aircraft IT OPERATIONS

V3.3 • JULY/AUGUST 2014

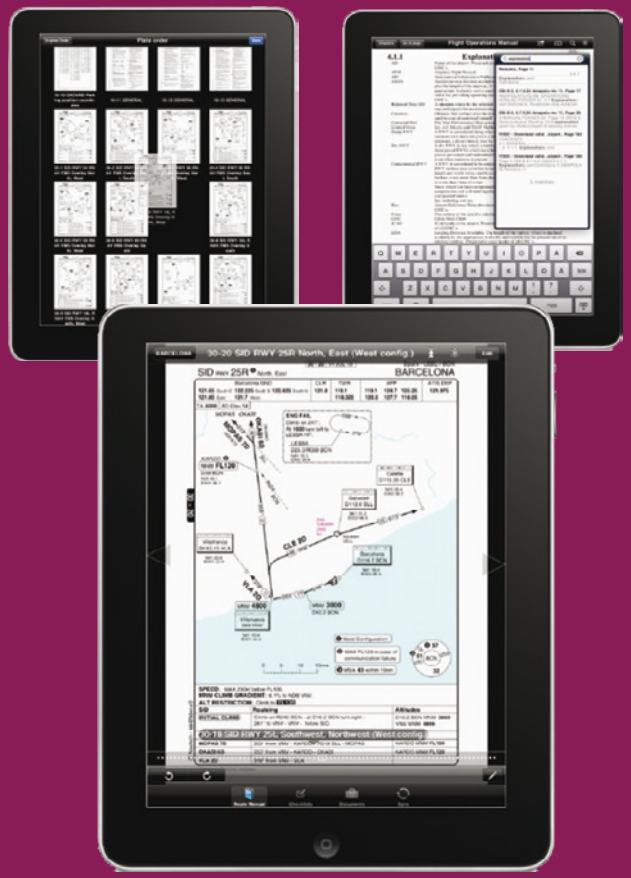
iPad vs Surface
CHOOSING THE RIGHT TABLET FOR YOUR EFB

EFB CONNECTIVITY
Norwegian Case Study

EFB AND XML
TUIfly Case Study

Case Studies: Norwegian and TUIfly **White Paper:** Allied Pilots Association (APA) **Column:** Paul Saunders
News: The latest developments and achievements **PLUS:** Webinars past and upcoming, Operations Software Directory, Latest Vacancies

Every Airline Operates Differently



Navtech realizes that each airline's business case for EFB will require a unique combination of hardware, software, applications, back-office tools, and business process adjustment. With this in mind, Navtech partners with each customer and their EFB suppliers of choice to provide the best ROI possible.

Discover more about Navtech TODC and Navtech Charts for EFB at www.navtech.aero

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Editor's comment

Aircraft IT Operations: we can't just change delivery systems and devices; it's also important to examine the processes and infrastructure that support them.

Man regularly comes up with great ideas and then realizes that, in order to get the best from this new capability, we first need to consider a whole range of other factors. On the roads, it might be the electric car; a great idea to reduce use of carbon fuels if… if we can make sure that the electricity isn't generated by even more carbon fuel or if we can source an efficient battery that doesn't do more harm than the old power source and if we can make sure that there are enough charging points around the road network to ensure that cars don't run out of power.

A similar situation occurs with technology solutions such as EFBs. We know what the benefits will be if… if the units are secure or if the operating system (OS) does what we want and is compatible with the main corporate OS and if appropriate connectivity can be secured to enable the full power of the EFB to be deployed and leveraged for other advantages within the business. It doesn't make EFBs bad, far from it: but it does mean that embracing them requires more than just the shiny new devices in the cockpit.

In this issue we look at how one airline has tackled the subject of EFB connectivity and used the solution to improve a range of capabilities. We also look at comparing two main contenders as a basis for the really fundamental matter of how to choose a device from a growing market. And we also look at the challenge of ensuring that the new device (whichever one is chosen) is always up to date with content and able to 'talk' with the rest of the system.

And, of course, no Aircraft IT Operations would be complete without a look into the World according to IT and to Paul Saunders: this time it's net neutrality under Paul's forensic spotlight. Plus we bring details of webinars to come and available in recorded form as well a new way to access just the recorded webinars you need for the purpose on your desk today.

Aircraft IT Operations: not just the things you need but how to find them, how to choose them and how to support them.

Ed Haskey
Editor

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AIRCRAFT COMMERCE

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Flatirons Solutions continues to progress on scope and content of solutions offered

FLATIRONS SOLUTIONS ACQUIRES AEROSPACE AND DEFENSE SOFTWARE LEADER CORENA

FLATIRONS Solutions announced in late April 2014 that it has acquired CORENA, a European-headquartered software development house specializing in S1000D-based solutions for the aerospace, defense, marine, rail, and energy industries.

The acquisition of CORENA is Flatirons Solutions' third acquisition in the past two years, reflecting the company's dedication to expanding the capabilities for specialized CLM solutions that enable more efficient operation of highly regulated, capital-intensive assets where material or labor productivity is a critical factor. Organizations that rely on mission-critical data to design, manufacture, operate, or maintain complex assets — such as civil or military aircraft, trains, ships, power plants and energy equipment — are faced with increasingly complex requirements for creating, delivering, consuming, and optimizing technical content over the product and service lifecycle of these assets and across a highly fractured ecosystem.

These evolving requirements stem from new information standards such as S1000D, a shift from paper-based to electronic documentation systems, and benefits made possible by tablet devices. CORENA and Flatirons Solutions' consistent and on-going R&D investments deliver the innovative solutions to help customers meet these complex requirements with user-friendly solutions.

"The demand for specialized CLM solutions is increasing dramatically," said Toralf Johannessen, CEO of CORENA. "We are excited to come together with Flatirons Solutions to keep pace with increasing functional demands and geographic coverage that respond to constant change and user expectations."

"CORENA and Flatirons Solutions bring together the most recognized and respected experts in content lifecycle management for the aerospace, aviation, and other industries," said Geoffrey Godet, CEO of Flatirons Solutions. "Combined, we serve the world's leading aerospace and defense manufacturers, the largest airline operators, and many defense organizations. With a presence across Asia, Europe, and the Americas, we're pleased to reinforce around-the-clock support for mission-critical customer requirements moving toward Cloud/SaaS-based solutions demanded by today's mobile workforce."

HEAVY LINEUP OF INFORMATION STANDARDS EXPERTS SLATED FOR SAN ANTONIO

IN mid-June 2014, Flatirons Solutions' April 2014 acquisition of European-based CORENA was cited as promising to deliver on the company's unmatched expertise in information standards at the 2014 ATA eBusiness Forum / S1000D User Forum on June 23-25, 2014, in San Antonio, Texas. Flatirons presented six sessions on topics across the event's ATA, S1000D, and demo tracks, ranging from Spec 2300 for flight operations to the relationship of business rules to S1000D and the use of standards for today's mobile solutions. Featured speakers include:

- Svante Ericsson, Senior S1000D Consultant, S1000D Steering Committee Member, Chair of S1000D Learning Standards Harmonization Task Team and New Technology Task Team, Participant in multiple other S1000D Working Groups and Task Teams, Inventor of the BREX concept.
- Tim Larson, Global S1000D Product Owner and Member of the ATA eBusiness Steering Committee, Civil Aviation Working Group, and S1000D Steering Committee.
- Gary Mayer, Chief Architect S1000D, iSpec 2200 and Spec 2300 Specialist, and Member of the ATA Flight Operations Interest Group.
- Paul Saunders, Global Product Manager and Member of the ATA eBusiness Program's Flight Operations Interest Group.

Flatirons acquired European-based CORENA in April 2014, creating the most experienced global team of experts in content lifecycle management (CLM) for the aerospace and aviation, military, shipping, rail, energy, automotive, and related industries. The company was proud to sponsor the 2014 ATA eBusiness Forum / S1000D User Forum and lead discussions on diverse topics that addressed the value of information standards as a cornerstone of an organization's content lifecycle management strategy.

FLATIRONS COMPLETES MERGER INTEGRATION WITH CORENA, INTRODUCES NEW CORENA SUITE

By late June 2014, Flatirons Solutions was able to announce that it had completed its integration with CORENA. As part of the integration, Flatirons has consolidated the TechSight/X suite of products and CORENA's product line into a new CORENA Suite, creating the largest CLM suite available on the market today. The introduction of the CORENA Suite is the company's next step in providing complete and easy-to-find solutions through the broadest CLM coverage available today from a single provider.

The CORENA Suite by Flatirons is the leading CLM solution developed specifically for organizations that rely on mission-critical data to design, manufacture, operate, or maintain complex assets over their product and service lifecycles as well as across multi-echelon business networks. It includes complete CLM solutions for aerospace, aviation, military, rail, and marine customers. The

CORENA Suite also includes stand-alone products that enable the creation, delivery, consumption, and optimization of technical information for capital asset-centric, cash flow-sensitive industries.

"Today's announcement is analogous to an airline achieving single operating certificate as our R&D, solutions management, and business process experts are now aligned to deliver high-value CLM capabilities to our customers across an expanded breath of industries," said Flatirons Chief Solutions Officer JD Sillion. "With the introduction of the CORENA Suite and Flatirons' preconfigured industry solutions, our teams are united on our core mission of Turning Content into Knowledge® to help customers succeed with new products that we believe will exceed [their] expectations in…efficient paperless operations, enhanced regulatory compliance, and high ROI achieved through the adoption of mobile solutions."

Flatirons Vice President of Strategy and Marketing Michael Denis added, "We are excited to move ahead as an integrated company by unveiling new corporate and CORENA Suite brands that highlight our combined 25-year history of innovation and customer successes. The 'orbit' in our new logo represents how we apply content lifecycle management to bridge the gap between product lifecycle and service lifecycle management."

Flatirons is rolling out the new CORENA Suite at the ATA eBusiness Forum / S1000D User Forum in San Antonio and at the MRO and Operations IT Conference in London. Flatirons' CLM experts are giving a number of presentations at both events. They will discuss industry advances in S1000D, iSpec2200, Shipdex, and Spec 2300 flight operations standards as well as address building OEM/OPS/MRO technology networks that enable and improve service lifecycle business network effectiveness. Participants at both events are invited to visit the Flatirons booth to learn more about the CORENA Suite first hand.

Aviaso wins tender to supply Fuel Efficiency software for Europe Airpost

IT was announced in mid-July 2014 that Europe Airpost had signed a contract for the use of the fuel conservation software developed by Aviaso. The Aviaso/Fuel Efficiency solution has been selected by Europe Airpost to support the Paris-based airline in further reducing its fuel consumption and carbon emissions. The Aviaso software is also providing Europe Airpost with automated data collection, integrated data quality routines, and comprehensive reporting, for full compliance with the European Union Emissions Trading System legislation. With the introduction of the Aviaso software, Europe Airpost is taking the next step in implementing its sustainable development strategy that already includes programs such as: fleet modernization, introduction of EFB, optimization of take-off and landing performance, introduction of non-polluting electrical ground power units, etc.

"After the launch of our ECO2 project, that has already reduced our annual fuel consumption by more than 2%, we are ready to take the next step and discover more ways to save fuel." said Philippe Lonnoy, Director of Flight Operations of Europe Airpost. "We were looking for a software solution that not only helps us to accurately monitor our ongoing initiatives but also allows us to discover further fuel savings potential. We started a thorough evaluation process and talked to all major vendors of fuel efficiency and EU-ETS software. Our final choice was Aviaso, since their solution very much convinced us in terms of functionality, ease of use, and flexibility to adjust to our operations and our IT systems. It was also important for us that the software is already in use at several other mid-size and large airlines."

The fuel efficiency software from Aviaso includes more than 100 ready-made analysis reports. These reports allow an airline to thoroughly understand their fuel consumption and to identify potential fuel savings. Furthermore, the Aviaso solution not only identifies the fuel savings, but also helps in really achieving these savings by rigorously monitoring the various fuel savings initiatives for each and every flight. In addition, the software also provides comprehensive reporting to ensure full compliance with the EU Emissions Trading System legislation.

"We are delighted and grateful to have our first French airline customer with Europe Airpost", says Rudolf Christen, CEO of Aviaso. "It will be challenging to further reduce the fuel consumption in an airline like Europe Airpost which is already on a high level of implementing fuel conservation initiatives. Therefore, we are looking forward to deploying our software at Europe Airpost and applying the comprehensive analytical capabilities of the tool to identify additional fuel savings."

SO 9001:2008 certification earned by ifrSKEYES

TOWARDS the end of April 2014, ifrSKEYES was very pleased to announce that it had been awarded the ISO 9001:2008 certificate. AFNOR Certification certifies that the management system implemented by ifrSKEYES, located in Colomiers, France, has been assessed and found to meet the requirements of ISO 9001: 2008 for Aircraft Maintenance and Operations Software Edition and related assistance for Civil and Military Operators, and Aeronautical Maintenance and Services Companies.

DAC International enhances its solutions and collaborates on e-Enabled Aircraft program

DAC INTERNATIONAL SECURES ANAC APPROVAL FOR ITS ADS-B OUT SOLUTION FOR THE SIKORSKY 76 PLATFORM

IN early May 2014 DAC International, a Greenwich AeroGroup company, announced that the Agencia Nacional de Aviacao Civil (ANAC) in Brazil has approved its supplemental type certificate (STC) for the Trig Avionics TT22 transponder with the FreeFlight Systems 1201 WAAS/GPS sensor for ADS-B Out compliance for use with the Sikorsky S-76 A/B/C models.

The TSO-certified 1201 GPS/WAAS Sensor provides position, velocity, and time (PVT) data to integrated navigation systems. Small, lightweight, attractively priced and easily installed, the 1201 supports oceanic and domestic, enroute, terminal, non-precision approach and departure operations and meets ADS-B accuracy requirements worldwide.

Trig's TT22 transponder replaces the non ADS-B transponder and is the smallest and lightest (0.8 lbs) transponder, allowing the unit to fit into the tightest of panel spaces. It is an approved Class 1 transponder which meets the ADS-B functions of DO-260B Class B1S as well as FAA TSO C112c and C166b. The Trig TT22 also meets all equal ETSO requirements in Europe. The STC was previously approved by the United States Federal Aviation Administration in March of this year.

DAC INTERNATIONAL RELEASES SECOND ITUNES APPLICATION

LATER, at the end of May 2014, DAC International announced that Apple® has approved its GDC64 weather application. The newly released weather app provides the iPad user a visual display of weather in the United States and Canada when connected to an HUT XM Receiver through DAC International's GDC64 TAIU. Current display capabilities include U.S. radar, Canadian radar, strikes, shear, tops and satellite imagery.

"This new application will allow operators to see and react to potential weather related issues," said General Manager of DAC International Francisco Hernandez. "The tool provides pilots with improved situational awareness, and affords them a means to plan diversions well ahead of time."

The App, while not designed as a navigational tool, does allow for last known aircraft position display on the map. Users can zoom and pan to display desired map contents. And when displaying the aircraft icon, the map will automatically re-center when the icon reaches the edge of the map. The map is always drawn in the landscape position.

DAC PREVIOUSLY RELEASED ITS FIRST APP, THE GDC64 IN MAY, 2013, WHICH PROVIDES A MEANS TO CONFIGURE THE GDC64.

DAC INTERNATIONAL PARTNERS WITH CATHAY PACIFIC AIRWAYS ON GEN-X E-ENABLING PROGRAM

DAC International announced in early July 2014 that it is collaborating with Cathay Pacific Airways on its e-Enabled Aircraft Program. The Federal Aviation Administration approved the Supplemental Type Certificate for the Cathay Pacific e-Enabled Aircraft Program, and DAC International is providing the Gen-X e-Enabling AID device, selected by Cathay Pacific Airways and Dragonair for their fleet-wide aircraft implementation.

The second generation Gen-X system was specifically developed by DAC International to meet the stringent requirements of the Cathay Pacific program. The system will be installed in the flight deck and cabin to support a wide range of applications including: system interfaces to the aircraft navigation systems, EFB functionality for charts and aircraft documentation, communication system interfaces for text messaging, maintenance support and e-Commerce applications as well as cabin applications for in-flight services.

"We are honored to be part of the team that is implementing the most advanced e-Enabled solution in the airline industry," said General Manager of DAC International Francisco Hernandez. "The Gen-X e-Enabling AID is a very cost effective solution that incorporates the latest processing technology and is designed to support an e-Enabling solution well into the future."

Hernandez added that DAC International has already begun delivering units. The Gen-X e-Enabling AID will be installed on Cathay Pacific Boeing 777, 747/400F/-8F, Airbus A320/1 and A330 aircraft.

ARCONICS HAS A NEW WEBSITE

In mid-July 2014, Arconics announced the launch of their new website which can be checked out at http://www.arconics.com/

Aviation software specialist AvilT celebrates 10 years in business

IN late May 2014 Aviation software specialist, AvilT Ltd celebrated 10 years in business this month and marked this important milestone with the opening of a new office at Dunfermline, Scotland.

The company was founded by David Brown in 2004, following nearly 15 years in the provision of specialised development and IT consultancy services in a range of sectors and AvilT now employs 26 staff across operational bases in Scotland, Australia and the US.

In 2006, AvilT launched its eMan solution for the management of technical manuals associated with aircraft maintenance and service activities and major clients now include Monarch, Virgin Atlantic, Air Berlin Technik and the Royal Canadian Mounted Police (Air Services).

