

# Campus Recreation Reservation System

INLS 582

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<b>Table of Contents</b>	
<b>Executive Summary</b>	<b>2</b>
<b>Description of Current System</b>	<b>3</b>
<b>Consolidated Models Description</b>	<b>6</b>
<b>Recommendations for New System</b>	<b>11</b>
<b>Appendix</b>	<b>16</b>
<b>Team Appendix</b>	<b>20</b>

## **Executive Summary**

During the span of our project, we have designed multiple models regarding the current system. We brainstormed an affinity diagram to get a sense of various factors in the system and grouped them into two big categories: specific needs and technical support. We looked at the artifact model to see how a possible reservation system works. We also designed a sequence model to understand the flow of how the system functions. We then came up with several flow models concerning different users: student members, director of campus recreation, business and strategic planning director, sports program director, facility operations director, fitness and wellness coordinator, and aquatics assistant director. We also considered several different user personas. Through our examination of our current system, we understood better about the system and what we can do to improve it.

In order to examine the system sufficiently, we first did risk assessment, which is more likely to be called system investigation. We discussed advantages and possible risks the current system is facing and possible future improvements to make. We then identified the area to modify and clients we need to talk about this system. We then conducted interviews with clients and sent out questionnaires with identified users of the current system. We then performed testing on the current system to see flaws and limitations. After that, we came up with several models such as flow and experience models, which further enhance our understanding of the current system.

After we analyzed our findings and some possible solutions and improvements, we came to the conclusion that the campus recreation system should be workable and easy to use for users as well as a more sophisticated and well-run management system. We suggested that members will be distributed a tag which signifies their reservation. Also, adopting a new computer network and efficient management system would enhance the overall performance of the campus recreation system. The main functions of our newly designed system would include member management, venue categorization, schedule management, communication, and interactive pages.

## **Description of Current System**

UNC Campus Recreation designs and delivers innovative, diverse, and inclusive experiences that stimulate well-being, enjoyment, and learning for the entire university community. Campus Recreation inspires all Tar Heels to have fun, stay active, grow, and play together. Campus Recreation provides various programs such as intramural sports, fitness & wellness, aquatics, sports clubs, climbing, and expeditions. Campus Recreation inspires students to live healthy lifestyles, engages individuals from different backgrounds, and provides intentional and socially supportive experiences.

Campus Recreation offers many facilities, programs, and services to serve the UNC community. Recreation memberships provide access to all Campus Recreation facilities and programs, while specific programs and services are available to UNC-affiliated and non-UNC-affiliated individuals without recreation memberships. Please explore Campus Rec's membership options and various offerings to find your fit throughout this Members and Services section.

### **Problem Description:**

Campus Recreation is constantly short-staffed this semester. During the day, when there are not that many students, there are several staff members, while at night, only one or two staff members deal with hundreds of students. One staff member often has to run between multiple locations, such as Fetzer gyms. Sometimes at night, only one staff member works at each site, who must face a large volume of student needs. For example, at Fetzer hall, a group of students plays volleyball every night, and they need multiple nets set up before their arrival. However, one staff member would be unable to set the nets up, and they are not allowed to have students' help because of safety concerns. At the same time, students would not be able to request a reservation and give staff members at Fetzer short notice ahead of time, so sometimes, students would leave with disappointments of not being able to play the night.

### **Project Objectives:**

This project aims to establish a reservation portal for the use of the facility and spaces in the gyms. As a result, students could make reservations online to notify staff members at campus recreation facilities ahead of time to set up the net and reserve the space for late-night activities during times of staff shortage. This would increase students' satisfaction with campus recreation and stop crowding in the gym. At the same time, staff members do not have to run between different gyms to solve student problems.

### **Metric:**

Multiple indicators could be used to evaluate the project output—first, a decrease in crowding and traffic at night in the gym. Second is a decline in the number of student requests for facility use and help. Third, the number of times staff members must run between different facility

centers on campus. Fourth, the increase in students' satisfaction with campus recreation facilities.

### **Scope:**

Staff members, marketing members from campus recreation facilities, and students at UNC are all involved in the process. This project's scope is restricted to implementing new functionality on on-campus recreation websites. We do not necessarily need to create a reservation system or portal for reservations. This project focuses on determining the importance of reservation systems for campus recreation.

### **Methodology:**

Many contextual inquiry sessions were conducted with diverse members of the UNC Campus Recreation system. Our initial brainstorming sessions exposed three broad categories of inquiry: Mechanism, Interview, and Solution. We then workshopped some comprehensive general comments or questions, which became our "Information Gathering Plan" to guide our understanding of the UNC Campus Recreation system.

- What services do you use? How do those services have potential concerns?
- What information do you need to gather, and why is it important? This may include information about existing processes or information, the expected users, the new system's environment, any constraints on your design, standards or "best practices" that may be pertinent, products or equipment, etc., and How you will get the information. This may include types of interviews or observations, artifacts you want to collect, searching through indexes or on the Web, etc
- What models do we need to use, and how to deepen our understanding of the project through modeling methods
- What are the possible solution and Recommendations for New System
- Does there need to be a more precise assignment of roles/tasks that need to be done? How does each member of the team understand the UNC Campus Recreation system? How do we use our strengths to divide the work

We asked a series of questions that prompted team members to demonstrate and explain how they work, organize their work and interviews and understand the existing Recreation system, their problems, and their problem-solving skills. The questions are instructive; the interviewee usually acts or makes a comment that triggers a different question. As interviewers, we are not bound by the questions we design.

