

# Project M Check-in

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**Abstract.** Our project's task is to first understand the critical drivers of the fan experience who attend sporting events at stadiums and arenas. From there, we hope to discover and design a number of ways in which this experience can be altered and improved, drawing from principles of human-computer interaction as well as the integration of technology into more key components of it.

## Introduction

Recent figures have shown that live attendance of sports in many parts of the world is declining with fewer fans interested in or willing to attend events in person (Leitch).<sup>1</sup> While there are likely many reasons for this (the continually improving experience of watching sporting events from home on television, rising ticket prices that make it more expensive to attend in-person, etc.), we approach this problem from the perspective of the fan experience in stadiums at sporting events. Our hypothesis is that by considering the motivations, needs, and contexts for spectators at stadiums that we could revamp and improve the experience of fans in stadiums, thereby giving stadiums an opportunity to stem declining attendance numbers.

Some initial needs we identified during the needfinding phase of our plan included:

1. Improved navigability (especially entering/exiting the stadium)
2. Creating an experience safe from concerns related to other rowdy fans (especially those that disrupt a family-friendly experience) without disrupting the thrill of participating with other like-minded fans
3. Translating the experience of many of the conveniences and features that fans are used to from watching sports on television (better view, instant replays, live commentary, live information and statistics)

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<sup>1</sup> Leitch also raises the question of whether anyone really *cares* about the fact that attendance is down in many sports, to which we would emphatically argue that the answer is yes, both because declining attendance is still a core source of revenue for teams and can also be detrimental to the source of community and the fan experience that fans of teams feel.

4. An improved food and drink purchasing experience<sup>2</sup> to mitigate concerns with missing live play due to needing to leave seats and wait in lengthy lines
5. Improving the ticket purchasing experience as part of the broader context in which people prepare to attend events

We chose to focus on two of these needs and interfaces designed to address those needs were designed:

1. Improving the food and drink purchasing experience: A smartphone app for having food delivered directly to your seat so that you do not need to miss viewing anything.
2. Improving ticket purchasing: An app that gives users a better ability to anticipate the seating experience in a given seat.

To evaluate the proposed designs, we developed a GOMS model and a cognitive walkthrough for both prototypes. Then, interviews and [surveys] were conducted.

## **Evaluation**

### **Predictive Evaluation**

In order to evaluate the result of the design phase, we chose to execute predictive evaluation first, so that our own critique is the first filter that the designs pass before showing them to a broader audience.

A GOMS model will be delineated for both prototypes in an attempt to analyze the prototypes in a way that can lead us to find critical parts that can be designed so that the prototype can be changed to be made more efficient and simple.

We will also perform cognitive walkthroughs for both of the apps. In the app for purchasing drinks and foods, the task will be to complete the placing of an order; while in the anticipation of ticket experience the task will be to select the seats that the user will purchase.

### **Food and Drink Purchasing GOMS Model**

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<sup>2</sup> Many users also reported something similar with respect to leaving their seats and waiting in long lines to use restrooms, although we consider this food purchasing need to be substantively similar.

Employing a GOMS model approach of our card based prototype will allow us to develop a better understanding of how users might leverage our food delivery smartphone application. The goal of the users that we will be evaluating is the users purchasing food for consumption during the game. There are a couple of different avenues that our users can follow when trying to accomplish their goal. We will focus on three for our predictive evaluation. Those being using the newly developed smart phone app to order and deliver food right to the consumer, the consumer getting up to go and purchase the item of their choice at some vendor location, and the user waiting for a mobile vendor to bring around what they want to their seat.

### **Operators for users ordering food off of Smartphone Application**

- 1) Opening Application
- 2) Choose food menu items
- 3) Navigate seating chart
- 4) Add in credit card information and billing information
- 5) Await for arrival

### **Operators for users getting up to order food from vendor stand**

- 1) Walking out of assigned section
- 2) Finding vendor location with desired food
- 3) Ordering food
- 4) Paying for order
- 5) Awaiting order completion
- 6) Walking back to seat with order

### **Operators for users waiting for a mobile vendor to bring around particular food to their section**

- 1) Wait for vendor with exact food item
- 2) Attract vendors attention
- 3) Pay for item

## **Qualitative Evaluation**

After performing the predictive evaluation, we also ask some users to evaluate the prototypes. We will let them use the prototypes, observe them while using them, and then, we will ask questions about their opinions as post-event protocols.

