## Background

We are partnering with Ross Video to automate a process in the uOttawa CEED Centre that will improve user experience in some way. This briefing presents the work we did during the ‘empathize’ stage of product development where we determined customer and user needs to create a problem statement that will inform the rest of our design process.

## Methods

We used a variety of sources to determine customer and user requirements, including interviews with Justine Boudreau, Coordinator of the Richard Abbé Makerspace; Dave Clarke, Coordinator of the Brunsfield Centre; and James Peltzer, Technical Product Manager at Ross Video. We also compiled reviews of over 40 North American makerspaces from Google Reviews and Yelp, as well as observed users working in the makerspace. We organized these findings into a clean list of needs, ranked these needs based on relative importance and then condensed this list into a product statement. We also conducted the first round of benchmarking where we looked a couple existing solutions to these needs to refine our problem statement.

## Results

Our comprehensive list can be found in Table 1 on the following page. We have left out the intermediary step where we created needs from each user input. From this, we have distilled the following problem statement:

|  |
| --- |
| **CEED facility users need to remotely monitor available devices in the Makerspace and Brunsfield Centre with a device that can accommodate a changing workspace. They need to access this information with a user-friendly and attractive interface.** |

## Benchmarking

We were able to briefly compare our needs with accounts found in [1], [2] and [3]. We found evidence to suggest that we were focusing on some important traits and gained insight into what other people have already prioritized, which informed our ranking scheme.

## Conclusion

We now have a statement that adequately captures our design goal. It remains to be seen if our priorities change depending on subsequent feedback from customers, however we believe our statement is robust enough to allow for new information. We believe that this statement respects both our customer’s desire for a professional and engaging UI and our users’ need for a user-friendly and useful solution.

## Table 1: Refined List of Needs

|  |  |  |  |
| --- | --- | --- | --- |
|  | Customer / User Input | Identified Need | Rank |
| 1 | *“Must be maintainable”* | Maintainable | 5 |
| 2 | *“The equipment isn’t always in the same space in the Brunsfield center…”*  *“We haven’t changed the layout of the Makerspace much, but we might...”* | Modular | 4 |
| 3 | Based on size constraints from [4] | Unobtrusive | 4 |
| 4 | *“We don’t always have staff that know a lot about the equipment”*  *“Don’t have time to learn a completely new system”* | User friendly | 5 |
| 5 | *“Do something cool!”*  *“A lot of our passion projects involve UI…”* | Attractive | 4 |
| 6 | *“A lot of our makers are using this equipment for the first time”* | Easy to use | 5 |
| 7 | Based on uOttawa demographics | Bilingual | 3 |
| 8 | Based on project definition | Automated | 5 |
| 9 | *“It’d be nice to know about what’s happening in the space when I’m not in the space”* | Space surveillance | 4 |
| 10 | *“Need to know what to replace when I do ordering…”*  *“People waste the most time on finding things”*  *“SD cards are the biggest thing that go missing”* | Inventory management | 3 |
| 11 | *“Users come in and don’t know that they’re project is going to go past the closing time”* | Lets users know about their time limits | 3 |
| 12 | *“People won’t know where certain equipment is in the room…”* | Lets users know about their physical surroundings | 2 |
| 13 | *“Air particulate regulation/monitoring - make sure space is healthy and safe and comfortable”* | Safe environment to human health | 5 |
| 14 | *“Gets hot in the summer”*  *“Noisy, dirty, full of fruit flies”* | General comfortable experience of product and space | 4 |
| 15 | *“Customer service is a big part of our job…:* | Encourage user engagement with space | 4 |
| 16 | *“He made others feel uncomfortable…”*  *“Just reeking of BO…”*  *“...toxic work environment…”* | Encourage positive Interaction between makers | 2 |
| 17 | *“We can’t buy something expensive without thinking through it”*  Based on input from [1], [2] | Affordable | 5 |

## References

[1] N. Halford, ‘4 Best 3D Printer Cameras to Monitor Your 3D Prints’, 2018. [Online]. Available: <https://all3dp.com/2/the-4-best-3d-printer-cameras-to-monitor-your-prints/>. [Accessed: 23-Sept-2019].

[2] J. Simon, ‘How to Monitoring Your 3D Prints’, 2014. [Online]. Available: <https://3duniverse.org/2014/01/06/how-monitoring-your-3d-prints/>. [Accessed: 25-Sept-2019].

[3] J. West, ‘Equipment Monitoring Saves Lab Managers Time and Money’, 2019. [Online]. Available: <https://www.labmanager.com/laboratory-technology/2019/07/equipment-monitoring-saves-lab-managers-time-and-money>. [Accessed: 25-Sept-2019].

[4] Ultimaker. *Ultimaker 2+ technical specifications,* 2019. [Online]. Place: ultimaker.com. Available: <https://ultimaker.com/3d-printers/ultimaker-2-plus>, [Accessed on: 25-Sept-2019]