Deliverable C

Group 8

Thomas Alkhoury, Laura Godfrey, James Hight, Cecilia Lou & Julian Ward

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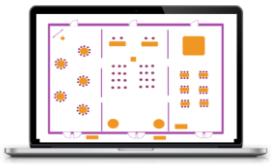
Contents

Introduction

As previously discussed in Deliverable B, the most important needs we identified were regulating machine use and crowd management. We were able to discover at least 3 pre-existing products for each high priority need. The booking system can be used to book machines and equipment, while the motion sensors can be combined with a program to determine how many people are entering or leaving a space. These products are discussed and analyzed in detail within this document consisting of benchmarking, target range, design criteria and how we think these products will help the clients from the information we obtained from the client meeting.

Benchmarking

Booking System

	Skedda	PlanningPod	EventGuru
Screenshots			
Cost	$5/month	$99/month	N/A (available per request)
Ideal Number of Users	1-1000+	1-1000+	1-99
Platforms Supported	- Cloud	- Cloud	- Cloud
Training available	- Live Online Documentation	- Live Online - Webinars - Documentation	- In Person - Live Online
Ease of Use (Ratings Online out of 5)	4.5	4.5	4
Booking Features	- Calendar - Conditions	- Calendar - Venue	- Calendar - Venue

	and Restrictions	Manager - Conflict Alerts - Hold Dates	Manager - Event Reservations
Technical Support	- 24/7 Tech Support - Online	- Business Hours - Online	- Business Hours - Online

Motion Sensor

	Eclipse	Spectrum 3D People Counter	Gazelle Series	Aukru HC-SR501
Design				
Material	ABS Plastic	Aluminum	ABS Plastic	PCB
Dimensions	7.5” x 3.35” x 1.25”	9.3” x 3.9” x 1.5”	7.5” x 4.37” x 2.5”	1.3” x 0.9” x N/A
Mounting Height	7.5 to 13.75 feet	10 to 20 feet	7 to 15 feet	N/A
Power supply	PoE (Power over Ethernet)	PoE or 24 VDC	PoE or 24 VDC	5V (With the Arduino power source)
Interface	Built-in Ethernet connection for configuration and data access	Ethernet 1000 Base T, PoE, RJ45 socket	Built-in Ethernet connection with Dual View and IP models for configuration and data access	Through Arduino

Target Range

Booking System

- Cost: $0-$100
- Ideal Number of Users: 10 -1000+
- Booking Features: Machine Booking, Calendar display of machine use.

Motion sensor

- Dimensions: min 1.3” x 0.9” x 1.25”; max 9.3” x 4.37” x 2.5”
- Mounting Height: 7ft - 20ft
- Power Supply: Has at least PoE or 5V; has at most the option between PoE or 24 VDC
- Interface: Has at least Ethernet or through Arduino; has at most Dual View and IP models

Design Criteria

- Total cost must be under $100

Booking System

- Functional Requirements
    - Booking Features should meet the minimum requirement of having a Calendar to view bookings.
    - Allow users to book time slots for each individual machine
    - Shows the users when the machine is in use.
    - Should support cloud to ensure use on all devices
- Non-Functional Requirements
    - Aesthetics
    - Safety (Hacker-Proof)
    - Reliability
- Constraints
    - User Supported
    - Cost ($)

Motion Sensor

- Functional Requirements
    - Material is variable as it is out of reach, therefore it doesn’t need to withstand contact

    - Dimensions can be variable depending on the specific product
    - Mounting height should be at least 15 ft to be placed on the ceiling of makerspace
    - Power supply is wired to prevent changing of batteries and constant accurate results
    - Connects to the internet to make it easier to view results
    - Weight must be light to avoid falling as it is attached to the ceiling
- Non-Functional Requirements
    - Aesthetics
    - Product Life (years)
    - Safety (doesn't fall from the ceiling)
    - Reliability
- Constraints
    - Weight (lbs.)
    - Cost ($)
    - Mounting Height (ft)
    - Power Supply
    - Interface?

Client Meeting Reflection

During the client meeting we learned that a majority of the problems in CEED are based on organization. One complaint the clients had was that the makerspace become too crowded and it was impossible to tell when the downtimes were.

We decided to help this issue by using Dashboard to create a program that allows people to see what machines are in use and how long until they are available. This way people will be able to see if there is a machine available before participating in activities within the makerspace. We also plan on making a counting system for the number of users at the doors of the building. This way it'll be known how many people are in the building at all times and allow users outside of makerspace can see if makerspace is at capacity. It also gives CEED data on the usage of their spaces and facilities.

Conclusion

Reflecting on the client meeting discussion, the products that we benchmarked to match their needs will work well for the Makerspace. Both high priority needs of regulating machine usage and crowd management are solved by using a booking

software and a motion sensor counter, respectively. The process of benchmarking will allow our own products to more accurately address the needs to be specific for how the makerspace operates.

Bibliography

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