Electronic flight bags built with Microsoft technology

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Microsoft has history in the airline industry, and our vision for the EFB is an exciting leap forward. Learn about our strategy in this white paper. Then, contact us to learn how you can partner with Microsoft to take advantage of our strategy in your organization.
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The landscape is changing for airlines, and nowhere is this truer than in the cockpit. Airlines want to improve pilot efficiency by enabling better experiences and reducing complexity. Improvements to pilot collaboration with air traffic control, ground crews, and other pilots is a priority. Also important is lowering fuel costs, reducing printing costs, and extending engine life. Driving these requirements is the economy, of course, but also innovations in cloud and mobile technologies.

The electronic flight bag, or EFB, promises to deliver these requirements. Enterprise-grade mobile devices can replace heavy flight bags and unwieldy computers. Pilots can use a single device to plan, file, and fly their aircraft. The EFB is the information hub among the pilot, aircraft, airline, and operations. In addition, airlines can make Microsoft productivity apps (e.g., Microsoft Office) and corporate apps (e.g., training, scheduling) available to flight crews in their EFBs.

Our solution for the EFB is not just about the device, however. Rather, it is a strategy to modernize the pilot’s job function and provide comprehensive flight management. It builds on existing infrastructure investments—identity management, device management, connectivity, and office productivity—to power your move to the EFB. Helping you to integrate, secure, and manage your infrastructure is a key part of our vision, but our strategy also includes an ecosystem of partners that deliver even more flight-management capabilities to our platforms.

Microsoft has history in the airline industry, and our vision for the EFB is an exciting leap forward. Learn about our strategy in this white paper. Then, contact us to learn how you can partner with Microsoft to take advantage of our strategy in your organization.
Replacing heavy flight bags with EFBs can reduce pilot injuries, fuel consumption, printing costs, and the airline’s carbon footprint. Providing pilots, flight crews, and airline personnel a single set of credentials reduces password fatigue and help desk calls to reset passwords.

Reducing clutter can increase pilot effectiveness by providing a paperless cockpit and enhance safety by reducing human error. Making data and reference content available in real time can improve pilot productivity and effectiveness.

Managing and monitoring EFBs remotely helps to ensure that they are always up to date, secure, and compliant with the airline’s IT policies. Enabling seamless collaboration among pilots, their crews, and airline personnel improves communication and reduces delays.

Using EFBs to calculate accurate takeoff thrust solutions helps to optimize every takeoff and extend engine life. Delivering manual, chart, and plate updates automatically, instead of maintaining printed binders, can streamline operations.

Integrating data, systems, and content securely can provide more opportunities to enhance the business and improve operations.
**BLUE YONDER AIRLINES**

Paul West is a pilot for Blue Yonder Airlines, which has recently started using EFBs. Prior to Paul’s flight, he uses his EFB to attend a preflight briefing by collaborating remotely with his crew and other airline personnel. The airline delivers the flight’s paperwork directly to Paul’s EFB. In addition, he gets manual, chart, and plate updates automatically, providing him near–real-time access to the latest data.

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**PREFLIGHT //** After Paul signs in at the airport, he heads down to the tarmac to check his aircraft. Of course, he uses his EFB to check the aircraft’s logbook and record his own notes. Onboard the aircraft, Paul takes his seat and builds his nest—an easier process with his EFB because there is less clutter to lay out around him. Instead, he mounts his EFB to the cockpit docking station and signs in to it.

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**PREFLIGHT //** Paul then selects the required charts, and he checks the weather. He can annotate the charts, and he can even display real-time weather data side by side with them. Next, he files his flight plan with the Flight Management System (FMS) and uses his EFB to accurately calculate a takeoff thrust solution, saving fuel and extending engine life. Once on the taxiway, Paul uses his EFB for better awareness of his and other aircrafts’ positions.
FLIGHT // During his flight, Paul can collaborate with ground crews. Of course, he continually receives weather updates on his EFB, and when he gets closer to the destination airport, he receives arrival and connecting gate information for the flight crew and passengers. If Paul encounters an anomaly during his flight, he is able to quickly look up emergency procedures on his EFB rather than trying to locate them in a binder.

POST-FLIGHT // On approach, Paul is able to quickly see the airport plate on his EFB, make a last-minute check of weather conditions, and guide the aircraft in for a safe landing. After landing, he uses his EFB to tidy up by submitting his flight report and updating the logbook, minimizing delays caused by filing and waiting for paperwork.
Microsoft offers a long-term strategy for your pilots. The Windows platform is built for mobility, productivity, and security—important pillars for pilots. Office helps them collaborate, with strong integration into our mobile and cloud services.