### **Interviews:**

Interviews will be conducted face-to-face to gather the different perspectives of students and staff at the UNC Campus Recreation system.

Structured interviews with four representatives of the Fetzer lobby staff.

- one representative of the receptionist at the Fetzer front desk
- one representative of Fetzer's sports equipment staff
- two representatives of badminton association administrators

Structured interviews with users of Fetzer Gym A:

- six students who wanted to play badminton without a badminton court (2 male graduates and four female graduates)
- three students who wanted to play badminton without badminton equipment and court (2 male graduates, one female graduate)

### **Observation :**

We observed the usage of Fetzer gym A courts at different specific times. We recorded the occupancy and crowding levels, the change in the number of people per court, the court's booking mechanism, the on-time arrival of reservations, the court's booking method, and the user satisfaction with the court's booking method.

### **Results :**

Badminton courts are membership-based, and you must join a badminton club to book a badminton court.

Badminton courts are scheduled on a whiteboard where users mark the time required(Tag System).

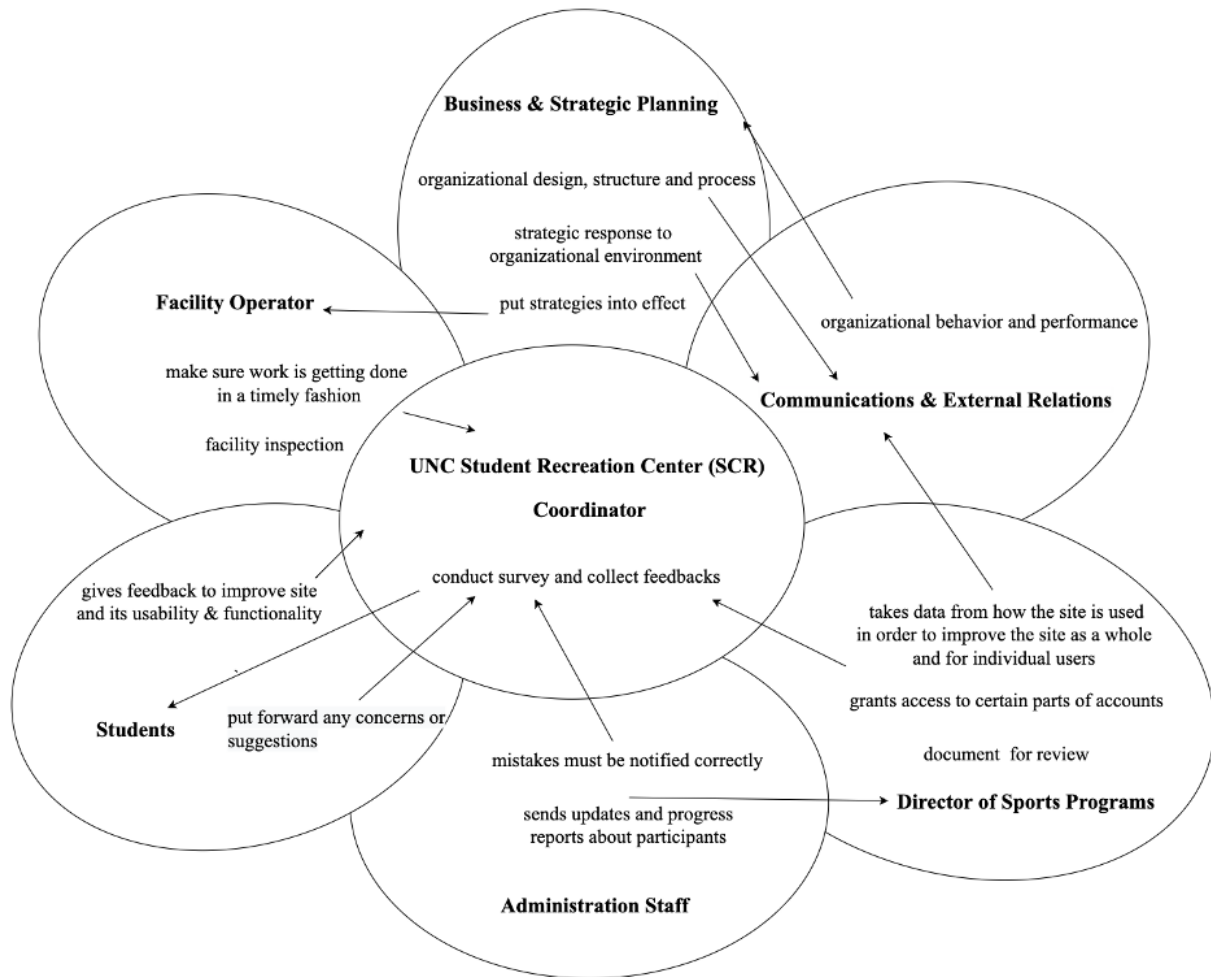
The whiteboard booking model causes unreasonable use of the court, with some users unable to successfully book during peak usage periods and more space at the court during off-peak hours.

