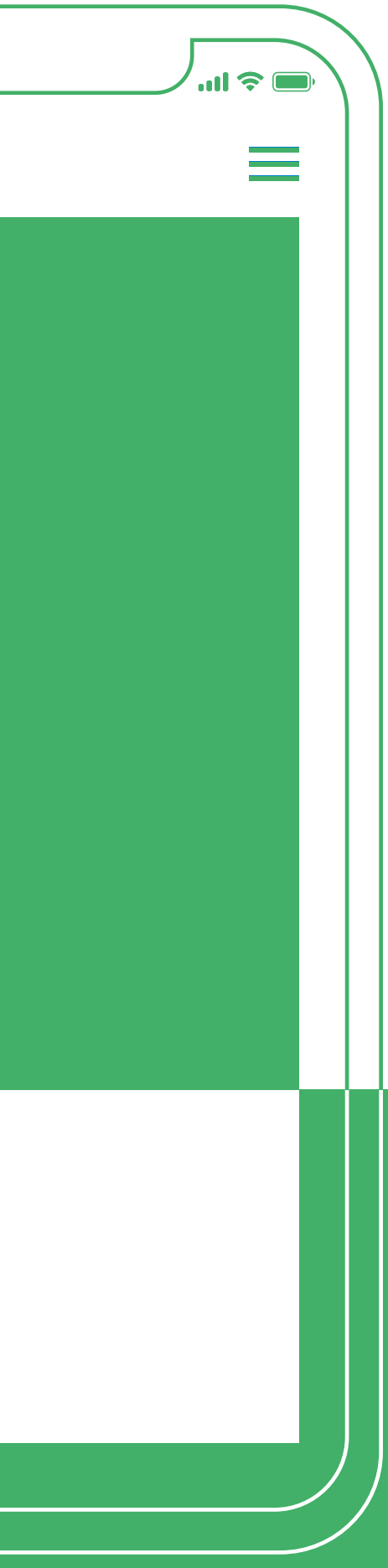


Cruise Mobile Apps

2021 Annual Report

sourcetoad

Contents

Introduction

Few sectors have been as broadly affected by the global COVID-19 pandemic than the cruise industry. And like all other aspects of the industry, mobile app development did not look anything like previous years. In the early days of the pandemic, few changes were made to development personnel and release cycles, because many in the industry anticipated a rapid return to sailing and for life to continue on as usual. However, by around August, development teams across the industry had started taking divergent paths. Some groups slowed down releases significantly due to furloughs, budget cuts, uncertainty, or development priorities. Other groups saw their workload increase to add new features that could address health and safety concerns.

While the last 15 months have been extremely trying, there are now signs of encouragement everywhere. Small test sailings have largely proved to be effective and safe, and lines are increasingly announcing limited returns to service. As a result, mobile development teams are ramping back up throughout the industry, and there is an increased hunger for innovation and features that improve the guest experience.

This report uses many of the same methods and analytical tools as previous years, but suffers a lack of first-hand and reported experience with passenger-facing mobile apps due to the pause in sailing. While this report does contain many new findings, trends, and technologies, we look forward to releasing a 2022 report that can be informed by real guests.

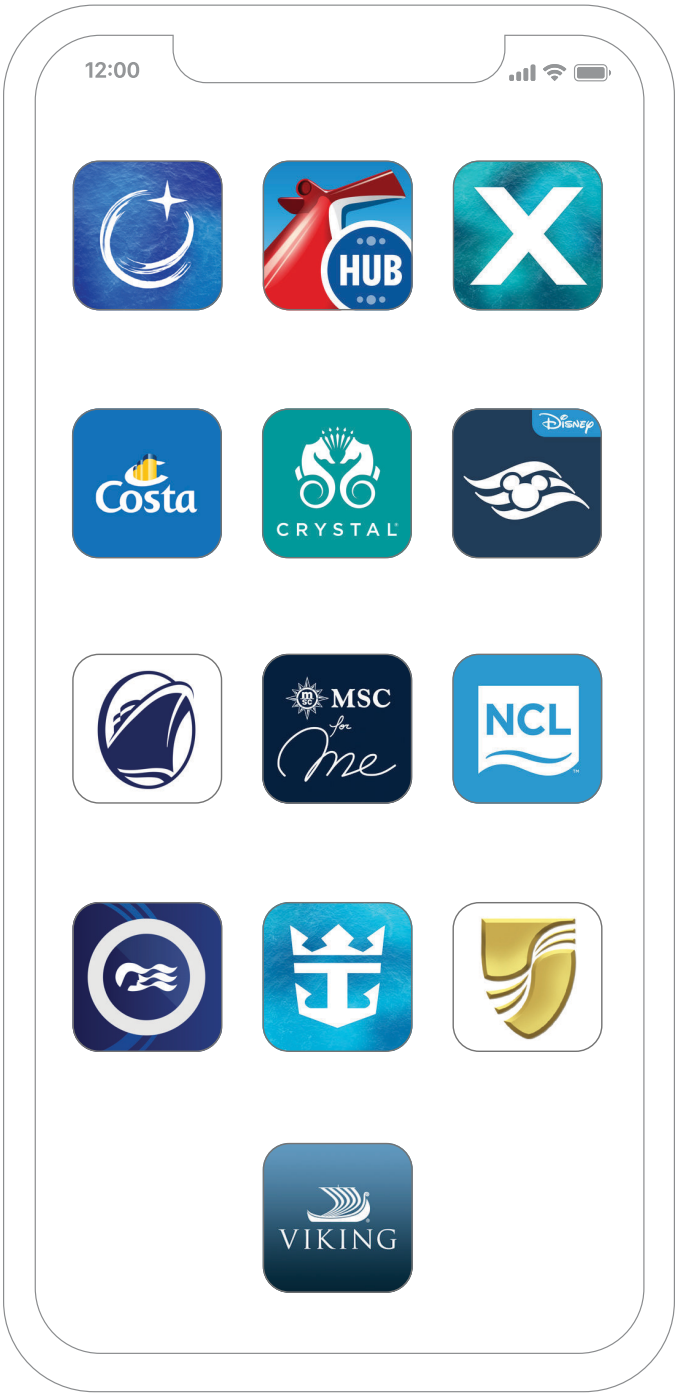
This report focuses solely on each cruise line's primary passenger-facing app for ocean ships. The data and information in this paper were collected from a number of sources, including app analyses from VirusTotal, discussions with professionals in the cruise industry, first-hand experience, articles, online reviews, and demonstration videos.

If you would like your app or a feature included in the next report, please contact us at **appreport@sourcetoad.com**.

New A new addition to the 2021 report.

Updated A significantly updated section.

Mobile Applications



Azamara New

Initially released in December 2018, *Azamara* appears to share much of the same code base as the Royal Caribbean International and Celebrity Cruises apps. It currently only works on the *Pursuit*.

Carnival Cruise Line

Carnival HUB was released in January 2015 and works across the cruise line's entire fleet.

Celebrity Cruises

Celebrity Cruises was released in November 2017. The app now works on eight ships in Celebrity's fleet (*Apex, Constellation, Edge, Equinox, Millennium, Reflection, Silhouette,* and *Summit*), with features varying by ship. The app appears to share much of the same code base as the Royal Caribbean International and Azamara apps.

Costa Cruises

Released in January 2018, *Costa Cruises* works across the cruise line's whole fleet.

Crystal Cruises

Crystal Cruises was released in November 2019 and works on the *Serenity* and *Symphony* (the *Esprit* uses a separate app). There is no Android version of the app at this time.

Note: Crystal Cruises does have a robust river-cruise app; however, it does not fall within the scope of this report.

Disney Cruise Line

Disney Cruise Line Navigator has been around since August 2013, but it was redesigned in February 2018. It works across all four of Disney's ships.

Holland America

In February 2019, Holland America Line released a downloadable mobile version of their Navigator web app. *Holland America Line Navigator* works across the cruise line's entire fleet. The app shares a code base with *Seabourn Source*.