Not only do we understand the challenges facing modern pilots, but we also understand the complexity around managing mobile and cloud-connected devices. Our technology connects your EFBs with your systems, data, and content. We are leaders in this space. We also offer device management, particularly cloud-based management of mobile devices, to help keep them up to date, secure, and compliant with your IT policies. Of course, security is at the core of everything we build.

Microsoft and our partner ecosystem offer flexible solutions that meet your pilot and IT requirements while leveraging your existing infrastructure investments. We enable airlines to innovate faster and take advantage of emerging trends.
**CHOICE**

Microsoft understands the importance of making technical choices that are right for the organization. We are committed to offering airlines the greatest flexibility possible while providing them the ability to secure, manage, and govern their investments and assets.

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**WE ARE COMMITTED TO THE AIRLINE INDUSTRY**

Microsoft and its partners provide solutions from the cockpit to the cabin, providing enhanced capabilities and experiences to the pilots, crew, and passengers.

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**INNOVATION**

Our breadth of experience enables the extensive choices we offer. Few companies in the world can deliver as broad an array of services and capabilities. We lead the industry in research and development, and we invest in integrated and continuous innovation to ensure that our customers have ongoing access to the most innovative technology.

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**RELATIONSHIP**

Microsoft can help airlines control costs, improve productivity, and accelerate agility. We can minimize deployment and adoption risk through a full range of services. Our ability to cover the full life cycle is a valuable service that can reduce complexity among the airline, its employees, and its partner businesses.
When it comes to improving flight operations and providing customers with an even better quality of service, an ever-increasing number of airlines rely on innovations from Microsoft. We are proud of the fact that the biggest carrier in Austria, Austrian Airlines, opted to use Surface Pro 3 and Windows 8.1 to modernize its operations.

Alexander Lenhart // Windows Business Group // Microsoft Austria
Microsoft has a variety of experienced original equipment manufacturer (OEM) partners that can deliver Windows 8.1 devices for EFBs. Because Windows 8.1 is common to all of them, they share traits that make them ideal as EFBs.

Our ecosystem of OEM partners—including Dell, HP, Lenovo, and Panasonic—offers Federal Aviation Administration–approved tablets. These devices provide world-class modern designs, low weights, instant-on capabilities, and extended battery lives. Importantly, our partners build these tablets for commercial use, so airlines can deliver a resilient platform throughout their device life cycles.

- Pilots can display modern apps side by side (e.g., display a chart on the left side of the screen and current weather conditions on the right side).
- Flexible input methods allow pilots to use their devices the way they want. Use digital pens to annotate charts. Touch input streamlines how pilots use EFBs.
- Devices running Windows 8.1 offer exceptional performance, enhancing the pilot’s experience and leading to higher satisfaction.
- Learning and using EFBs running Windows 8.1 are easy. It has the user interface and features that pilots already know well (e.g., File Explorer, etc.).
- Windows 8.1 devices support both desktop and modern (Windows Store) apps, so airlines can continue to support their existing FMSs but also deploy modern apps.
- Multiple user profiles help to keep users’ data separate when sharing their device with multiple people (e.g., captain and first officer). Airlines can also use profiles to separate work data from personal.
Most airlines have already invested in infrastructure to support Windows (e.g., Active Directory and System Center). They can use the same processes and tools to engineer, test, deploy, and operate EFBs running Windows 8.1.

Airlines can reduce requirements for multivendor management solutions because everything is built in to Windows 8.1 with AD DS, Microsoft System Center products, and Intune. For example, they can manage compliance, policy, malware protection, updates, and app deployment by using a single unified management solution.

Devices running Windows 8.1 provide USB ports, enabling airlines to continue supporting their existing investments in devices such as printers and scanners.

Apps that run on the Windows 7 operating system will run on Windows 8, reducing the cost of testing existing apps and procuring new apps.

Windows 8.1 delivers enterprise-grade security with improved data protection, new authentication options, and malware defense. Airlines can manage security and compliance by using Group Policy, System Center, and Intune.
Microsoft Intune

By using Intune, airlines can manage mobile devices—including Windows, Android, and iOS devices—anywhere without requiring that they connect to the network. Airlines can apply updates, deploy apps, protect against malware, manage compliance, and report on the inventory and configurations of their EFB devices. Airlines can also wipe corporate data from devices if they are lost or stolen. Using Intune as a stand-alone system requires no additional infrastructure.

Microsoft Azure Active Directory Premium

Azure AD Premium enables identity and access management from the cloud, which synchronizes with your local Active Directory domain to provide a hybrid identity. It provides users a single identity that they use to authenticate with all of their corporate services, including Active Directory Domain Services (AD DS), Microsoft Office 365, and Intune. Important features include multi-factor authentication (MFA), self-service password reset, advanced security alerts.