Abuse of the court, sports activities are carried out directly on the court without reservation.

Court booking of sports equipment rental information lags; some rental locations marked on the official website can not successfully rent sports equipment.

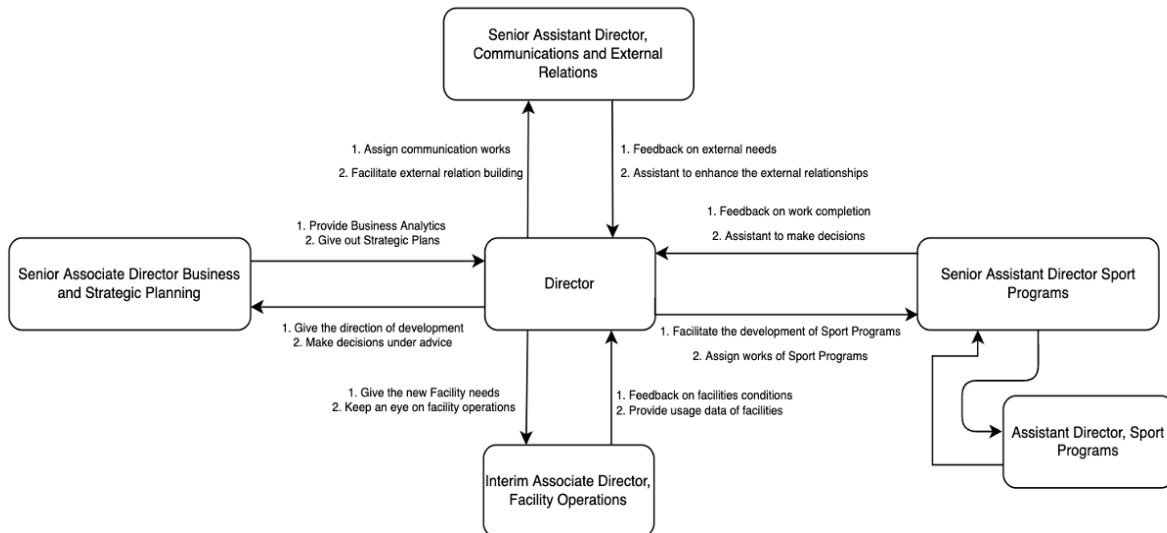