In 2008, AvilT entered into a joint venture with a UK media business for the creation of portable inflight entertainment products under the Bluebox Avionics brand. The venture has seen great success and Bluebox IFE products are currently used by almost 20 airlines including British Airways, Thai Airways, Hawaiian Airlines and Aeromexico. Earlier this year, Bluebox Ai, the iPad-based IFE system, was awarded the highly sought-after prize for 'Best Handheld Inflight Entertainment System'.

David Brown, Chief Executive Officer of AvilT is delighted to be celebrating this anniversary. "It's been a fantastic journey so far and I would never have guessed 10 years ago that AvilT would grow into a profitable business with a truly global footprint. We are so focused on delivering for our clients that we take little time to reflect on what we have achieved. It's been a very exciting first 10 years and I'm sure the next 10 will be equally so." concludes Brown.

airBaltic pilots go green with iPads

LATVIAN airline, airBaltic, has introduced Apple iPads into the pilot's cockpit as a modernization investment, which will provide operational efficiency and will lead to savings on paper and fuel consumption. When making the early July 2014 announcement, Martin Gauss, Chief Executive Officer of airBaltic said: "airBaltic has introduced iPads to pilots, to replace their heavy flight bags, containing paper flight details, manuals, navigation and reference material. This will save about 2 million pages of paper every year, when the project is rolled out completely."

Pilots carry between 10-15 kg of flight details, manuals and reference material in their flight bags. Replacing these with an iPad (so-called electronic flight bag) reduces the burden to just 0.7 kg and the weight reduction saves on fuel. It also means that less space is taken up by paper in the cramped cockpit environment, updating and modifying the reference material is more efficient, and smoother procedures help airBaltic to further improve its industry-leading punctuality record.

Pauls Cālītis, Senior Vice President Flight Operations added: "The electronic flight bag is yet another green initiative that we at airBaltic are undertaking to continue with innovations in our operations and service. We are proud that airBaltic continues to be a leader by being the first airline in the region to modernize their pilots' work processes with the electronic flight bag".

As announced earlier, airBaltic last year launched its AMBER project that helped it to become the first European airline operating green turboprop flights.

SITA meets the needs of airlines and aircraft authorities

SITA AGAIN WINS AFRICAN AIRLINES ASSOCIATION AVIATION ICT SERVICE PROVIDER OF THE YEAR

IN mid-May 2014, the African Airlines Association (AFRAA) named air transport IT specialist, SITA, the Aviation ICT Service Provider of the Year for the second year running. The Aviation Suppliers and Stakeholders Award recognizes excellence in service delivery, innovation and competitiveness among the best service providers to the African aviation industry. SITA was selected ahead of the many other entrants because of its community initiatives and consistent support for the African air transport industry, in addition to providing innovative, cutting-edge technology.

Hani El-Assaad, SITA President, Middle East, India and Africa, said: "SITA operates at the forefront of the air transport industry, and it is clear to us that innovative services and solutions have to be accessible to all markets. It is an honor to be named ICT Service Provider of the Year again by AFRAA. We have been working with African airlines and airports for more than fifty years, improving both their operations and customer service. We provide cost-effective, advanced technology solutions tailored to the unique needs of the business environment in Africa."

SITA TO INTRODUCE ENHANCED AIRCRAFT TRACKING CAPABILITY

SITA, at the heart of the air transport industry being community owned and driven, announced at the beginning of June 2014 that it will introduce an innovative technology solution which will allow airlines to efficiently and cost effectively track their aircraft. The solution, which is currently being evaluated by several airlines for testing, will utilize technology that is already installed in the aircraft to provide advanced tracking capabilities.

The SITA AIRCOM Server Flight Tracker solution will enable interested airlines to track aircraft movement by merging SITA's airline dispatcher center system and airline operations center system (AIRCOM) Server, with its Future Air Navigation System (FANS) ground application, which is available to Air Navigation Service Providers (ANSPs). The FANS system is already installed in many aircraft, so the solution does not call for extensive additional cost or investment by the airlines.

"SITA is 100 percent owned by the air transport community and has worked with its aviation industry partners to define next generation technology for more than 65 years. Pending development, trials and testing, we will be able to bring this advanced aircraft tracking solution to the industry meeting a pressing need," stated Francesco Violante, CEO of SITA. "The strong upside of our innovative solution is that it can be developed quickly and it will only add minimal cost to the airlines as it will utilize existing systems on the aircraft."

The SITA AIRCOM Server Flight Tracker solution will allow end-to-end flight tracking on conditions and parameters the airline sets through their own ADS (Automatic Dependent Surveillance) contract. This in turn will help the airline to react to different aircraft events, including adapting the pace of tracking as appropriate. The solution can be fully managed from the ground and is not dependent on actions from the crew or cockpit as the data is sent automatically after initialization.

Using the new SITA AIRCOM Server Flight Tracker solution, airline flight dispatchers will be alerted to unexpected aircraft movements by using the FANS Automatic Dependent Surveillance – Contract (ADS-C) application to request aircraft position reports across the ANSPs borders. This will avoid any gaps between ANSP tracking of the aircraft and will cover areas where ANSPs do not yet have FANS ground systems. Airlines will also be able to see any unexpected loss of contact between their aircraft and air traffic control FANS ground systems by monitoring their aircraft's use of FANS Air Traffic Services (ATS) Facilities Notification exchanges to log on to and hand off between ANSP FANS ground systems.

The catalyst for developing the solution is the International Civil Aviation Organization (ICAO) Special Meeting on Global Flight Tracking of Aircraft held in May where airlines were encouraged to use existing equipment and procedures to the extent possible to support flight tracking. The meeting resulted in the development of a Task Force led by both ICAO and the International Air Transport Association (IATA) to further evaluate possible solutions to enhance flight tracking. SITA will comply with any mandated solution determined by the Task Force.

Airlines using the new SITA solution can also benefit from the latest Inmarsat proposition for aircraft tracking reports. SITA provides over 150 airlines', flying more than 10,000 aircraft, with communications services for their Aircraft Communications and Reporting Systems (ACARS) cockpit data link systems through its global AIRCOM network. This network consists of 1400 VHF radio stations and links via satellite.

BRAZIL UPGRADES AIR TRAFFIC TECHNOLOGY FOR WORLD CUP AND OLYMPICS

IN the run up to the FIFA World Cup™ in 2014, and the Olympics in 2016, SITA is working with the Comissão de Implantação do Sistema de Controle do Espaço Aéreo (CISCEA) in its drive to upgrade Brazil's air traffic management technology. CISCEA is the body responsible for developing and implementing new technologies for DECEA, the Brazilian Air Navigation Service Provider.

SITA already provides Departure Clearance (DCL) and

Digital-Automatic Terminal Information Service (D-ATIS) datalink services at both Antonio Carlos Jobim International Airport in Rio de Janeiro and São Paulo's GRU Airport. These solutions will now be extended to 23 airports across Brazil.

Major Brigadier Carlos Vuyk de Aquino, President of CISCEA, said at the mid-June 2014 announcement: "Brazil has the busiest airspace in South America and we are very proud to be hosting two of the world's biggest sporting events. We want everyone flying to, from and within Brazil to have smooth and uneventful journeys. It is therefore essential that our air traffic managers have access to the very best technology available.

"This investment is part of SIRIUS, DECEA's major modernization program. A cornerstone of this program is the delivery of datalink services at Brazil's main airports to transform air traffic communications. We have been working with SITA over the past ten years and we are confident that they will deliver exactly what we need."

DCL, using SITA's datalink solution integrated with local systems, streamlines departure control. The pilot requests departure clearance by sending a text message to the control tower and the controller responds, also by datalink. Likewise, using D-ATIS, real-time airport operational and weather information is transmitted to the pilot over datalink. Together DCL and DATIS will reduce overloading of the VHF voice frequency and so improve overall efficiency and safety.

Philip Clinch, SITA Vice President of Aircraft Services, said: "The transmission of data in text format is highly reliable. It reduces workload for both air traffic controllers and pilots by improving the accuracy of their communications. And information can be transmitted at any phase of the flight, in advance of the busy time period of departure and approach."

The project began in December 2013 and is progressing as planned. The technology is being delivered in batches to four airports at a time and will be completed in time for the Olympic Games in 2016.

The early bird catches the worm!

IN mid June 2014, Airline Control Software launched a unique promotion called 'The early bird catches the worm'. The first five airlines which will sign the contract with ACS can take an advantage of 30% price reduction. The first five airlines to sign a contract with ACS will be able to use the software at the discounted fee as long as the agreement is in force. The offer includes all modules produced by ACS and fast implementation.

eOFP; yet another eEnablement solution from aircore systems

FROM CLUE-LESS CHAOS TO CLUTTER-LESS CLARITY

aircore systems GmbH announced in mid-June 2014 that they are finalising the development of their eOFP (electronic Operational Flight Plan) . When creating this solution aircore had in mind the currently often 'messy' information management situation around the operational flight planning process during the flight. Heaps of paper, critical data hidden in less relevant information, uncoordinated information between the Captain and Flight Operations are currently often the case. The eOFP overcomes this. A clear and comprehensive graphic representation of key decision parameters makes it most user-friendly. Amongst the optimization engines offered by the eOFP are two main modules:

1) WAYPOINT MANAGEMENT: MOST RELEVANT INFORMATION JUMPING AT YOU

This solution translates unsightly, multiple printouts of the paper-OFP into an electronic form. It enables information to be presented clearly, flexibly and on demand. For example colour coding allows for an immediate comparison between planned and actual figures. Only the most relevant information – time and fuel progress figures – are visible all the time. Other data, such as weather reports, NOTAMs, or multiple alternate routes, are just a click away. Features like waypoint changes or additions and 'direct-tos' are also available. Starting with 'Actual Take-off Time' the ETOs for every waypoint are calculated automatically. The deviations from these calculated values are indicated and colour coded (red / green). Time and Fuel Checks (TFCs) are also recordable, and the 'Fuel Howgozit' is available.

In the on-board flight preparation several automated reminders are available to keep track of airport slots, start-up- or holdover-end-times or simply whether the start-up clearance has been granted. For legal purposes an eSignature module is integrated into the eOFP.

2) FUEL PRE-PLANNING: OPTIMISED FUEL AND LOAD FIGURES IN ONE SIMPLE VIEW

Traditionally fuel pre-planning calculations have often been done on different sheets of papers or between different low-tech electronic devices involving cumbersome applications and/or various media. The Fuel Pre-Planning Module brings these different calculations onto one intuitively operable and understandable user interface.

The results are summarized in one simple double-bar graph. This bar represents in a very clear and simple manner the relevant variables for flight specific optimal fuel and load (passenger load, dead load) figures, thus eliminating the need to be overly conservative regarding fuel. These new modules obviously fit and interface very well with the existing aircore systems solution portfolio.

Michael Rosenkranz, the CEO of aircore systems says: "We are proud to announce the eOFP module as the latest addition to our solution portfolio. It is not often that we can recommend a pilot to go to the bar to get clarity."

Boeing acquires new solutions and a new customer for AHM as well as a new radome

BOEING EXPANDS CUSTOMERS' FUEL-EFFICIENCY CAPABILITIES BY ACQUIRING ETS AVIATION

BOEING announced in late May 2014 an agreement to acquire ETS Aviation, a provider of fuel-efficiency management and analytics software. ETS Aviation solutions lead the market, providing more than 120 airlines and corporate flight departments the tools necessary to accurately monitor fuel consumption, identify fuel savings opportunities, and track and report carbon emissions. ETS Aviation's fuel efficiency solutions support more than 600 commercial aircraft across nearly 900,000 flights annually.

"Boeing is focused on creating a competitive advantage for our customers," said Stan Deal, senior vice president of Commercial Aviation Services, Boeing Commercial Airplanes. "With fuel costs accounting for as much as 40 percent of airline operating costs, reducing fuel consumption enables airlines to be more successful while reducing emissions. Adding these fuel-efficiency tools enhances the edge we provide customers, helping airlines realize greater operating and environmental efficiencies," Deal added.

"We founded ETS Aviation with a simple goal: to develop affordable software and consultancy solutions that make the day-to-day operations of airlines and aircraft operators more efficient," said David Carlisle, ETS Aviation founder and chief executive officer. "Today we are the market leader, helping customers around the world improve their fuel efficiency and reduce CO2 emissions. As part of Boeing, we look forward to an exciting future, delivering the highest standards of customer service whilst our solutions continue to innovate and grow at an even more rapid pace."

ETS Aviation's fuel efficiency tools will become part of the integrated suite of aviation services marketed as the Boeing Edge. These include digital solutions that increase efficiency and profitability for aircraft operators by optimizing flight operations, maintenance, and crew planning and scheduling. ETS Aviation employees, who are based in Bristol, UK, will join the Jeppesen UK subsidiary of The Boeing Company upon completion of the transaction, which is expected to occur in the second quarter. Completion is subject to customary conditions. Terms of the transaction are not being disclosed.

BOEING, SOUTHWEST AIRLINES TO IMPLEMENT AIRPLANE HEALTH MANAGEMENT

IN mid-June 2014, Boeing announced that Southwest Airlines has selected Boeing Airplane Health Management (AHM) to enhance operational efficiency in its maintenance and engineering operations. Southwest Airlines will use Airplane Health Management to collect and evaluate airplane operations data while the airplane is in flight. This real-time data is used to signal ground operations crews of any potential maintenance issues before the airplane lands, minimizing flight schedule disruptions and maintenance-related delays.

"In our trials with Airplane Health Management, we clearly saw how we would be able to reduce – and even avoid – unscheduled maintenance and ground time for our fleet," said Jim Sokol, vice president of Maintenance Operations, Southwest Airlines. "The predictive nature of this product allows us to proactively initiate planning for necessary repairs, even while an airplane is in flight. With this capability, we can mitigate schedule delays and help ensure on time arrivals and departures for our customers."

Boeing technical teams will work with Southwest to facilitate initial deployment of the system for its Next-Generation 737s. Southwest is Boeing's 66th customer for Airplane Health Management.

"We expect to see an immediate cost benefit with the introduction of Airplane Health Management to our next-generation 737 fleet," said Trevor Stedke, vice president of Technical Services, Southwest Airlines. "We're excited to work with Boeing to take advantage of the full potential of this product and further leverage its capabilities to improve efficiency across our operations."

Boeing Airplane Health Management is a powerful, data-driven capability used worldwide by airplane operators and maintenance, repair and overhaul providers (MROs) to proactively manage the serviceability of airplanes and fleets. It is designed to interface with existing airplane systems and communication infrastructure, using state-of-the-art airplane and ground technology to address day-of-operation disruptions, help predict future operations events and prevent unplanned maintenance and schedule interruptions.

Airplane Health Management is part of an integrated suite of aviation services marketed as the Boeing Edge. These include parts, training, engineering, maintenance and software solutions that increase the efficiency and profitability of airlines and leasing companies.

"Throughout the long relationship between Boeing and Southwest, we have worked closely together to support ongoing focused efforts in applying state-of-the-art technology to solve day-of-operations issues," said Rick Anderson, vice president, Sales, Commercial Aviation Services. "We are very pleased to provide Digital Aviation solutions such as Boeing Airplane Health Management to enhance and accelerate improvements in Southwest's operations with real-time data analysis, which gives our customers a competitive advantage."

BOEING OFFERS BETTER IN-FLIGHT CONNECTIVITY OPTIONS

IN early July 9, 2014 Boeing announced that it continues to advance its suite of connectivity offerings for customers, signing a contract with General Dynamics Ordnance and Tactical Systems to produce a new radome, the Boeing Tri-band. The radome will support Ku and K/Ka wideband commercial and military satellite communications.

The Boeing Tri-band radome is the latest of several Boeing initiatives to provide safe and reliable passenger services, such as in-flight use for cell phones, internet access via Wi-Fi connectivity and live satellite television broadcasts. It will be available for both retrofit and production airplane installation in the fourth quarter of 2015.

A radome, a combination of 'radar' and 'dome', is a weatherproof structure that protects an airplane's antenna to enable reliable satellite communications. The Boeing Tri-band is approximately the size of a car-top luggage carrier and has a maximum weight of 80 pounds. It is designed for use with antennas from multiple manufacturers and with data services from all current providers, offering more passenger connectivity choices for Boeing airplane operators. Based on Boeing's proven Ku-band radome design, the new design meets or exceeds current Ku-band radome performance and also provides industry-leading performance for Ka-band operators.

"The Boeing Tri-band exemplifies the kind of competitive advantage we aim to give our customers," said Rick Anderson, vice president, Sales, Boeing Commercial Airplanes. "Airlines are telling us that the Boeing Tri-band's affordability, flexibility, wide range of capability and compatibility with all current data services make it ideal for their Boeing fleets, which have to quickly and economically adopt new technology to better serve passengers."

General Dynamics will supply the radomes. "General Dynamics and Boeing have enjoyed a long partnership in radome development," commented Jim Losse, vice president and general manager, of Advanced Materials for General Dynamics Ordnance and Tactical Systems. "This Ku/K/Ka tri-band system will offer the flying public better in-flight entertainment and connectivity over current single band Ku systems."

The Tri-band radome can be mounted on new or existing airplane mounting plates, which makes it simple and economical to retrofit. The Tri-band supports satellite communications at all frequencies currently used and planned for use, in the Ku-band and extended K- and Ka-bands. Like all Boeing radomes, it will meet all FAA environmental and safety requirements, including the recently revised FAA regulations for bird strike survivability.

The new radome is planned for use as a line-fit option on Boeing 737s, 747s, 777s and 787 Dreamliners. It will also be available for retrofit.

