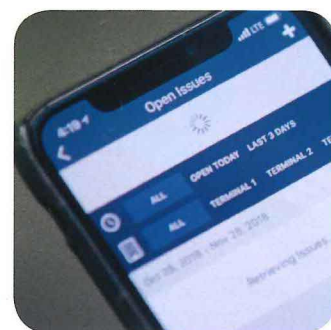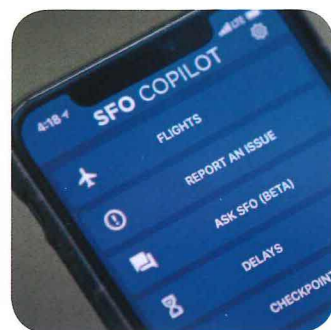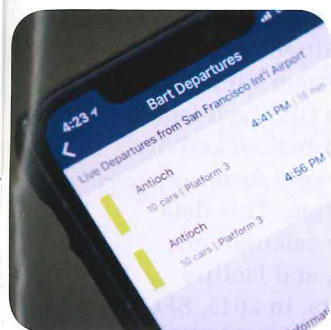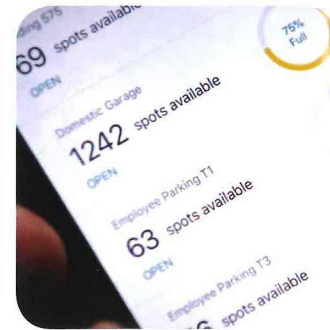# SFO's Co-Pilot

mobile gives employees a snapshot of airport operations and a way to report issues

BY DOUG YAKEL

PUTTING AIRPORT INFORMATION IN EMPLOYEES' HANDS:

THERE'S AN APP FOR THAT

Many airports ask their public-facing employees to serve as informal ambassadors… guiding passengers, observing the condition of the facility, and reporting issues. At the same time, many travelers see staff with airport ID badges as a potential source of guidance, advice and information.

At SFO, fulfilling these mutual expectations led to the creation of an in-house app that puts airport information, and a way to report issues, in the hands of any employee authorized to use a cellphone on the job.

Named "SFO Co-Pilot," the mobile app was developed in-house by the airport's Information Technology and Telecommunications (ITT) team and launched in the fall of 2017 for both iOS and Android users. With the initial objective of providing up-to-date operational information to

enable airport staff to better assist travelers, the app launched with the following features:

- Flight data for departing and arriving flights
- Average and overall SFO flight delay times over the next 12 hours
- Real-time capacity status for both public and employee parking garages
- Real-time capacity of taxi staging lots
- Real-time security checkpoint wait times in Terminal 3

ADDRESSING A VARIETY OF BUSINESS USE CASES

The SFO Copilot app began with a primary purpose, but grew to accommodate a variety of business use needs from multiple organizations. "Initially, our team was focused on making the Flight Information Display System (FIDS) available on a mobile platform to help employees answer the most commonly asked customer questions," said SFO Chief Information Officer Ian Law. "As we examined the informational needs of various departments, we realized our solution needed to be much broader."

For example, airport staff who interacted with news media had articulated a need for an accurate source of flight delay

information, such as the number of delayed flights and average delay length. Parking management leadership asked for easy access to parking occupancy data. Similarly, landside staff sought real-time data on the capacity of taxi staging lots.

In the case of FIDS information and parking occupancy, existing application programming interface (API) were available to incorporate into the new app. Other needs, such as taxi staging lot capacity, already were being tackled through the in-house development of separate mobile apps, allowing information to be repurposed easily for SFO Copilot.

However, other requirements, such as flight delay information, and a pilot test to calculate wait times at security checkpoints, required the creation of customized APIs to deliver the information easily and accurately. The ITT conducted performance tests to ensure information could be delivered reliably and continued to solicit feedback and enhance functionality, eventually adding schedule information for mass transit and shared vans, and maps of individual terminals.