## Consolidated Models Description

### Cultural Model

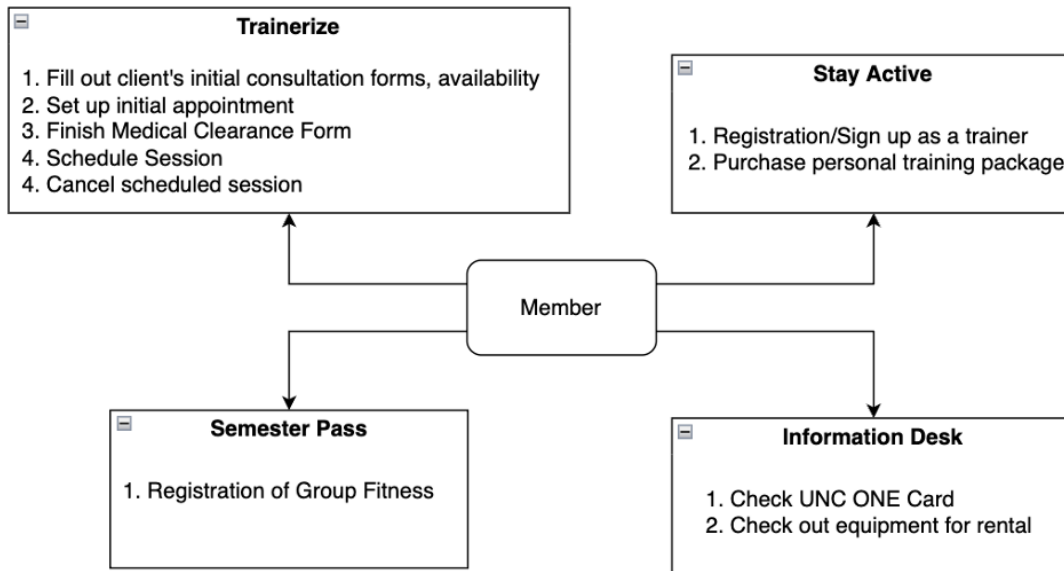


## Flow Models

### -Flow Model for Director of Campus Recreation

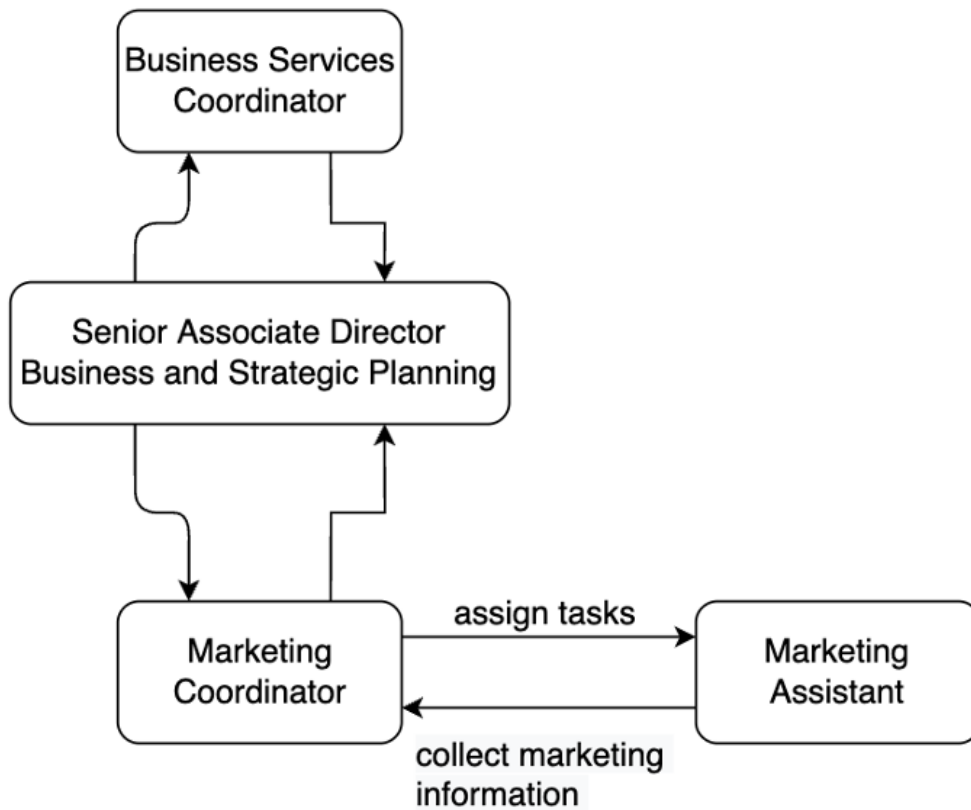


### -Flow Model for Members

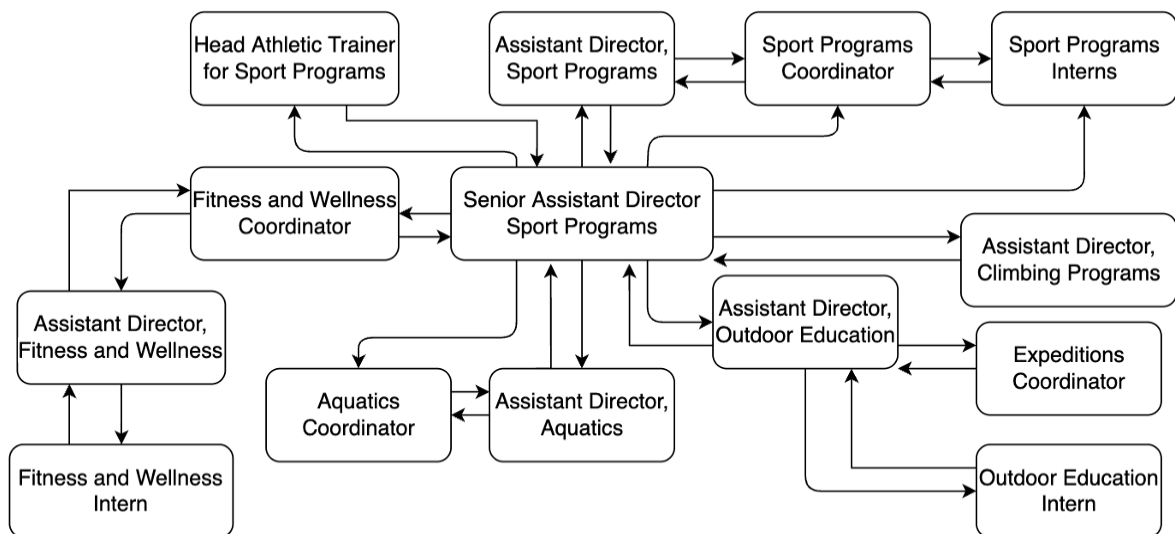




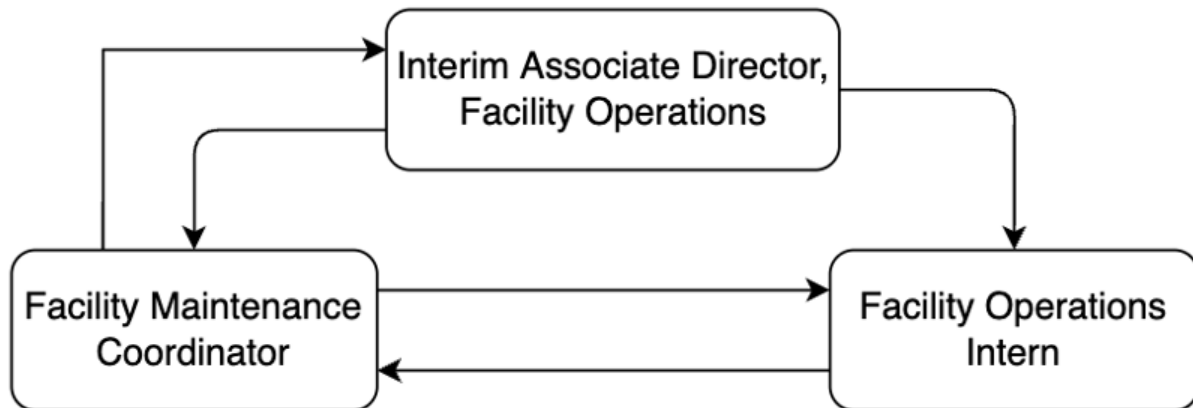
### - Flow Model Business and Strategic Planning Director