MSC

MSC for Me works on six ships in MSC's fleet (*Bellissima, Grandiosa, Meraviglia, Seaside, Seaview* and *Splendida*). The app went live in June 2017.

Norwegian Cruise Line

Cruise Norwegian was released in October 2017 and now works on all ships in the fleet.

Princess

Princess Cruises originally released *MedallionClass* in August of 2019. The line recently rolled out the app across its whole fleet.

Royal Caribbean International

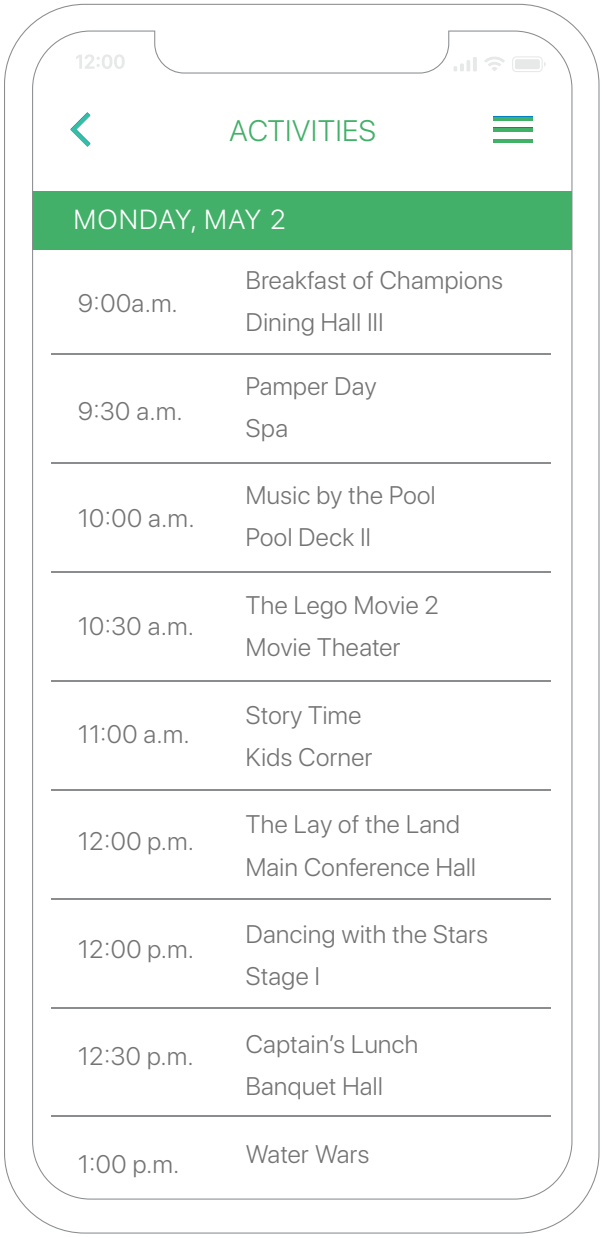
Royal Caribbean International became available for download in November 2017 and now works on 20 ships in the fleet (*Adventure, Allure, Anthem, Brilliance, Enchantment, Freedom, Harmony, Independence, Liberty, Mariner, Navigator, Oasis, Ovation, Quantum, Rhapsody, Serenade, Spectrum, Symphony, Vision,* and *Voyager*). As mentioned before, this app shares much of the same code base as the *Celebrity Cruises* and *Azamara* apps.

Seabourn Source New

Seabourn Source was released in April 2020 and works across the cruise line's whole fleet. The app shares a code base with *Holland America Line Navigator.*

Viking Ocean Cruises

Viking Voyager was released in June 2017 and works across the cruise line's entire ocean fleet.



Availability

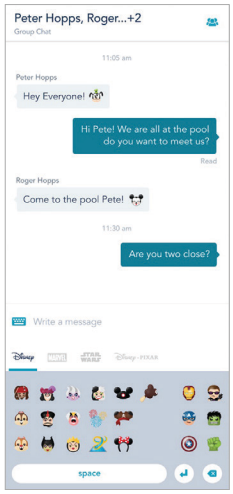
The infographic below shows how many ships across each cruise line's ocean fleet support their mobile app.

Features

Each app that we analyzed contained a fairly broad selection of features and options. To better compare and contrast their offerings, we broke down the features into categories: common (almost standard), less common (appearing in at least two apps), and stand-out (differentiating or found in only one app).

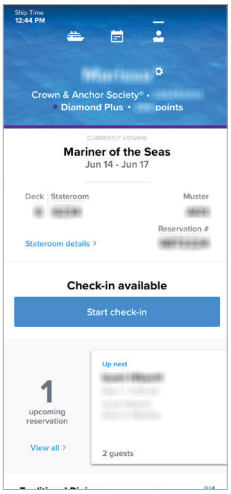
Common Features

There are several features shared by the majority of the apps we reviewed.



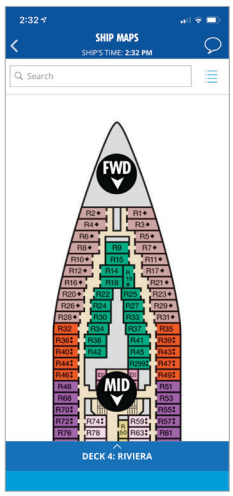
Chat

Chat has now been adopted by the majority of the apps we reviewed. Although a couple of cruise lines still charge small fees, it is increasingly becoming a free feature.



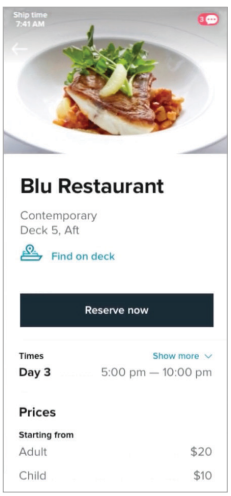
Check-In

One of the features that has been rolled out for most apps during the COVID-19 pandemic is a pre-board check-in, which will help get guests onboard more quickly.



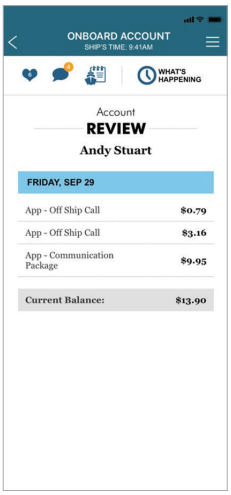
Deck Map

Deck plans are a ubiquitous feature and a critical guide for guests who are navigating their way around the ships.



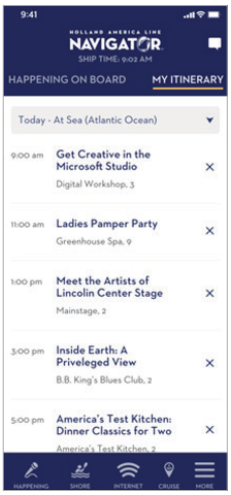
Dining

Every app has at least some information on dining options. Dining features across applications include hours, menus, images, locations, dress attire, reservations, and reservation cancellation.



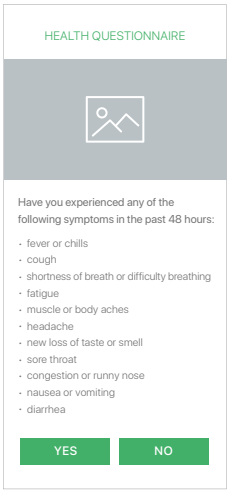
Folio

The folio is an itemized billing statement that updates when guests make purchases. This feature is important for avoiding bill shock at the end of a cruise.