Beyond serving as an informational resource, SFO Copilot emerged as a valuable planning tool with the addition of a Roadway Congestion module that measures the entry/exit flow rate of Transportation Network

Companies (TNCs) like Uber and Lyft to determine the current speed at a terminal roadway. For example, when a TNC makes an entry, drop-off, pick-up or exit, this produces data points that SFO can use to determine the average speed over a period of time. Once the average speed is determined, then a color-coded scheme such as red, yellow or green will be displayed when the current traffic flow is normal, slow or congested. SFO landside staff then can use this information to allocate traffic personnel at different terminals, depending on congestion of the traffic flow.

### PARADIGM SHIFT: CREATING A NEW WAY TO REPORT ISSUES AROUND THE AIRPORT

But by far, the largest step forward in the mobile app came in November 2018 with the addition of a "Report an Issue" function, allowing employees to report on any of the following categories:

- Restroom cleanliness
- Beverage spills
- Trash bins in need of servicing
- Damaged furniture
- Electrical issues, including moving equipment outages
- Wi-Fi performance and availability

Expanding on the solution developed by San Francisco International to chart Transportation Network Company (TNC) activity on the airport, AAAE developed the App-Based Transportation Clearinghouse (ABT).

ABT is a comprehensive solution that provides airports with real-time data tracking, invoicing, trip and fee reconciliation, and representation to the TNCs, all with the goal of reducing the burden on the airport's staff.

*For information on AAAE's ABT, contact Sarah Pilli at 703-797-2542 or sarah.pilli@aaae.org. The ABT website may be accessed at **aaae.org/abt**.*
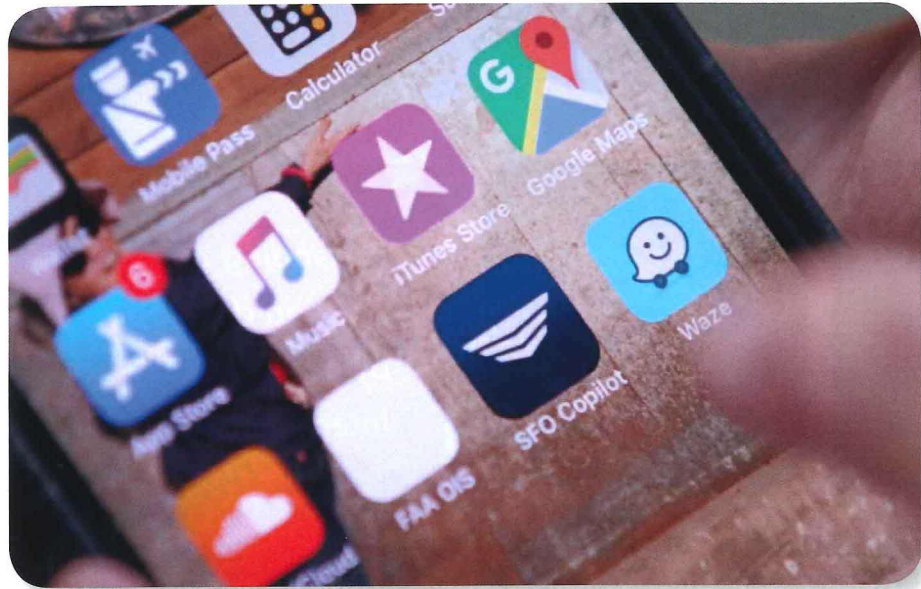
- Heating, ventilation, and air conditioning issues
- Lights out or broken lighting fixtures
- Other conditions

This new capability posed the biggest challenge yet to airport teams. It required not just the creation of an entirely new function on the mobile app, but also — more importantly — a host of back-end changes to ensure issues being reported got into the hands of the right airport teams for action.

The ITT group worked closely with SFO's facilities team to understand the requirements and business processing behind generating work orders. This led to the creation of a web portal that is monitored in real-time by SFO facilities staff. Items reported on SFO Copilot generate a work order ticket through the same system traditionally used to assign work. The ticket then is escalated to the proper division of the airport that will handle the issue appropriately to find a solution.