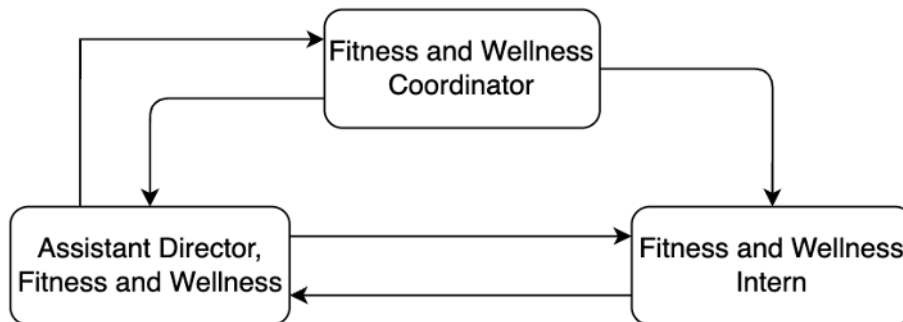
### - Flow Model for Sports Programs Director



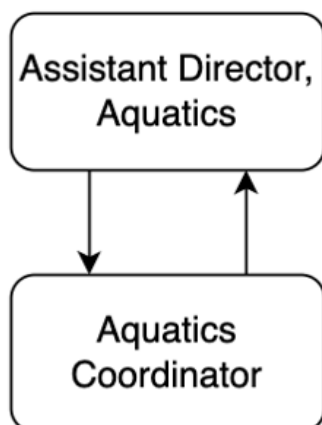
**- Flow Model for Facility Operations Director**



