# River Cruise Mobile Apps

## 2023 Annual Report

sourcetoad
OnDeck

# Contents

# Introduction

Sourcetoad has been producing the "Cruise Mobile Apps Annual Report" since 2019. In this report, we attempt to analyze the major updates, technologies, trends, and features released in mobile applications in the Ocean Cruising industry. In previous years, we focused on Ocean apps for a number of reasons, but mainly because there are many more available than River cruising apps, and (more selfishly) most of our cruise industry clients are Ocean cruising companies.

However, that changes now! The River cruising mobile app space has started to become more interesting, and we predict it will only grow over the next few years. Also, since Ocean apps have become increasingly more homogeneous over the last two years, we want to do something new and interesting to us.

The River Cruises Mobile App space is very interesting compared with the more mature Ocean space. There are still only a handful of apps in the industry, but they are all wildly different. Apps range drastically in terms of features, quality, security, design, and philosophy. This is partly due to five major differences in River vs. Ocean cruising:

## The Nature of River Cruise Line Ownership

Ocean Cruise lines have a diverse set of ownership structures, but nothing like the River world. River lines are owned privately, as part of hotel chains, as subsidiaries of large cruise lines, subsidiaries of charter and ferry groups, and frequently as part of travel or tour operations groups. This diverse set of ownership systems means that while River cruises may appear to be direct competitors, they actually serve very different purposes in each group's portfolio. These differences directly affect the technology decisions that are made from group to group. A large cruise company might use the same, well-established code base to build out their River app, while a tour operator group might not consider it necessary to have a dedicated mobile app at all if they already have an app at the group level.

## River Passenger Demographics

While River passenger demographics are diverse, especially depending on brand, there are more River brands that cater to older demographics than Ocean cruising. As a result, it is often suggested that older passengers would not use a mobile app even if one was offered. However, there is some data to suggest that this is incorrect as an assumption, and this is being acknowledged inside cruise line meeting rooms.

## Onboard Connectivity

River ships face different connectivity challenges from their larger Ocean-going sisters. Ocean ships are often without internet connectivity, so offline functionality is a key challenge and where much of the technological complexity comes from. River ships could conceivably get away with a web-based application whereas an Ocean ship could not. However, the networks and wifi systems on many fleets are significantly older than many Ocean lines, which creates its own set of unique issues.

## Fleet Sizes

While River ships are significantly smaller than Ocean ships, River fleets can be much larger. Some river lines even have backup ships and motorcoaches for moving passengers down parts of a river that has dried up. Managing this many small ships, where passengers might even move vessels, creates a number of issues not faced by Ocean lines.

## Operational Complexity

Finally, River ships are simply not as big or as complicated as Ocean ships. There are typically only one or two restaurants onboard, so a reservation management system is not required. Being much smaller, many River cruise ships offer only one shore excursion option per day, so booking management systems are also not needed.

An argument could be made that passengers will be fine with a single printed itinerary at the beginning of the cruise, and an app would only complicate things. Less complexity also means that feature decisions are made based on an entirely different set of operational and guest experience requirements from those of Ocean lines.

# Methodology

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.

# Scope

The apps we chose to research for the purposes of this paper met the following criteria:

- They are designed to be the primary guest-facing app that passengers use while onboard.

- They work on at least two river ships in a fleet.

- They are downloadable mobile apps and are not web-based.

- They are not crew apps, brochure apps, entertainment apps, or supplemental mobile applications.

- They were available for Android and iOS.

- They were released and tested before December 10th, 2022.

