

Much more than a new EFB

Wolfgang Sperber, Administrator EFB and Operations, AeroLogic and Jürgen Gläser, Product Manager, T&A SYSTEME report on the implementation of iPads as supportive devices for Pilots at AeroLogic



THE STATUS QUO ANTI

AS A NEW startup cargo airline, AeroLogic decided, at an early stage during the build-up phase, to implement a class1 EFB in 2008 prior to its first commercial flight. A 15" HP Windows Laptop based solution was selected using the T&A designed Logipad authoring and management system that had already been in use for some years with a number of German airlines.

This Laptop device was intended to serve not only as a classic EFB but also it had to support a number of additional tasks:

- Paperless Document Management;
- Learning and Training supplement;
- Communication device (e-mail);
- Performance calculation;
- Reporting System;
- Personal Computer.

This is why Laptops were distributed to each individual pilot as a personally dedicated device rather than using aircraft based computers. This 'AeroBook', as it was called, had been in operation for three years, when ageing hardware started to require increasing maintenance efforts and a growing number of failures could no longer be ignored. Additionally, the older CPU processor speed and hard disks no longer met the performance required for the growing data volume and application complexity that had been developed in the meantime. The same problem applied to the server architecture supporting the system, which was also ageing with gradually declining performance. The computers were perceived to be slow and uncomfortable to handle. Finally they were considered too heavy and large to be carried around. The conclusion was that it had to be accepted that a replacement would need to be distributed during the fourth year of operation.

REPLACEMENT OPTIONS

One possible replacement option was another Laptop Computer, slightly smaller (14") and lighter in weight, and estimated to cost about €1200-1400 euros per unit including the license cost for standard Microsoft software. Against this, the initial purchase cost for an iPad including all the required apps was calculated at about €800. Furthermore, the expected maintenance cost is expected to be much less than Windows based hardware would require. And, very importantly, the iPad is significantly lighter, smaller and slimmer, much more ergonomic to handle and lightning-fast, featuring a better display resolution and a longer battery runtime.

AeroLogic made the decision to opt for the iPad at a very early stage (during the first half of 2011) when most suppliers were still investigating and developing options for iPads. Not all potentials and abilities were clear to the airlines at that time. But seeing the

potential of the iPad-device, Aerologic were soon able to envisage it as their future EFB. The ease of handling, speed of accessing information and, ultimately, the overall usability compared to any Windows based device was far better than previously experienced. Therefore Aerologic decided, even while it was still unclear how many things would work in the new technology, to select and implement an iPad based EFB.

The goal from the beginning was to provide a full EFB on the iPad as it was intended to replace the Windows based Class-I EFB laptop. Therefore it was not an option to simply concentrate on documentation or Charts: the iPad EFB for Aerologic had to deliver documentation, charting, reporting, training, briefing and performance calculations, just as the previous device had done, making it a complex and time consuming project.

THE IPAD DEVELOPMENT PROCESS

During the feasibility study, all aspects relating to the intended purpose were evaluated and solutions had to be found by either having a suitable IOs compatible App or by providing some alternate means. Many of the Apps available today, were still under development and most providers were not in a position to commit to a delivery date. Aerologic finally summarized the following situation:

Application Evaluation: EFB migration to iPad			
Operation	Windows Application	I-Pad™ Application	Workaround
Management	Logipad EFB management	New Logipad™ App	
Charting	LIDO Airport Charts	LIDO™ I-Route Manual ProApp	
Charting	LIDO Enroute Charts	LIDO™ I-Enroute App	not yet released/certified
Training	Pelesys CBT	Pelesys™ CBT App	
Documentation	Adobe reader ofPDF Docs	Logipad™ App	
Documentation	Power Point for ppts	<u>no solution to support animations</u>	convert ppts to pdfs
Performance	EFRAS™ Performance	<u>no solution</u>	access EFRAS™ through RDP
Pre-Flight	Access to Netline Duty roster	through VPN and RDP	unsolved printing problem.
Communication	Outlook E-Mail	I-Pad E-Mail	
eReporting	MS-Info Path reporting forms	Logipad™ reporting forms	
Training	Tutorial videos	converted MP4 Videos	
Training	Boeing/Alteon™ CBTs	<u>no solution</u>	awaiting re-engineered CBTs

Figure 1

Based on good experiences with all suppliers of the Windows based environment, discussions and evaluations to move everything to the iPad were started with the same suppliers, to ask them to provide that service on iPad.