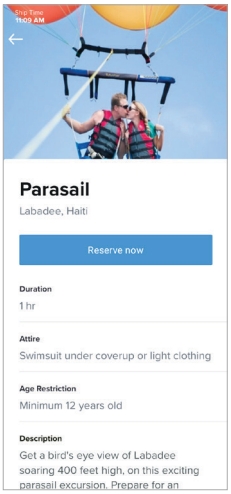
Itinerary

The itinerary is the guest's customized schedule. Once an activity has been chosen or selected, it appears on this calendar.



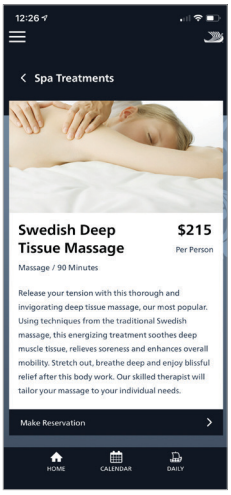
Health Questionnaires

The most common feature added to apps during the last year has been the health questionnaires. Cruise lines handled these in a number of ways, from integrating with onboard EMR systems to simple forms that trigger alerts when certain conditions are met.



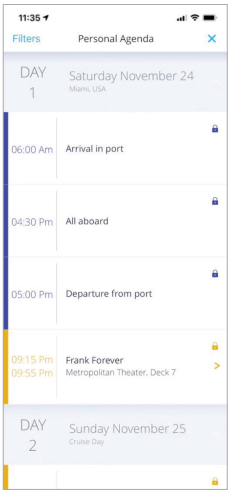
Shore Excursions

The vast majority of mobile applications we reviewed allow guests to both research and book an excursion.



Spa Services

Most cruise lines have some kind of spa service. This feature allows guests to view offerings and make reservations.

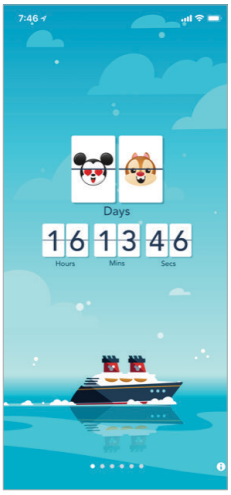


Schedule

The daily schedule is the main stop when planning activities for each day. An event can usually be added, booked, or marked. It then moves to the itinerary.

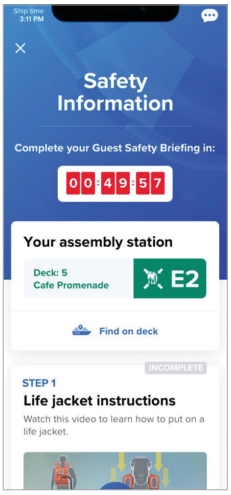
Less Common Features

The following features were shared by at least two of the apps we researched.



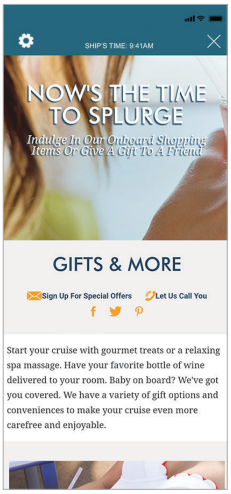
Countdown Clock

A pre-cruise countdown that works before boarding the ship is being introduced to more apps. This feature helps to build anticipation for a guest's upcoming cruise.



Muster

Cruise lines are beginning to offer guests an option to access safety drill information via their mobile devices (or interactive stateroom TVs), eliminating traditional large-group assemblies.

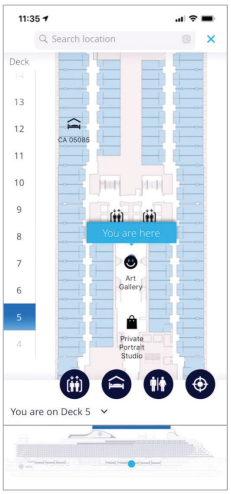


Purchase Merchandise

Apps are beginning to offer guests more options for purchases, including shopping before boarding the ship.

Video on Demand

A few of the guest-facing apps feature the cruise line's own channels and shows that do not require a supplemental app to watch.



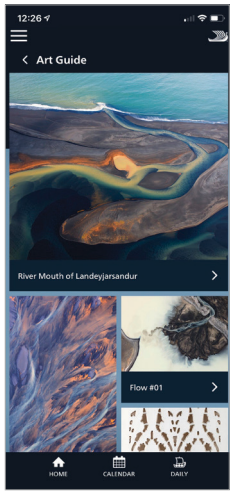
Wayfinding & Passenger Locator

A couple of the apps use a Bluetooth Low Energy (BLE) beacon system to help guests find their way around the ship.

Wayfinding and wearables are also making it possible to keep track of family and friends.

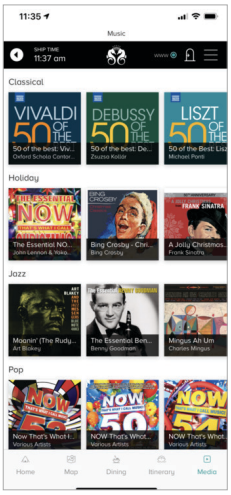
Stand-Out Features

Below are some of the unique features that stood out to us.



Art Guide

Viking Voyager includes the Viking Art Guide. Guests can listen to audio clips about historical pieces, works of art, and different areas of the ships.



Audio on Demand

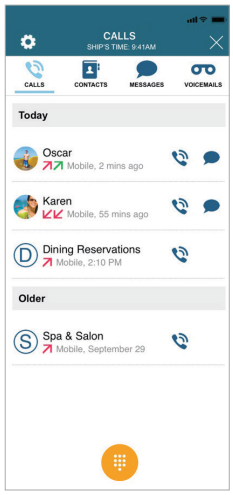
Crystal's app allows guests to listen to a range of music directly from the app.

Fleet Map

With the Holland America Line Navigator Cruise Map feature, guests can see where all Holland America ships currently are, including their own.

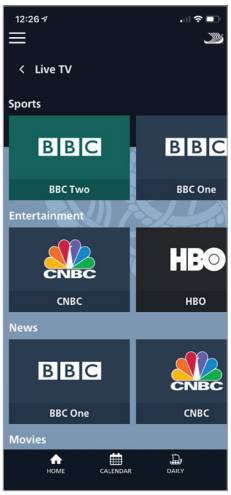
Geolocated Orders

MedallionClass allows guests to order drinks or merchandise from the app. The order is sent to the closest bar or store location. Bartenders and servers in the area then deliver the order directly to the guest.



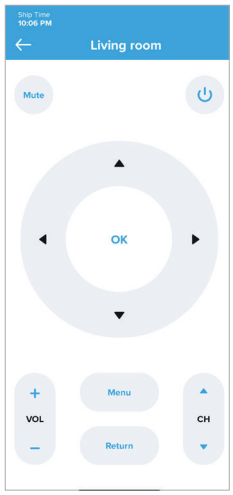
Guest Calling

Along with a chat system, Cruise Norwegian also has a call feature that allows guests to make unlimited calls to other passengers for a one-time fee of $9.95 (USD). Guests can also use it to call home for $0.79 a minute.



Live Television

Another complementary feature on the Viking Voyager app is live television. The app works anywhere on the ship, allowing guests to sit by the pool and watch the news on their phones or tablets.