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

# Mobile Applications
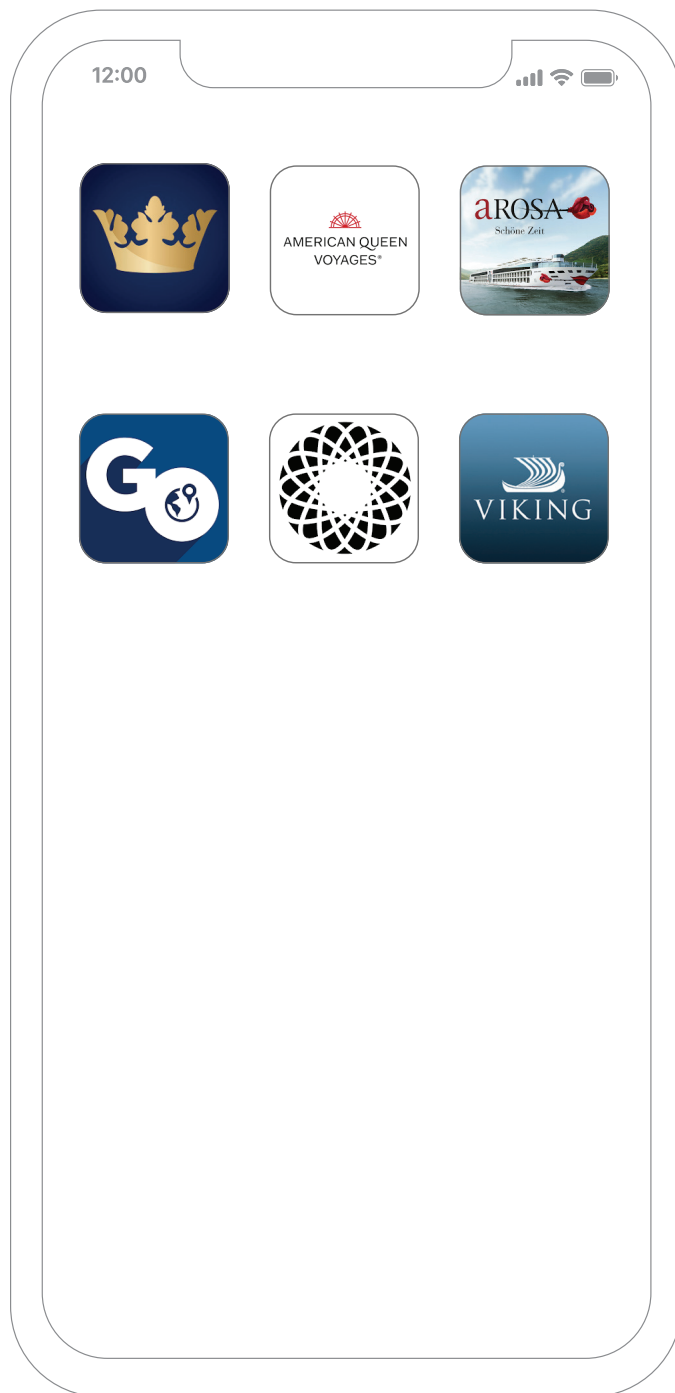


## myAmaCruise by AmaWaterways

*myAmaCruise* was released in 2019 and works across the company's entire fleet.

## American Queen Voyages

The American Queen Steamboat Company's mobile app was released in 2020 and works across the company's entire fleet. It shares much of its code base with other Hornblower apps.

## A-Rosa Cruises

A-Rosa's app was just released in May 2022 and works across the company's entire fleet.