**- Flow Model for Fitness and Wellness Coordinator**

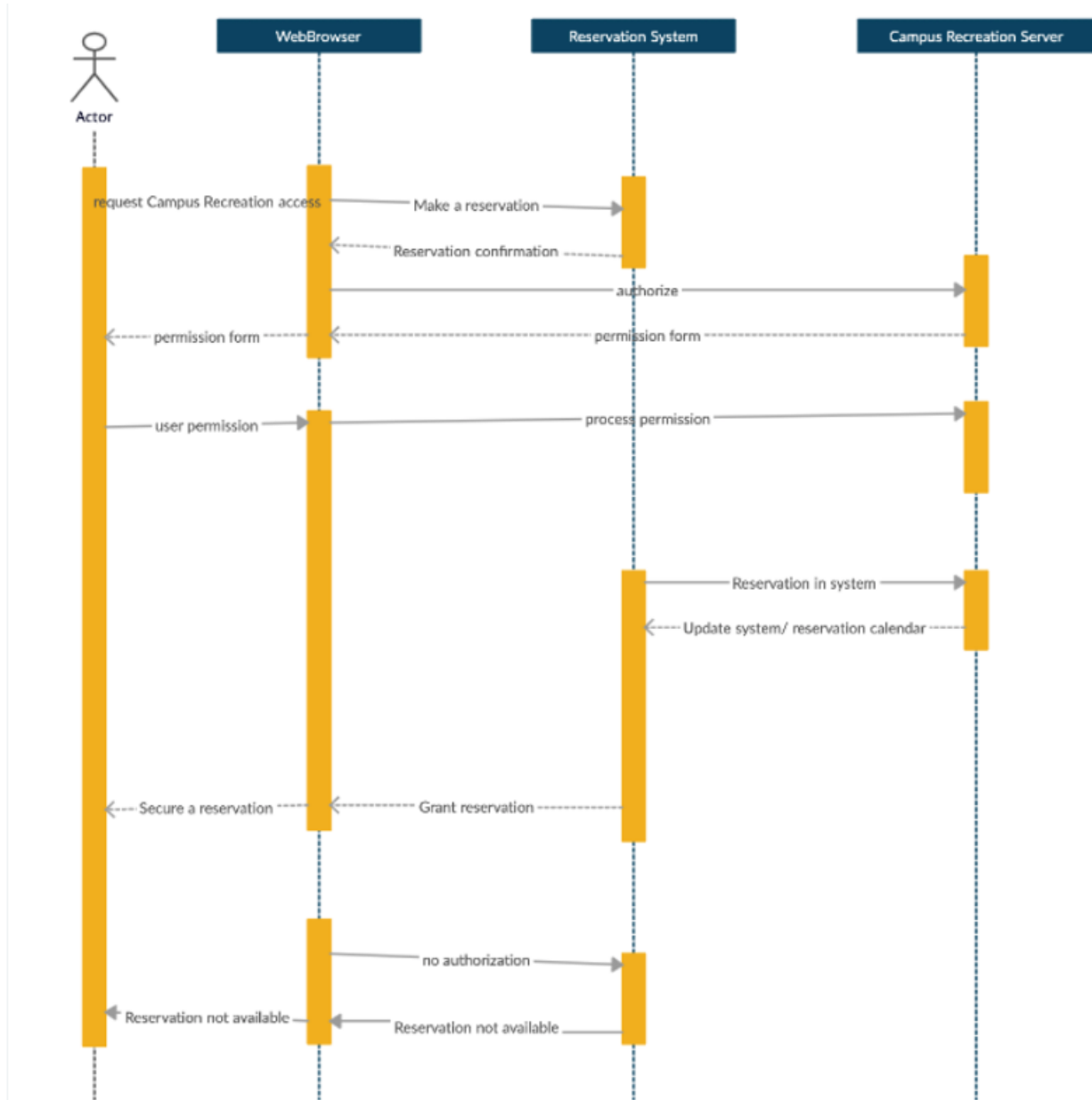


**- Flow Model for Assistant Director, Aquatics**



## Additional Models

### -Three Sequence Models



## **Recommendations for New System**

Our recommendation for the Campus Recreation Reservation System will address the following four main issues. Although this project covers a wide range of subjects, there is one overarching goal that always feels imminent: to reduce unnecessary confusion and delay in scheduling for our staff members and students.

We have several recommendations for improving the Campus Recreation Reservation System. We put forward specific solutions for each issue, which have different features when implementing.

Please note that our recommendations are not mutually exclusive. Staff members and students can implement as many or as few as they prefer depending upon available resources and priorities.

### **1) Enhance Communication Efficiency**

<b>Recommendation</b>	<b>Description</b>	<b>Advantages</b>	<b>Disadvantages</b>
Design and implement an online reservation system.	The online reservation system needs to update availability of courts and time slots and automate booking notifications.	<ul style="list-style-type: none"> <li>- It will be less time-consuming to integrate into the website seamlessly, allowing the creation center to accept bookings 24/7.</li> <li>- It helps simplify and automate administrative tasks. The real-time availability viewer allows students to book based on exact availability.</li> </ul>	<ul style="list-style-type: none"> <li>- Production costs.</li> <li>- Staff members may need to synchronize their calendars based on the status of reservation.</li> </ul>
Create a virtual waitlist.	Students can join a virtual waitlist via Campus Recreation Reservation system, so that it would be more efficient for them to	<ul style="list-style-type: none"> <li>- Help students line up virtually and thus save waiting time.</li> <li>- Quickly fill no-show appointments and</li> </ul>	<ul style="list-style-type: none"> <li>- If the waitlists are too long, even if there are spaces available it still takes time to weed through the students who have</li> </ul>

	notify staff members of their coming.	cancellations from the waitlist. It will be easier to fill newly available appointment slots by reaching out to students labeled as "Added via Waitlist" on the list.	been waiting. - May increase waiting time if - It may cause conflicts with students who drop in. - It will be hard to operate the waitlist if the online system is down.
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## 2) Improve Awareness and Understanding of Process

Recommendation	Description	Advantages	Disadvantages
Create a brochure to provide detailed information about the Campus Recreation Reservation System.	Staff members can strategically place brochures in a wide variety of locations in the recreation center such as rest areas and helping desk so that it will be more convenient for students.	<ul style="list-style-type: none"> <li>- Brochures hold lots of information. They will compact a lot of information in a small area. Students' common problems can be solved.</li> <li>- Brochures are easy to distribute.</li> <li>- Brochures are cost effective. It will help save time and money when having a succinct summary of the procedure and service readily available in the brochure.</li> </ul>	<ul style="list-style-type: none"> <li>- Limited access and spreading of brochures. The amount of students reached through the use of printed brochures is limited.</li> <li>- Text heavy. While photos and graphics are part of the design, text is a major component.</li> </ul>
Create a video explaining the process.	The video can be shown at the gym, posted on GoHeels.com and delivered to students who may	<ul style="list-style-type: none"> <li>- The engaging video will attract students' attention and help explain the procedure easily, so that the</li> </ul>	<ul style="list-style-type: none"> <li>- Production cost. It will take longer to plan and produce a video than it would to deliver other types of content.</li> </ul>

	need the service via their registered email.	process is sped up. - It will help save staff's time dealing with common problems from students.	- Difficulty of spreading.
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### 3) Frustration at a lack of staff at night time

Recommendation	Description	Advantages	Disadvantages
Hire more staff	Campus recreation can think of and make plans for possible staff positions needed, and hire more staff to solve current staff shortage problem	<ul style="list-style-type: none"> <li>- More staff can provide more flexibility for arrangement, and can solve current problem in a rather straightforward way</li> <li>- More staff can efficiently help shorten the time that staff members spend running around</li> <li>- More staff can reduce waiting time and improve student experience</li> </ul>	<ul style="list-style-type: none"> <li>- There will be a great increase in the operational cost of campus recreation if hiring more staff member</li> <li>- Difficulty of hiring: the hiring process may be difficult</li> <li>- The number of staff needed is not yet determined, and thus cannot make sure how many positions are likely to be provided.</li> <li>- There may be not enough space in current campus recreation for new staff to set up working area and office</li> </ul>
Hire part-time workers or student	Instead of hiring new staff, campus recreation may consider hire	- Hiring part-time workers can help relieve the stress of staff shortage in a	- There still is increase in the operational cost of campus recreation