Azure Rights Management

Azure Rights Management can help protect corporate data from unauthorized access. In addition, it also helps you control how that information is used (e.g., printed, viewed, forwarded). Azure Rights Management is similar to NTFS file permissions, except that the permissions stay with the files regardless of their location. Airlines remain in control of their content even after it leaves their network.

Microsoft System Center Configuration Manager

Airlines can integrate Intune with Configuration Manager to take advantage of their existing management infrastructure. They can use one pane of glass to manage all of their devices.
Microsoft is developing a connected aircraft strategy that combines data management and communication capabilities to deliver advanced intelligence and control in support of airline operations and performance. As part of our connected aircraft strategy, we have collaborated with leaders in cockpit technology infrastructure to facilitate seamless integration with on-board systems. Industry leaders with which we have collaborated on next-generation productivity solutions include:

- Honeywell
- Rockwell Collins
- United Technologies

Our partner ecosystem offers many infrastructure leaders.
Microsoft information storage and analytics services support our EFB vision.

- **AZURE MACHINE LEARNING** // With machine learning, airlines can mine historical data to predict future trends or behavior. Azure Machine Learning combines new analytics tools, powerful algorithms, and years of Microsoft machine learning research into a simple, easy-to-use cloud service.

- **MICROSOFT SQL SERVER ANALYSIS SERVICES** // SQL Server Analysis Services provides online analytical processing and data-mining functionality for business intelligence (BI) applications. By using the SQL Server Analysis Services platform, airlines can build high-performance analytical models that they can use for interactive data analysis, reporting, and visualization.

- **POWER BI** // The Power BI cloud service works together with Microsoft Excel to provide a complete self-service analytics solution. By using Excel to create reports and Power BI for Office 365 to share them, everyone at the airline has a powerful new way to work with data.

**SECURITY IS A FUNDAMENTAL**

At Microsoft, security is a fundamental. We understand its impact on mobility in the airline space. Security threats can be hazardous for today’s airlines, and those deploying EFBs face challenges:

- Airlines need to protect against unauthorized use of their EFBs with modern access control, such as MFA, that deter theft and prevent unauthorized access.

- Airlines deploy pilot and crew tablets containing highly specialized apps and sensitive data. Unauthorized access can disclose that data.

- Configuring EFBs for multiple users can create security vulnerabilities. For example, if crewmembers share a device or a pilot has separate work and personal profiles on the device, profiles might have unauthorized access to another profile’s data.

To address these and other security challenges, we made security a key investment in Windows 8.1. We delivered exciting new capabilities that enhance our end-to-end security offerings. Securing devices and their data and giving airlines the management controls they need, is easier than ever.
Microsoft works extensively with the airline industry to build a comprehensive ecosystem. Our software partners offer a range of solutions for Windows 8.1.

**AIRBUS**

Airbus apps, such as Fly Smart, are available as desktop apps. Microsoft is working with Airbus to create Windows 8.1 modern apps.

**BOEING**

Boeing has several desktop apps, such as OPT. Microsoft is working with Boeing to create Windows 8.1 modern apps.

**JEPPESEN**

Flight Deck Pro is Jeppesen’s premier charting app available for Windows 8.1. It is available as a modern app.

**LUFTHANSA TECHNIK**

The mRoute charting app and LiDO app portfolio are available as desktop and modern Windows 8.1 apps.

**NAVTEQ**

The eCharts, iCharts, and EFB apps are available as desktop apps. Microsoft is working with NavTech to create Windows 8.1 modern apps.

**PACE**

PACE develops a range of innovative software solutions for the aviation and aerospace industries. PACE develops specifically for Windows.
CONNECTING THE EFB TO OFFICE SYSTEMS

OFFICE 365 // Airlines can give pilots and crews the best possible productivity experience on their devices by subscribing to Office 365. They can access required resources anywhere at any time.

CONFIGURATION MANAGER AND INTUNE // Using Intune with Configuration Manager streamlines management of pilot and crew devices, which can be almost anywhere in the world at any time.

AZURE AD PREMIUM // Azure AD Premium provides a hybrid identity solution that gives pilots and crews one account for all of the devices and resources they use.

AZURE RIGHTS MANAGEMENT // Airlines can protect confidential data and resources by using Azure Rights Management, especially important since pilots and crews are highly mobile.
Example of EFB connectivity to aircraft systems
To start a conversation about your EFB requirements, contact us at digitalairline@microsoft.com. To learn more about our airline solutions, see:


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