## AvalonGO

Avalon Waterways' *AvalonGO* app was released in 2018 and works across the company's entire fleet. It shares a code base with all other Globus brand apps.
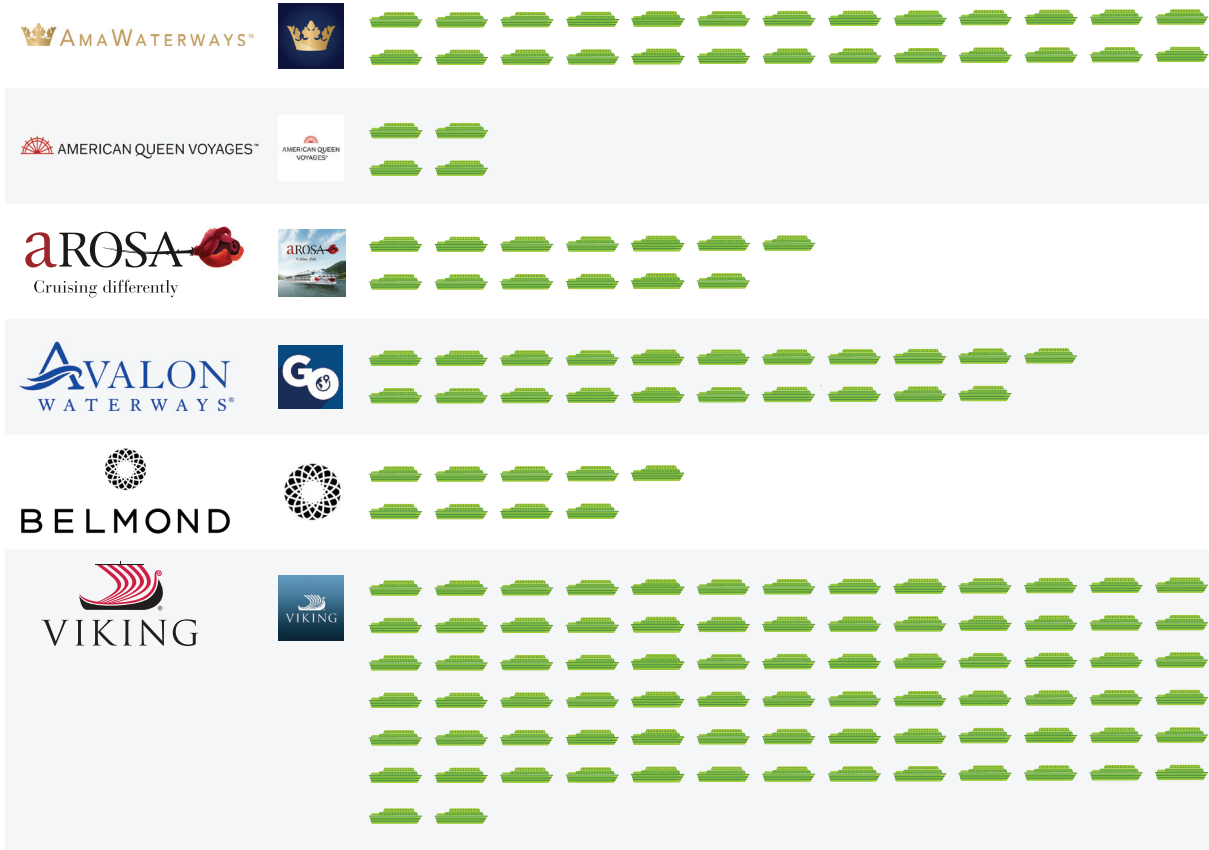
## Belmond

Belmond's app was released in 2020 to work across the company's entire fleet, as well as the brand's hotels.

## Viking Voyager

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

# Availability

**AmaWaterways**

**American Queen Voyages**

**aROSA** — Cruising differently

**Avalon Waterways**

**Belmond**

**Viking**

Supports mobile app onboard  Does not support mobile app onboard

# Features

Of the six apps we analyzed, all but one contain a very limited selection of features and options compared to the apps offered by ocean cruise lines and other travel and hospitality companies. To better compare and contrast their offerings, we broke down the features into three categories: Common (almost all apps have this feature), Less Common (two to three of these apps have this feature), and Stand-out (found in only one app).
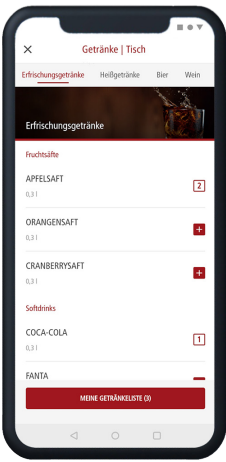
## Common Features

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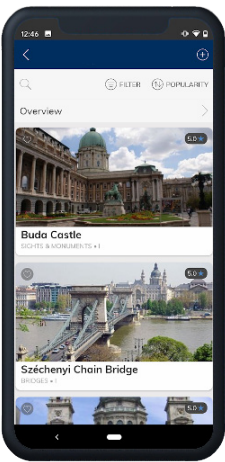


### Digital Travel Guide

Almost every app offers guests photos and information about ports of call and excursions; some include audio tours of individual locations.