Atlantic Airways certifies the PFB EFB Platform from IFS for its A319 fleet

IFS – International Flight Support, the Copenhagen based EFB Software Platform provider, announced in mid-June 2014 that Atlantic Airways of the Faroe Islands has obtained final operational approval from the Danish CAA/Trafikstyrelsen covering their fleet of Airbus A319 aircraft. Atlantic Airways operates a fleet of Airbus A319's on their well-established Nordic scheduled route network and also operates ad hoc as well as scheduled charter flights to typical charter destinations all over Europe and into North Africa.

"After the implementation and approval of the PFB™ Paperless Flight Bag we have reduced our printing cost dramatically and the amount of reports we receive from the flight crew has increased because of the reporting module. But the greatest benefit is the Back-Office, where we have access to all the data." Mr Samal Dannielsen, Director of Flight Operation said.

The customization and implementation project was run throughout 2013 and initially also included the RJ85/RJ100 fleet which in the meantime has been converted into a new Airbus A319 fleet. Atlantic Airways has implemented the PFB™ Paperless Flight Bag software in the iPad version initially as a Class I-b solution, with expected upgrade to Class II-b (Mounted units) solution as the next future step.

"The possibilities of the system are second to none and we continue to expand the PFB all the time. The flexibility of IFS, makes it easy to customize the PFB to make it an integrated part of the flight deck and the pilots working tool." Mr. Jakob Evald, EFB Administrator said.

The EFB modules implemented and certified by Danish CAA are Document Management & Library Module, a fully customized Voyage/Journey log reporting module (Pre-flight and Post-flight reporting) with electronic sign-off, eReporting module, Weight & Balance/eLoadsheet module with electronic sign-off, Take-Off Performance module based on Navtech data integration and Landing Performance module OFF-line, Electronic Flight Planning with full CrewBriefing and eOFP for eFuel, eTime checks and eNote functionality, ATC Note Taker module for finger/stylus registration of ATC clearances, ATIS and notes.

"IFS is proud to work closely together with a unique airline operator like Atlantic Airways, since given their complex operational environment at their Vagar base in the Faroe Islands their quality requirements and attention to details are second to none. With the data integration between the PFB™ Back-Office engine and various back-end systems such as their maintenance system Atlantic Airways is one giant step ahead on the road towards a completely paperless cockpit and paperless ground operation" sad Jens Pisarski, COO of IFS.

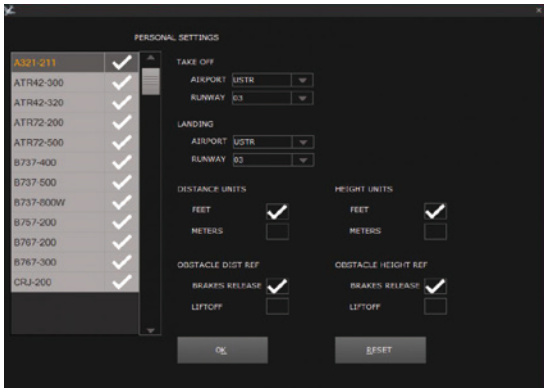
ACFT Perfo extends RTTO in scope and capability

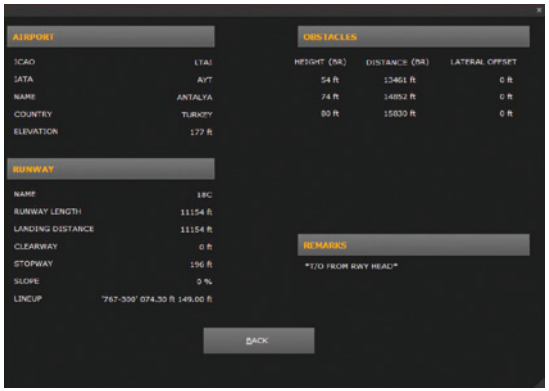
RTTO SOFTWARE FOR IPAD, ANDROID AND WINDOW TABLETS

ACFT Perfo was proud to present the latest version of their Performance software, called RTTO in late May 2014. The announcement confirmed that the new version enables any user, pilot or ground staff, to perform take off, landing and W&B calculations from any mobile office and hardware. The same application can be used on an iPad, Android tablet or a Windows operated device. Designed to be used on small screens such as the iPad mini, it offers the possibility to use a wide range of hardware/operating system combinations. It is also the first hardware independent performance software platform in aviation that can be used for any type of aircraft such as Airbus, Boeing, ATR... or any aircraft manufacturer.

RTTO BY ACFT PERFO HAS BEEN UPDATED WITH A NEW FEATURE.

ACFT Perfo released a new update of RTTO (Performance Calculation Software) in early June 2014. This version includes a new feature: users and administrators can now set their preferences for distance, height and obstacle reference displaying. In RTTO Admin (Administrator management part of the software), the administrator can now set the references and units to be displayed in the RTTO Client (Pilot version of the software) release. The user will automatically receive the administrator's choice as default reference and units for each aircraft type. Users can change their defaults settings. In case the user has to add a notam to a specific airport or runway, he is able to override the defaults settings in order to match the notam settings.





ACFT PERFO ADDS A NEW AIRCRAFT TYPE IN RTTO

SINCE early June 2014, the Bombardier Dash 8 Q400 has been available for takeoff, landing, and weight & balance. The Reduced Take Off Power (RDC TOP) is also part of the options. ACFT Perfo airport database contains optimal data for this aircraft.

IAA APPROVAL FOR 'MASS AND BALANCE' FUNCTION FROM EFB

ACFT Perfo was proud to announce in early July 2014 that the Irish Aviation Authority (IAA) had approved the 'Mass and Balance' function of RTTO Electronic Flight Bag (EFB). The authority approved the function in accordance with EU-OPS 1.625 (c).

AIR SUPPORT enhances its product and service with partnership links

WSI AND AIR SUPPORT JOIN FORCES

THE Weather Company's professional Division WSI is joining forces with one of the world's leading flight planning systems PPS by AIR SUPPORT. The cooperation between the two renowned companies, which was announced in mid-May 2014, will have a massive impact on the future of flight planning.

What do you get when you combine one of the best flight planning and real-time operation platforms in the world? You get an industry changing solution that delivers efficiency through all phases of flight. With this cooperation, WSI and AIR SUPPORT are taking flight and empowering aircraft operators to reach new heights. PPS is already known for its ability to optimize on fuel, time and cost, which has played a big part in AIR SUPPORT's success story. By integrating the WSI Fusion platform for essential flight and weather decisions with PPS optimized flight planning, WSI and AIR SUPPORT will empower dispatchers and other operational personnel to stay ahead of changing weather conditions, and take proactive action and stay on time and on target.

When filing a flight plan before flight with PPS, WSI enables dispatchers to manage by exception, alerting 24/7 to disruptive weather and plan variance and enabling timely action to reduce the impact on operations. With the amazing fusion of weather, flight, and airspace information, pilots, dispatchers and other operational personnel can track any flight from push back to dock. Fleet operators have for a long time been asking for a proper flight panning system. In the early days that wasn't available but now it is available in the terms of PPS flight planning and WSI combined solution.

DWI PARTNERS WITH AIR SUPPORT ON RAIM

DWI and AIR SUPPORT were pleased to announce, in late May 2014, their new partnership for the provision of RAIM prediction to AIR SUPPORT customers. DWI has integrated the GNSS RAIM Prediction Service (GRPS) with AIR SUPPORT's PPS – preflight planning system. AIR SUPPORT's customers can now automatically calculate the RAIM predictions they need for their PBN operations.

Preflight RAIM predictions are required by the ICAO PBN Manual (Doc 9613) for GNSS-based operations and with the integration of GRPS and PPS, these can now be calculated automatically as part of routine flight planning activities for large airline operators and low volume General Aviation operators alike.

"The best way to obtain RAIM predictions is automatically during pre-flight planning. The predictions generated by the GRPS are accurate, fast and use the latest constellation data available," said John Wilde, CEO of DWI. "We're extremely happy to have integrated the solution with AIR SUPPORT's PPS."

"With the integration to DWI, AIR SUPPORT confirms the commitment to continuously supply the best flight planning solution with the highest quality and precision. We are very proud to present RAIM prediction from DWI, the leading source on the market," said Per Jensen, CEO of AIR SUPPORT.

ACT Airlines chooses navAero iPad EFB with aircraft interface device

NAVAERO announced in mid-May 2014 that ACT Airlines has chosen the navAero iPad Air Class 2 EFB system as the platform of choice for their electronic flight bag initiative.

The highly adaptable navAero iPad 'Smart' Mount system with the integrated power interface module will be deployed to provide an installed platform for holding the iPad device as well as supply certified connectivity to aircraft power for device charging. The integrated system will allow ACT to realize maximum functionality for the iPad Air tablet as a deployed Class 2 EFB platform. The ACT EFB program will be implemented on both their Airbus A300 and Boeing B747 fleets with first installations planned to take place in second quarter, 2014.

ACT Airlines Flight Operations Manager Cpt. Taner Gokbul stated: "The navAero iPad Tablet EFB system has proven to be [the] perfect solution to our needs and our bright future. It will not only reduce weight, cost, effort and risk. It will also [generate the] benefit [of] greater efficiency and improved situational awareness."

Simone Giordano, President, navAero Group commented: "Over the past months, we have worked closely with ACT Airlines to document and demonstrate our technology and how our offerings could meet the specific needs and requirements of their EFB program. The navAero iPad/Tablet system will provide ACT with a platform for both their fleets that can be used in all phases of flight… to help them achieve their business and operational goals." Giordano continued: "The rapidly expanding number of customers who have chosen our iPad/Tablet system tells us that we have developed the right STC'd solution to fulfill their needs both today and well into the future. We are delighted to add ACT to our roster of airline customers who have embraced EFB technology and look forward working with them in the implementation of their EFB initiative."

Navtech launches next generation products and partnering arrangement

NAVTECH LAUNCHES ICHARTS EFB AT THE ARINC EFB USERS FORUM IN MEMPHIS

NAVTECH Inc., launched iCharts EFB at the ARINC EFB Users Forum in Memphis, Tennessee. This is Navtech's next generation of charting products that allows pilots to view aeronautical charts using an iOS EFB (electronic flight bag).

iCharts EFB is designed by pilots and provides users with an easy-to-use interface for the cockpit; replacing paper aeronautical charts with an electronic version that is viewed on a tablet prior to and during flight. It equips pilots with quick access to all information needed for flight and airport navigation while decreasing the clutter.

It was launched at the ARINC EFB Users Forum from May 13-15 in Memphis, Tennessee at the Memphis Cook Convention Center. The event was centered around both users and suppliers to exchange information on the technology, applications and experiences of EFB. Navtech was on-site at the Vendor Expo, showcasing its EFB Charts and giving demonstrations to attendees.

Currently Navtech is releasing iCharts, which allows users to view charts using the iOS platform on a tablet. eCharts, the Windows version, was slated to be released at the end of June 2014. Both of these charts products are part of Navtech's suite of charting solutions designed to replace paper aeronautical charts.

NAVTECH PARTNERS WITH VENYO'S INNOVATIVE FLIGHT SIMULATOR AT THE FARNBOROUGH INTERNATIONAL AIR SHOW

LATER on, in early July 2014, Navtech Inc., partnered with Venyo at the 49th Farnborough International Air Show in Hampshire, England. At the air show from July 14-20 Venyo, a designer and manufacturer of professional flight simulators, were demonstrating their first FTD pre-production unit, which integrates Navtech's navigation databases.

The Farnborough International Air Show is the world's largest exhibition and air display that features a wide array of business platforms within the aviation industry. This is a great event to showcase Venyo's innovative flight simulator before it debuts in the market in 2015. By partnering with Navtech, Venyo's flight simulator will utilize its navigation database which provides high fidelity data based on the industry standard ARINC 424 specification.

"The quality of a pilot's training depends largely on their instructor's experience. However, an instructor must be able to use the best educational tools available to pass on their knowledge," explains Fabrice Cornet, CEO of Venyo. "This is why Venyo [has partnered] with Navtech to ensure the highest possible internal integrity and accuracy of the navigation databases that offer an unparalleled flight experience of our revolutionary professional flight simulator."

"We're happy to partner with Venyo and their flight simulators. Navtech Navigational Databases provide them with accurate and reliable data that they need in a timely manner," states Robert Kernahan, Vice President, Charts and Navigation Data Production and General Manager of Navtech's UK Office. "It is the cornerstone of Navtech's Navigation Data products. By partnering with Navtech, Venyo can combine our data with their flight simulators for a reliable and innovative product within the market."

Navtech navigation databases are used for flight simulators such as Venyo's, but also for flight management systems, ground positioning systems, airspace modeling, and air traffic systems. These databases are available for a wide variety of aircraft including helicopters to light aircraft, business jets and wide-body jets. Navtech Navigation Data products are used by over 200 airlines.

airBaltic signs up for ARMS®V2 OPS by Sheorey Digital Systems Ltd. (SDS)

AVIATION InfoTech solutions provider, Sheorey Digital Systems Ltd. (SDS), confirmed in late June 2014 that European carrier airBaltic has become the newest airline to sign-up for its popular ARMS®V2 OPS (Operations) suite incorporating the latest Operations Research based Optimizer solution. A phased implementation plan will see airBaltic deploy the ARMS®V2 CMSS or Crew Management Sub-System application in the first phase and follow it up with the Flight Operations Sub-System in phase two. Network Planning & Management Sub-System is under consideration for implementation in phase three.

AirBaltic Boeing 757-200 by Aleksandrs Samuilovs

The Latvian flag-carrier decided upon ARMS®V2 after a rigorous six-month due diligence process which saw the solution confirmed as offering airBaltic a completely bespoke solution; a right fit to achieve the carrier's business objectives. As a leading Airline in North Europe and operating in a highly competitive market, ARMS® will help airBaltic ensure high operational efficiency by maintaining tight control over resources, without compromising on quality and flight safety.

airBaltic's selection of ARMS®V2 OPS applications also includes Operations Research (OR) based Optimizers (a.k.a., 'Solvers'), which through an affordable cloud-computing model, employ advanced scientific analytical methods to improve effectiveness of operations, by presenting optimum solutions for any given plan or schedule, thereby greatly improving the efficiency of resource planning and simplifying the handling of disruptions.

Managing Director & CEO of Sheorey Digital Systems, Vivek Sheorey, was delighted to welcome airBaltic as the newest ARMS®V2 customer and expressed great pleasure at this newfound association. He also stated that he was deeply gratified by airBaltic's decision to go with the SDS solution, adding that this selection was a clear reflection of the high-quality and competitiveness of our products. He further added that SDS was committed towards supporting airBaltic's plans, as it continues to develop and grow its business in spite of a tough economic environment.

RocketRoute launches technology and support historic D-Day event

ROCKETROUTE SUPPORTS THE DAEDALUS D-DAY 70TH ANNIVERSARY AND MEMORIAL AIRBORNE INVASION

ROCKETROUTE is proud to have sponsored and assisted flight crews in the Daedalus D-Day 70th Commemoration. For the first time since D-Day, a formation of up to 10 Dakota aircraft departed from the UK (Daedalus Aerodrome, Lee-on-Solent) and flew to France, Carentan, Normandy to undertake a mass drop of over 100 'round canopy' parachutists wearing WW2 uniforms.

This will be the first time since D-Day that an 'airborne invasion formation' will have taken place from UK to France.

Subject to weather and operational requirements aircraft departures commenced between 10:00 and 13:00 Local on the 4th June 2014. There was also a public D-Day 70th Memorial Service at Lee-on-Solent seafront Civic War Memorial on the evening of the 3rd June at 18:30L. The service was closed by a D-Day 70th Memorial Flypast of historic aircraft types representing those flown from Daedalus, Lee-on-Solent on D-Day and during WW2.

Daedalus was the most active south coast airfield on D-Day launching 435 Spitfire, Seafire, Mustang and Typhoon missions to Normandy, flown by Fleet Air Arm, RAF RCAF and US Navy squadrons.

FLIGHT PLANNING SUPPORT

AIRCRAFT and parachutists flew in from around the world to participate in this commemoration. RocketRoute provided sponsorship to the Lee Flying Association which hosted the UK part of the cross-channel Memorial Airborne Invasion in collaboration with the Round Canopy Parachute Team (RCPT).

RocketRoute provided flight planning and operations support to all aircraft that wished to use the support for this event including positioning flights to and from the commemoration.

ROCKETROUTE OPENS TECHNOLOGY TO COMMERCIAL AIRLINES

IN mid-June 2014, RocketRoute launched two new technology initiatives to assist commercial airlines in boosting their tactical systems.

1. ONLINE EUROCONTROL FILING AND MESSAGING GATEWAY

RocketRoute was the first vendor in the world to connect to Eurocontrol and start filing flight plans using their next generation XML interface. RocketRoute has developed deep expertise in these systems and is now offering carriers a virtual filing gateway using this technology that can be used for primary flight plan filing or as a backup. This new technology is highly scalable and robust, fast and at a significantly lower cost of ownership versus traditional AFTN network gateway systems.