Room Control

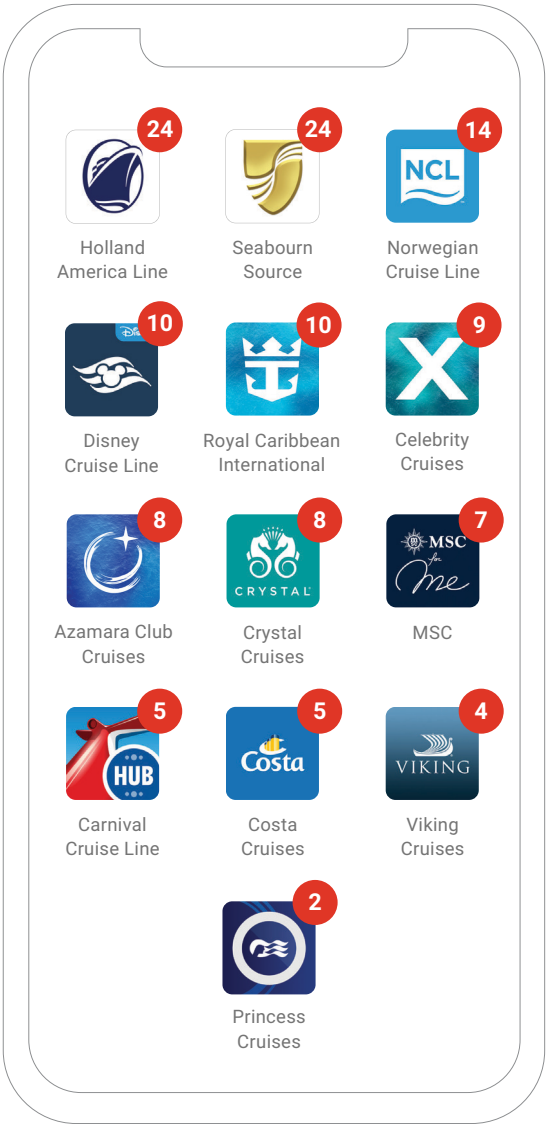
On select ships, Royal Caribbean Group is testing out a stateroom control feature. The app functions as the room key and controls the TV, lighting, temperature, and shades.

Update Frequency

Once an app is live, regular updates are important. As operating systems are updated and new hardware devices are released, software has to adapt. Although the frequency of version releases is not indicative of the quality of an app, it does give us a general idea of how often developers are fixing bugs, responding to feedback, and making improvements.

During 2020, although there was a reduction in guest feedback and new initiatives, most cruise lines continued to update their apps to keep up with operating system updates and the release of new hardware devices.

The majority of updates in 2020 were bug fixes and performance improvements, and new feature releases were mostly aimed at addressing health and safety concerns.



Tools and Key Players

Accenture

We have found a few apps in testing that strongly suggested the multibillion-dollar consulting firm's participation in the programming. Accenture extensively publicized their involvement in the development of the Carnival Medallion project, and it appears to offer both full application development and the augmentation of in-house teams in the cruise space.

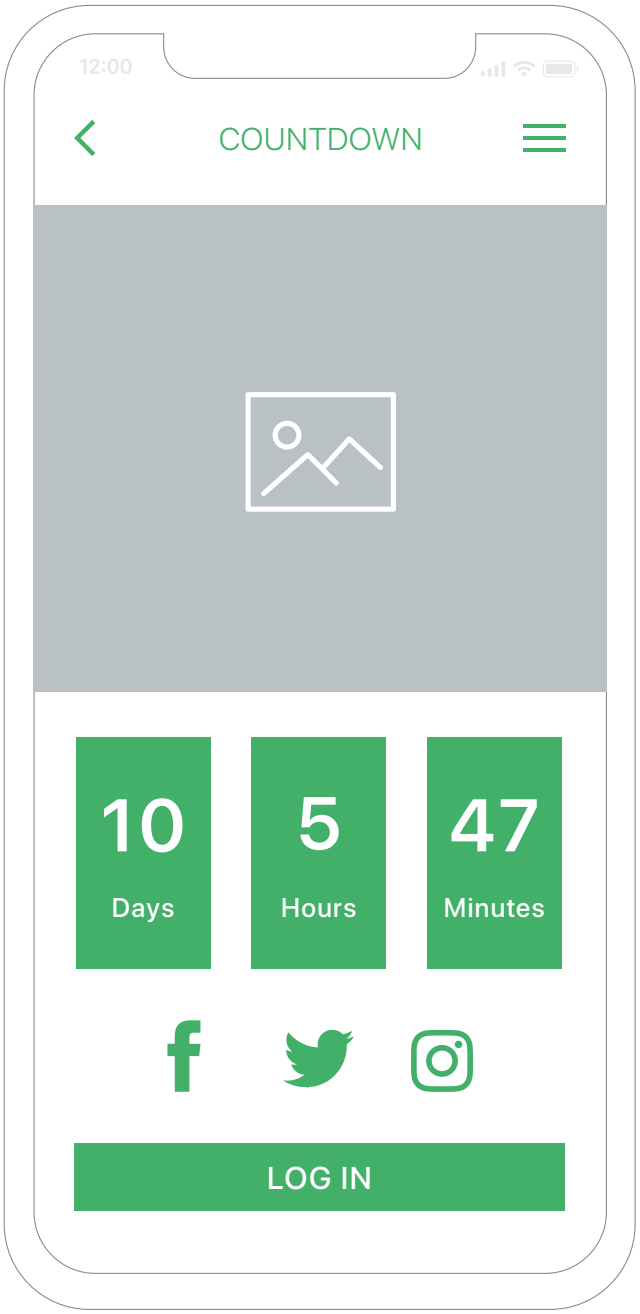
Accessibility New

New accessibility features are starting to appear in two of the most technologically forward apps in the industry. Accessibility features allow passengers with disabilities to use the apps more easily. These users may have their devices in accessibility modes that help them read, have text read to them, have images described, or work with additional assistive technologies. This is a welcome new addition to the cruise industry and has often been a distant afterthought for most development teams.

Alipay & WeChat Pay New

Cruise lines are clearly betting on Chinese passengers to come back to cruising in numbers. The inclusion of libraries supporting both Alipay and WeChat Pay confirms the importance the industry is placing on the Chinese market.

Mobile wallets from Tencent (WeChat Pay) and Alibaba (Alipay) are becoming the norm in China. These systems largely dominate in China, accounting for 92% of market share and are rapidly turning the country into a cashless society. These integrations will presumably be used for connecting credit cards or financial institutions to onboard folios as part of the check-in process or to be linked to direct onboard purchasing and casino transactions.



Artificial Intelligence

Passenger-to-passenger chat systems are not the only emerging text chat tools in cruise apps. Kore.ai, a virtual AI assistant system, has now been seen bundled into applications, and there are indications that at least three cruise lines are experimenting with virtual chat assistants. These bots are commonplace on the web but have not taken off in shipboard applications. This is mainly due to the lack of on-premise solutions and data infrastructure. Virtual assistants need to be trained and conversations built on top of readily available data sources and APIs. If the data required to answer questions about the weather tomorrow is in a different system from the one required to make dining reservation inquiries, the development of AI systems becomes prohibitively complex.

Virtual voice assistants like MSC's Zoe platform were bespoke builds. However, with the increasing sophistication of onboard middleware products, it will become easier and more cost-effective to integrate pre-built AI systems into existing mobile apps.

ASSA ABLOY

ASSA ABLOY Global Solutions Marine (formally VingCard) is by far the leading provider of cabin door lock systems in the cruise industry. Mentions of their libraries have been spotted in a number of cruise apps in the past, but full implementation has seemed elusive. Two mobile apps have now been seen to include the full SDKs, although it is difficult to know the full level of integration. These SDKs would allow guests to use their phones to access the gangway and unlock their cabin doors.

Even though the technology to enable these convenient lock systems is available on many ships, it has yet to be widely rolled out. This may be due to several factors:

- The certifications required to work with the SDKs involve in-person ASSA ABLOY training, often in Northern Europe.
- Integration requires a fairly robust understanding of security systems and may be more challenging than standard mobile app development.
- Gangway systems and door lock systems may be from different suppliers. This means that generating a soft key would enable a passenger to unlock their door, but not access the ship. Having a passenger carry a keycard and a phone defeats the purpose. Integration with two separate systems also dramatically increases development complexity.
- Card printing systems may be run through separate integrations with the PMS, creating issues for developers who would have to manage both access control and card printing at the same time (rather than simply rolling out a soft key option).

The reemergence of the ASSA ABLOY SDKs in Android binaries strongly hints that this will soon change.