### Dining

Every app has at least some information on dining options. Dining features across applications include hours, menus, images, locations, and attire. Less common is the ability for guests to book reservations.
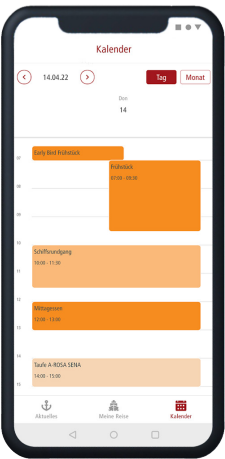


### Itinerary

The itinerary is the guest's personal calendar. Once an activity has been favorited or booked, it appears on this calendar.
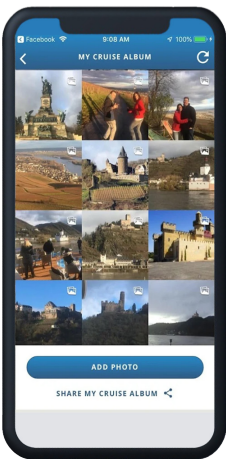


### Photo Album

Most apps offer the ability to upload photos to a personal photo album with social media integrations. A few also offer additional functionality such as pinning to a map or adding notes.
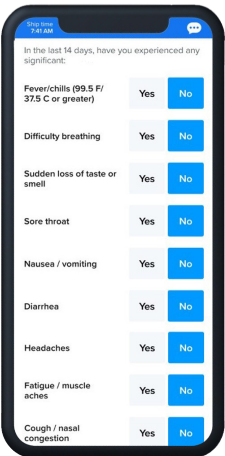
### Schedule

The daily schedule or newsletter is the main stop when planning activities for each day. In a few cases, an event can usually be added, booked, or marked.
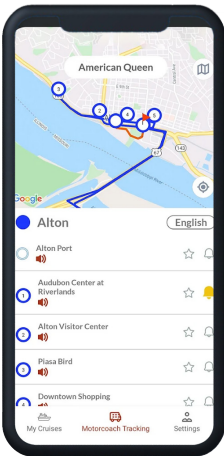
## Less Common Features

The following features were shared by two to three of the apps we researched.

### Health Questionnaires

Two of the apps we reviewed facilitate passenger health questionnaires and allow passengers to upload COVID-19 vaccination records to help streamline check-in on cruises where proof of vaccination is mandatory.

### Live Tracking Maps

A couple apps offer live tracking of your cruise's movement and/or tracking of buses at destinations.
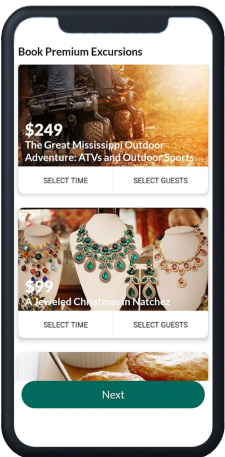
### Shore Excursions

Two of the mobile applications we reviewed allow guests to both research and book an excursion.

# Stand-Out Features

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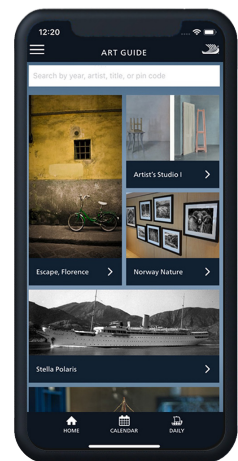


## Art Guide

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.
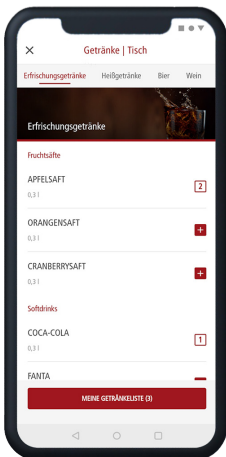


## Mobile Ordering

A-Rosa's app allows guests to order beverages to their current location..



## Offline Navigation

AvalonGO's app features GPS that works without wi-fi or cell data so guests can navigate while touring ports-of-call.

# 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.
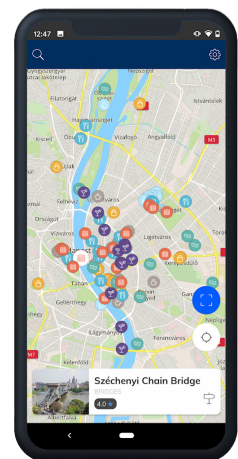
Given the relative simplicity of most of the apps we evaluated, the relatively low frequency of updates last year is logical. The two outliers also make sense: A-Rosa's app was just launched mid-2022, so it's not surprising to see zero updates. Viking's app is shared with its ocean cruise line and thus offers a much broader array of features than the other river cruise apps, so 18 updates in 2022 also makes sense.