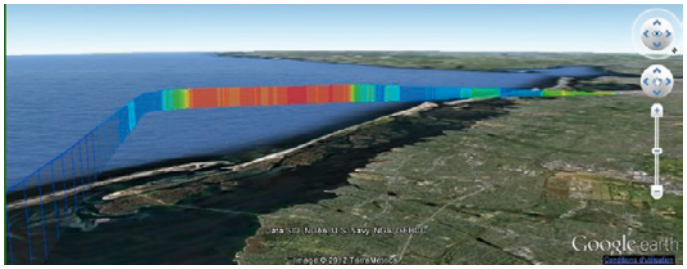
2. EUROPEAN ROUTE PROPOSAL AND VALIDATOR TERMINAL

RocketRoute is offering carriers a low cost web terminal for ad-hoc routing requests within the Eurocontrol region. This is ideal for dynamic situations, such as controller strikes, for quick route lookups and for checking that existing routings are still valid in Europe. Uwe Nitsche CEO and Founder said "We have found that carriers are now definitely over paying for legacy technology and should be looking to switch to smarter newer solutions. Both of these new offerings provide airlines with a tangible quick win that can use to enhance their business agility."

Further customers for OpenAirlines' SkyBreathe® Fuel Efficiency

ENTER AIR SAVES MORE FUEL BY PARTNERING WITH OPENAIRLINES

ENTER Air, Polish charter airline company, announced at the end of May 2014 its continued commitment to sustainable development by signing a contract with OpenAirlines to implement SkyBreathe® Fuel Efficiency, a software solution to help airlines all over the world achieve important savings (from 1% to 4 %) on their fuel costs.



This software is the outcome of five years R&D and has leveraged the results of the Clean Sky CARING* Project (Contribution of Airlines for the Reduction of Industry Nuisances and Gases). The company developed algorithms to quickly analyze all the flights of an airline and propose fuel savings solutions.

With SkyBreathe Fuel Efficiency, Open Airline was awarded the '2013 Sustainable Development Trophy' by La Melee association and the Toulouse Midi-Pyrénées Chamber of Commerce.

AIGLE AZUR SAVES FUEL WITH OPENAIRLINES

IT was confirmed in early June 2014 that Aigle Azur, the second largest French scheduled airline, had entered into a partnership with the company OpenAirlines. As part of this agreement, Aigle Azur is now using SkyBreathe® Fuel Efficiency, a software solution that allows airlines to get important fuel savings on all their fleet. This innovative software solution allows airlines to save between 1 to 4% on their fuel consumption.

SkyBreathe® Fuel Efficiency relies on innovative algorithms that can very quickly analyze the data from the flight data recorders (the black boxes) to propose targeted recommendations on fuel efficiency. OpenAirlines also provides consulting and continuous monitoring of the improvements. With this partnership, Aigle Azur intends to reduce its carbon footprint and strengthen its commitment to sustainable development.

Who's in the news: Vendors

ACFT PERFO
ACFTPERFO is experienced in electronic flight bags and related software to reduce costs such as engine use and related maintenance, data availability and study, paper printing and handling, manpower, etc.

ACS
The ACS system was created specifically for the needs of the airlines. The system is under the supervision of the European Aviation Safety Agency (EASA).

AFNOR CERTIFICATION
AFNOR Certification is 'the leading certification and systems, services, products and competencies assessment body in France with two quality marks: AFAQ and NF.

AIRCORE SYSTEMS
aircore systems develops and implements IT- and Workflow solutions for the cockpit, the cabin, the counter, dispatch, and power management and measurement.

AIR SUPPORT A/S
AIR SUPPORT A/S supplies computer based flight planning software systems with integrated web-based CrewBriefing services worldwide to private and commercial business aircraft operators as well as military/utility operators.

ARCONICS
Arconics technology allows airlines to import complex XML documents from aircraft manufacturers, modify them to meet their own operational needs, and deliver them to pilots and crew over a web, mobile, tablets, and EFBs on the flight deck.

AVIASO
Aviaso develops products with a focus on topics such as Fuel Efficiency, EU-ETS, Aviation Reporting, and Crew Communication plus integrating aviation IT systems and developing the Aviation Portal.

AVIIT
AviIT provides the aviation sector with a range of software solutions to specific business issues. AviIT's products are based on the latest thin client, web based and mobile software technologies.

THE BOEING EDGE
An integrated suite of aviation services marketed, including parts, training, engineering, maintenance and software solutions that increase the efficiency and profitability of airlines and leasing companies.

DAC INTERNATIONAL
DAC International offers a wide range of avionics upgrade solutions for regional and major airlines, military and general and corporate aircraft, as well as MROs and OEMs worldwide.

DW INTERNATIONAL
DW International provides technical support in the fields of air navigation, civil air communications and air traffic management. The company also develops and maintains bespoke software and manages websites that support air operations.

ETS AVIATION
ETS Aviation has specialized in fuel-efficiency programs and emissions data management since 2009. The firm created Aviation FuelSaver™ software and consultancy program having launched a software and consultancy solution, Aviation Footprinter™, for managing EU ETS (Emissions Trading Scheme) requirements.

FLATIRONS SOLUTIONS
Flatirons Solutions, Inc. provides information management consulting services and solutions. Its TechSight/X suite of products dedicated to the aerospace community is used by many of the world's largest original equipment manufacturers and airline operators.

GREENWICH AEROGROUP
Greenwich AeroGroup, Inc., owns and operates providers across the full gamut of general, commercial, government and military aviation services.

IFRSKEYES
ifrSKEYES, an AIRBUS company, is a full-service IT provider specialized in aviation software managing aircraft maintenance and flight operations. Its recognized know-how is based on a central strategic axis: the entire aircraft management

IFS
IFS – International Flight Support is a supplier of iPad and Windows 7/8 based EFB Platform solutions aimed exclusively at the aviation industry.

ISO 9001:200
ISO 9001:2008, developed and published by the International Organization for Standardization (ISO), specifies requirements for a quality management system and focuses on customer satisfaction and continuous improvement.

NAVAERO
navAero, Inc.develops and commercializes electronic flight bag products with FAA & EASA STC installations.

NAVTECH, INC.
Navtech, Inc. provides flight operations solutions including aeronautical and other charts, with products that can be configured as part of an EFB.

OPEN AIRLINES
Open Airlines meet the needs of airlines to optimize their flight operations and reduce their costs. It offers software solutions to save fuel, manage crews and fleets.

ROCKETROUTE
Founded in 2010, RocketRoute is a worldwide flight planning and navigation service for pilots. RocketRoute works on the web, mobile phones and tablets. It also provides a full time operational support team to members.

SHEOREY DIGITAL SYSTEMS
Sheorey Digital Systems Ltd. (SDS) is an ISO 9001:2008 & 27001:2005 certified, established Indian InfoTech company specialising in Aviation and Information Management domains.

SITA
SITA is a multinational information technology company specialising in providing IT and telecommunication services to the air transport industry.

VENYO
Venyo's designs, manufactures and markets professional flight simulators (JAA/FAA certified).

WSI
WSI is a professional division of The Weather Company, the largest private weather company in the world.

Airlines, Aircraft, Operators and OEMs and infrastructure managers in the news

ACT AIRLINES
Istanbul based ACT Airlines (myCARGO) is a cargo airline company with a fleet of four A300 and 4 B747-400 freighters. In September of 2008, ACT became Turkey's first air-cargo operator to be IOSA (IATA Operational Safety Audit) certified by IATA.

AFRICAN AIRLINES ASSOCIATION (AFRAA)
AFRAA is the trade association of airlines from the African Union member states. Its primary purpose is to foster commercial and technical co-operation among African airlines, while representing their common interests.

AIGLE AZUR
Aigle Azur is the 2nd largest scheduled airline in France and the oldest private French airline with many destinations: Algeria, Portugal, Russia, Mali, departing from seven French airports with its 11 Airbus A320

AIRBALTIC
airBaltic was established in 1995. Its primary shareholder is the Latvian state, which holds 99.8% of the stock. The airBaltic fleet consists of 25 aircraft - Boeing 737-500s, Boeing 737-300s and Bombardier Q400Next Gen.

ARINC
Aeronautical Radio, Incorporated, established in 1929, is a major provider of transport communications and systems engineering solutions for eight industries: aviation, airports, defense, government.

ATLANTIC AIRWAYS
Atlantic Airways operates a modern Airbus fleet as well as helicopters transporting people and cargo by air from, to and around the Faroe Islands.

CATHAY PACIFIC
The Cathay Pacific fleet of 135 wide-body aircraft is one of the youngest in the skies. The airline is committed to operating a modern, fuel-efficient fleet and has 80 aircraft on firm order for delivery up to 2020.

CISCEA
CISCEA is the body responsible for developing and implementing new technologies for DECEA, the Brazilian Air Navigation Service Provider.

ENTER AIR
Enter Air provides charter flights mostly to tour operators and direct customers with eight Boeing 737-400 and six 737-800 aircraft.

EUROPE AIRPOST
Europe Airpost is a French airline with dual activities: passenger and freight. The airline has around 500 employees and operates 18 Boeing 737 aircraft.

SOUTHWEST AIRLINES
Southwest Airlines is an all-Boeing carrier and operates the largest 737 fleet of any airline. In 2011, the airline became the launch customer for the 737 MAX.

Norwegian EFB Connectivity

Klaus Olsen, EFB manager B737, Ops flight support, Norwegian, outlines the challenges of connectivity for Class II EFBs – including 3G and Gatelink connectivity.

AT NORWEGIAN, WE have very limited resources within the Flight Support department, dedicated full time to EFB operations, but between us we have refined the product over time in order to get the best, and most effective, solution possible for our flight operations.

Our first EFB system was introduced in 2008, when we installed the t•Bag C2 system from navAero. We still have this technology installed in the majority of our fleet (of about 75 airplanes); but that number is set to change over the coming months. And even though we are replacing the navAero system with Panasonic Toughpads MKII, the former has done an exceptional job in those six years they have been in service.

All new aircraft acquired by Norwegian since September 2013 are being equipped with the Panasonic Toughpad MKII, and we currently have 22 aircraft operating with the new system, which is supplied courtesy of Scandinavian Avionics. Highlights of the Panasonic tablet are a control panel at the bottom of the Toughpad, and a standalone USB port, which can be used to charge phones or tablets without interfering with operations on the EFB.

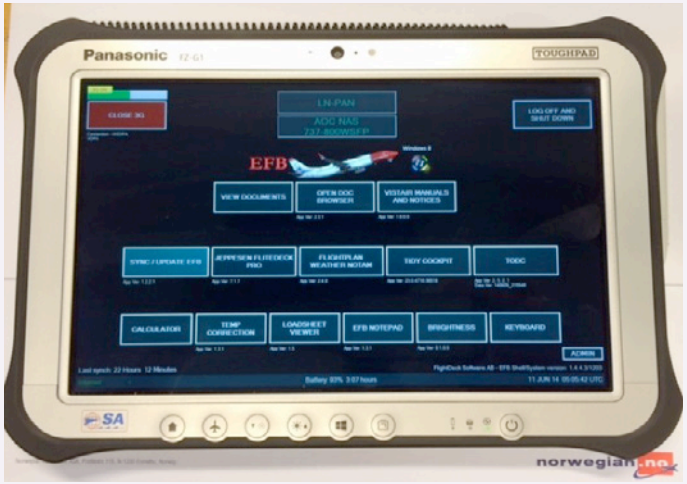


Figure 1: Panasonic Toughpads are entering the Norwegian fleet for use as EFBs

CHANGING SYSTEMS

Very early on in our EFB program, we decided that we would update and maintain the system only through 3G communications. We had to undertake a thorough test of all possible operators, in order to find the one with the best coverage, roaming partners and price.

We soon found out that the 'best price' element would have to be dropped because, in 2008, there were many providers that could give decent communication services at a low price. However, when it came to roaming outside Scandinavia, the bandwidth was cramped, and we could not get the updates in the time we needed… if we got any connection at all; low price meant low quality in this instance.

We ended up signing up with Telenor as our main provider, committing to a supply contract in 2009. The telecommunications company offered great coverage, was located in most of the countries that we flew to, and, when we went 100% paper-free in 2012, it meant we had to rely on good, stable connectivity to make sure the crew could download their flightplans, documents, chart updates, etc.

The other factor we had to contend with for any of the operators we considered was a rapid increase in price. A high demand for ground connectivity equals higher costs, which meant that in 2013 we had to undertake another set of tests for different operators. This scenario caused a major headache in the organization, and in our department.

CHOOSING A TECHNOLOGY PARTNER

We tested big players such as T-Mobile, Vodafone, Telenor and more, again, but many of them were offering GPRS-only, which is not ideal when it comes to EFBs. We also had to plan in our pretty short turnarounds — about 25 to 30 minutes — and during that time, we needed to organize our flight plans, and get new documents, etc.

Another issue we encountered from time to time was the 'blind spots' at a few airports, where at certain gates it was impossible to get connection, while other operators worked fine at these spots, but fell through at other places. What we needed was something that would work no matter what, or where….and at a reasonable cost.

To this end, we were helped by a contact at DAT (Danish Air Transport) who told us about GigSky — a Danish-based company — and we began a trial with them, late in 2013. What really intrigued us was that GigSky was focusing on data connectivity, while many others were offering voice solutions with data attached. We weren't interested in voice on the aircraft, as all we needed to do was to update our EFBs!

GigSky proved perfect with coverage in more than 114 countries, and it benefits from 100% national roaming, meaning that you get a choice of roaming partners at each location. What we experienced — especially with Telenor — was that for some gates, there was actually a full blackout with no signal. With GigSky we are juggling between operators and we can get coverage wherever we are.

We rely on 3G connectivity, which means we have 24/7 status of all the EFBs on our fleet. We have the ability to see when they were last online, what kind of software they are running, and what chart database they currently have. Figure 2 shows how the EFBs are colour-coded, according to their contact with the main system. The ones in green are those that have been in communication with the server in the last 24 hours; the yellow ones have been in contact in the past 25 to 72 hours; and the red EFBs are items that need action as there hasn't been communication for a long while.

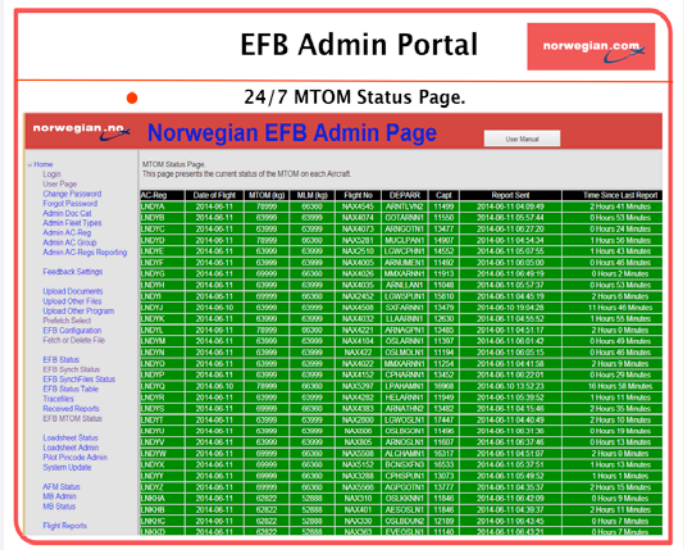


Figure 2: Norwegian's EFB admin portal, indicating the communication status with the connectivity system

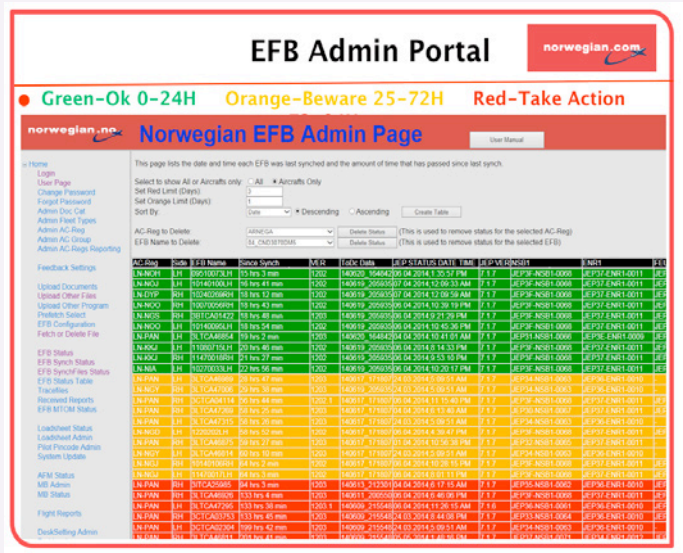


Figure 3: The EFB admin page allows admin users to monitor all of Norwegian's EFBs

ADDITIONAL COMMUNICATION TOOLS

Another important system we use when monitoring our EFBs is TeamViewer. As well as the units in operation, we have a spare pool of EFBs at all of our main hubs — including Copenhagen, Stockholm, Helsinki, London and also Spain — but since we are a small team, we cannot rely on training all of our technicians, because that would be too time consuming and require a lot of resources.

As a result, each of our clients has TeamViewer installed, and admins can connect to the EFBs using a secure server with an encrypted password. When in the system, we are able to define the user groups, and access can be made via IP addresses, which can make the connection to the EFBs. Making it a highly secured solution.

Whenever an EFB is stranded in Dubai, for example, and it gets a Jeppesen error, or the SQL server has crashed, or the database becomes corrupted, as long as they can get online, they can call and tell us what the issue is. Someone at our end can then connect, and take full control of the EFB onboard. From here, it is possible to complete file transfers, undertake general maintenance, and troubleshoot ongoing issues. Therefore there is no need for a technician to go out to the aircraft on the remote base, and the EFB will, in most cases, be ready to go in as little as 30 minutes.