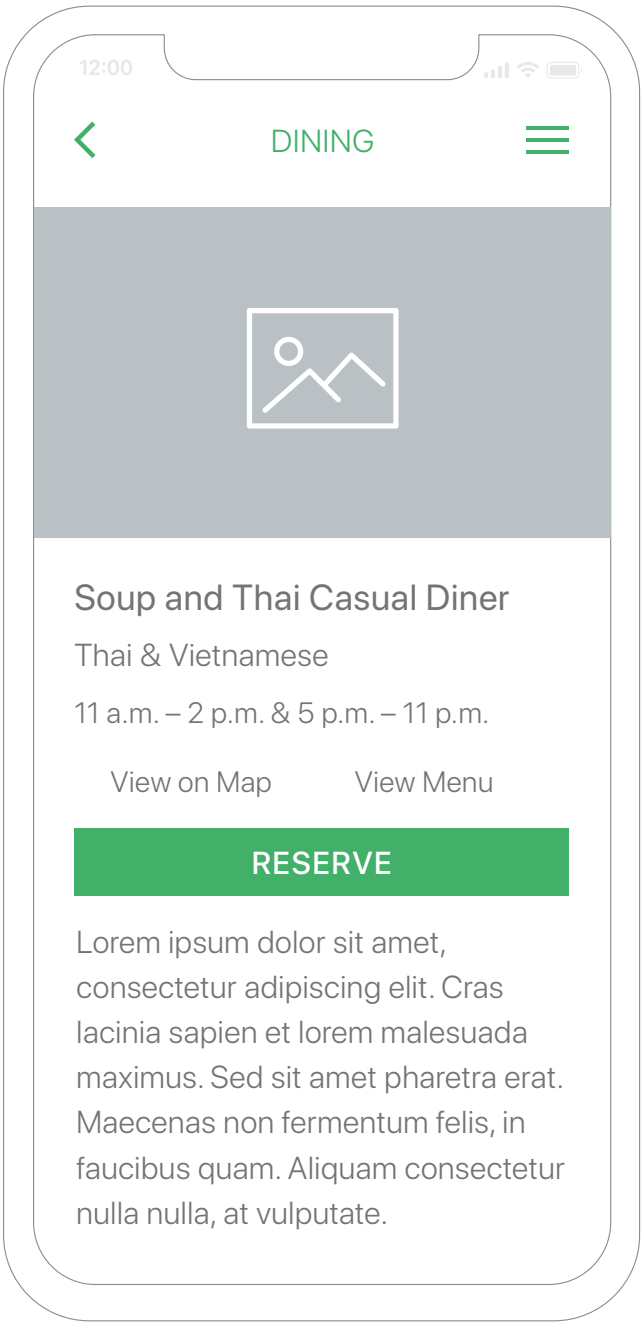
Beacons & BLE *Updated*

Bluetooth Low Energy (BLE) beacons allow a Bluetooth-enabled device (such as a smartphone) to detect small radio devices nearby. These devices send out an identifier that the detecting device can send back to a central server to learn more information.

Up until 2020, the level of support for beacon functionality was increasing. The use of technologies such as the Android Beacon Library indicated that

cruise lines were making significant investments in the infrastructure to enable this tech onboard.

In a somewhat surprising turn, it appears that a few lines are now dropping support for BLE. Bluetooth permissions have been removed from at least three applications in the last year. There are a number of possibilities to explain this:



- Analytics were showing that passengers were uncomfortable allowing their devices to hand over Bluetooth permissions to cruise lines. This may be due to bundling too many permission requests in a single ask and scaring the guests off from accepting anything. It also may have been a privacy concern for the users.
- BLE technology onboard ships has been difficult to implement. Signals do not pass well through steel bulkheads and fireproofed walls. Experiments where beacons were attached to tables to allow instant drink ordering were sometimes unsuccessful because passengers and crew moved tables around. BLE may not be as practical on a real ship as it is in a lab environment.

Bug Tracking & Analytics *Updated*

In previous years, Crashlytics has been the primary tool used by cruise apps to detect a crash and send all the associated details to a specified location. However, one of the biggest changes in many apps in the last year has been the introduction of Firebase as the preferred method of bug and crash detection. Firebase is a complete back-end-as-a-service system by Google. However, Google acquired Crashlytics in 2019 and has now moved their error reporting console into Firebase and have (creatively) renamed it Firebase Crashlytics. Most developers who were using the Crashlytics console have migrated to the Firebase version over the last year, presumably to have all their crash data and usage analytics in the same place.

Dynatrace is another new analytics and application performance monitoring tool. Dynatrace provides an on-prem solution, which is unusual for these types of applications, making them ideal for cruise ships.

Card Scanning

Card scanning applications and libraries are embedded into cruise apps to allow passengers to scan credit cards, driver's licenses, or passports to speed up the check-in process.

Microblink seems to be the primary choice in embedded card-scanning SDKs. BlinkID and BlinkCard allow developers to capture ID documents and credit card information from device camera scans.

Charles

A common challenge while developing mobile applications for cruise lines is the debugging of issues discovered. No amount of logging and exception logging is the same as a developer being on the ship and experiencing the issue firsthand. Replicating the same issue locally might be difficult due to a variety of services not available in a test environment. Charles works by allowing a developer to proxy onto the ship to test the issue directly on a real device. We discovered a number of applications that contain a Charles SSL certificate, hinting towards multiple cruise lines using this type of debugging.

Chat *Updated*

Passenger-to-passenger chat systems had been making their way slowly into cruise apps for a few years; however, adoption had been very slow. We believe that this was largely due to privacy and process issues, rather than technological hurdles. For example, if guests are asked to add a chat partner's name to their group chat, do they look them up via their cabin number? If cabin number lookups are allowed, could that be abused by a passenger trying to learn the name of a guest in a certain cabin?

The recent increase in chat feature adoption is probably due to a few innovative approaches to these problems. And once there were working examples, other cruise lines felt comfortable mimicking workflows. Disney Cruises, Royal Caribbean Group, and MSC mainly led the way in testing these solutions onboard real ships. Mainly, these solutions revolve around either linking accounts together by having to type in a reservation number or by scanning a QR code on a friend's device to permit connection. These are relatively painless solutions to privacy and policy concerns. That left very few hurdles for the industry to implement off-the-shelf chat solutions in their apps.

The one hurdle that remains is push notifications. Sending push notifications without a consistent internet connection has been an engineering nightmare since the introduction of smartphones to the cruise industry. However, this will likely no longer be an issue as both Apple and Android have released new local push systems in the last year.

Cruise Director (Sourcetoad)

Sourcetoad's Cruise Director is a suite of onboard and shoreside software tools designed to manage various aspects of both guest-facing and crew-facing applications.

Cruise Director contains out-of-the-box modules for entertainment (i.e., iTV and music), intelligent signage, captive portal, mobile app management, IoT device management, cabin access, and notifications. Custom modules are easily added to enable interfaces for new technologies, dashboards, and features.

The framework is built on shared API management, shoreside synchronization, content management, and analytics across the suite. This allows all modules to have a cohesive interface, which can be managed from a shoreside office, while sharing data with other modules and funneling data into a combined analytics system.