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| 3 | 2 | 0 |
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| AmaWaterways | American Queen Voyages | A-Rosa Cruises |

| 5 | 2 | 18 |
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| Avalon Waterways | Belmond | Viking Cruises |
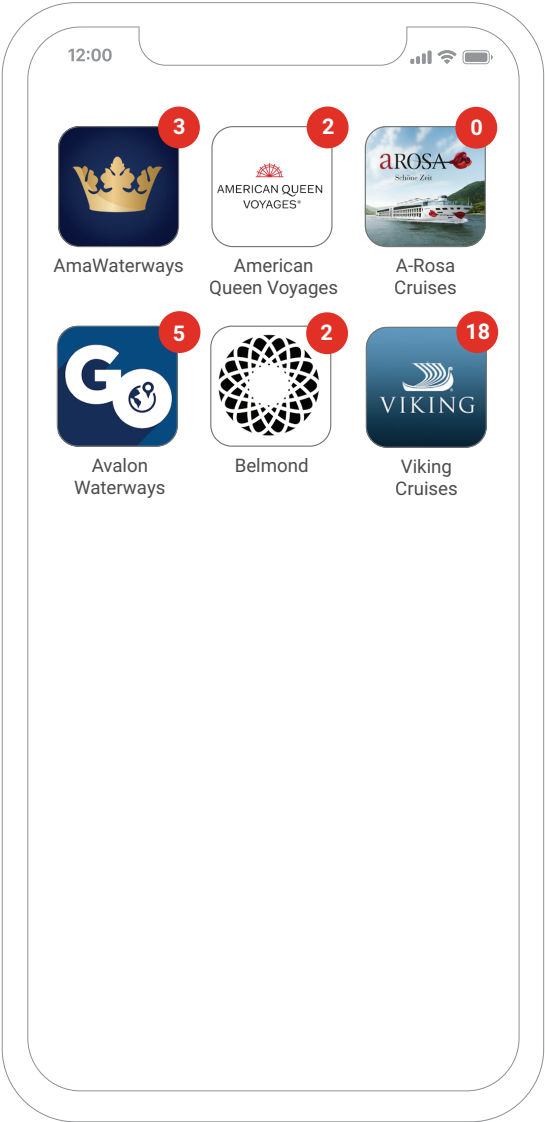
# Tools and Key Players

## Animation Libraries

Animation libraries help apps with smoother transitions, scrolling, and video playback. Apps use these to improve the native screen management or to make developers' lives easier in some way. Two of the applications used the Glide library to handle these tasks. Glide is also effective for cases where developers need to fetch, resize, and display a remotely hosted image.

## AssaAbloy

AssaAbloy Global Solutions Marine (formally VingCard) is by far the leading provider of cabin door lock systems in the cruise industry. Integration of their libraries have been found in one of the applications, including the full SDK, and more strangely, the entire API documentation. These SDKs would allow a passenger to use their phone to access the gangway and unlock their cabin door.

It is unclear, however, if this feature actually works onboard, or if it has been inherited from another codebase. Descriptions and reviews of the application in the app stores do not mention the mobile door locks as a feature.

## Bug Tracking & Analytics

Debugging and troubleshooting cruise apps in a production environment is a challenging task. Shoreside test systems data are problematic throughout the industry. Not only have PMS systems become massively complicated, but there are also a myriad of onboard scenarios that are not often accounted for in testing. Couple these

facts with the increasingly large number of devices that guests are bringing on board, and you have a QA person's nightmare. When issues are reported back to the shoreside IT or Software departments, it can be very difficult to recreate the issue, let alone solve the problem.

One of the mobile apps was found to be using Sentry, an advanced crash monitoring tool with stack tracing built in. Sentry's tools allow developers to be alerted to the specific module, or even line of code, that caused a crash. Sentry can also monitor the speed of certain functions, allowing developers to optimize their applications based on data from the tool.

## CruiseTraka / TripTraka

CruiseTraka (now part of TripTraka) is a white label system for allowing guests to share their journey with friends and family, and to document their trip for the occasional reminiscence. Adding these features to an application is done through the TripTraka SDK. This then allows passengers to add photos and journal entries to items in their itinerary which can be stored or shared.