DEVELOPMENT OF THE NEW EFB MANAGEMENT LOGIPAD APP

Once the feasibility and business case was confirmed, positive, suitable arrangements were made with the established service provider T&A SYSTEME to develop a new authoring and management App for the iPad. As a launch customer, particularly close coordination had to be maintained between Aerologic and T&A throughout the development process. Those discussions had already started in the early stages of the project, to technically evaluate and define the solution components to be provided. It was the goal that Logipad should retain the overall framework, to provide and handle the management and data of all devices.

The new system had to be hardware independent, since it had to support both, the data on iPads and the Aircraft Books, especially to provide a backup, offline ability for performance calculation. It also had to be very flexible and configurable to meet various requirements, and to cover the areas of documentation, eReporting, application and device management as well as overall synchronization of content. Different user groups are authorized to receive different information (e.g. TRE need training and examination information not accessible to line pilots) therefore the entire system had to support role-based distribution of information.

The topic of eReporting was particularly important to Aerologic as, with the Laptop based solution, for the past three years, dedicated procedures had already been established for occurrence reporting. Those procedures had to be carried over to the iPad. Therefore it was vital to keep the existing ground process unchanged and only to change the front-end of reporting on the iPad.

After a period of technical evaluation, T&A came back with an overall proposal for the management solution, and a detailed demonstration of the features and functionality to be provided.

“AeroBook’, as it was called, had been in operation for three years, when ageing hardware started to require increasing maintenance efforts and a growing number of failures could no longer be ignored. . .”



Figure 2

The key requirements in Aerologic’s selection process were the ability to provide one overall framework to manage all devices, from EFB content to device management. Logipad was able to achieve this; plus, no additional mobile device management (MDM) solution had to be selected. Every type of content, even from third parties, can easily be distributed via standardized ground procedures, which gives us full control on testing, releasing and tracking updated revisions via compliance reports.

Some of the important achievements of the new system included enhancements to the previous laptop based environment such as... document confirmation, tracking pilots’ confirmations regarding revisions via the Compliance report, and the ability for overall role-based distribution of information. This gives Aerologic a lot of flexibility, to dynamically deliver information to just a small group of users, without creating any additional complex procedures to setup.

CHALLENGES

CHARTING: The LIDO approach charting software had been available for months and could be tested in advance by using the privately owned iPads of interested pilots participating in the tests. The LIDO I-enroute App is expected to be delivered as a beta test version by October 2012. It will then be tested based on an existing enterprise agreement, before it can be implemented for operational use by approximately February 2013.

TRAINING: The computer based training (CBT) learning management system (LMS) required massive development by Pelesys to get the solution to operate with iPad. Delivering training onto the iPad, was another key element and requirement, to be able to displace the current laptop based solution. Therefore Pelesys was also involved by Aerologic in the overall project in a very early stage. All CBTs originally are based on Flash, which is not supported on the iPad. Pelesys had to find a solution for that. There are generally Apps available on the

