Success Story

embarcadero®

DELPHI

COMPANY

Aeronavigator

AERONAVIGATOR

Established in 1998, Aeronavigator originally focused on air navigation solutions and services for aircraft. The company has now evolved into a trusted Russian vendor of solutions and software for automation of business processes at airlines. Its products are compliant with Russian and international standards. It is led by a team of professionals drawing on an impressive track record with airlines and vendors of aviation industry software.
They have completed scores of integration projects for airlines and created off-the-shelf solutions used in the aviation industry.

PROJECT

Aeronavigator developers used the Delphi programming environment to develop three civil aviation mobile apps for the Windows, Android, and iOS platforms.

DEVELOPMENT TOOL

Delphi

TASKS

- Streamline the work processes of aircraft crews and flight attendants with the aid of mobile apps
- Reduce paper usage onboard aircraft by implementing electronic portfolios
- Reduce the cost and time of delivery of regulations

RESULTS

- Three new mobile apps for the Windows, Android, and iOS platforms have been developed in cooperation with Delphi
- Seamless integration with the Meridian flight control system has been provided
- Airlines have been offered tools for increasing the level of automation and reducing costs

The Russian company Aeronavigator was established in 1998 and originally focused on digital navigation technologies used by airlines both commercially and for pilot training.
The company developed automated air navigation systems for flights, computer-based simulators for navigation training, automatic training systems, electronic textbooks, exercise books, and other innovative technologies.

In recent years Aeronavigator has won acclaim in the Russian market for air services as a developer and vendor of the Meridian integrated automated system. Airlines use this system for optimal scheduling of regular and chartered flights, planning and managing aircraft fleets and flight crews, and allowing personnel access to all the required operational information. Data accuracy and reliability is seen as the key hallmark of the system's effectiveness. The Meridian system comprises several modules that facilitate administrative decision making: the Enterprise Resource Planning System, the Decision Making Support System, the Process Automation System, the Administration System, and the Document Management System.

Each employee of a customer airline can log on to the Meridian portal and receive all pertinent necessary information.

PROBLEMS AND SOLUTIONS

"During the course of a business day, websites of airlines connected to the Meridian system can receive as many as 3,500 visits from flight crew members looking to download their flight schedules or view regulations. Approximately two years ago, we saw a trend as more and more employees logged onto the portal from their mobile devices, with the share of those who use Smartphones or tablets for job-related tasks constantly on the rise," says Alexander Beley, Aeronavigator Chief Commercial Officer.

The company decided to develop mobile apps to cover various aspects of airline operations and optimize them for mobile devices. Aeronavigator employs over 25 top-class professionals. Development of business processes is entrusted to engineers with appropriate academic and practical aviation backgrounds. Programming is handled by in-house experts and partly outsourced.
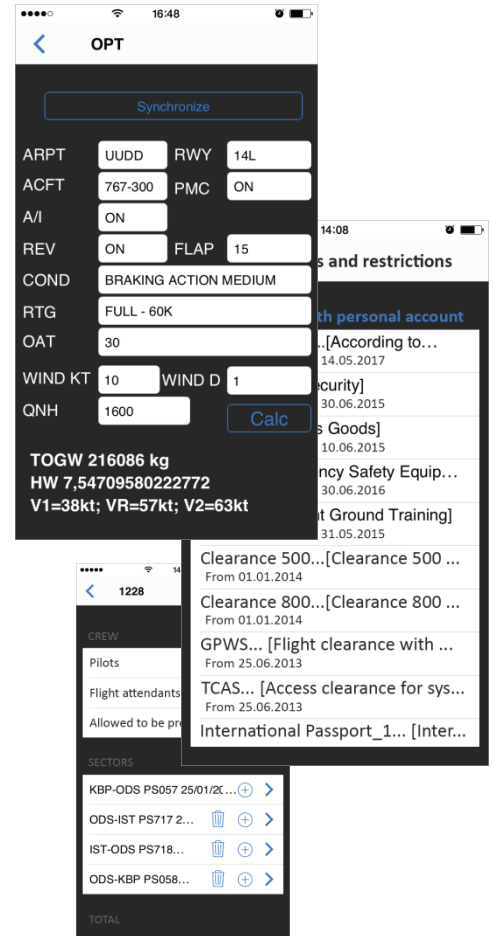
Before developing the mobile apps, the company searched for the most optimal programming environment. Delphi is the preferred programming language for the Aeronavigator team.

"After attending a number of conferences staged by Embarcadero in St. Petersburg and elsewhere in Russia, we opted for Delphi available in version XE5 at the time. We really like the fact that this product makes it possible to create native applications for various mobile operating systems, which is important in the context of using mobile devices in offline mode," says Alexander Beley.

After about six months of development, the company released native apps for Windows and Android with the help of Delphi.
The company eventually renewed its Delphi licenses, which made it possible to create app versions for iOS in the shortest possible time. Aeronavigator applications are currently used by such airlines as ORENAIR, Urals Airlines, International Airlines of Ukraine, NordStar, to name just a few.

MOBILE APPS

The first app, Meridian.Crew, is intended for flight crews. Crew members and flight attendants can use it to:
- View the schedule of flights and off-duty time as well as to look up the identities of flight and cabin crews for each flight
- Monitor their clearance levels and restrictions, schedules of inspections and qualification tests
- Download and read regulations and corporate documents
- Get briefed ahead of each flight
- Generate a flight safety report and include photos

Meridian.Crew was first released as a Windows application and subsequently as an app for Android mobile devices. In June 2014, the app was introduced for Apple iOS mobile devices.