## Cryptography

Two apps were found to be using some level of cryptography from the presence of the libconceal.so and libconscrypt_jni.so libraries. In these specific examples the applications are using the enclave/keychain at the OS level to store secrets securely. This is most likely for small convenience

features such as having your user name persist at the login screen, or storing a user's authentication tokens.

## Hermes

The one React Native application examined is now using Hermes. This engine moves more of the work done by an app to the build time, rather than the run time. Basically, this means more of the app is pre-compiled, leading to the app loading and running faster, as well as having smaller app download sizes. Depending on the complexity of the application, this could have been a fair amount of work for the development teams.

## PDF Processing

Two of the applications investigated contained the PDF rendering toolkit, PDFium. PDF toolkits offer features such as displaying PDFs to users, extracting data from PDFs, and creating PDFs from dynamic content to download. In the case of these applications, the use cases are limited to reading daily newsletters/compasses and restaurant menus.

## QR /Barcode Scanner

One of the applications was found to be using the Android MLKit, Google's Machine Learning toolkit for mobile devices. It appears that there is no actual machine learning being done on the device, rather the application was using the QR Code/Barcode scanning feature of the toolkit. Barcodes are useful for scanning tickets for shore excursions or products in onboard shops. However, it is most likely being used to scan QR Codes for digital menus or other URL-based systems onboard.

## Security Issues

At least two of the applications investigated suffered from unclean build and deployments procedures. Artifacts from testing ended up in the production versions from two Cruise Lines. This suggests that many development teams are not using modern CI/CD pipelines, and instead just have an engineer who is building a production build from their local copy. This opens the possibility of human error, for example accidentally including all non-committed files into the archive.

These types of accidents can lead to leaks in private data, reveal information about the backend systems the apps are communicating with, and include sensitive test data that should not be public.

## Survey Tools

Two applications showed the use of built in surveys. SurveyMonkey was used in one case and the CruiseDirector survey module in another. Both systems allow for the creation and distribution of online and offline surveys for passengers. These surveys could be used to collect guest feedback about dining experiences, spa treatments, shore excursions, the onboarding process, or even health surveys.

## Technology Blends

In one of the more surprising cases of uniformity found in the apps we investigated was the tech stacks used. Five out of the six applications were native applications (meaning they used Kotlin or Java for their Android builds and Swift or Objective C for their iOS builds). This is surprising because developers now have a lot more technology options for building

apps, and there may have been more cost effective tools out there for smaller development groups.

Among the native apps, the main architectural commonality was a heavy reliance on webviews. Webviews are simply headless web browsers that are opened inside of a native app and show a website in the app. This is useful for items that are highly dynamic (dinner menus, daily newsletters, etc.) and for saving development time and costs. These are seen less and less in larger applications as they tend to break up the feel of the app and can lead to errors that are difficult to track.

One of the native apps did contain a few [Flutter](#) components, which is interesting. This might mean that the development team is experimenting, or is going to write more and more cross-platform modules for the application in the future. Flutter is a cross-platform framework supported by Google.

Another application was built on React Native, a cross platform framework supported by Facebook. React Native is a technology becoming more commonly seen in the Ocean app space, but it only has one representative in the Rivers segment.

## Zendesk's Sunshine Conversations

In yet another one off, we found an application to be using [Zendesk's Sunshine Conversations](#) SDK. This module allows for the integration of a chatbot that can be overridden by a live operator using the Zendesk platform. This does require an active, stable internet connection to function, and is most likely being monitored by shoreside staff, rather than onboard crew.

# Looking Ahead

Predicting what the uncertain future looks like for the River Cruise App industry is a bold move, but we're going to give it a shot anyway.

## New Entries

American, Aqua, Grand Circle, Tauck, Uniworld, and Vantage are just some of the cruise lines who have not launched a dedicated mobile app for passengers. We are guessing that this is not going to last long. It is surprising that the lines that cater to slightly younger audiences have not adopted these technologies sooner regardless of the technological and cost barriers. However, these barriers are getting smaller every day with new developments, and so we predict we will see one or two new River cruise apps in the next year.