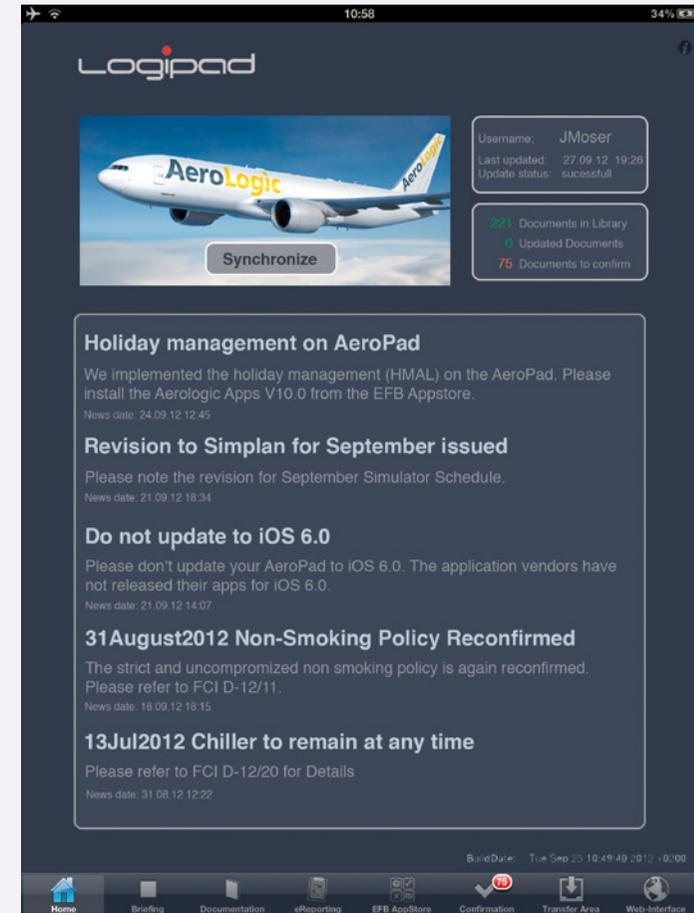
“Knowing we wanted to replace the existing Class-I based laptop device, preparation and planning were far more important, because the iPad had to work as a full business tool from day one of the roll-out. Therefore AeroLogic had an extensive user acceptance testing (UAT) period...”

market to get Flash streamed on the iPad, but those kind of solutions were unsuitable for AeroLogic, especially as they require permanent online connectivity

But after several months of development Pelesys was able to provide their LMS solution onto the iPad, which was another important milestone for the overall AeroLogic project. It gave AeroLogic the opportunity to provide all existing Windows based CBT courses onto the iPad as well, which was the last missing piece at the end, to get everything prepared for Roll-out and distribution.

AIRCRAFT PERFORMANCE CALCULATION: The EFRAS performance tool is based on the Boeing Security Certification and Authorization Package (SCAP) calculation module that was developed using an ancient coding language and is currently not available in an IOs compatible version. It is rumored that a re-engineered core calculation engine will be available by end of 2012, when reprogramming of the surrounding graphic user interface (GUI) and user customized gadgets can commence. It is likely that we will not have an iPad App for performance calculation ready for implementation before March 2013 or even later.

The workaround consists of two components: one is an online remote desktop protocol (RDP) software connecting the iPad through a virtual private network (VPN) to the in-house server, where the Performance software is accessible. The other is an aircraft based, backup Laptop (referred to as the AircraftBook), featuring the EFRAS software. The first one requires internet connectivity for the iPad, which is not guaranteed worldwide, as a result of inhibited international Universal Mobile Telephone System (UMTS) roaming, for cost reasons. The second requires increased administrative efforts for regular data updates and battery recharging.



REMOTE ACCESS TO DATA

Alteon CBTs often use flash animation, that doesn't run on an apple. Similar to the Performance Software it was installed on an in-house windows server, accessible by the iPad through a VPN and the RDP software. Access to the Netline Crew Link, for Duty rosters and other crew services must also be granted using RDP. The current problem is that the Roster-pdf-file cannot be stored on the iPad, nor can it be printed. A possibility is still under development to have the duty roster sent to each individual crew member by email at the click of a mouse. Just recently, a suitable App was published, that might solve the problem

IMPLEMENTATION

Implementation of the overall solutions commenced at the beginning of 2012 based on the development and implementation of Logipad as management solution. That core setup was finalized by T&A in April, so that AeroLogic was able to concentrate and focus on providing and structuring the information and preparing everything for the operational usage. The first core challenge was to establish and structure the document library in the most optimized and natural way for the Pilots. Knowing we

wanted to replace the existing Class-I based laptop device, preparation and planning were far more important, because the iPad had to work as a full business tool from day one of the roll-out. Therefore Aerologic had an extensive user acceptance testing (UAT) period of about 12 weeks involving 15 Pilots from all levels of technical knowledge. We were greatly surprised with the enthusiasm and excitement of all test pilots from the very beginning. All the pilots involved performed active tests, gave valuable feedback on usability and generated ideas on how to optimize the overall system. We've never received such positive and frequent feedback on any user acceptance test before, an early indication of the kind of success that such a project, based on iPad, could generate. After that UAT period, getting all training prepared for the iPad was the last step required, before the final roll-out could start.