Developers

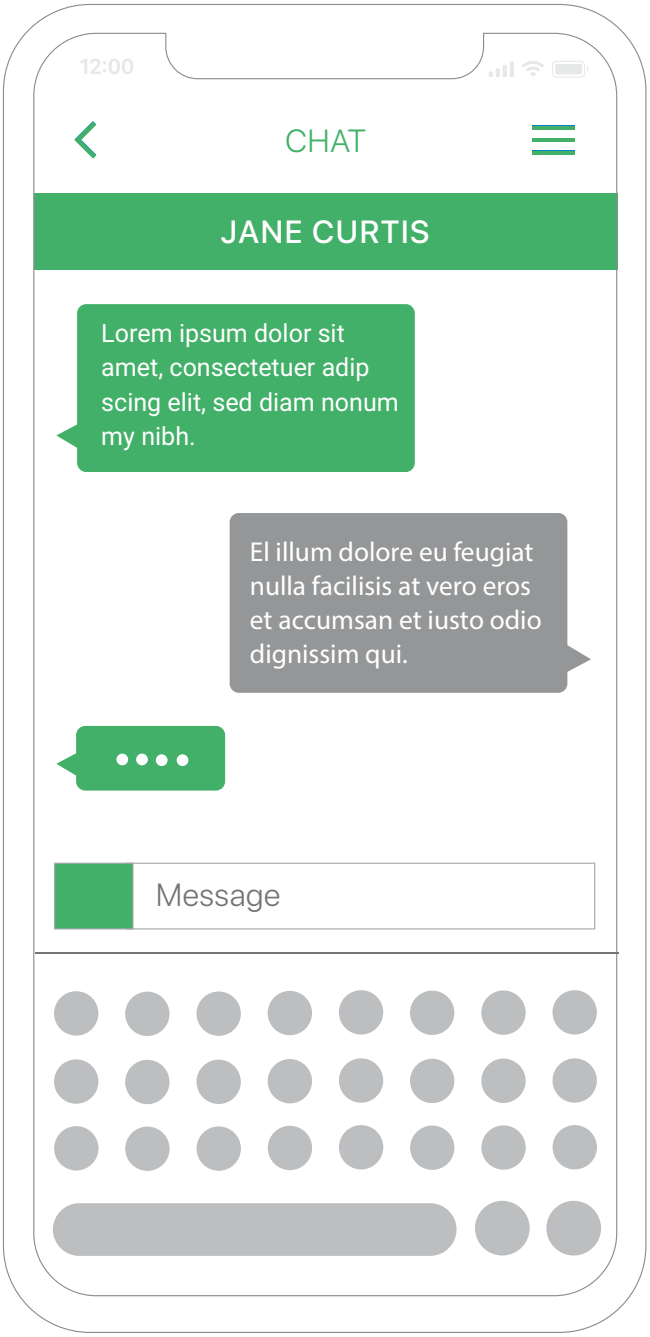
Analyzing the apps provided insight into the development teams behind the code. Package names and test account information were often clearly visible; however, it is problematic to make assumptions about developers unless it is quite obvious. Developer vendors can provide external libraries that cruise internal teams ingest into the in-house codebase to add an out-of-the-box feature. External development teams may also be augmenting in-house developers with outside vendors.

External Settings Files

Cruise applications have an uncommon constraint: they act differently based on the network you have joined. The idea of the application acting differently automatically requires a solution that works without the guest noticing anything. An external settings file works by requesting a file from a specific domain with configuration flags. Once connected to the onboard network, this file will return different flags than it will return when connected to a standard internet connection. This can be expanded greatly to include more than simple configuration flags. We noticed this pattern of development in many of the applications.

Fingerprint Authentication New

Biometric authentication systems such as Face ID and Touch ID have become commonplace in many mobile apps. However, they have not been widely implemented in cruise apps. In fact, we found only one app featuring fingerprint authentication. Biometrics are useful for systems that automatically log their user out for se-



curity purposes. Not having to reenter a password over and over again is also more convenient. Considering that most cruise apps have fairly low security implications, they typically rely on a token system to keep passengers logged in during the duration of their cruise. As a result, we think that biometric authentication will not become the norm anytime soon.

Image & Animation Libraries New

Cruise lines have spent some of the time while not sailing to improve the look and feel of their applications. Some apps began adding image and animation libraries to their codebases. Libraries like Glide Transformations, React Native Animatable, and ViewAnimator are starting to appear in more apps. These tools add another layer of management complexity to builds, but they do create a more fun, lighthearted experience for users.

Liferay

Liferay is an open-source enterprise CMS. We found that at least two cruise applications were using some part of Liferay DXP, the company's digital experience platform, most likely to deliver marketing content and images to the app. Liferay is also likely being used as an EFSS (enterprise file synchronization and sharing) tool to coordinate shoreside digital assets for synchronizing to onboard systems.

Medallia New

Medallia is a platform technology that analyzes feedback from social media sources and review sites. They now also offer their own set of mobile feedback tools that can be embedded in applications, which is presumably how it is being used in at least one of the cruise apps we investigated.

netTALK New

netTALK Maritime provides a number of telephony, device tracking, and health-related SDKs for cruise mobile development. While netTALK systems have been seen in codebases, 2021 is the first year when more than one distinct package has been observed inside of cruise apps. netTALK has traditionally provided telephony and chat services onboard, but the COVID-19 crisis saw them expand with a number of innovative health and safety offerings.

PDFium New

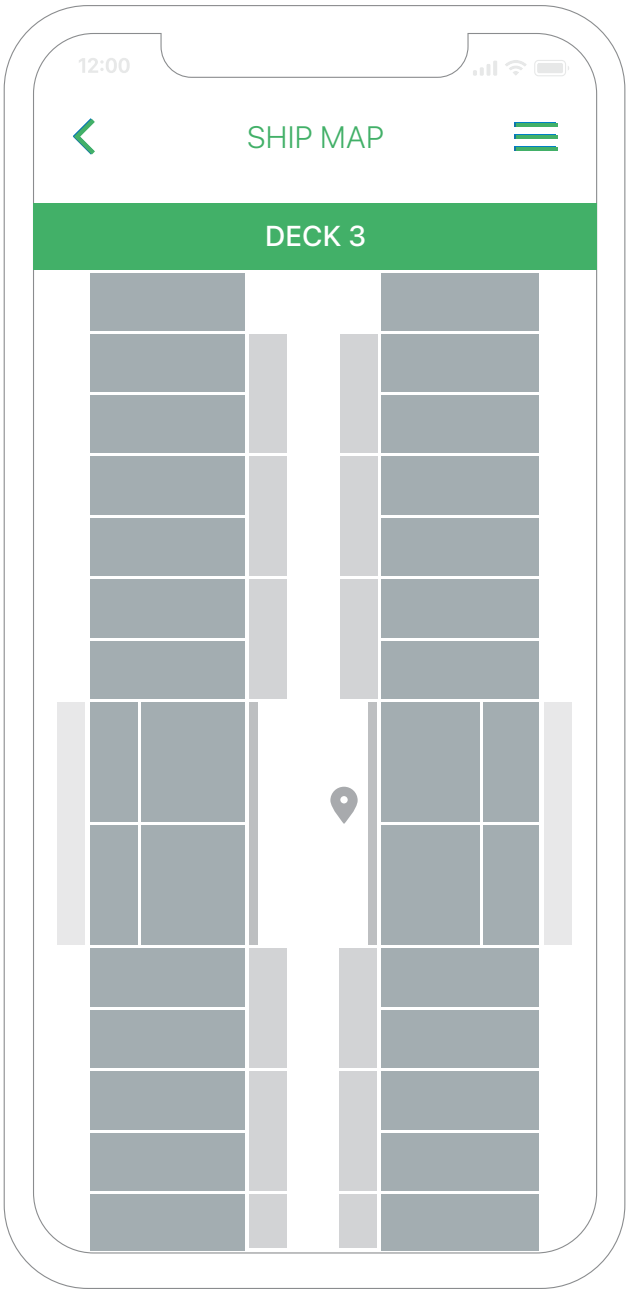
PDFium is a Google-supported, open-source library for manipulating PDFs. It allows developers to view, print, search, and fill out PDF forms. It was a surprising discovery to see PDFium included inside a mobile app. Managing PDFs has largely been handled by server-side applications rather than on passengers' actual devices. We can assume that the inclusion of this library at the local level is to handle PDF documents (e.g., tickets, medical forms, etc.) in an offline environment.