We also have a high level of documentation control by being online 24/7. If we have a SAFA inspection, and they find that a document is missing, we can connect to the EFB through TeamViewer and upload it. Or, if we need to, we can connect to our server, define the aircraft registration or group that is missing the information, and they will get it as soon as they synchronize with the system.

"We also have a high level of documentation control by being online 24/7. If we have a SAFA inspection, and they find that a document is missing, we can connect to the EFB through TeamViewer and upload it."

MASS CALCULATIONS

We also operate with variable take-off mass levels with the 737s, so by using the systems, we have a complete overview of what aircraft is set up with what take-off and landing mass, and how long it has been running in that configuration.

It is the same situation for load sheets — every pilot has to send one before take-off, which means we instantly get it through our server, and we can watch it, or send on, through to the people that need to see it. In this situation, we do not have to wait until the plane comes back to the ground, and for the pilot to take his documents into the crew room or hotel to perform a synchronization. All of our EFBs are airplane-attached, and we synchronize at each stop, which means synchronizations up to 20 times a day can occur.

Using the EFB, we go online, and a line at the bottom of the screen tells us when the unit we are working with was last synchronized. The first thing operators do when they get to the aircraft is to perform a sync, and get the documents needed, find the mass and balance data that is required, and then go through a pre-defined list of tasks. These include a sync update, where the client gets any documents, procedures, notices, etc. that have been updated since the last synchronization. This is done quickly over 3G. Then a status report is sent to the server from that specific EFB, including a list of the documents it contains.

We start Jeppesen Flight Deck Pro because we need it to be running before we can start our flight plan, which is to get it pre-populated. The flight plan is fetched straight from our crew briefing system, and all flight plans for the following 24 hours for aircraft that are being operated, in that time period, get downloaded. The crew then go in and select what flight plans they need. The system also allows users to check waypoints, with remaining and used fuel, etc. — including taxi and take-off fuel levels. On the display the mandatory fields are default as red, the non-mandatory are yellow, but as soon as you put the numbers into the fields, they turn green.

PRE-FLIGHT CHECKS

A series of checks is carried out — using the red, yellow and green numbers. Notes are added here, and then the user signs it off with a five-digit pilot code. Users can then save and submit which connects to the server, and sends the filled-out flight plan to our back-office.

When the pilot gets to the cockpit page they will already have the FMS routing, flight number, and crew fields pre-populated, and they can then enter their desired take-off mass. There is also an option of doing a recalculation if needed.

The system shows remaining fuel and planned ramp fuel, and we select the fuel supplier used at that location, and enter the fuel ticket number for accounting. We also note the actual uplift, and then make sure the numbers, are correct before sending the reports to the server.

The need for manual input is minimal; we can pull almost everything from our flight plan in XML, and pre-populate it to the different programs that we use. Even the enroute charts get pre-populated with all the waypoints, TOC, TOD, etc., saving us valuable minutes of manual punching.

Our current software is a combination of in-house development and excellent XML, PDF and document solutions from Flight Deck Software AB, that have put us in pole position with regards to how the EFB is being utilized today.

"We have learned a lot through our first six years of using EFB's and flying 'paperless' and we have changed our focus from selecting an EFB hardware and STC provider to investing in AC infrastructure with full flexibility for the future when it comes to selecting EFB devices."

We have also tested Gatelink connectivity for our 737 EFBs, but hit a few roadblocks that made it a bit complicated. The concept is that the EFB sends a request attached to its certificate.

- The airport receives, recognizes it as a NAS request, and forwards the request to NAS' Radius servers for authentication.
- The Radius server responds with their certificate, and the EFB verifies and compares to its local certificate.
- When the authentication process has been successful, the airport puts the unit in the correct VLAN, and communication can take place after IP address have been assigned.

As this process worked great on the 787, but needed adaption to the 737 (attached device vs removable device (Class3 vs Class2)). The major challenge was that the unit-specific certificates were issued by Boeing and very hard to reproduce. And as a removable device, when having an issue, is quickly replaced with a new device rather than fixed on-site, the handling of the certificates proved to be challenging. Currently we are only using it on the 787s where we have no 3G at all.

All is ready for Row 44-to-EFB connectivity on our 737s, but it has not been implemented on a large scale yet. The business case for this is currently ongoing, and tests show that stability varies and therefore makes it hard to rely on as a stable connectivity source.

We have learned a lot through our first six years of using EFB's and flying 'paperless' and we have changed our focus from selecting an EFB hardware and STC provider to investing in AC infrastructure with full flexibility for the future when it comes to selecting EFB devices. Today's solution with Scandinavian Avionics gives us the full freedom of an EFB tablet solution at a sensible low cost. This means that in three years we may see either the 12" Surface Pro 3 or a 12" iPad! With more and more software development in HTML5 it might not matter much whether you run Windows, Android or iOS in the future, but for now we are sticking to Windows 8.1 supported EFBs.

We will evaluate again in 1-2 years when we select our next EFB hardware unit. ■

NORWEGIAN

Norwegian is the second largest airline in Scandinavia, and third largest low-cost carrier in Europe. Headquartered at Fornebu, outside Oslo, it employes 3,000 people at various locations around the world.

The airline has bases at Oslo Gardermoen; Bergen; Stavanger; Trondheim; Stockholm Arlanda; Copenhagen Kastrup; Helsinki Vantaa; London Gatwick; Alicante, Malaga, Las Palmas, Tenerife (Spain), Barcelona, New York, Miami and Bangkok.

Norwegian has 392 routes to 124 destinations, and has 500 flights a day. In 2012, it carried 17.7 million passengers. It offers flights to attractive destinations tailored to both the business and leisure segments to and from all its bases in Scandinavia.

KLAUS OLSEN

EFB MANAGER B-737, NORWEGIAN

Klaus Olsen is currently EFB Manager B-737 at Norwegian Air Shuttle. He has 18 years' experience as an IT operations manager, and as head of IT security for Norwegian Financials Daily, PC Magazine, Kapital, Hegnar Media and many other titles.

Described as a hands-on problem-solver with high work-ethic, and even higher pace of work, Klaus is also outspoken and creative, as well as a constructive listener. He also boasts a sense of humor. Despite this, openness, seriousness and quality do tend to be key elements in all his activities. Klaus, who started the EFB project in Norwegian Air Shuttle in 2009, has a number of certifications and fields of expertise including: EFB software and hardware; SSCP; MCSE and MCP; Quality Assurance; IDS/IDP; and web security.

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EFB Tablet Strategy: Apple iPad vs Microsoft Surface

In a world full of tablet devices, choosing the right tablet for your EFB needs can be a challenging decision requiring a thoughtful process. **Captain Hank Putek** and **Captain Brian Tighe**, from the Allied Pilots Association (APA), discuss the pros and cons of two of the more popular tablet options

SINCE THE INTRODUCTION and FAA approval of tablet computers, use of tablet style Electronic Flight Bags is at an all time high. As their popularity with air carriers soars, the technology that services these demands is also rapidly evolving.

The current generation of tablet computers have significantly more processing power and communications capability than their predecessors. Moore's Law suggests that this will continue for some time to come.

Early adopters of Apple iPad hardware are now finding out that the processor and RAM specifications of the early models are not up to the demands of the current application developers, since the third party developers do not develop for 'old hardware'

BACKGROUND FROM THE AUTHORS

The Allied Pilots Association (APA) partnered with the American Airlines (AA) Flight Department to create, implement, and gain regulatory approval for electronic flight bags at American Airlines. This project was not management driven, rather, this was a pilot initiative. The pilots designed the program and American Airlines (AA) management approved the effort because they saw significant value with system-wide implementation and a low up-front cost tablet computer.

That unique partnership between APA and the AA Flight Department produced a program that pilots wanted to use. So far, this system designed by pilots for pilots, has been deployed on COTS tablet EFBs to about 9,500 AA pilots. Following AA's merger with US Airways, the New AA will eventually deploy approximately 13,000+ iPad's under the company's new Single Operating Certificate.

CHOOSING FROM TWO OPTIONS

Two of the leading tablets in the mobile device sector are the Microsoft Surface 2 and the Apple iPad Air. Both have specific advantages and disadvantages when being used on the flight deck, which makes a comparison between the two inevitable. At AA, the pilots chose the iPad for many reasons, not the least of which was form factor and availability of specific and desired applications.

The marketing fight of two major brand tablets has resulted in all kind of hype and specification 'face-offs'. The inevitable comparison between the two hardware configurations, and the resulting 'over-complex' purchasing process, makes the decision tough, especially if the airline IT department is already committed to one particular Operating System

Figure 1

"Early adopters of Apple iPad hardware are now finding out that the processor and RAM specifications of the early models are not up to the demands of the current application developers."

(OS). These are consumer devices that are not built to the usually more stringent commercial or military specifications. Therefore, they are relatively inexpensive to acquire and operate. Airline finance personnel are well aware of this fact, so some in the industry consider these devices throw away or recyclable if the hardware is damaged or broken.

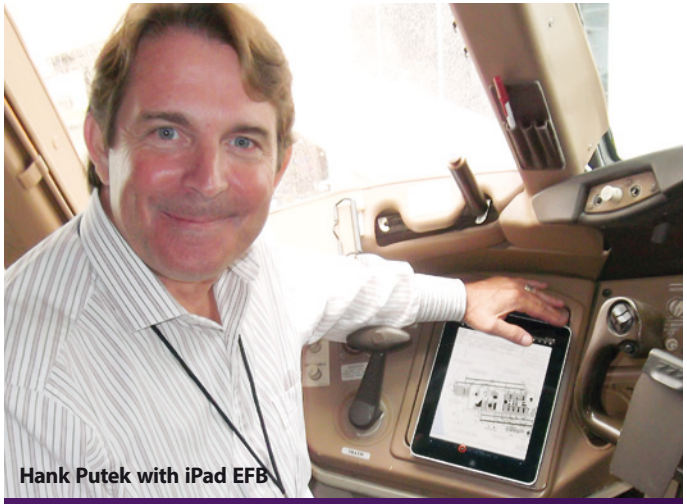
Airlines contemplating implementation of either of these two tablets have much to consider. For example, there are more than 470,000 apps for an iPad, but aviation users may only need three. While the MS Surface is a beautiful and slick piece of hardware, how those aesthetics hold up on the flight deck over time is anyone's guess at this early stage of its evolution. The Surface has no cellular connectivity, so some already consider this unit well behind most of the competition vying for EFB market share. This would appear to be a crippling feature of the Surface as airlines are trying to increase communications and productivity with their flight crews.

Tablet computer advertisements tend to show consumers irrelevant details such as boot times, but really they should be selling aviation operators on more relevant feature sets, such as ease of accessibility to and comprehensiveness of required aviation information. They are also in the fight of their lives over battery life, unless the particular airline plans to provide ships power. Tablet manufacturers use the 'scorecard' advertisement method to sell their product, which can be misleading. Score cards tell potential users that the iPad Air has no ports, and that the Surface has many, but what if flight deck usage doesn't require any ports? Pilots don't require audio for use in the cockpit, but do if the device is to be used for flight training materials. Apple and Microsoft want you to think that factors such as a camera and accessories are

SCORECARD FACE-OFF

	iPAD AIR	SURFACE 2
Design	✓	
Ports		✓
Display	✓	
Audio	✓	
OS and Interface	✓	✓
Productivity		✓
Performance	✓	
Camera	✓	
Apps	✓	
Battery Life	✓	
Accessories	✓	
Value		✓
TOTAL POINTS	9	4

Figure 2



Hank Putek with iPad EFB

"Airlines contemplating implementation of either of these two tablets have much to consider. For example, there are more than 470,000 apps for an iPad, but aviation users may only need three."

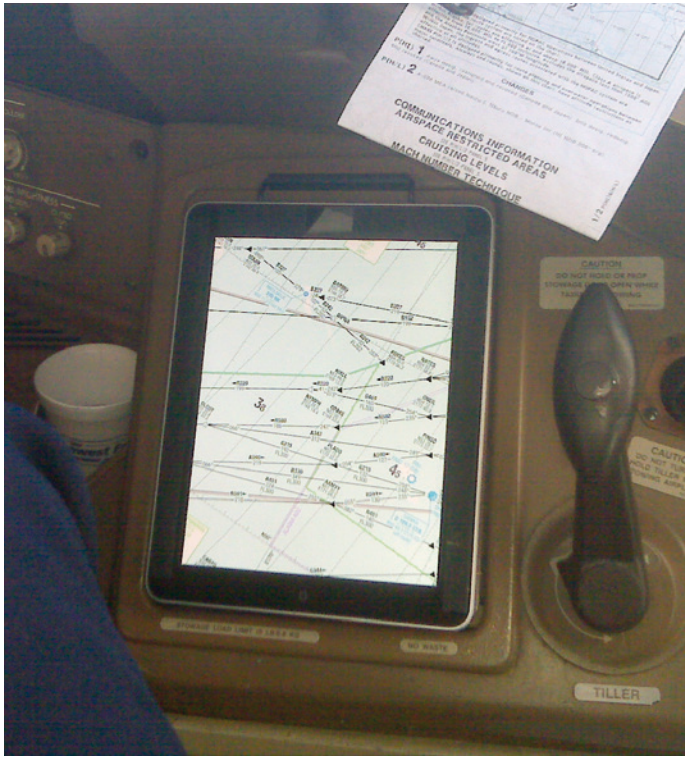
important, but really, it is the capability of the tablet to meet the intended functionality that matters. Since the scorecard style of advertising is meant to sell product, the purchasing departments must be diligent in filtering the necessary information in order to make an effective decision based upon their respective needs.

WHAT TO CONSIDER IN TABLET EFBS — FUNCTIONALITY VS VALUE

There are, however, a few primary considerations when selecting a tablet computer for electronic flight bag purposes. On the operational side, software maintenance can be an expensive issue, especially for Windows operating systems. If you are trying to save costs, you don't really want the extra overhead required for maintaining software programs - you just want them to work!

Since Apple iPad's can successfully achieve about 70 to 75% of the tasks a Class 3 device can manage for less than a tenth of that cost, can you imagine how hard it is to make a successful Class 3 implementation argument to airline finance management?

On the operational side, software maintenance can be an expensive issue, especially for Windows operating systems. If you are trying to save money, you don't really want the extra overhead required for maintaining software programs - you just want them to work! That ratio of 'functionality vs value' will no doubt change in the future with the full implementation of ADS-B In/Out. ITP operations and the regulator's requirement for certified hardware and software will drive the next flight deck computer market. With current low costs of tablet computer operations, airlines are anxious to implement fast ROI EFB projects that make flight operations more efficient.



When EFB devices first came out, no one considered the cost of the hardware refresh cycle, because for many pilots, participation was optional and they used their own tablets/laptops. Bring Your Own Device (BYOD) policies have saved the airlines significant beta testing costs. As the program has matured, many airlines have mandated EFBs, which means they must now bear the overhead costs required to provide pilots and flight attendants the hardware and tech support to do their jobs.

Apple states the iPad battery is good for three to four years before it will not recharge fully to 100%, and with that in mind, the FAA says that you need to have a "mandatory refresh cycle" for such COTS hardware. This is an important consideration because it could cost $3 million to refresh a large airline with 13,000 or more users.

CONNECTIVITY COSTS

As all operators move to a paperless flight deck, connectivity will be a key for EFB flight operations. Since connectivity can prove to be expensive, purchasers need to conduct cost analyses on the benefits of such features. Whether they use Wi-Fi or cellular cards now, operators should be prepared to embrace new connectivity systems, even if they are unfamiliar with them.

Some IT Departments didn't think that the iPad would be compatible with the connectivity of their Windows based enterprise IT systems (mainly because some airline IT departments are strictly a Microsoft-based operation). So, IT department heads have to change their mentality, and get through a lot of ancestral worship to allow iPad's to function in both their IT system and company networks as well as on the flight deck. Apple's Enterprise IT functionality allows the iPad unit to easily fit into the Microsoft Enterprise network and server system, and of course, the Surface provides a seamless fit when it connects to large WIN IT enterprise computing platforms and networks.

SOME PRIMARY CONSIDERATIONS

There are a number of desired EFB functions that are 'desired and required' that can make a big difference.

- What functionality do you desire?
- What functionality is required?
- Do you need a performance calculator, or do pilots get performance data from ACARS?

If a performance calculator is considered a flight critical application, then one must consider if the needed application will run better on the Surface or the iPad. Most aviation-computing experts consider it important that no flight critical data or information is contained on a non-installed (new FAA terminology) EFB that the pilot carries in his personal flight kit. Unfortunately for most operators, non-installed devices are the least expensive way to acquire and operate EFB's, so keeping flight critical data off of these devices may defeat the purpose of purchasing such a device.

COMPUTING SECURITY IN THE SKY

Protection of both hardware and data is significantly important. Which device is easier and cheaper to keep secure? Companies pay people millions of dollars to find vulnerabilities in their software and to protect their data. Fortunately, theft of EFB hardware seems to be a non-issue because many major airlines have implemented Mobile Device Management (MDM) applications that can put electronic location rings around EFB's, and if they are lost or stolen, the tablets can be erased and locked down, basically 'bricking' the unit.

Beyond that, there is also the consideration of the theft of company and personal data. Depending on how deep you let your employees into your company network, they potentially could be walking around with company sensitive data on their device. This, obviously, isn't good, especially if the employee lost the unit, but didn't realize it for a lengthy period of time, which can happen with pilots' schedules.

HARDWARE CONSIDERATIONS

One very serious hardware issue is the use of lithium batteries. The FAA gets quite concerned about allowing operators to plug an iPad or a Surface into flight deck power to recharge.