"SFO Copilot is driving a paradigm shift in how we run our business," said Director of Facilities Leroy Sisneros. "We're now looking at how to make the mobile app available to entire work groups, such as custodians, with the ultimate goal of making our entire work order process completely paperless."

The app allows users to take a photo of the issue as part of the reporting process, to ensure the right issue is acted upon. "A picture is worth 1,000 words," said Sisneros. "It's amazing how much one photo can communicate." Users also can self-assign the issue if they are able to resolve it personally. The addition of push notifications allows users to see when another issue has been reported, which reduces duplicate reporting and encourages usage of the system.

Once the issue is resolved, the ticket is closed out, but the data for the issue can be aggregated and analyzed to identify trends and improve airport operations. For example, multiple reports of litter in a particular area could point to the need for additional waste receptacles in the area.

PREVIOUS EXPERIENCE WITH IN-HOUSE APP DEVELOPMENT

The SFO ITT group had several previous experiences developing mobile apps in-house. The first such example, the Application-Based Commercial Transport System, was developed in 2014 to coincide with the launch of permitted operations from TNCs. The system works in conjunction with a GPS "geo-fence" to tabulate the commercial activity generated by app-based forms of ground transportation. This data can be used for fee calculation, roadway planning, and facility improvement efforts. In 2015, SFO licensed the system through AAAE for use at other airports around the U.S. That same year, SFO was honored by the Center for Digital Government in the category of "Best In-House Developed Application" for the creation of this mobile app. To date, 27 airports utilize this app to manage commercial ground transportation. (See sidebar on page 35 for information on AAAE's App-Based Clearinghouse.)

The SFO ITT group then turned its attention to another important category of commercial ground transportation: taxi operations. In 2016, it created TaxiQ, a mobile app developed in-house for use by authorized taxi operators at the airport. The system was first conceived to support a practice of providing head-of-line privileges to taxi drivers who had accepted a "short" fare, involving transport to the cities immediately surrounding SFO. Using a GPS geo-fence, the app allowed drivers up to two hours to return as long as they stay within the defined short-trip region. Although this practice since has been discontinued, the app also provided drivers with real-time information about space availability in the designated taxi holding lot. This functionality is now being utilized for creation of a "Virtual Queue" process, in which taxi drivers can establish a place in line without physically being at the airport. The app allows users to schedule a timeslot in which they are needed at the airport, based on daily demand, thus eliminating lengthy waits in staging lots or unnecessary circling airport when staging lots are full due to oversupply and/or reduced passenger demand. This system is being evaluated for future adoption by the San Francisco Municipal Transportation Agency, which sets policy for taxis serving SFO.

More recently, during a major runway repaving project in 2017, SFO developed another mobile app to expedite traffic entering and leaving the construction area while maintaining the safety and security of the AOA. In order to accommodate a large number of contractors over a series of weekend-only runway closures, SFO installed a construction gate that restricted the area to workers and equipment with pre-approved security clearance, and developed the Escorted Driver Information Service (EDIS) app to save time and resources verifying security credentials at the jobsite. The system improved driver identity verification by 66 percent, and successfully validated 8,418 drivers over the course of seven weekends. SFO continues to utilize the EDIS app for other major construction projects where AOA access is needed.

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Airport Director Ivar C. Satero

A POWERFUL NEW TOOL TO KEEP AN AIRPORT RUNNING

Since its launch, SFO Copilot has enjoyed ever-expanding usage, with a broader audience to come. The airport is evaluating ways to put the app in the hands of more employees, and also may evaluate a simplified version to allow travelers to communicate their own observations.

"What began as an informational resource to help passengers has now evolved into a powerful tool for our employees to instantly communicate what's happening around our airport," said SFO airport Director Ivar Satero. "With SFO Copilot, we've created a way to crowdsource real-time information about how our airport is doing, with the goal of continually improving the experience for our guests." ✈

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