### **Food and drinks purchasing**

The food and drinks purchasing app will be evaluated as an []

### **Anticipate seating experience**

The app designed to let the user have a glimpse of the experience that will be offered depending on the seat will be evaluated applying a post-event protocol. Relatives and people from work were already invited to participate in the evaluation and a few of them accepted.

The evaluation process starts with an explanation of the task, which, for this interface is simply to make the decision about which seats they will consider buying. The interface will not be explained, because, given its simplicity, one of the factors that we can analyze is, precisely, the challenges that it may present to novice users.

Once the exercising of the interface is finished, the participants will be asked to answer the following questions:

- What did you like about the interface?
- What did you dislike about the interface?
- How did you know which steps were needed to complete the task?
- Was the interface helpful in selecting the best seating position? How?
- Which information is missing in the interface that you think can make it more helpful in letting you select the best seat?
- Where do you expect to use this interface? (At the ticket office? At home?)
- Which elements help you the most (and the least) to choose the best seat?

In order to avoid observer bias, we deliver the questions trying to be as close to the script as possible. We know that some changes can be necessary according to observations of behavior while using the interface, but we will remain as close to these questions as possible. A complete script for the evaluation can be seen in Appendix A

Our attempts to avoid social desirability bias will include, be attentive during the observation of the participants while interacting with the interface (performing naturalistic observation) and, giving them misguided information about the authorship of the prototype, so that they will not know that the author is the person delivering the evaluation.

## References

1. Joyner, D. A., Ashby, W., Irish, L., Lam, Y., Langston, J., Lupiani, I., Lustig, M., Pettoruto, P., Sheahen, D., Smiley, A., Bruckman, A., & Goel, A. (2016). Graders as Meta-Reviewers: Simultaneously Scaling and Improving Expert Evaluation for Large Online Classrooms. In *Proceedings of the Third Annual ACM Conference on Learning at Scale*. Edinburgh, Scotland.
2. Joyner, D. A. (2017). Scaling Expert Feedback: Two Case Studies. In *Proceedings of the Fourth Annual ACM Conference on Learning at Scale*. Cambridge, Massachusetts.

## **Appendix A: Script for Post-event protocol**

### **Before showing the prototype**

Hi, as I told you we are here to evaluate a prototype that was built by a team from a class that I am taking in HCI.

I will explain to you a task that I want you to complete in the prototype, and then I will present it to you. Then, you will attempt to complete the task. The idea is that you figure out how to complete the task without my help, but anything you need, I can give you a hand.

The prototype that I will show you is an interface that you can use to select the seat that you want to buy when you want to go to the stadium. So, let us imagine that you will go to a game of one team you follow. You may have never go to these particular stadium and you want to select the seat that better suits your needs. The interface claims to let you experience the seating experience, so that you will know which seating position is better for you.

Your task is to explore the interface and to let me know which seating position you would select based on that.

### **During the exercising of the prototype**

The expectation is to avoid communication while the user is exercising the prototype (beyond the parts in which the prototype is not ready), but to be helpful without giving the answer, remember to help the participant by asking questions.

### **After the exercising of the prototype**

Now I would like to ask you some questions regarding this exercise:

- What did you like about the interface?
- What did you dislike about the interface?
- How did you figure out which steps were needed to complete the task?
- Was the interface helpful in selecting the best seating position? How?
- Which elements help you the most (and the least) to choose the best seat?

- Which information is missing in the interface that you think can make it more helpful in letting you select the best seat?
- Where do you expect to use this interface? (At the ticket office? At home?)

If the participant was having problems with some particular part of the interface, take notes and after these questions ask them about those parts.

I saw you did [whatever unusual behaviour], why did you do it? Was the interface guiding you to do that? How?