UC San Diego Mobile App:
Staff and Student Collaboration

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Team Members:

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Executive Summary

Mobile is a platform for innovation, and the UC San Diego's Information Technology Services (ITS) team has built a collaborative approach with students to develop the campus mobile app. Students obtain valuable experiential learning opportunities across a wide spectrum of disciplines including cognitive science, computer science, art and design. Staff obtain a fresh perspective of campus services and gain an understanding of the students' energy and passion.

Expending effort on increasing the visibility of and interest in the development process of the app by actively engaging with students, staff, and departments has been beneficial in countless ways. We are optimizing not just the current state of the app but also creating a collaborative environment that will carry the app well into the future.

The Problem

Originally launched in 2009, the UC San Diego Mobile app was reimagined in 2014. The goal was to better connect students to campus, yet we did not fully grasp the needs and expectations of students from a mobile perspective.

To build a solid foundation for the mobile platform, we needed to meet campus requirements and students' expectations.

Background

Modern mobile apps use the phone's location to push well-timed and relevant content to users. The campus mobile app increasingly failed to meet students' expectations on user experience (UX) and lacked functional capabilities of modern native applications such as personalization to their individual profile.

Staff resourcing consisted of one developer and one UI/UX designer to create the next generation mobile platform. The team needed to be creative with development resources.

The Solution

The team started work on the mobile platform and within a couple of years, we had a production product in both the iOS and Android store. Knowing that additional resources were needed to build out the platform further, the team began an extensive outreach program to campus and students. We presented at conferences, meetings for departments, student organizations, and campus events.

Through this outreach, we gathered interest from two developers from UC Davis, Scott Kirkland and John Knoll. They were early contributors to our open source project and submitted significant code contributions. We used real-time collaboration and communications tools like Slack and GitHub, in this project. GitHub enabled developers throughout the UC system to participate without the need to ask permission or interfere with others' work. This transparency made developers accountable for their work because contributions were openly reviewed. Bugs, upcoming features, milestones, and activity were easily monitored.

We also caught the interest of a student at UC San Diego, Vivian Pham. Vivian, a senior majoring in computer science, worked with our team on her own time over a period of several months. She contributed code to the mobile framework and provided outreach to her peers. It was through her that we piloted our first project where students sponsored by a faculty, worked on the mobile app in exchange for course credits. This was as success and we've completed two successful projects using this model.

Vivian was hired on as a student employee and continues to serve as an ambassador for our organization to the student population. She graduates this year and has a full-time employment in place.

Through these successes, we've been able to add an additional staff resource with a total of nine student employees, funded from various ITS and non-ITS funding as a result of our campus collaborations.

Vivian Pham, a senior in Computer Science wrote:

> "I had heard of this project through Warren College Student Council and saw a great opportunity to give back to UC San Diego, as well as to enhance student involvement and experience. This is a project that students, like myself, can and will actually use so they can enjoy their time here, get more involved within the community (e.g., student orgs and events), succeed in their studies, and help them with whatever they need. It will be a project for students by students. In addition, with it being open sourced, this is a fantastic learning opportunity for me and other interested students to learn more about mobile development and work with new technologies."

Antonio Martorana, a junior in mathematics and computer science wrote:

"I loved every second of it from conception to employment," said Martorana. "It was great learning new technologies and being exposed to a real project that impacts and benefits students, faculty and staff every day."

Bethany Bin, a senior in Mathematics-Computer Science wrote:

"Working with ITS has helped me grow professionally in an area I look forward to pursuing in the future. Aside for the technical aspect of a development job I also learned how a team sets up a working environment while maintaining different services. My favorite aspect about the job is that I get to work with both full-time employees as well other student developers. The mix of the two provides good balance in terms of communication between the two groups."

Next Steps

The development team consisting of staff and students have made significant progress with the mobile platform. Foundational features include native Single Sign-On support, class and finals schedules for students personalized to the individual student, real-time parking availability, real-time shuttle arrivals, push notifications, and in-app messages.

Student feedback drives strategic direction and is driving our development roadmap. Future releases will include integration of class registration, access to academic records, and more personalized, actionable content such as recreational opportunities and campus events that appeal to an individual student's interests. Other upcoming features include a student ID card, live streaming from the campus radio station, and allowing users to see how busy select campus locations are.

We will continue to engage with students and campus and encourage user feedback and participation. Utilizing these actual user experiences and identifying design and development resources within the student body, campus organizations and communities beyond serves not only the immediate development needs of the mobile app but also advances the UC's mission.

Timeline

- Late 2014 - Initial concept of card-based interface
- Oct 2015 - iOS development began
- Jan 2016 - Alpha iOS prototypes
- Jun 2016 - Android development began, iOS version released to Apple app store, began collaboration with UC Davis developers
- Aug 2016 - Android version released to Google Play store
- Mar 2017 - Mobile App framework became the official UC San Diego Mobile App
- Sep 2017 - Collaboration with students
- July 2018 – Single Sign-On integration
- July 2018 – Class schedule integration

- Nov 2018 – Real-time parking availability integration and Push Notification support, including free food notifications
- Apr 2019 – Teaching and Learning Commons Supplemental Instructions support

Technology

The GitHub platform provides the transparency and accountability when collaborating with distributed contributors.

