UCTech 2022 Recognition Award Nomination

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UC location: University of California, Berkeley

Award category: Operational Excellence, Team

Team name: COVID Compliance Campus Access Badge Technical Team

Team members: Aswan Movva, Data & Analytics Manager; Jeff Kreutzen, Director of University Health Systems IT; Terri Kouba, IT Solutions Architect; Chara Bui, Mobile App UX Designer; Tamer Sakr, Enterprise Integration Architect

Narrative

In January 2021, the executive-level COVID Recovery Management Team charged Berkeley IT with developing a "campus access badge" that would consolidate an individual's adherence to various campus COVID policies in one place and demonstrate clearly if that person was or was not permitted to be on campus.

The technical project team evolved over time and eventually would consist of members of the Berkeley Mobile App, People Cards Portal, University Health Services (UHS) IT, Data & Analytics, and Engineering and Integration Services teams. Many of the team members had never worked together before, but the urgency and importance of the project galvanized the team to come together quickly in order to address the challenge.

Due to the dynamic nature of the pandemic and the constantly evolving compliance requirements, the team had to design a solution that was equally dynamic and that could quickly respond to new and shifting requirements. One of the key challenges was that compliance data resided across multiple, disparate source systems, for example the UHS health database for COVID vaccine and testing compliance, People Cards portal for flu vaccine compliance, UC Learning for training requirements, ServiceNow for authorized access to campus, Qualtrics for symptom screener attestation, and the identity management system to determine if an individual is a student, employee or affiliate. And no system housed the composite answer of whether an individual was cleared to be on campus based on compliance with individual policies.

In the spring of 2021, the team quickly adopted an architecture that sourced the sundry compliance data into a single data store, an Amazon Web Services data lake. Consolidation of the data allowed the team to assess a person's overall compliance with campus COVID policies in order to set the campus access badge to "green" if they were cleared to be on campus. An API (application programming interface) was built on top of the data store so that downstream systems could consume the data and get a consistent representation of an individual's campus access badge. The two primary consuming systems were the Berkeley Mobile App for an individual to display their own badge and the People Cards portal for supervisors to monitor their employees' compliance. (See Figure 1 below for high level architecture.)

The initial Campus Access Badge system architecture has served us well, and has allowed the team the ability to introduce new compliance requirements, as well as to enforce and relax requirements fairly nimbly. The team has also continued to improve and refine the badge so, for example, data updates faster, e.g., near real-time updates for the Symptom Screener, and thousands of campus community members can access their badges concurrently without overburdening the system.

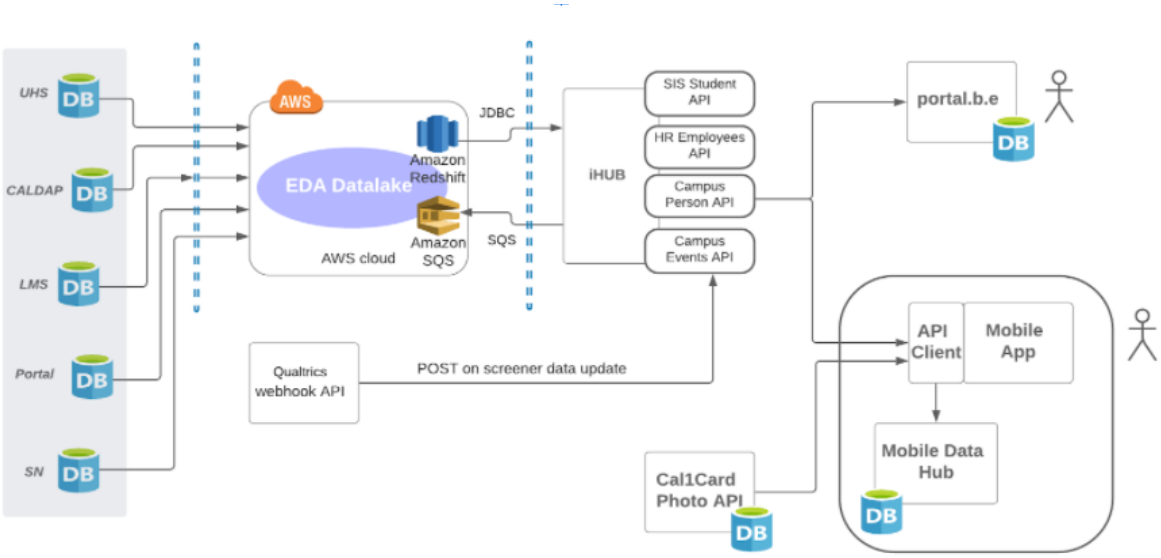

Figure 1: High level architecture of the UC Berkeley Campus Access Badge (Authored by Tamer Sakr, Berkeley IT Enterprise Integration Architect)

The Campus Access Badge project demonstrates the best of Berkeley IT's innovative and adaptable team members and their ability to tackle and solve a complex problem. When posed with the challenge of how to holistically track campus community members' COVID compliance, the technically diverse team shared what their technologies might offer in order to weigh options, quickly identify a solution and implement it. The team also produced an adaptive design where new compliance criteria can be added, enforced and relaxed very quickly. This has been vital as new compliance criteria can be introduced very suddenly, such as the January 2022 enforcement of COVID vaccine boosters.

The Campus Access Badge is used by every single member of the UC Berkeley community as a means of returning to campus so that the vital work of teaching, learning and research may continue. We take extreme pride in that throughout the project's inception and implementation the team partnered with UC Berkeley Privacy Officer Scott Seaborn, as well as members of campus counsel, to present information in a way that is consistent with UC policy and privacy principles; for example, a viewer of the Campus Access Badge can never make conclusions about an individual's private health matters, rather, they can only tell if a campus community member is in compliance with current policy.

The Campus Access Badge project fosters an equitable campus access experience for all community members by integrating all compliance criteria into a single data store and assessing overall adherence. Policies vary somewhat across populations, for example, employees have more compliance criteria than do students, e.g., the UC Learning Environment Health and Safety training requirement only applies to employees. The Campus Access Badge being consistent for these subpopulations makes it easy for those monitoring entry into various facilities/events to quickly check the badge. And similarly, supervisors can assess their teams' compliance via the People Cards portal.

We are incredibly grateful to the Campus Access Badge technical team for the creativity, talent and flexibility they brought to this challenging problem and are proud to nominate them for a UCTech 2002 Recognition Award.