

Deliverable B

List of client needs (in order from highest to lowest priority):

1. Sign in/out system allowing for usage of tools (e.g. 3D printers) to be used in a more organized manner
2. A way to let students know what machines are being used before entering the Maker Space and Brunsfield Center.
3. Tracking system for signed out tools such as SD cards allowing for items to be returned and not lost.
4. A way to keep track of materials/tools in stock especially in the Brunsfield Center.
5. A better way to help users navigate STEM
6. A tool or system indicate users to pack up/clean up before the rooms are closed
7. A functional security system for makerspace. Makerspace currently doesn't have cameras set up for security.

Summary:

The sign in/out system was emphasized the most by the client compared to the other needs. Not only does the sign in system benefit the users, it also benefits the staff members like making the space more organized. The other needs were not ranked as high because the demand for these needs are currently not a priority. However, the sign in system is being used on a daily basis and can use an improvement to further enhance the user experience. By creating a better sign in system, it allows for a more fluent process and cuts down on wasted time spent trying to fix the current sign in boxes.

Problem statement:

We want to design a sign-in system and user interface that improves the current problems with signing into the STEM spaces while also automating the use of 3D printers to improve the user and staff experience with 3D printing, organizing, time management, and ease of use.

Benchmarking:**Table 1 - Highlights: Sign In Systems For Benchmarks**

Specifications for sign in systems	STEM space sign in system (uOttawa)	uOttawa gym sign in system	uOttawa library sign in system
Company	uOttawa - CEED	UOttawa	UOttawa
Material of sign in box	MDF	Card scanner with laser with plastic outer shell	Scanner with laser with plastic outer shell
Light/Sound indication	All lights flash when card is tapped	Beeping sound and flash when card is used to sign in	Beeping sound when card is tapped
Program language	C	N/A	N/A
System/Hardware	Arduino	N/A	N/A
Tools/equipment able to be signed out	none	Treadmill, row machine, weight belts	Books, DVDs

Table 2 - Highlights: Softwares To Generate G-Code

Specifications for 3D printing slicing software	Octoprint [2]	Cura [3]	Slic3r [1]
Adaptable to various printers	Yes	Yes	Yes
Upload .gcode files wirelessly to printer	Yes	No	No
Setting up printing specifications(Printer head speed, bed temperature etc.)	Yes	Yes	Yes
Set up a webcam to view in browser	Yes	No	No

References:

[1] 3.0 was released! (0AD). Retrieved from <https://slic3r.org/>.

[2] Häußge, G. (0AD). OctoPrint.org. Retrieved from <https://octoprint.org/>.

[3] Ultimaker Cura: Powerful, easy-to-use 3D printing software. (0AD). Retrieved from <https://ultimaker.com/software/ultimaker-cura>.