SHIP'S POWER

Testing of the ship's power has been undertaken to ensure the aircraft power output meets the exact power requirement of the tablet. Originally the FAA stated that if there was any variance in the ship's power to the charging power requirement, then pilots wouldn't be allowed to charge COTS tablets on the flight deck, because the regulator did not want to have an overcharge/battery fire event on a lithium battery in the cockpit. However, as the FAA has extensively tested various fleets (including 400hz output), they seem to have now lightened up a bit, on this issue. Both the iPad and the Surface are equal in this category, each requiring similar power requirements for charging.

"Since connectivity can prove to be expensive, purchasers need to conduct cost analyses on the benefits of such features. Whether they use Wi-Fi or cellular cards now, operators should be prepared to embrace new connectivity systems. . ."

"Recently a National Transportation Safety Board report from the 2013 UPS A300 crash included all data the investigators found on both the pilots' company issued iPads and the pilots' personal computers and phones."

PRODUCT GENERATION

Product maturity is also a factor in the tablet computer implementation decision making process. Apple says that the latest iPad is fifth generation, while Microsoft's Surface, in stark contrast, is only on it's second generation.

PRODUCT DESIGN

Both pilots and design engineers warn that the flight deck can be an unfriendly and hostile environment for fragile tablet designs. Testing has shown that the Surface is more fragile than the iPad -- when dropped from a height of 3 feet. In a similar test, the iPad survives unless it lands directly on one of it's four corners, in which case the glass will crack and web. The iPad's advantage in this category is important if the device is intended to be removable. If the device is "permanently mounted," they are equal.

MOBILE DEVICE DATA MANAGEMENT

Generally speaking, third party application developers create MDM applications for iOS, but in reality, third-party developers cannot build any MDM application that operates outside of Apple's own locked down specification. Apple controls all the MDM functionality, and developers create apps around those parameters. Apple also provides a free utility for mobile device management. This allows airline IT departments to create their own MDM for their own devices, which could save significant dollars over having to get outside contractors to create and administer a MDM system.

On the Microsoft Surface, there are a large number of third party MDM providers and the Windows 8.1 OS can have its levels of MDM controlled to the parameter and specifications that the customer wants. In that respect, Windows 8.1 OS has a much better, and wider ranging MDM capability, and is much easier to customize to the operator's requirements.

PRIVACY EXPECTATIONS

Privacy concerns are big deal for all users of mobile devices. Pilots are especially suspicious of airline management intrusion on their personal lives. The Allied Pilots Association is particularly against its pilots using company issued devices for any personal purposes.

APA publicly states that the company-issued device should be used for

company business only. If you want to listen to music, take pictures or surf the web, they advise bringing another personally owned device. There is however one exception where division of information between company issued devices, and personal devices makes no difference at all: an accident or incident.

Recently a National Transportation Safety Board report from the 2013 UPS A300 crash included all data the investigators found on both the pilots' company issued iPads and the pilots' personal computers and phones. The investigators downloaded all the information, and then made the content public. The moral of the story is: if you have an accident or incident, you have no privacy..

EFB ACQUISITION PROBLEMS

There are a number of issues that can muck up the acquisition process, including the following attitudes and actions:

- Buy first, then decide what to do with it later;
- Free is better than not free... that's a sure-fire way to get what you pay for;
- No validation testing with actual users, in the actual job that they do;
- Have lots of inter-departmental meetings, instead of focusing on the end user's requirements, and the requirements of the operation;
- Do not survey the end user after the validation testing;
- Unwilling to spend money on third party consultations.

SUMMARY

In the end, both the iPad with iOS, and the Surface with WIN8.1 OS will be able to get the job done. The iPad has a better form factor, the Surface has more ports and can run all the Microsoft Suite of applications. The Surface feels less hardened for flight deck operations (however if the tablet is mounted, this may not be a factor). Data integrity certainly is better on the iPad due to the sandboxing scheme of the OS. Both the iOS and WIN8.1 operating systems can be hacked, so it's a draw when it comes to data security, however a higher percentage of hacks exist for the WIN OS.

Connectivity will cost the same for either implementation, however software management will be more costly on the WIN platform than on the Apple platform. ■

HANK PUTEK JR.

777 INTERNATIONAL PILOT AND TRAINING COMMITTEE MEMBER, ALLIED PILOTS ASSOCIATION

A computer scientist and 29 year veteran of international, heavy jet flying, Hank has amassed over 10,000 flight hours in various aircraft types including the DC-10, 747SP, and the Boeing 777. His technical background includes ten years at Apple Computer, six years as Chief Technical Officer for a California startup, and he was a finalist for the Aviation Week and Space Technology Laureate Award held in Washington DC (Information Technology/Electronics category) for his work on the iPad project at American Airlines. He is currently on the Allied Pilots Association Training Committee, specializing in electronic flight bag technical oversight. The Allied Pilots Association represents the 10,000 pilots that work at the new American Airlines.

BRIAN C. TIGHE

CAPTAIN 767 & 757, AND DEPUTY CHAIRMAN TRAINING COMMITTEE, ALLIED PILOTS ASSOCIATION

Having attended the US Air Force Academy, Brian graduated with an engineering degree in 1980. He completed his Undergraduate Pilot Training at Vance AFB in Enid OK, before flying B-52s and T-37s at Mather AFB in Sacramento, CA from 1981 until 1985. After leaving Active Duty in 1988, he went to fly with American Airlines as a Boeing 727 Flight Engineer, and also joined the Illinois Air National Guard flying A-37s. He was later upgraded to the Airbus A-300 as a First Officer and switched to the New York Air National Guard to fly C-5s. Brian retired from military duty in 2010, completing 30 years of commissioned service and to date has accumulated approximately 18,000 hours of flying time.

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ALLIED PILOTS ASSOCIATION

Headquartered in Fort Worth, Texas near Dallas/Fort Worth International Airport, the Allied Pilots Association (APA) serves as the certified collective bargaining agent for all 10,000 American Airlines pilots. APA was founded in 1963 and is the largest independent pilots' union in the world. APA provides a broad range of representation services for its members, and also devotes more than 20 percent of its dues income to support aviation safety.

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Airline and Operator Fuel Efficiency / Savings Masterdass and Software demonstration Webinar recording

12th June 2014

Openairlines

SESSION OVERVIEW

Sign up to view this Webinar recording (recorded 12th June 2014) and join the Fuel Saving experts at OpenAirlines who take you on an online tour of their software and consulting solution SkyBreathe Fuel Efficiency. Via an as live demonstration of the ground-breaking SkyBreathe Fuel Efficiency software solution (and following the processes already used successfully by airlines such as Transavia and Aigle Azur), you see how to continuously monitor fuel consumption and identify the most relevant opportunities for fuel saving using sophisticated, innovative algorithms and taking into account exact flight conditions.

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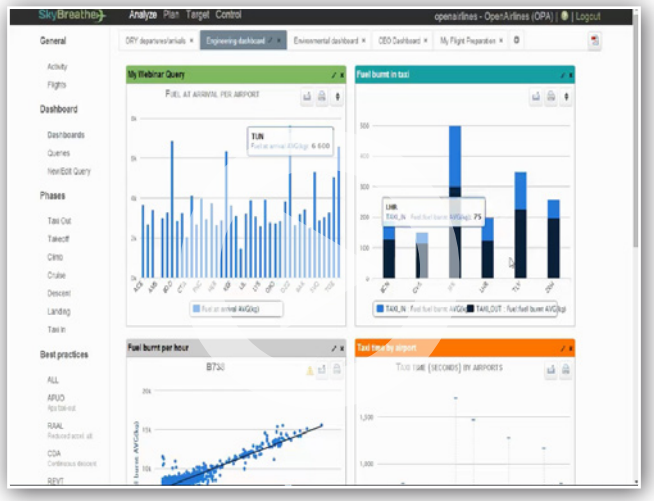

EFB and XML Document Management Masterdass and Software Demo Webinar Recording (including iPad demonstration; Smart Content; Creation; Distribution]

3rd July 2014

OVIDIUS

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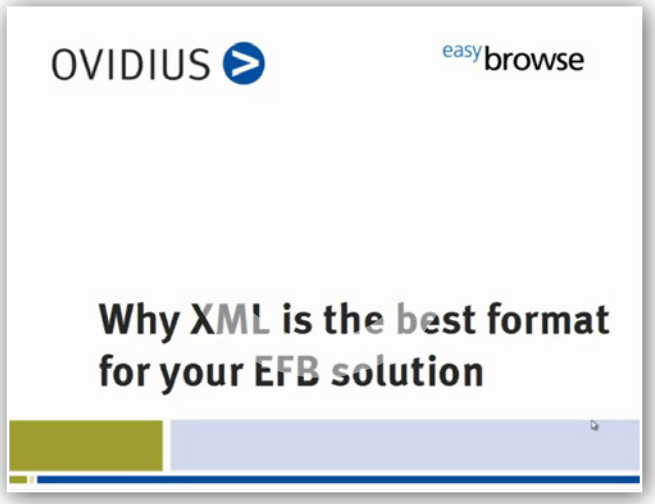

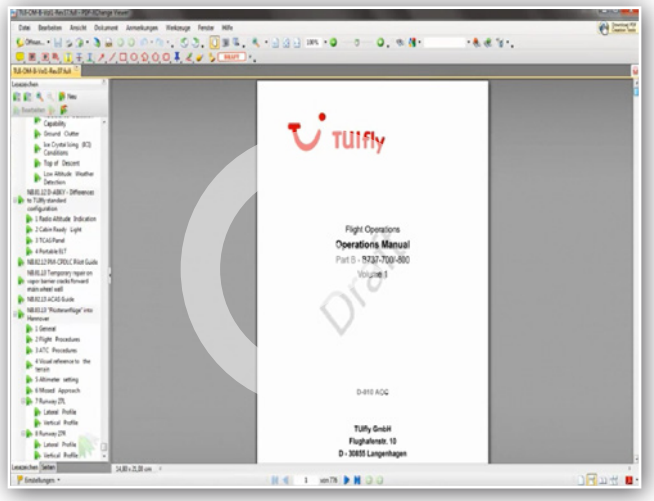

About the Live Software Demonstration Webinar Recordings

Whether you missed them the first time around, need to refresh your understanding of available systems before making a key decision or if you are building a reference portfolio of relevant knowledge, these past webinar recordings will add vital market intelligence to your established professional skills. They'll improve and sharpen your awareness of available solutions and add to your knowledge store. You'll gain an overview of the major Flight Operations software systems on the market today, from the world's leading IT Vendors, and all at a time and a place compatible with your busy schedule. Each demonstration lasts 1 hour, providing airlines and aircraft operators with the perfect introduction to each Flight Operations software solution demonstrated.

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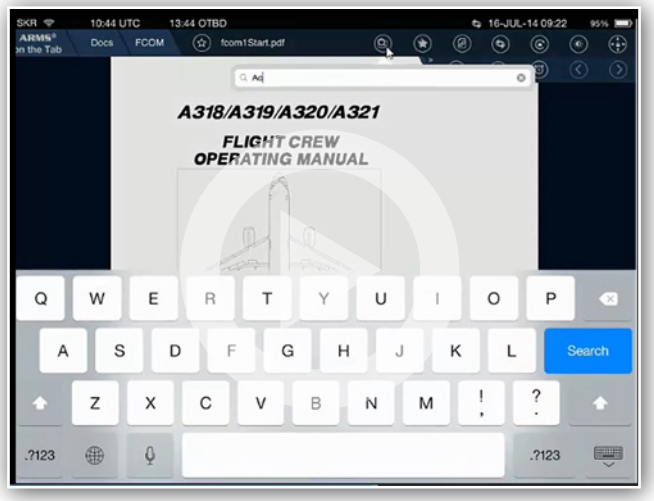
iPad/Tablet Integrated Flight Ops Software Demo Webinar Recording (including EFB; ETL; Charts; Trip Kits). Pre-recorded

17th July 2014

SESSION OVERVIEW

Sign up to view this Webinar Recording (recorded 17th July 2014) and see how a seamlessly integrated, Flight Operations Software Suite, running from a single database and sharing critical data can provide any fixed or rotary wing operator with a next generation, cost-effective, iPad / Tablet solution for both their air and ground crew. During the recording, product specialists from SDS take you on an as live tour of their iPad / Tablet solution, ARMS on the TAB, where you see the following functionality: EFB; eTechLog; CFP; Trip Kits; Charts; Forms; Interactive document library / Forms (via XML technology); NOTAMS; Weather Briefing; 3rd party Apps Integration..



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The helpful Webinar format means you don't just learn what solutions are but also how to use them and apply them to different challenges and opportunities. The entire Fuel Management/Efficiency market on your screen: easy to use and wholly aligned to your requirements.

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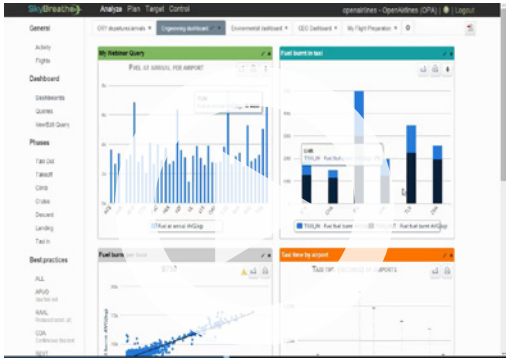

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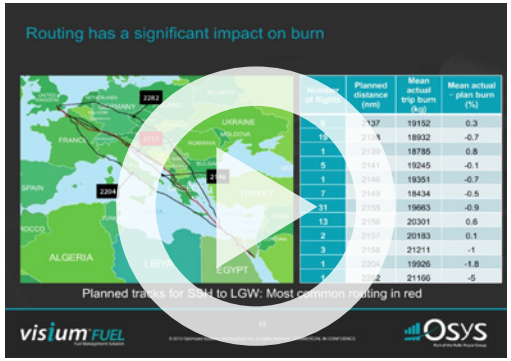

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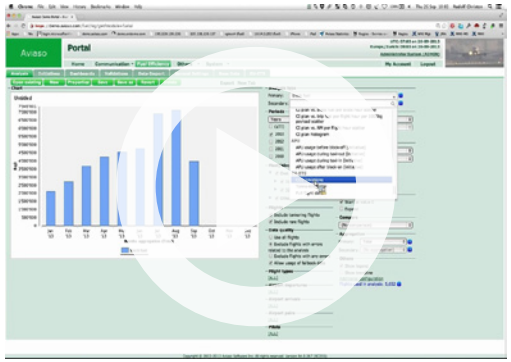

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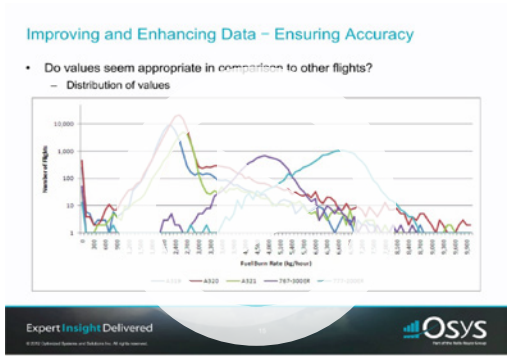

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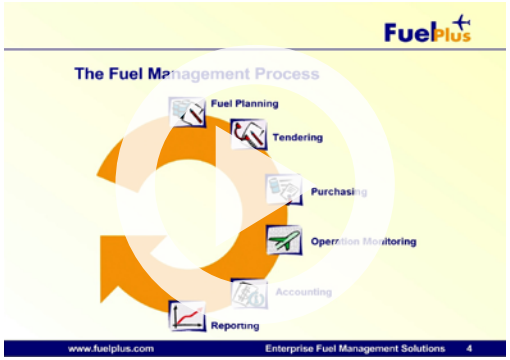

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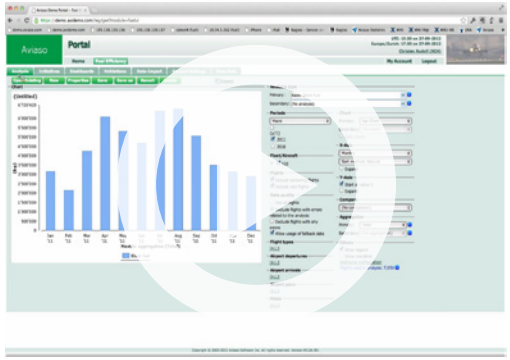

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FuelPlus
Enterprise Fuel Management

FuelPlus Fuel Management Solutions Software Demo Webinar (Pre-recorded)

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Aviaso
connecting aviation and software

AVIASO Fuel Savings Masterclass and Software Demo (Pre-recorded)

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Upcoming Live Software Demonstration Webinar at www.aircraftit.com this September 2014

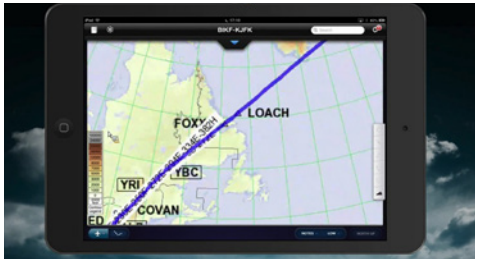
Sign up to ***free*** live online software demonstrations for a perfect introduction to the world's leading Flight Operations Software vendors and to learn how they can assist and add value to your operations.