The main task of the Meridian.Crew app is to facilitate the transition from paper-based flight portfolios to e-portfolios. Now, instead of lugging heavy paper portfolios with navigation charts and other essential flight documents that can weigh as much as 15 kg each, pilots carry a compact mobile device containing an electronic portfolio. All e-portfolio data is updated when the user logs into the app, which significantly simplifies the entire process for the crew.

All app data is saved for offline use, enabling the pilot to review documents and start processing flight information after the plane leaves the ground.

The second app is called Meridian.OPT (OPT stands for "offline pilot tool"). It is designed to help the pilot calculate the takeoff and landing parameters of the aircraft. It stores a database of pre-calculated values of takeoff and landing parameters. After keying in the current values of the aircraft weight, runway dimensions, weather conditions, and other parameters, the crew receives data needed to make calculations for a trouble-free takeoff and landing. The app also stores online documents needed during flights.

The Meridian.Cabin Crew app is designed to automate the work processes of flight attendants and allows for the conversion of a fair share of paper documents into electronic form in addition to considerably simplifying document processing. The app helps to ensure flight safety. For example, when a passenger chair gets broken in the cabin, all the flight attendant needs to do is type in the relevant information, and the ground service crew will be ready to fix it as soon as the plane lands in its home airport.
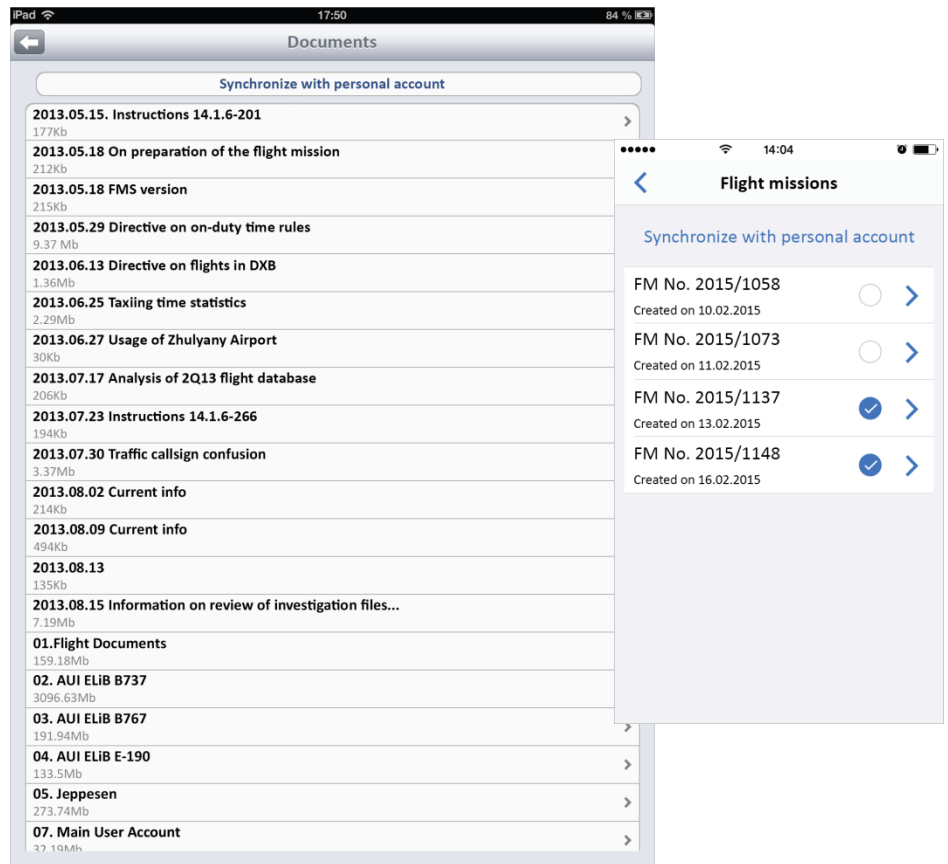
For security reasons, all apps encrypt data before transmission and require two-factor user authentication. They can also be used in offline mode. In terms of flight documents, the e-portfolios of the captain and co-pilot are identical to guarantee that data remains accessible when one of the mobile devices malfunctions.

Aeronavigator apps are special in that they use flight documents based on a custom-designed XML format that allows controlling data input in specific containers as well as performing simple resultant calculations based on data input from the pilots. As a result, after downloading a standard mobile app from the official AppStore or Google Play, an airline employee can use his or her mobile device to view flight missions and documents approved and adopted by the airline.

FUTURE OUTLOOK

Following the release of the new version of Delphi, Aeronavigator has started migrating the existing mobile apps to the 64-bit platform and is also preparing to release a new application for ground services at airports — along with supervisors and airline representatives.

"The aviation industry leads the innovation curve when it comes to using mobile and wireless technologies. Modern planes have turned into flying computers capable of exchanging data by means of wireless technology. We hope that the mobile devices in the hands of pilots will start exchanging vital flight information with the onboard computer in the near future. This will become a new milestone in automation of the aviation industry by simplifying the process for pilots and making flights safer," said Alexander Beley.