workers to relieve pressure	part-time workers and student workers who are familiar with work of recreation to help with some busy hours from time to time	relatively cheaper way than hiring full-time campus recreation staff - More helpers in the campus recreation can reduce waiting time and improve student experience - More staff can efficiently help shorten the time that staff members spend running around	if hiring more staff member - Needs to train student workers and part-time workers, which may take more time and can be difficult
Arrange staff working time more scientifically based on student number	There is a noticeable shortage of staff in campus recreation especially during night time, and a more scientific way of staff time arrangement may help solve the current crowded problem. Arrange more staff during busy hours may help reduce waiting time	- In this way, campus recreation can balance the current staff force and needs of students and make waiting time of busy hours relatively shorter than usual, and thus provides better experience for students	- Student number may vary from time to time, and it is hard to predict possible busy hours - Students' busy hours may change from semester to semester, and this requires huge amount of time to make analysis and make adjustment accordingly - Possibly increase number of night shift because most students may have class during morning times

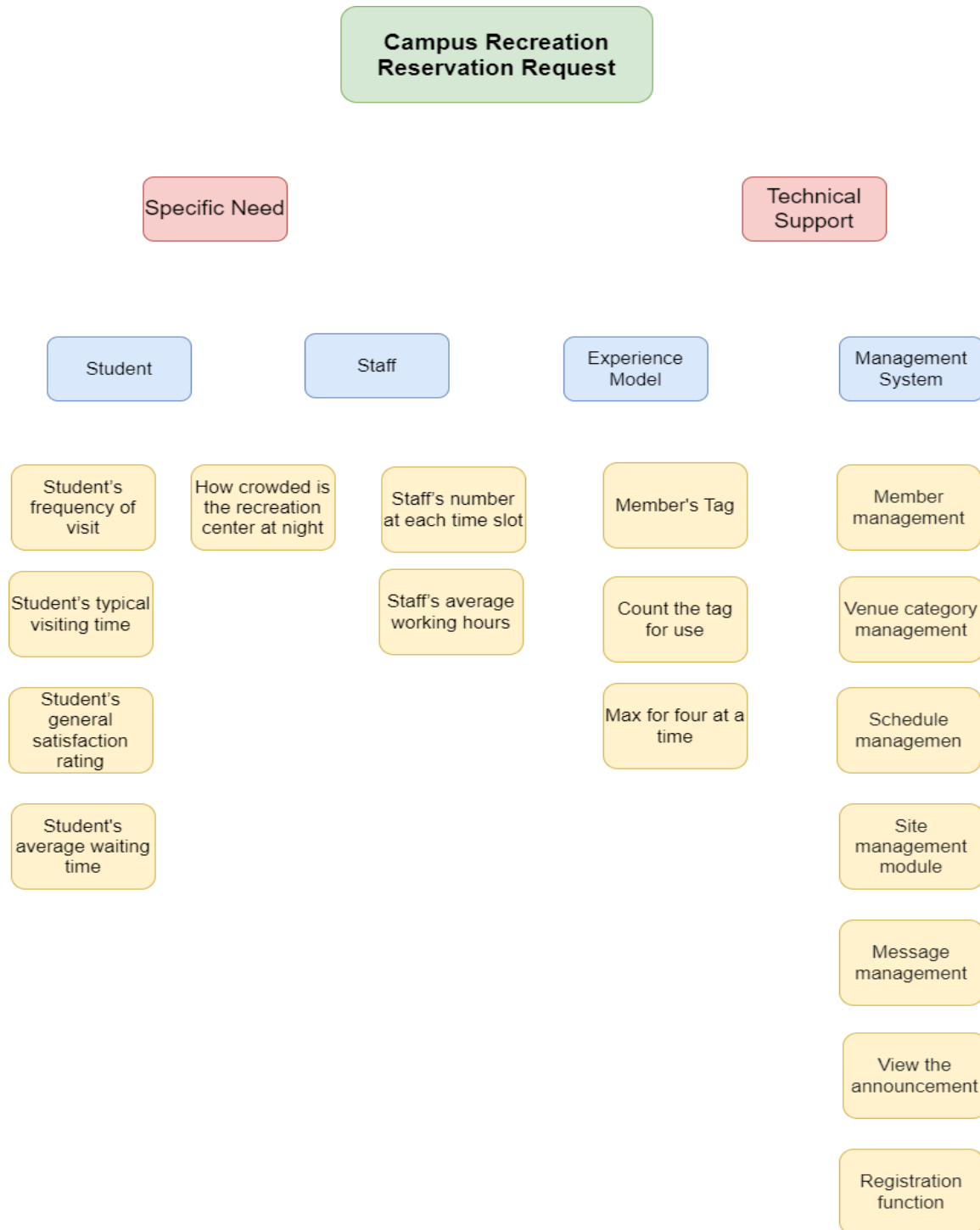
4) Staff member often has to run between multiple locations, such as Fetzer gyms

Recommendation	Description	Advantages	Disadvantages
Relocate office locations to shorten time for staff member running around	In order to save staff's time spent on running around between different locations in order to process students' requests, a relocation of certain office locations may help shorten the time spent during the process. This helps increase the efficiency of each request and can thus reduce students' waiting time	<ul style="list-style-type: none"> <li>- This help reduce time of staff members running around, and can thus leave more members at the desk to communicate with students</li> <li>- Greatly save time for each process. This helps increase the efficiency of each request and can thus reduce students' waiting time</li> </ul>	<ul style="list-style-type: none"> <li>- Cost of changing locations and arrangement may turn out to be expensive</li> <li>- Some locations may be impossible to change, and the improvement could be limited</li> </ul>



## Appendix

1. **Affinity Diagram:** This is an Affinity Diagram the team created. Using this diagram we identified primary pain points and what students need in the Campus Recreation reservation system.