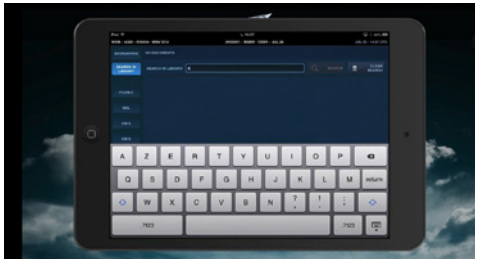
September 2014 will bring a further tremendous opportunity for readers to attend a program covering EFB Software with a focus on tablet solution. If you need to know more about this topic, you'll save a great deal of time and gain a lot of what you'll need to know to inform a good decision by simply attending this informative webinar.

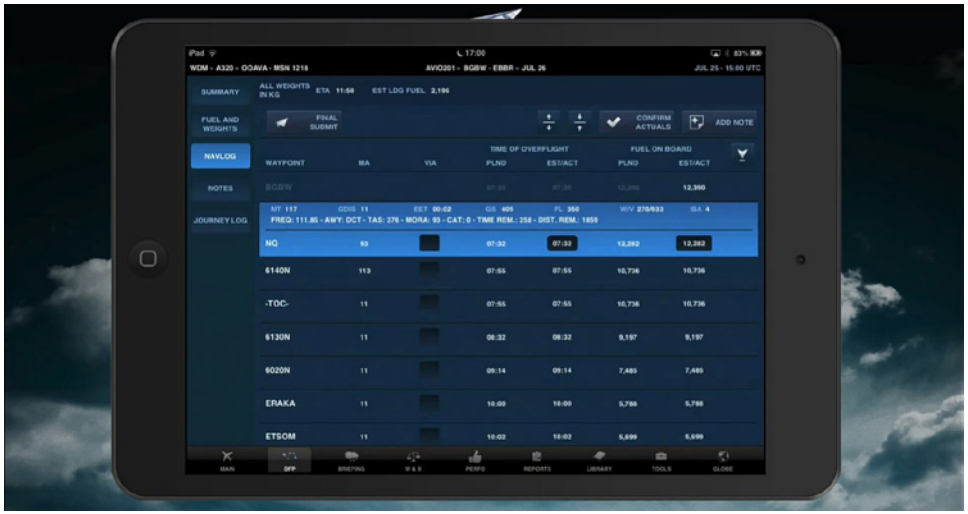
And remember that if you miss a webinar or are reading this after the live webinar has run, you can still access all of the benefits through a recording of the event – go to www.aircraftit.com/Operations/Webinars/Past.aspx for how to do that.

AVIOBOOK EFB Software Demonstration Webinar [iPad; Windows; Comprehensive Module Overview]

- **SESSION 1:** 4th September 2014 – 06:30 UTC /GMT
- **SESSION 2:** 4th September 2014 – 14:30 UTC /GMT
- **DURATION:** 1 hour plus Q&A.







REGISTER TO ATTEND this Webinar and join AvioVision for an online demonstration of AVIOBOOK, their ground-breaking Electronic Flight Bag (EFB) software solution – modular and designed for a variety of platforms, both online and offline, including iPad; desktop and laptop computers; tablets; and cockpit-installed units.

This Webinar focuses on iPad and tablet functionality and provides a live demonstration of the solution and explains how the EFB is linked to the back-office via AVIOBOOK BASE. You'll see that sophisticated EFB software can provide pilots with an iPad and tablet solution which is more than an electronic device to eliminate paper from the cockpit; it provides new possibilities for an entirely digital experience which can reduce operational costs, enhance back-office processes, increase oversight, limit the risks of human error and facilitate regulatory compliance.

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The World according to IT ...and me!

What the heck is net neutrality and why should we give two hoots about it?

Paul Saunders writes…

Before I go any further, I should like to point out that the bulk of this column was written before another bespectacled Englishman did a much better job of explaining the issue of net neutrality in a clearer and funnier way than I ever could. Check out YouTube for John Oliver's Net Neutrality piece from HBO's Last Week Tonight on Sunday 1st June. Notwithstanding this I'd like to draw your attention, dear reader, to a technology issue that is dividing politics on both sides of the Atlantic. And when I say dividing politics, I mean dividing politicians between those who don't understand what net neutrality is and those who don't care.

A LEVEL PLAYING FIELD FOR NOW… BUT

In short, net neutrality is the principle that ensures a level playing field for all Internet content and services. It is a principle on which the Internet has been built to date and means that Internet Service Providers (ISP) are required to treat all data traffic equally without any discrimination. This means that my image search for fluffy kittens is given equal network priority with your less important, work-related data request. But new laws being debated in Europe and in North America may dismantle all this. Netflix users suffered the initial skirmishes of the net neutrality battle earlier this year when the ISP Comcast capped peer-to-peer communications resulting in a degradation of service in the US. This only came to a halt when Netflix agreed to pay a premium.

TWO DIFFERENT APPROACHES

The European Parliament voted earlier this year to prevent ISPs from implementing similar preferential tariffs for content access, or from blocking rival services, setting it on course to be enshrined in European law later this year. However, in the US the FCC is on course to allow ISPs the freedom to dictate their own terms for content providers. Backers of the proposals say that this will bring competition and innovation to the ISP market.

You may be one of the few Internet users who has no interest in fluffy kittens or Netflix, but net neutrality also means that there is no fast lane or slow lane for all of your business needs as well. Whether you are synching new content to your EFB device, downloading your personal roster data, accessing a Cloud-based document, or carrying out any online performance calculations, this Internet traffic is given equal priority by your ISP regardless of your hardware, software or service provider choices under the current principles. The differing stances between European and North American regulators will certainly lead to some interesting challenges for users to consider. As well as deciding on their software and hosting providers, there will ultimately be a choice of hosting locations and any resulting Internet tariffs.

"…what regional attitudes to net neutrality means for innovation and competition on a global level. Will the removal of net neutrality in the United States lead to a migration of services to Europe?"

One final thought is what regional attitudes to net neutrality means for innovation and competition on a global level. Will the removal of net neutrality in the United States lead to a migration of services to Europe? Or will the promised competition that the removal of net neutrality will provide bring additional benefits to North American vendors? And to think that the Internet used to be just 'a series of tubes…' Now it's becoming much more complex, or at least that's how I see IT. ■

INTERACTIVE: YOUR AIRCRAFT IT – GET INVOLVED!

Why not get involved with the debate? Send your comments or questions to Paul by clicking here. The most interesting comments will be published in the next eJournal.

The power of XML – for dynamic operation manuals on EFBs at TUIfly

Sebastian Franz, referent director flight operations, at TUIfly, explains how the company deals with documentation.

"This technology allows us to have interlinked manuals which are based on one content structure which we can filter according to the task at hand. We can also already embed graphics and videos into the documentation as well as personalize our manuals which are updated automatically."

YEARS AGO, WHEN flight operations involved paper folders that had to be updated once a week, I often had to search for bits of information page by page. When you've got nearly 900 pages, it can take quite a long time to get the information that is needed. Since then we have moved on to a 'paperless cockpit'. To do that we had to optimize our information for all possible media and output devices… installed EFB, personal devices and the intranet on a standard web-browser; as well as having the ability to generate PDF and print-ready documents. It was also important that the publication process was automated.

TUIfly currently operates 38 Boeing 737-NG aircraft as a charter carrier for TUI Travel plc — a major European tour operator. Within the group we operate nearly 160 aircraft and we want to harmonize our operations and all our manuals, which has to be done across five different AOCs (Airline Operations Centers). This is why we have to think carefully about compilation and distribution of the material as well as adoption of new media channels by the end-users.

DOCUMENTATION IMPROVEMENTS

There have been many improvements in documentation from the days of the Ten Commandments (carved in stone), through hand written papyrus scrolls, to the printed bible. But perhaps we should first ask, what is documentation? Asking Siri on my iPhone, I got the definition of documentation (from Wikipedia) as "A set of documents provided on paper, or online, or on digital or analog media, such as audio tape or CDs. Examples are user guides, white papers, on-line help and quick-reference guides. It is becoming less common to see paper (hard-copy) documentation. Documentation is distributed via websites, software products, and other on-line applications."

There are a number of requirements for modern documentation: It should be portable and available everywhere — and, as there are moves to reduce weight in aircraft, stones are not an option. Documentation should also be clearly structured and easy to navigate, something that is probably not achievable with scrolls. Moreover, it should be easily accessible and easy to maintain, and be updated automatically; I'm sure no-one wants to update their documentation manually.

Progress in the documentation industry is such that even the Encyclopedia Britannica is only available as an electronic application. The standard of today's documentation is an electronic version of the former printed library.

Within our five airlines, we have taken the step of moving PDFs, which are essentially electronic pages, onto stylish devices. This does not fully harness the potential of e-documentation: it is essentially the same editorial process as with paper manuals whereby updates are electronic. The process of finding the information remains very much the same as with a paper manual. For us to fully harness the power of e-documentation we have to shift our mind-set. We need to listen to the priorities of our staff… priorities that include:

- All documents should be hyperlinked;
- They expect google-like search functions;
- Relevant changes should be automatically highlighted;
- It should be possible to add bookmarks and notes to personalize the manuals (much in the way that Post-it® notes were once used);
- Most importantly, it must be possible to filter the relevant content for a particular task.

OPEN YOUR MIND: NEW AGE DOCUMENTATION

In the ideal world, pilots want information to appear as it does in Wikipedia or Google. But what concept is needed and what data frame is able to handle those requirements? TUIFly GmbH embraced a new-age concept in the 80's and has since never looked back. We adopted XML and manage our textual content with an XML based CMS (content management system). This technology allows us to have interlinked manuals which are based on one content structure which we can filter according to the task at hand. We can also already embed graphics and videos into the documentation as well as personalize our manuals which are updated automatically. Figure 1 nicely illustrates the features of our EFB application that runs on iPads and installed EFBs as well as our intranet.

Figure 1: Linking all documentation in one structured system

Up until recently, progress has been slow with incremental improvements to the way that we manage our information; but now the benefits are starting to show. When I search, my device searches every piece of documentation available on my iPad and provides me with an immediate list of choices without me needing to page. In that way my documentation assists me in getting to the right place faster than a book with an index. If I search for a specific word, I have the benefit of it being highlighted within

the text automatically so I always arrive in the right chapter with as little search time as possible. My updates are no longer packs of paper. As soon as I am in the vicinity of a Wi-Fi connection, my app checks for updates and downloads the new information. The revised information is then highlighted so that my attention is drawn to it immediately.

MANUAL HARMONIZATION

The TUI group wants to harmonize their operations including technical documentation as there can be massive savings there. It is possible to have one structure of information with the ability to reuse and repurpose content, thus decreasing the workload of the documentation department. With the power of XML these manuals and their creation can be harmonized, reducing redundancy and adding value. At the front-end where the pilots are the end users, we have the benefit of being able to filter according to the tail sign we are sitting in and receiving only the information that is relevant for that machine. Our documentation department can also then concentrate on creating more valuable content such as embedded 3-D graphics and info films to enrich the experience of e-documentation.

ADMINISTRATION DEMANDS

We mustn't forget there are certain administrative expectations from the airline's perspective when it comes to documentation. At TUIFly GmbH we identified that it should be centrally managed and administered; there should be a multi-airline capability (editorial system) so that we can reuse the same content in different chapters of the OM (operations manual) A/B/C/D. This should also allow the automated generation of revision records, including a list of effective chapters, and active changes; switching to a more modern style.

Airlines will demand additional output as PDFs, either the complete manual, or changes to the pack for revisions. The documents should be audit proof, e.g. linked compliance list, with no specific XML knowledge required. Finally, the system should deliver a cost-effective solution.

XML for flexible, powerful documents

Klaus Fenchel, managing director at Ovidius, discusses why XML, and not PDF or word processing formats, is the best document format for intelligent EFB applications.

TOGETHER WITH EASYBROWSE — a 100% subsidiary company of Ovidius — we have a modular and integrated solution for content creation, content management, content publishing and content delivery: TCToolbox Airline Edition. TCToolbox is a generic XML CMS (content management system) which is in use in several industries where it supports authors and editors to reduce the complexity of and time needed for their documentation requirements. The companion product EB.4aviation is our system for electronic delivery to Windows and iOS based platforms.

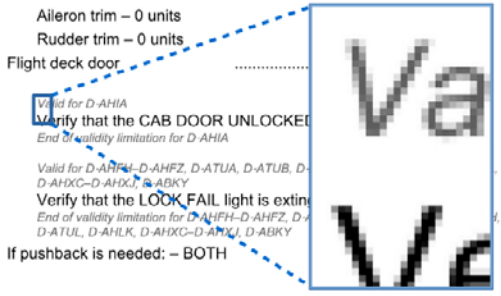


Figure 2: What is in a bitmap?

Both systems are native XML systems — they harness the power of XML in an uninterrupted workflow. In addition EB.4aviatioin can also index and display many other document formats, e.g. PDF, Microsoft Word and Excel. This feature allows for a step-by-step migration from a non-XML workflow to a full XML based workflow.

Figure 2 shows part of an OM-B page from TUIfly as a bitmap image. You as a human reader may well easily recognize that this is some kind of procedure. However, any software trying to process this document will not get very far. If you look closely you will just see dots on a page — there is no text, no graphics objects like lines or boxes.

Modification of the page is not really possible, but the format is very good for long-term archiving, as long as the images are saved as TIFs, or similar. Extracting higher level information like textual or structural content is very difficult from a bitmap — you have to use something like an Optical Character Recognition (OCR) system, or send it overseas for re-typing.

A PDF is already a step up in the information structure hierarchy. In many cases it is possible to identify words, lines, and with some additional processing intelligence you may even find paragraphs. However, frequently in a PDF, a text flow doesn't exist. In essence, in a textual PDF you have characters which have an absolute position on a page, and some basic font information with a character. In general there is no structural information (there are tagged PDFs, but they are rare) or semantic structure, meaning you don't know if something is a procedure or not. PDFs make interactive editing of content very difficult, and while content extraction is possible it is difficult, as is structure enrichment.

Word processing formats are suitable for easy interactive editing. In a word processing format there are paragraphs, tables and lists, graphics objects, cross references etc. which is an improvement on PDFs. It is possible to define named styles (e.g. Heading 1) which allows for uniform formatting of similar structural objects. Named styles may even carry some semantic information (e.g. by naming it 'Warning' instead of 'Box1') but there is a limit to what you can achieve with this mechanism. The benefit of word processing formats is that they are designed to allow easy interactive editing. Word processing formats are virtually useless for long-term archiving or for setting up stable and reliable

> *"We mustn't forget there are certain administrative expectations from the airline's perspective when it comes to documentation. At TUIFly GmbH we identified that it should be centrally managed and administered…"*

documentation processes — even within one and the same word processing system 10 year old documents may not be compatible with today's system. Extracting textual content from word processing formats is simple — automated extraction of the semantic information needed for intelligent applications like EFBs is difficult or impossible.

THE FUTURE IS XML

What exactly do we mean by 'semantic' information? Let us look at a screenshot (Figure 3) which displays the same piece of information we have seen already, now in an XML editor. There is the same textual information as in the word processing document and in the PDF, but there is an additional level of information: in XML we delimit 'information objects' with tags, e.g. an action consists of a challenge and a response, and, optionally, a crew member — the text is marked up accordingly. Procedure items consist of commands and steps etc. Each string of text not only carries textual information, it also says explicitly what it is. We call this 'self-describing': the text "Flight deck door" by its mark-up <Challenge> states that it is a challenge in a challenge response pair.

Additional information can be associated with information objects: we can assign effectivities to information objects: in Figure 3 one procedure item appears twice with a minor modification — the effectivity information codes which item applies to which aircraft. Other parameters which can

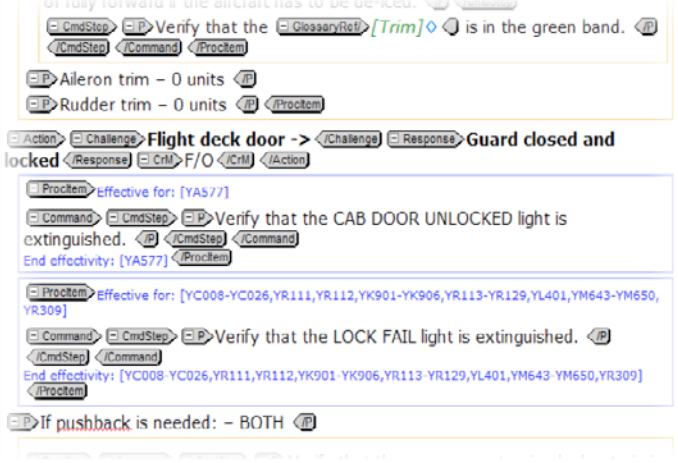
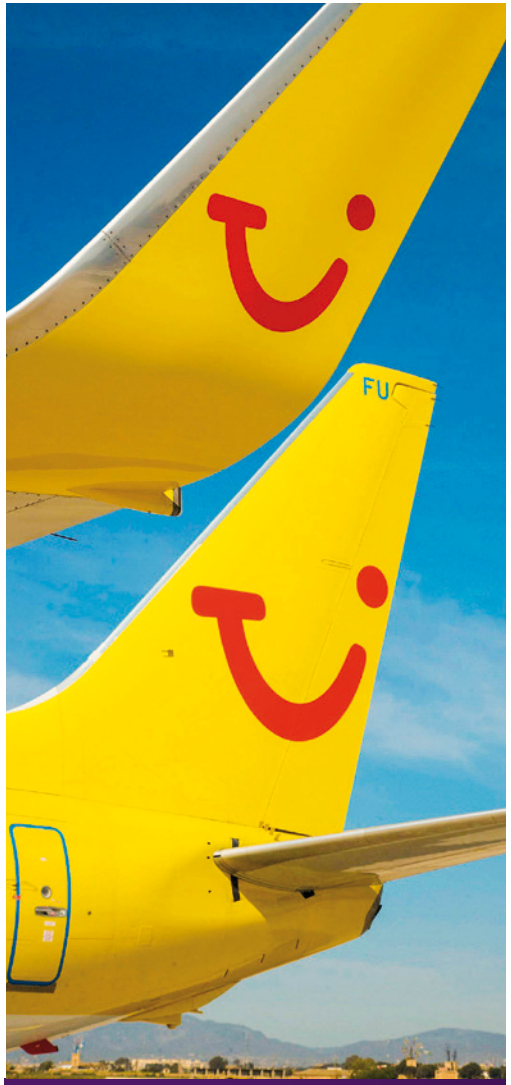


Figure 3: What is in an XML document



"In an XML-based content management system you only change those information modules that need to be changed; all other parts of the manual remain untouched. Publication processes are fully automated and very quick. This leads to short update cycles."

influence the validity of information may be 'target group' (cabin, cockpit, maintenance), 'temporal information' (only valid on certain dates) etc. If information is marked up in such a way, the entire information body can easily be filtered based on these criteria. In essence, an XML document consists of textual content, text structures (like paragraphs, lists or tables) and highly semantic data islands (like procedures, actions, effectivities). An XML document therefore has both the characteristics of a textual document (easily readably by humans) and a database (easily processed by software for filtering, transforming and querying information).