The campus mobile app is built with an open-source framework that allows us to distribute native solutions to both iOS and Android platforms while maintaining a common codebase for both. Working in conjunction with university departments, we use Amazon Web Services (AWS) to normalize and serve APIs to our app. By using Node.js to work with AWS, we leverage JavaScript to increase flexibility and productivity.
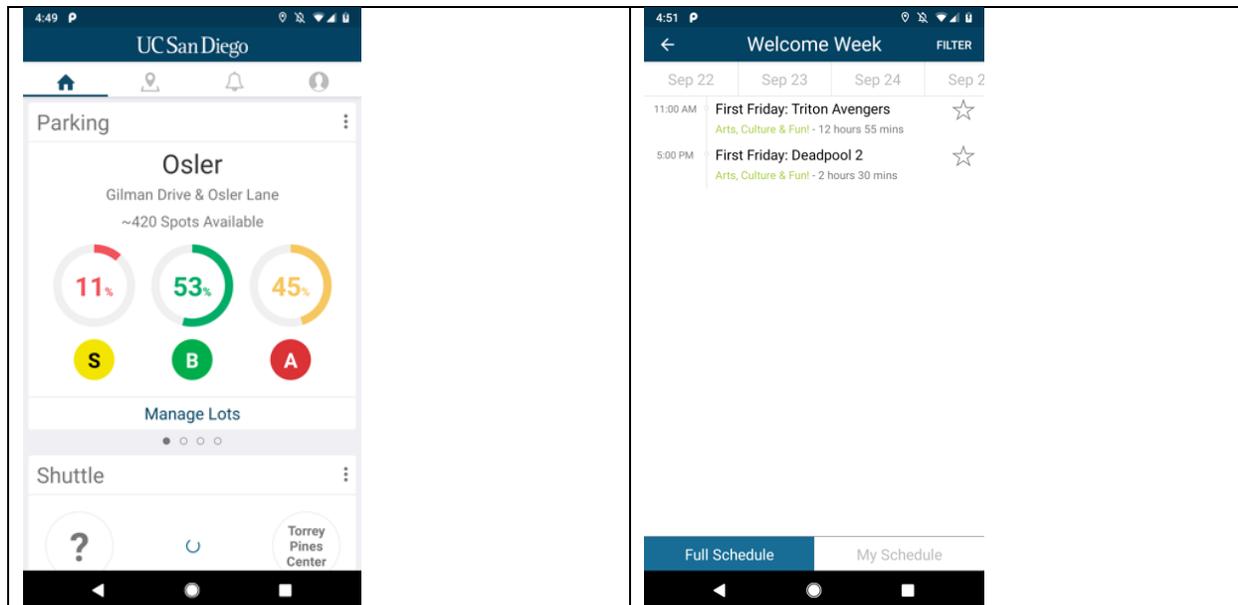
Links

- UC San Diego Mobile
- Open-Source Mobile Framework: Campus Mobile on GitHub

Screenshots
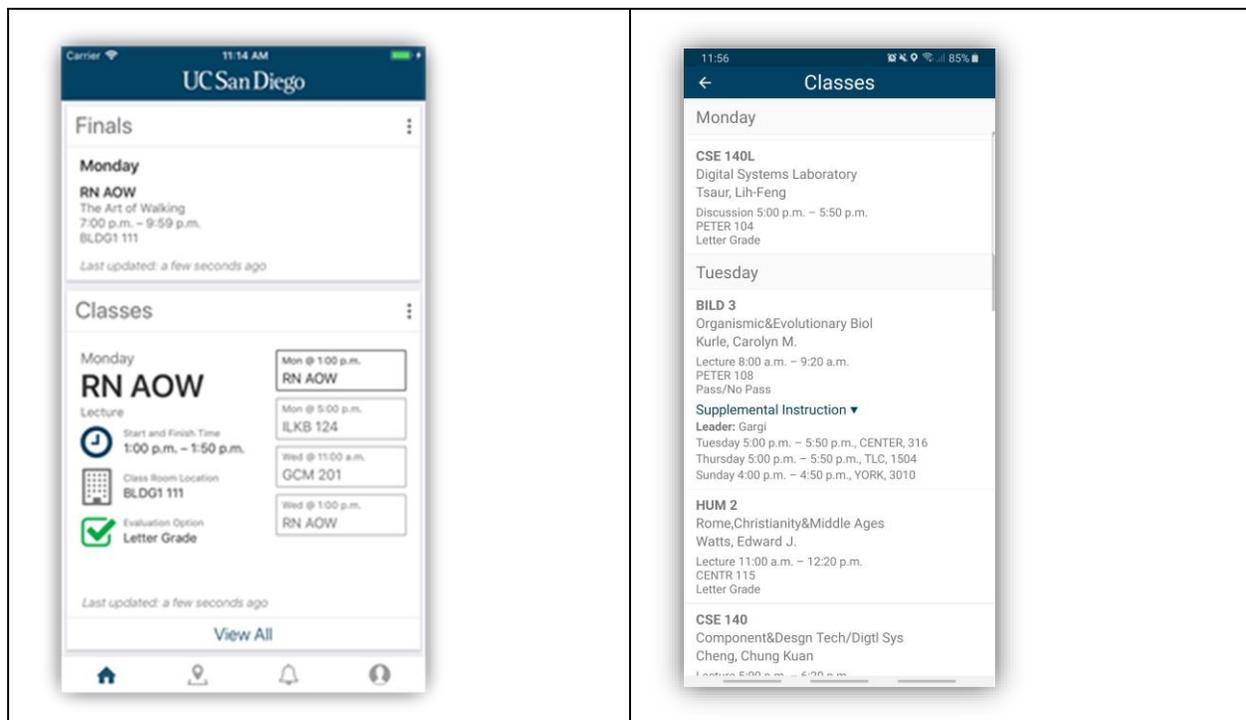
(Left) Developed as a student project for course credit, personalized class and finals schedule information is displayed for the logged in student

(Right) Schedule for supplemental instructions that matches a student's enrolled classes.

(Left) Utilizing real-time data feeds, the app displays current parking availability by permit types

(Right) Multi-day event feature where users can create their personal schedule.