2. **Artifact:** This is Campus Recreation Reservation Form. It is referred to Campus Recreation reservation instructions. It includes information needed for prior approval.

Form includes information needed for prior approval of campus recreation reservation according to instructions.

This form is referred to Campus Recreation Reservation Instructions. Form title is clear and informative.

Name : \_\_\_\_\_

Date of event : \_\_\_\_\_

Facilities : \_\_\_\_\_

Programs : \_\_\_\_\_

# of attendees : \_\_\_\_\_

Announcement

\_\_\_\_\_

\_\_\_\_\_

A.

B.

C.

clear / straightforward design and instruction asking for necessary information to make a reservation.

← November →						
Mon	Tues	Wed	Thur	Fri	Sat	Sun
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Available time slots:

8:00 - 9:00pm

9:00 - 10:00pm

Reservation System launched on campus recreation website. Available to all use students & faculties.

Make A Reservation

3. **User personas:** We created three user personas based on user research. We conducted multiple interviews and listening sessions for possible users. There are three kinds of personas;

- Who loves sports and goes to the gym frequently.
- Who is not proactive in exercise but still go to gym sometimes
- Who never goes to the gym.



Bill the Sportsperson

- Demographic:
  - Age: 21
  - Education: Undergraduate, Major in Statistics and Analytics at UNC
  - Live in the college dorm
- Interests:
  - Basketball, badminton, gym workouts, Cycling
- Go to gym four times a week
- Spend more than 2 hours every time
- Knows about the Fetzer Hall very well, familiar with different equipment and locations for different sports



Isabelle

- Demographic:
  - Age: 19
  - Education: Undergraduate, Major in Psychology
  - Live off campus
- Interests:
  - Drawing, watching movies, playing the piano
- Never been to Fetzer Hall before
- Love to lying in bed and doing inactive activities indoor
- Lack of skills in sports/not good at playing sports



Name: Emma

- Demographic:
  - Age: 23
  - Education: Graduate, Major in Accounting
  - Live off campus
- Interests: her new pet (dog), baking
- Go to gym when she want to learn something but she doesn't go when she loses interest.
- She sometimes goes for a walk with her dog
- She tried to take courses of pilates and yoga before but she stopped.
- Not really interested in exercise but want to be healthy

## **Team Appendix**

### **Plans for presenting to the clients**

We schedule meetings for our clients on November 30th. We will present our findings in three main sections. The first section is about the contradiction and problem we face right now. The client will understand the current problem comprehensively after our first section. Then we will show the data we collect with the potential trends and explanations to give our clients a professional analysis of the current situation. Finally, the conclusion and suggestions from the report and survey of the new systems we will offer as a great answer to the problem we introduce. Also, the PDF file and other documents will show with our presentation. We plan to offer our presentation remotely due to our clients are busy.

### **Lesson learned**

First of all, we all think that team communication is very important for this project. Our team is quite flexible that we hold a meeting to discuss our project once a week. During every week's meeting, we first organize and manage tasks that can improve our projects and then set up a deadline for ourselves so that we can have time to read through everything for the next meeting. We also figured out the date and time for the next meeting each week so that every group member can be engaged and have opportunities to share their thoughts. Besides our regular meetings, we communicated with each other through GroupMe. People who have questions about what they are working on can send their concerns to the group chat and other group members can provide help as soon as possible.

In addition, survey/interview questions are important for us to do user research and understand our target users' needs since users' backgrounds can be very diverse. We create personas based on our observations and research on unc students and staff to optimize our project. Through the process of conducting user research, we can also discover unexpected information to be considered in this project.

### **What would you do differently if you had it to do over again?**

If we were to do this project again, one thing that we would do differently is that we can create an online schedule for this project so that every group member can access and be clear about dates to complete the tasks and dates for the group meeting. For this project, we set a

deadline and the next meeting date at the end of each meeting. However, the online calendar shows each person's free time so that we can create the meeting time easier. In the meanwhile, people can set up alerts to prevent missing a meeting. Online schedule has other benefits such as we can write about what date and time our group members conduct user research, so that other teammates who focus on other tasks can get information from them if needed after they see those who finished working on user research in order to improve their tasks.

Furthermore, as we wish to improve our time management, we can spend more time on designing the Campus Recreation Reservation Form by testing it and observing people's interactions with it so that we can make better changes to increase the usability and accessibility.

**What lessons can you carry with you for the next project?**

During our first meeting, each one of us introduced and shared our strengths and skills to each other. This is very effective and makes us want to carry forward for the next project because we can divide the tasks and responsibilities by looking at which person is good at what, and arrange him/her to do the task to perform their strengths.

Also, everything needs to be planned in advance so that we have enough time to work with our clients and the unc students and staff from the campus recreation center. We assigned deadlines and future meetings one week ahead everytime which help our team to be more cooperative and also increase our productivity on every week's meeting.