## Shore Side Functionality

Almost none of the apps investigated allowed digital check-in or shoreside booking. At best they contained a few marketing screens and journey prep lists. Pre-cruise functionality was also one of the top requests from users in app reviews, so it is likely to be high on the list of development roadmaps. There are however a number of complexities with pre-cruise integration. It is fairly straightforward to integrate your application with one onboard source of truth (the PMS). This gets much more complicated when you need to integrate with different systems depending on your location. As a result, we predict that digital check-in will be the first shoreside innovation to make it to market, with shoreside booking and other features still a year or more out.

## Bug Tracking and Crash Detection

Hopefully this prediction comes true, and hopefully this report's release guarantees it! We predict we will see a wide adoption of bug tracking and crash detection systems in next year's applications. The lack of these simple tools was one of the biggest surprises in our research. These tools are extremely easy to install, and take very little time to monitor. There is always the chance that development teams at these cruise lines are aware of the issues, but simply don't have the resources to deal with them. That might lead to a mentality of "why install bug and crash tracking tools when we don't have the ability to do anything about them." Our hope is that this is not the case, and the management of tech debt and stability engineering is elevated in importance.

## A More Predictable Maturity

The great thing about the apps we investigated was their diversity. Each app was remarkably different from their feature sets to their user experience choices. We watched the evolution and homogenization of the Ocean Cruises apps over the last 5 years with great interest and hopefully we will see something similar in the Rivers world. With the Oceans apps, developers took radically different paths and multiple experiments to land on the features and interfaces we see today. Our guess here is that the River's maturation will be less exciting as it will use the path blazed by Oceans as their road map.

# Conclusion

The River Cruises Mobile App space is clearly still in its early stage of development. Unlike the Ocean Cruise apps out there, the Rivers apps are all over the board in terms of features, security, and quality. As a result, it is almost impossible to identify any large trends in the market. What we can say for sure is that there are a lot of areas where improvements could be made.

Security is the first space where investment in these applications is required. A disturbing number of the applications examined had little to no authentication on API requests which could allow malicious attackers to submit false requests or intercept guest requests. Other applications included test documentation with sensitive data inside or debug information inside the production applications. This could lead to everything from system exploits to publicly embarrassing information leaks.

Stability of these applications also seems to be a growing concern. Online reviews of many of the applications point to a large number of crashes, battery consumption, and data usage. Guests expect apps to work onboard in a similar manner to shoreside systems, regardless of the complexities. That means that extra care must be taken in ensuring apps are tested frequently onboard, rather than in idealized development environments. The lack of crash detection and bug reporting systems found inside of these applications shows that it may be easy to find and fix the low-hanging fruit of many of these stability issues. All developers would need to do is integrate something like Instabug or Sentry into their packages and pay attention to the results.

Operationally there also seem to be more issues on River apps than Ocean equivalents. Reviews by users point to a lack of crew engagement onboard with the systems that support the app. For example we found complaints that daily schedules were not up to date, or itineraries had changed and were not reflected in the app. These are most likely manual changes in supporting systems, and not directly the app's responsibility. Guests however do not understand or care why their app is not performing as expected. It is possible that a few small operational changes and controls would solve many of these issues.

Managing guest expectations would also go a long way to improving the perceived value of these applications. There seems to be confusion across the board about what each app is supposed to do. Reviews are littered with complaints that certain apps only work onboard, or that you cannot change your reservations using the mobile app. Issues like these may be technological or operational, but having a clear message about what the app is designed to do and what its limitations are might go a long way to improving the guest's experience.

It is clear that most River lines do not prioritize their mobile apps in the same way that Ocean lines do. There are many reasons for this, but more care will need to be taken soon as passenger expectations and demographics evolve. The River Cruise Mobile App space is still very much in the Wild West days of its existence, which means there are many challenges ahead, but also an enormous opportunity for exciting innovations. This is going to be a much more interesting space to watch over the next two years than the Oceans' app space. So stay tuned!

## About Sourcetoad OnDeck

Sourcetoad OnDeck specializes in innovative guest-facing software for the cruise and ferry industry. Our technology solves complex functionality issues both onboard and on shore, making operations easier for staff and delighting passengers.

Our teams based in Tampa, Florida and Perth, Australia have been building software for cruise ships and hotels for over a decade.

Learn more on our website, **OnDeck.Sourcetoad.com.**