ProGuard

ProGuard works like many obfuscation tools by optimizing the Java bytecode. This tool is joined by many on both Android and iOS for the purpose of optimization and security protections at the application level. The benefit being that any prying eyes have a lot more work to do instead of looking at bytecode equivalents of the protected source code of each application.

SIP Providers

At least one cruise app uses a VoIP phone system for making onboard, cabin-to-cabin calls. Some of the applications, however, have a SIP client library (the software required to make VoIP calls) inside of them but do not have a phone feature. When we dug into the possible reasons, we decided it might be to enable push notifications.



Up until recently (literally 2020), sending push notifications was not possible if a ship was not connected to the internet. One way around this is to have an app that listens in the background for notifications from a local server. Background pushes are useful but are not instantaneous. In fact, they can take up to an hour in some situations. The potential for long delay defeats the purpose of push notifications, especially if the cruise line wants to alert guests to a whale sighting off the port bow.

The exception is if the app has SIP permissions built into it. Because a VoIP app needs to get messages instantly for incoming call alerts, including a SIP library in the app can enable real-time background push notifications, even if there is no onboard VoIP system. This is risky, however, because Apple has caught apps doing this before and banned them from the App Store. It also has been deprecated by Apple, and is no longer available in later versions of iOS. Instead, Apple requires all VoIP apps to use PushKit (which requires connectivity to Apple's servers in order to function).

Technology Blends

In 2019, almost all apps analyzed were predominantly native, meaning they were written in Java or Kotlin for Android platforms and Objective-C or Swift for iOS platforms. There was one exception to this, using React Native. In 2020, two alternative technologies joined the industry: Cordova and Unity.

Unity was primarily developed to be a hybrid 3D gaming engine. There have been a number of non-gaming mobile apps built with Unity, but it is still an outlier as far as development choices go. The Unity engine does allow for more radical interface de-

signs, as well as a single code base to be deployed across iOS and Android devices.

Cordova is another cross-platform technology that essentially allows developers to write code using standard web development tools (i.e., HTML5 and JavaScript) and then run that code in an app wrapper. This is similar to most interactive TV development in that the application runs a headless browser and then loads the web content into the frame. This is another unusual choice for a cruise app. Development time and complexity are significantly lowered, with the trade-off coming in terms of speed and functionality.

Test Data/Shim

Many of the apps we researched included test, or "shim," data inside of them. This is basically a text file containing a fake passenger's details, calendar, folio, and any other items needed for testing. This shim data will also include items such as restaurant menus, available spa treatments, and shore excursion offerings. The reason the data is included in the actual app is so Apple (or other testers) can test the app without connecting to a PMS (property management system) or shoreside test databases. The risk with this data remaining in the application is that it could expose vectors of attack for hackers by providing insight into other onboard operations.

Test Logins

About half of the apps we investigated contained clear text usernames and easily visible passwords. This might sound more alarming than it actually is, but it is interesting to note. These credentials are for testing purposes, specifically for Apple's testing. Unlike the Google Play store, which relies solely on automated tests, Apple has real people testing the apps. Because most cruise apps are designed to only work shipboard, testers need a way to trigger "onboard mode" with fake credentials to log in. Of course, this leaves open the possibility that someone other than approved testers could log into the apps without having to pay for a ticket to board the ship.

Rating Our Predictions From 2020

Health & Safety

In 2020, we predicted that "COVID-19 is clearly going to be the largest driving factor in mobile app changes for the cruise world for the foreseeable future." This may not have been the boldest prediction, but there are more specific ones below that we can score from our research.

Communication

We predicted that passenger health reminders and educational tools would be pushed to devices to reduce the need for large gatherings and increase onboard safety. Although the majority of ships have not started sailing yet, we are already seeing features such as mobile check-in, health questionnaires, and the ability to watch muster drills via the app.

Score: 8/10

Behavioral Changes

In 2020, we predicted that cruise lines might alter behavior for things like health surveys through incentives or gamification. This does not seem to be how they are planning on approaching guest compliance. Rather, it looks like the way change will be affected is through policy. For example, a passenger must take a health survey, be tested, or prove they are vaccinated, otherwise they will not be allowed on board. We will give ourselves some points for at least being right about the health surveys.

Score: 3/10

Operational Safety

We predicted that physical distancing might be encouraged and enabled by technology. We speculated that medical systems onboard would be linked to passenger systems and beacon technology would help medical staff locate potentially ill passengers. It is still too early to know how different lines will approach this; however, there are two separate technologies that will accommodate operational safety:

1. In-app expedited boarding features and e-mustering. These technologies are a clear effort to reduce crowd sizes.
2. Device-based contact tracing systems. These are almost exclusively outside of the app environment, though, using separate wristbands or fobs.

Score: 6/10

Sustainability

We predicted that we would see an increase in touchless and digital delivery systems to reduce paper and improve hygiene onboard. While digital tickets did not become the norm overnight, there is a clear indication that several lines will be moving to digital boarding passes and tickets when sailing resumes. However, the future of all printed materials is uncertain. We have heard anecdotes from cruise executives that passengers have not always appreciated digital delivery of daily agendas and newsletters. However, we will double down on this prediction in a post-COVID world for 2022.

Score: 6/10

AI & Virtual Reception

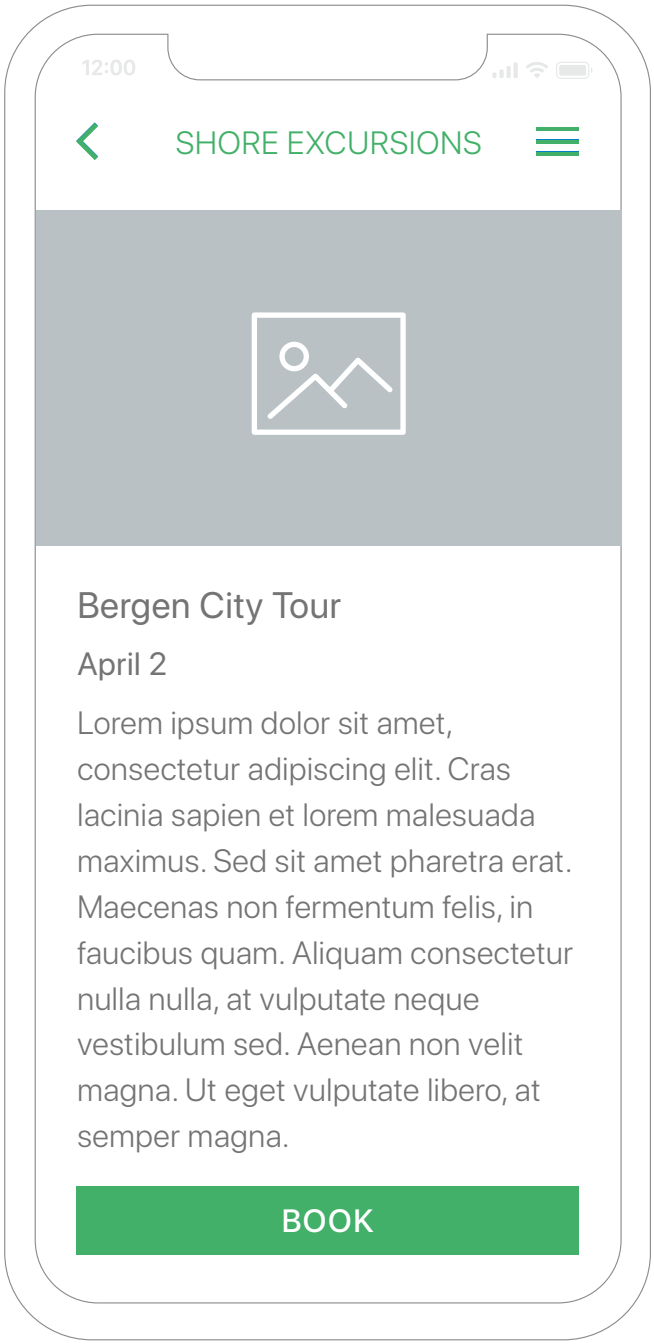
Last year, we suggested there would be a large increase in the number of virtual and AI assistants in cruise apps. While AI-powered monitoring, crash analytics, and feedback systems have been added, only one cruise line added any new virtual assistant features. The focus on COVID-related enhancements has overshadowed almost all new features.

