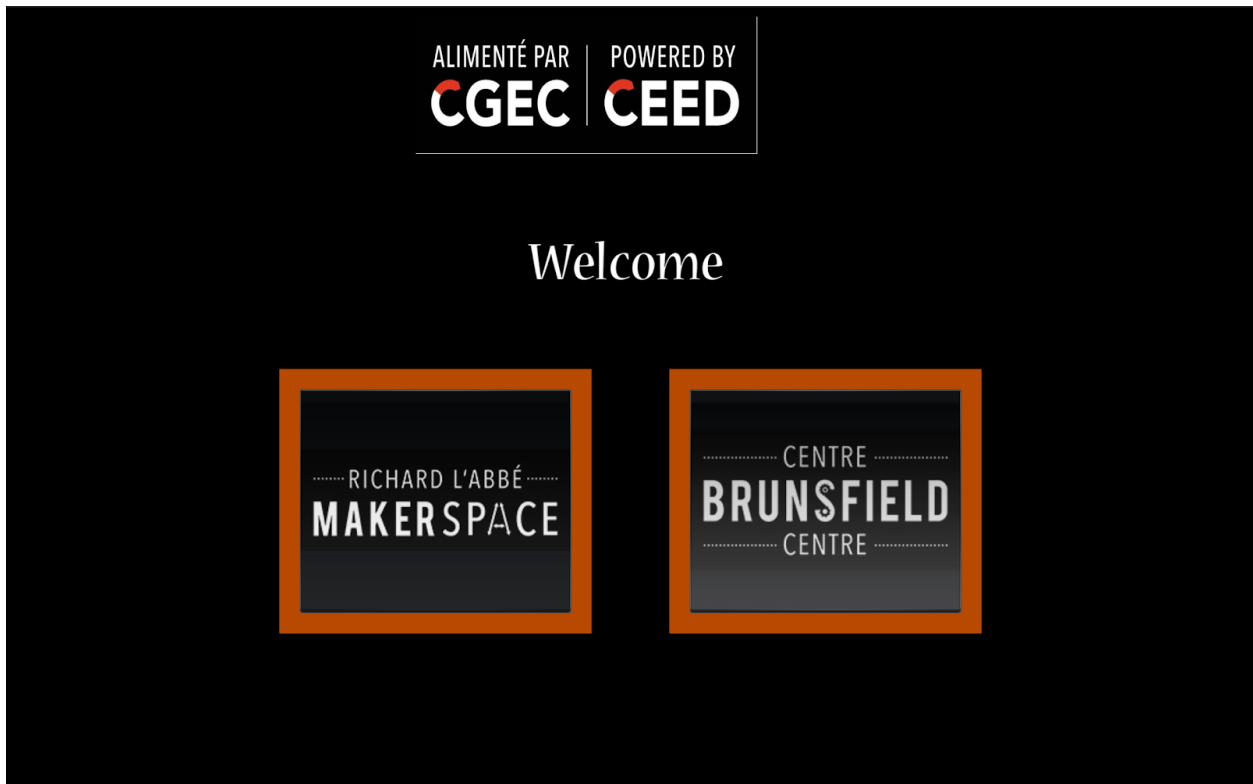


Figure 2: The map of Brunsveld Center

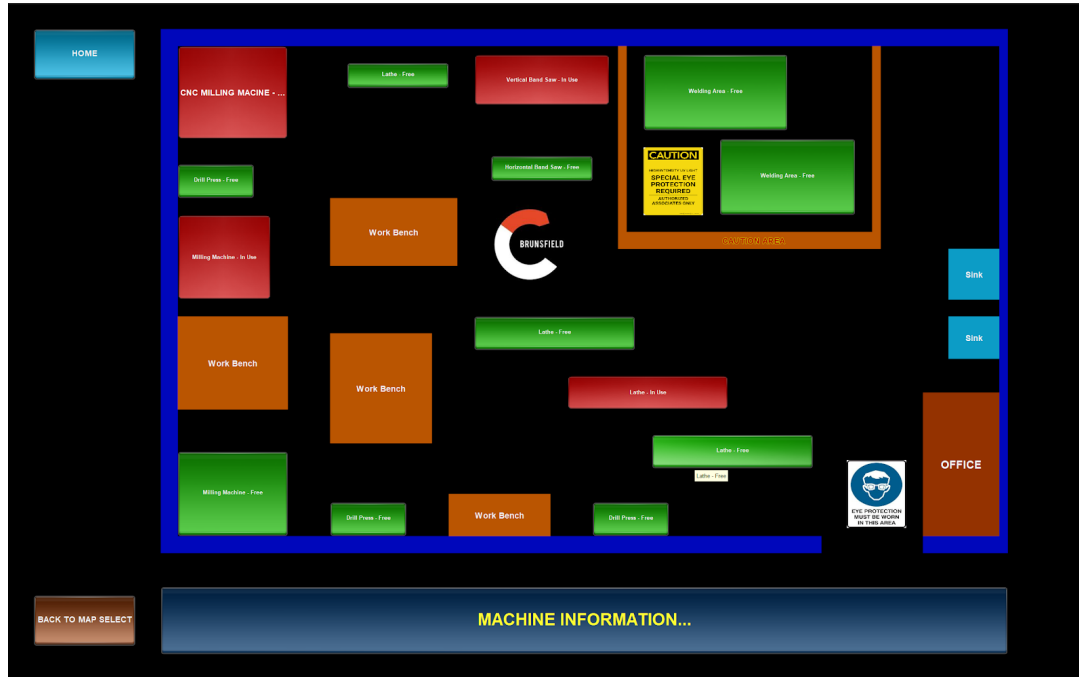


Figure 3: The map of MakerSpace



Figure 4: Machine information page for Brunsveld Center

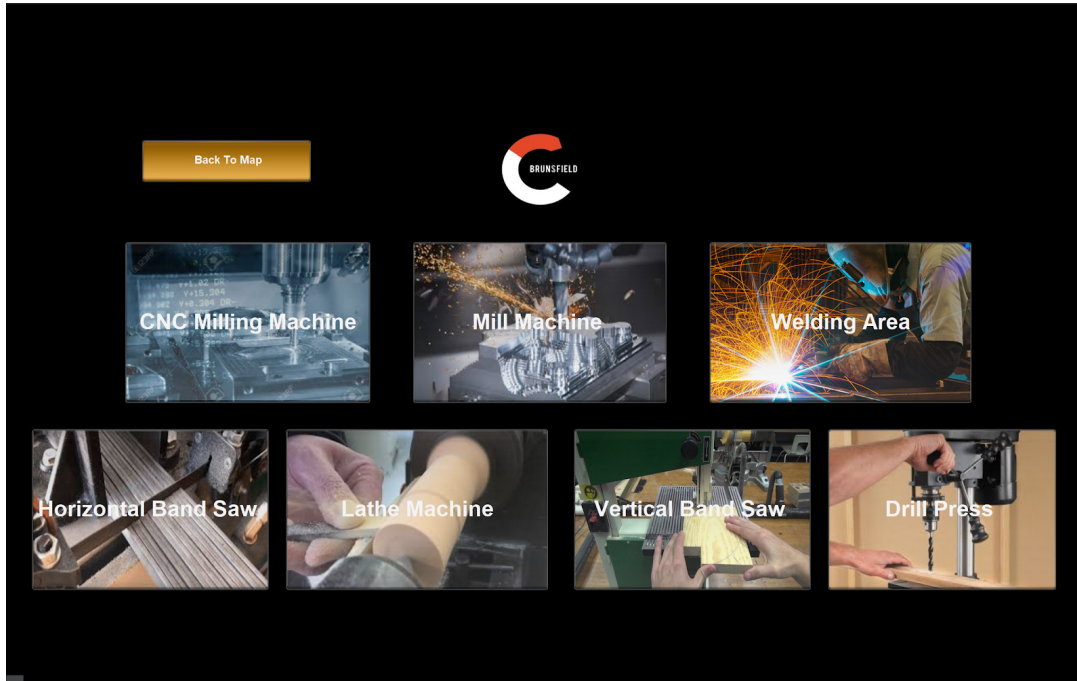


Figure 5: Machine information page for MakerSpace

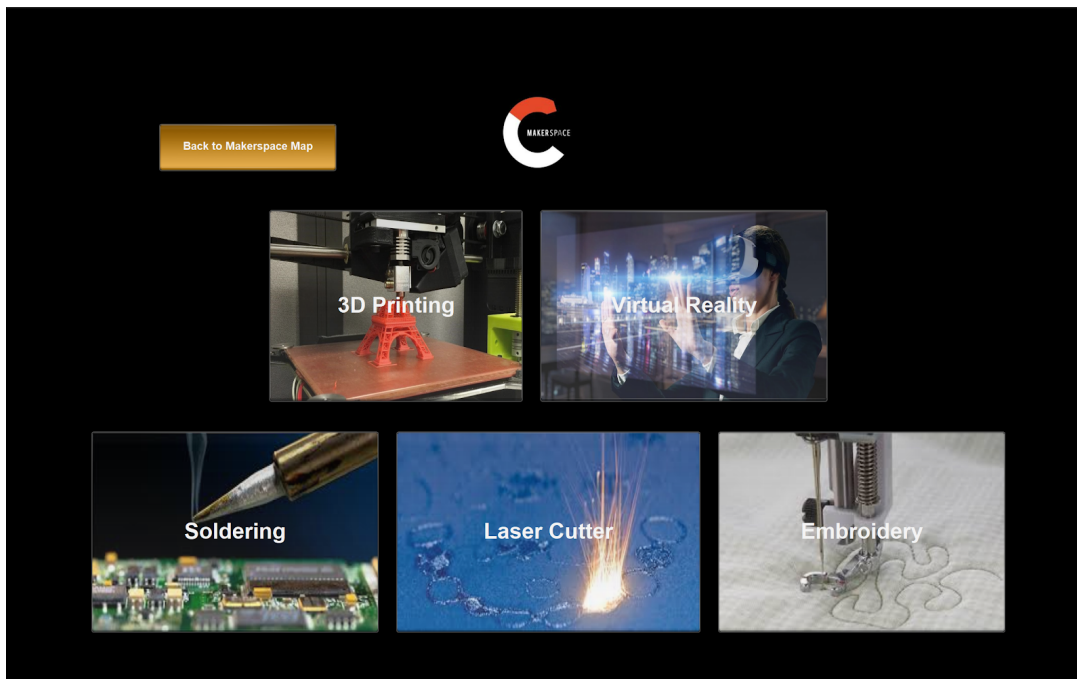



Figure 6: Specific machine formation page for CNC milling machine


CNC Milling Machine

A CNC (computer numerical control) milling machine is a machine process which employs computerized controls and rotating multi-point cutting tools to progressively remove material from the workpiece.

Back to Brunfeld Map
Help for Browser



eventbrite
Search for events
Browse Events
Create Event
Help
Sign In



CNEED - Basic Training
by The Manufacturing Training Centre

[View](#)

\$10

[Select A Date](#)

Description

La formation de base à l'atelier offerte par CNEED est la première étape pour avoir accès au centre Brunfeld. Durant la formation, les étudiants apprendront comment se servir d'outils manuels et de machinerie simple de façon sécuritaire et efficace.

Veuillez noter qu'en raison d'une faible participation de la part des détenteurs de billets, un dépôt d'une valeur de 10\$ est maintenant requis à l'achat d'un billet. Ce montant sera complètement remboursé suite à la formation.

Afin de participer, les étudiants sont priés de :

- porter des chaussures fermées (des bottes d'acier sont recommandées mais pas obligatoires)
- porter des pantalons longs
- se créer un compte Makeupo (ceci sera utilisé pour garder compte des formations reçues et donner accès aux espaces de CNEED) (<http://makeupo.com/new>)