CONCLUSION

Crew members benefit from the lower weight, faster and very comfortable use, less failures and, last but not least, from the smart positive image of the iPads. In order to extend the use of iPads as far as possible it was decided to wait for the most recent iPad 3 to be available.

Pilots are allowed to use their iPad and internet access for private purposes, although use of the iCloud had to be inhibited for data security reasons. Unfortunately the iPad does not constitute a full surrogate for the previous personal computer. Many users had to purchase a private Laptop to handle their files and private affairs. Some few dedicated pilots holding an administrative function in the company (management pilots, safety pilots, technical pilot etc.) now have to hold two separate devices, the iPad and a corporate laptop to do their duties.

The development and optimization of the iPad solution is an ongoing process, to further provide access to briefing information, connect it with in-house warehouse systems and, once performance apps are available, to remove the aircraft laptop.

The company benefits from the advantage of less hardware and maintenance costs, better e-mail connection to crew members, use of the push message function, less weight on the aircraft and better motivation for crews feeling appreciated by management and well perceived in society. We are very confident that we will be able to overcome the minor shortcomings within a very short period of time as new app developments for more and more windows files quickly become available in the app store. The iPad is becoming increasingly common for business applications, not only in the aviation sector, and a comfortable solution for the ppt. or the flash animation problem may be available by 'tomorrow'. ■

AeroLogic

WOLFGANG SPERBER



ADMINISTRATOR EFB AND OPERATIONS, AEROLOGIC
Wolfgang Sperber started his career as a Flight Operations Officer in the German Air Force in 1982. Following that he studied in Aeronautical Engineering and took up a position as an Air

Traffic Control Officer in 1985. In 1990 Wolfgang joined LTU-Süd Munich as Navigation and Flight Planning Officer. Then in 1993 he moved to LTU Düsseldorf heading Navigation and Performance, later – Dispatch and Documentation Departments. In 2009 he joined the Flugwerkzeuge Aviation Software (Flight Planning Software) team in Vienna as a Head of Aeronautical Data Services. Finally, in 2008 he joined the Startup Airline, AeroLogic, in Leipzig as the Administrator of Flight Operations. His present responsibilities in the company include authorization issues, EFB, NAV-Data, etc.

Logipad

JÜRGEN GLÄSER

PRODUCT MANAGER, T&A SYSTEME



Jürgen Gläser started his career in 1999 as IT networking and Systems Engineer for the German IT company Bechtle IT. In 2001 he became Systems Engineer at another German IT company, before joining

T&A Systeme in 2003, initially as an IT Consultant realizing medium to large sized IT projects primarily in server-client based communication, groupware and desktop management tools. In 2006 he became IT Project Manager for implementation and setup of Class-I based EFB at an airline from UAE based on the Logipad solution. In the following years he was responsible for the EFB implementation at five different airlines, in addition to standardizing and optimizing the overall solution. He became Product Manager for Logipad in 2009, responsible for defining product lifecycle, development roadmap, conference participations, sales and EFB workshops.

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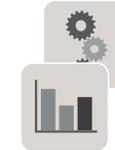
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Logipad^{aero}

EFB Management

MANAGEMENT PLATFORM

- Administration
- Release Management
- Compliance Reporting



SOLUTION FEATURES

- Document Management
- Device Management
- eReporting
- EFB Appstore
- Briefing



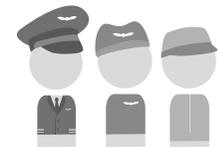
DEVICE OPTIONS

- Class-I
Laptop Devices
Tablet Devices
iPad
- Class-II



USAGE OPTIONS

- Pilots
- Cabin
- Maintenance



Contact us: info@logipad.aero