Score: 2/10

Cabin Automation

We predicted that cabin automation would be back on the table for 2021 due to improved technology and the health and safety benefits. While there are cruise lines experimenting with this technology, the future of cabin automation is still unclear. The costs involved can be extremely high for physical automation systems (e.g., specialized doors, motorized drapes and blinds, etc.), and these costs are difficult to justify. However, several digital vendors are offering fairly easy access to technologies like app-based TV remote controls and climate adjustment settings.

Score: 5/10



Looking Ahead

Increased Digital Delivery

We are doubling down this year on our prediction that more and more printed materials will go digital. Shore excursion tickets, daily newsletters, receipt slips, and even breakfast ordering menus cost money to print and take time to distribute. These items are ripe for innovation.

Shoreside & Shipboard Convergence

As the basic functionality of the onboard apps becomes more and more commoditized across the lines, development opportunities still have two largely unexplored regions: pre-cruise and post-cruise. Most apps focus on operational efficiency and the guest experience onboard.

Digital Mustering for All

Mustering and drills have long been passengers' least favorite activities. The pandemic has allowed some cruise lines and regulators to allow for digital versions of mustering for safety drills. What was once a pain point for both crews and passengers can now be removed, and so we doubt the previous style of muster drill will ever return. We expect to see similar solutions take over for other areas as well, including shore excursion and tender mustering, as well as staggered check-ins and checkouts. These will be enabled by a new breed of local notifications that are going to change the landscape of cruise mobile apps forever.

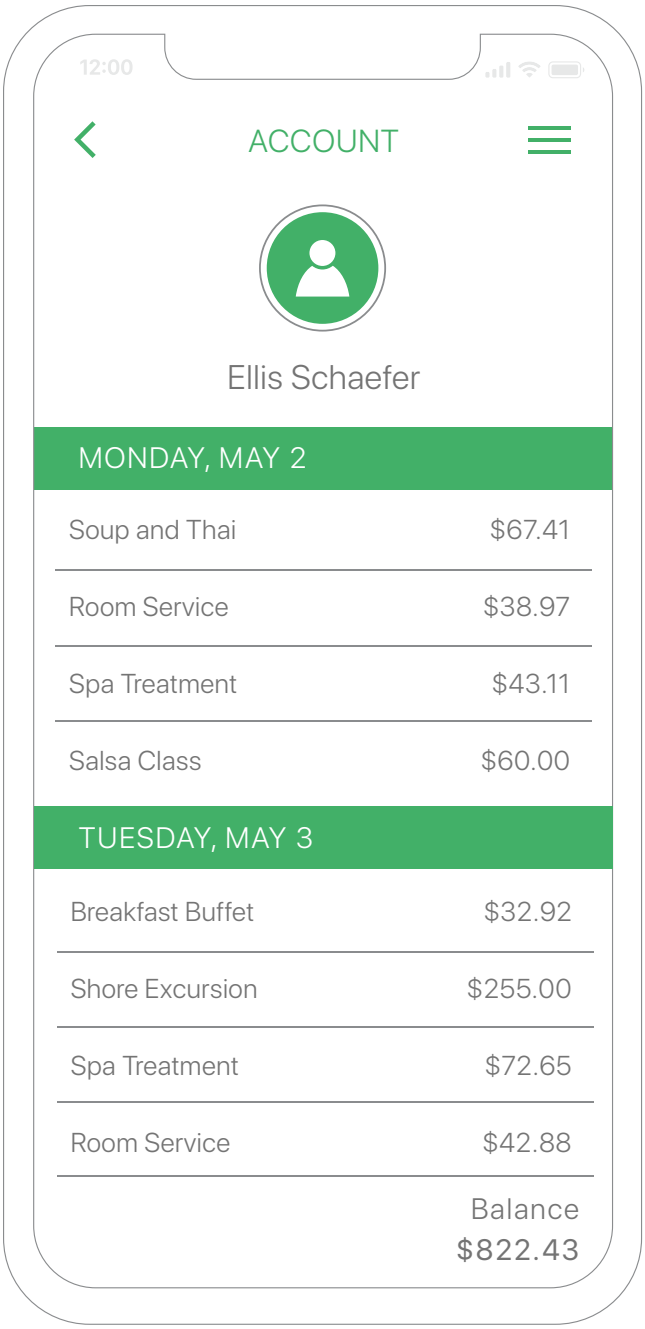
A New Era for Push Notifications

Sending push notifications without a consistent internet connection has been an engineering nightmare since the introduction of smartphones to the cruise industry. However, this will likely no longer be an issue as both Apple and Android have released new local push systems in the last year.

Therefore, we expect that onboard push notifications will catalyze a new generation of features across the industry. For years, workarounds and hacks have enabled onboard chat systems and dining reservation reminders, but little else. We expect to see more ship-wide notification features coming soon.

More Health-Related Changes

Again, this is not a bold prediction, but there will be a continued focus on pandemic-related health measures. No one is 100% sure how regulators are going to allow cruising to continue across the globe, but it looks unlikely that US residents will ever carry state-mandated "vaccine passports." This means that there will be an increased responsibility on cruise lines to manage the risk of outbreaks onboard. Vaccine proof will be required by some lines to hit certain percentages to make sailing acceptable, and that process will almost certainly be managed through pre-board check-in systems. Expect apps to add functionality for taking photos of vaccine cards.



Because vaccine cards will be difficult, if not impossible, to register, we expect terms of service agreements to be more visible for passengers to sign. Shifting the responsibility for vaccine proof from the lines to the passengers may be the only way to ensure authenticity.

We expect that the digital health surveys will also become more sophisticated and integrate with onboard EMRs directly. Right now, contact tracing devices, temperature checking systems, and self-reporting systems are being deployed as quickly as possible, and they often rely on third-party interfaces. These will likely become increasingly integrated with all onboard systems.

Conclusion

Despite all of the setbacks over the last year, none of the major brands in the cruise industry have stood still in their updates and improvements for passenger-facing cruise applications.

Almost every application we researched will include health questionnaires and contactless check-in. Contactless check-in has long been a wish-list feature for many cruise lines to improve the efficiency of the embarkation process, and during the pandemic, development teams were able to prioritized these digital check-in systems to decrease lines and personal contact. Pre-cruise and even daily health questionnaires have also been rapidly integrated into existing mobile apps with varying levels of sophistication.

The large swings in update frequency between cruise lines is difficult to accurately account for. Reduced frequencies may be due to furloughed development teams, budget cuts, or internal release policies. In some cases, higher frequency updates have been due to small framework updates and large feature releases in others. Our conclusion is that while all cruise lines are taking their mobile apps strategies seriously, the amount of investment in development varies greatly.

Security is still an issue across many of the applications tested. Combined with some of the outdated security measures seen on shipboard guest networks, it is only a matter of time before another large security or privacy issue makes the news. Cruise lines should seriously consider a number of measures to plug some of the more easily exploitable gaps in their defenses.

Much of the pandemic-related development has been difficult to predict. Even now that most of the apps we researched have been updated to account for some level of post-COVID sailing, the future is still uncertain. Unlike innovations seen in cruise apps pre-COVID, all of the new development has been performed in silos. Some information has been shared across brands, but divergent strategies will be tested when sailing continues. The next year of mobile app releases will be exciting to watch, and mobile cruise apps are only going to get better.

About the Author

Sourcetoad is an award-winning enterprise application development firm specializing in cruise industry solutions.

Sourcetoad's mission is to solve complex operational problems and bring convenience and delight to guests.

Sourcetoad is based in Tampa, FL and Perth, Australia.