- lire le manuel de formation, accessible à la page suivante, sous la case de gauche (<http://makeupo.com/learn/22/mfr-basic-training>).
- visionner la vidéo d'introduction (https://www.youtube.com/watch?v=Uduu0B_4&list=PLA-oTjBj8spqM4B7QjDNDXWEinT2i0d)
- compléter le quiz suivant et obtenir une note d'au moins 75% (<https://psr.gilforms.com/quiz/616060092/>)

Tout autre équipement, outil et information seront fournis durant la formation.

Location

Manufacturing Training Centre
150 Louis Pasteur
S1EM 127
Ottawa, Ontario
[View Map](#)

The Basic machine shop training offered by CNEED is the first step in getting access to the Brunfeld Center. In this training attendees will learn how to use basic machinery and hand tools safely and effectively.

Please note that due to poor attendance of ticket holders a deposit is now required with the purchase of a ticket. **This deposit will be refunded to the attendees upon arrival of the event.**

Attendees are required to do the following in order to participate to this event:

- **Bring closed shoes** (steel toes are not mandatory but recommended)
- **Wear Long Pants**
- **Make a Makeupo account** (this will be used to keep track of your

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4 How to Maintain the Prototype

The prototype was tested by going through every page of the system and analyzing the pages shown if it would complete the task which it was set to do. Each button was tested to see if it completed the necessary task. Most tests done were qualitative rather than quantitative because the prototype mainly does tasks which are either completed or not, not completing physical tasks or having numerical outputs. While most of the prototype functioned really well and done the desired tasks really well, there is one issue which needs to be discussed. The web page functionality in the information pages (as shown in figure 6) works only if everytime Dashboard is opened the web page function is edited and the URL is reentered.

The prototype is purely software based which means that there is no need for maintenance as it cannot breakdown unless the operating system which it is running on cannot run dashboard anymore. This could be a result of an update in operating software which would not allow Dashboard itself to run but this could be fixed by Ross themselves to update their software to accommodate to this change.

5 Conclusions and Recommendations for Future Work

It is recommended that identical pages, but in french are created to ensure that the project is fully bilingual. This can ensure the wide range of users which 'CEED' has to be able to use this service and give more boost to the accessibility criteria which was initially stated. Alongside that it would be vital to put up the dashboard which is used by the user to be displayed on a website which can be accessed from anywhere by whomever instead of having it only be accessible by users which download the dashboard application. Again this would mean more accessibility for users making a more user friendly service.

APPENDICES

APPENDIX I: Design Files

MakerRep link: <https://makerepo.com/kaylaphillipps/gng1103a5makermap>