THE INFORMATION STRUCTURE HIERARCHY

The formats discussed so far can be displayed in an information structure hierarchy.

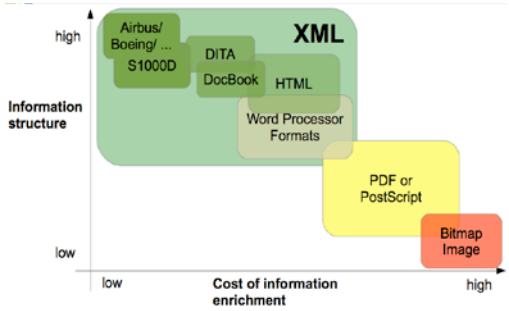


Figure 4: The information structure hierarchy

The horizontal axis in Figure 4 represents the cost for information enrichment from low to high, the vertical axis the level of information structure of the document format. Bitmaps, as we have seen, have virtually no information structure usable in automated processes — consequently enrichment in most cases is a manual process, associated with high costs. PDF is also low on the hierarchy.

XML is represented by a very large area. The reason is that XML, being a generic language for information description, can be used to describe almost any other type of format. As a matter of fact, modern word processor formats are XML based — this is true for Microsoft Word and OpenOffice. Still, they remain dedicated general purpose word processors with little to no support for encoding additional semantic information. The XML formats we are interested in can be found in the upper left corner, e.g. the XML structure of Boeing and Airbus documentation, the S1000D structures in defense documentation. These are the type of structures which allow us to create 'intelligent data' for 'intelligent applications'.

Depending on which document formats you are using in your processes, several workflow scenarios are possible: let us briefly review two of these:

SCENARIO 1 is when you get information from your pilots, engineers and other sponsors in a word processor format, PDF or mail, and the internal format of your operation manuals is also a word processor format. Based on this you distribute your manuals in print or as PDF; your EFB application is based also on PDF. In terms of software this is very inexpensive. However, you may have trouble meeting regulatory requirements, and the functionality of PDF based EFBs is low (filtering, re-flow of content for different device sizes, data driven connections to other applications etc.).

SCENARIO 2 is the type of solution we are aiming at. We want to get input in XML, manage it in XML, and publish in XML. This process allows us to get the benefits we have seen. We can still generate PDF for printing and archiving in order to fulfill regulatory requirements but we also have the full functionality of XML-based EFB documentation applications. Implementing such a scenario has higher initial costs than scenario 1 and it requires a bit more training but the benefits easily compensate for these initial investments.

BENEFITS OF AN XML-BASED SYSTEM

If you want to create a PDF, you use the enriched XML to pre-filter for a specific fleet, run the type-setting automatically and then you publish. In the PDF, you'll get automatic generation of LoeP/C (list of effective pages/chapters), LaC (list of actual changes), change marks, up-to-date glossaries and list of abbreviations which are consistent across all of your manuals.

For the EFB publication you always deliver the data unfiltered to all recipients; filtering occurs directly in the EFB application, e.g. by fleet, aircraft, target group etc. In addition, with an XML-based EFB format you can support device-optimized display and advanced functions like index-based searches, showing and hiding change marks, different styles for day and night mode, persistent commenting and bookmarking.

In an XML-based content management system you only change those information modules that need to be changed; all other parts of the manual remain untouched. Publication processes are fully automated and very quick. This leads to short update cycles. In addition you can easily generate differential updates — during the paper era they were called 'change packs,' and you still can create these — but you can also deliver change packs to your EFB application, thus reducing the size of the updates you deliver to the display devices.

Finally, using a generic XML content management system you can replace parts of the system without having to touch the other parts — there is more flexibility in selecting system components, meaning there is less vendor lock-in.

CONCLUSION

A fully XML-based workflow for creating, managing, publishing and distributing your operation manuals has a number of consequences: There is definitely a learning curve in order to make the most of such an environment. The documentation process requires a certain level of expertise. Basic input can be delivered by all users in any format but you'll need a small number of information experts that integrate and configure that input in order to be re-usable; they enrich it in order to allow filtering and efficient retrieval.

There may be higher initial costs for an XML-based system and the associated training, but there are definitely lower lifetime costs since you have shorter turn-around cycles and faster publication processes with little or no manual interaction. Working with such a system also helps to fulfil your regulatory requirements since you can always track who did what, when, and why. In some cases we reduced the times for preparing and carrying out audits from weeks to days.

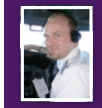
If your information is important, and vital for your business, you need the right expertise to create, maintain and publish it. You will have pilots, crew members, and engineers, entering information at a level that is acceptable to them. But at the core, the people who configure the information, write the publications and automate the processes have to be experts. You don't let amateurs service your aircraft: you shouldn't let amateurs run your documentation processes.

And you should choose the only document format that is flexible and powerful enough to meet your requirements of today and tomorrow: XML. ■

> *"…at the core, the people who configure the information, write the publications and automate the processes have to be experts. You don't let amateurs service your aircraft: you shouldn't let amateurs run your documentation processes."*

SEBASTIAN FRANZ

TUIfly



REFERENT DIRECTOR FLIGHT OPERATIONS, TUIFLY

Sebastian Franz has been with TUIfly since 2002 and is currently their Referent Director, Flight Operations. As First Officer on the B737, he was Quality Pilot & Auditor from 2005-2007 and has been Manager, Flight Operations for the past six years.

Between 1997 and 2001, Sebastian combined the Lufthansa Flight Training School with academic studies, gaining his ATPL & University Degree (Dipl. Ing. Aviation Science & Management) in 2001.

Since 2006, Sebastian's extensive Project experience has covered "Paperless Cockpit", "Electronic Flight Bag", !iPad" and "Crew Request System", with expertise in core processes and workflows within airlines. His wide-ranging knowledge of EU-OPS, Regulations & Requirements and IASA Regulations & Audits, together with a profound expertise in IT software and hardware, enables him to interface effectively with internal Departments and external Partners.

KLAUS FENCHEL

OVIDIUS

MANAGING DIRECTOR, OVIDIUS

Klaus Fenchel is the founder and managing director of the Berlin based Ovidius GmbH. He initiated the development of the core technologies that Ovidius uses as a basis for their products to this day. In the present day he is in charge of the strategic direction of the company as well as finance and personnel.

After high school, he studied linguistics, computer sciences and mathematics at the Free University of Berlin. His studies took him to France (Rennes) and the USA (Cornell University and University of California, Santa Cruz). Following his university career he continued as a university lecturer specializing in linguistics, computational linguistics and programming.

Later on he worked in various industrial companies as a language specialist and SGML/XML consultant and was the head of various software development projects. He founded Ovidius GmbH in 1996.

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Aircraft IT Operation 'Vacancies' on the website highlights real opportunities with great businesses looking for the best professionals

TARGETED OPPORTUNITIES

Considering your next career move? At Aircraft IT Operation 'Vacancies' great businesses flag up opportunities that need experience and skills like yours: or you can simply use us for overview of the market.

Aircraft IT Operations is the specialist website and publication for your sector so you won't have to trawl through a host of general vacancies to find the aviation operations IT ones that need your skills and will advance your career.

JOB ALERTS FOR FIRST SIGHT

As well as listing current career opportunities, Aircraft IT Operation 'Vacancies' also lets you sign up for 'Job Alerts', to receive email alerts, making you among the first to learn about the latest opportunities and in pole position to put yourself forward.

CAREER OPPORTUNITIES CURRENTLY ON THE WEBSITE INCLUDE THE FOLLOWING SO SIGN UP NOW BY CLICKING HERE

Operations Software Tender Upload

Aircraft IT website Operations Software Tender Upload function puts your requirements in front of all the leading Flight Operations IT Vendors.

THE AIRCRAFT IT Tender Upload function allows Airlines and Aircraft Operators the opportunity to send their software requirements to 30+ of the world's leading Flight Operations IT Vendors at the click of a mouse. It's all of a piece with Aircraft IT's mission to put readers in front of as many opportunities as possible to maximise their professional effectiveness; this time by linking to other professionals with a proven track record of matching complex requirements with effective solutions.

Whether you are looking for EFB software and hardware (Class I, II, III), iPad Solutions for the Flight Deck, Flight Planning Software, Fuel Saving Solutions, Crew Scheduling Software, this Tender upload feature will allow you to send your requirements to all the major IT Vendors at the same time... and it's not rocket science! In fact, it couldn't be easier.

HERE'S HOW IT WORKS:

- Visit the Tender Upload page at the Aircraft IT Operations Website by **clicking here**.
- Login below with your Aircraft IT Membership details. If you are not a member click on sign up and enter your details - it is free to join. If you are already logged in click on 'Upload Tender' below.
- Fill in the Tender Upload form and upload a PDF document of your requirements. Under the 'Software Type' section, which ever box you tick sends your Tender to all the IT Vendors in that section of the Aircraft IT website.
- Click 'Upload Tender' and your information will be sent to the key contacts at the IT Vendors.

Once the Tender has been uploaded the IT Vendors will very soon send you details about their software and product solutions that would be suitable to address your requirements.

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Interested in MRO IT Solutions?

WHITE PAPERS

MRO and Big Data

Benjamin Walther, CEO, and Marc Borkowsky, Business Analyst, at aviationexperts

Big Data and predictive analytics can take the vast data generated by modern aircraft and leverage it to improve the efficiency of maintenance and planning.

CMS and MRO systems integration

Thanos Kaponeridis, CEO & President, AeroSoft Systems Inc.

This first in a two part series considers the history of IT in the sector and how that has led to a seeming inability to integrate the different systems we use.

CASE STUDY

Mobile Case Study

Rob Lowy, Project Manager, Maintenance & Engineering at Alaska Airlines and Sherilyn Segrest, Program Manager, Fleet & Maintenance Solutions at Boeing

Mobility is coming to Maintenance & Engineering and, if the project is properly managed it will improve processes, enhance information availability and support better decisions.

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aircraft IT
MAINTENANCE - OPERATIONS

Operations Software Directory

Key 'at-a-glance' information from the world's leading Operations software providers.

From Electronic Flight Bags (EFBs) to Fuel Management Systems; From Flight Planning Solutions to Operations Cost Management — the leading IT vendors below can cater for all requirements.

ACFT PERFO

W: www.actperfo.com

T: +352 26 12 94

E: info@ actperfo.com

Company formed: 1999. Office Location: Steinfort, Luxembourg

Number of Modules.....10

KEY BUSINESS/SOFTWARE AREAS

- **WORLD AIRPORT DATABASE Compatible for ALL TO Performance soft**
- **All A/C Types TO. & LAND. Performance soft**
- **EFB SOFTWARE SUITE**
- **Operational support in Performance and Operations**
- **EFLS Electronic loading system ground operations**

ACFTPERFO has acquired a solid experience in the development of electronic flight bags tools and related support since start up in 1999. Our products are in continuous evolution in order to adapt to new regulations or practices in this rapidly changing business. We use our expertise to help the customers and our commitment is to find the best solution for any challenge an airline could face. Safety is a major concern of our ACFTPERFO team and our airport database has been developed to be the best on the market. It is maintained up to date using extremely efficient tools which guarantee the highest level of accuracy and follow up.

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AIRCORE SYSTEMS GMBH

W: www.aircore.aero

T: +49-2992-9771-40

E: info@aircore.aero

Company formed: 1992, Office Location: Fuerstenberger Strasse 70, DE-34431 Marsberg, Germany

NAME OF PRODUCT MARKETED

- **AS – FlightBag 3.0**

Number of Modules.....6

KEY BUSINESS/SOFTWARE AREAS

- **Library • CrewBriefing • JourneyLog**
- **TechLog • LeastCostRouting • PostFlightAnalysis**

The aircore_systems GmbH is a part of the PAS-IT-Group founded in 1992 and located at Marsberg, Germany, close to airport Paderborn (PAD / EDLP). Subject of the business is to provide suitable and affordable software solutions and consulting for the airline industry. The major difference to other companies is our combination of IT knowledge on the one hand and airline knowledge on the other hand as several staff members hold a valid captains rating on transport category aircraft in addition to their academic degrees. The main software application of aircore_systems which is in use since many years at several regional airlines is the EFB solution: AS – FlightBag 3.0. In addition to the aircore_systems core modules several third party airline specific applications can be fully embedded into this software suite environment. These are for example the applications of the two primary navigation software providers, the cost index applications, T/O performance tools, reporting tools and so on. The integrated Least Cost Routing Table administrates all data transfers including the data of the third party applications and minimizes the transfer costs significant. The workflow optimization - resulting in an efficiency gain and cost reductions - is the main aim of the AS – FlightBag 3.0 Suite. This goal is realized by a seamless information transfer between all participating members like operations control, cockpit, maintenance, back office, authorities and others parties. Trust center proven eSignatures can be assigned to all legal relevant activities and workflows and make sure that paper based work can be substituted fully by electronic workflows..

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AIRLINE CONTROL SOFTWARE

W: www.airlinecontrol.com

T: +48 22 2095035

E: contact@airlinecontrol.com

Company formed: 2005, Office Location: Poland (Warsaw), USA (New York), UAE (Dubai), UK (London), Marocco (Casablanca), Argentina (Buenos Aires), Italy (Rome), Zambia (Lusaka)

NAME OF PRODUCT MARKETED

- **ACS System Enterprise**

Number of Modules.....18

KEY BUSINESS/SOFTWARE AREAS

• Flight Operations, OCC Flight Dispatch, Sched – flight network planning • Crew Support with Duties autoplanner • CAMO (Part-M) and Maintenance (Part-145), Logistic • Document Management • Safety Management System (SMS) & QMS • Handling, Fueling, Fleet Management • On Board sale • Training (WBT&CBT Platform) • Tickets & Booking (Revenue Management, Fare Engine) • Finance Support – Cost Control • Cargo Support • Online Data Base replication

A specialized IT company engaged in software development for the airline. The main product is the ACS System, consists of 18 modules. There are optional modules: OPS (including OCC Flight Dispatch, FLIGHT INFO PAX OPS, MCC), CREW, CAMO (Part-M), LINE MAINTENANCE (Part-145), FLEET MANAGEMENT, HANDLING, FUELING MANAGEMENT QMS, SMS, TRAINING, TICKETS & BOOKING and built-in modules: DOCUMENTS MANAGEMENT, LOGISTICS, SCHED (flight network planning), FINANCE SUPPORT (cost control), SYSTEM ADMINISTRATOR. System is designed for small and medium-sized airlines cover in full all aspects of managing and supporting the airline. YOM 2012. Uses the latest technology – mainly Microsoft and Apple. Three platform for user: PC, Cloud, iPad/iPhone. Scalable and open integration with other systems existing in the airline. For data security, each client can use an online database replication. Quick implementation of the system.

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AIR SUPPORT A/S

W: www.airsupport.dk

T: 0045 7533 8889

E: pps@airsupport.dk

Company formed:1988; Office Location: Billund, Denmark

NAME OF PRODUCT MARKETED

- **PPS - Preflight Planning Solutions, CrewBriefing**

KEY BUSINESS/SOFTWARE AREAS

- **Flight Planning**
- **CrewBriefing facilities**

AIR SUPPORT specializes in the provision of pc-based flight planning software systems with integrated web-based CrewBriefing — PPS and CrewBriefing - services to private and commercial business aircraft operators, regional/charter/cargo/national airlines, military/utility operators and flight service providers.

Today, PPS is used by aircraft operators throughout 32 countries operating more than 3000 turboprop and jet aircraft daily consisting of more than 350 different aircraft types and versions.

PPS is powered by LUFTHANSA Systems FlightNav worldwide navigation data including all global route restrictions, worldwide updated NOTAMs, Surface Weather data and Wind and Significant Weather charts based on original source data.

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ARCONICS

W: www.arconics.com

T: (00353) 1611 4625

E: info@arconics.com

Company formed: 2001; Office Location: Dublin, Ireland

NAME OF PRODUCT MARKETED

- **Manual Manager, AirPortal, EFB Viewer**

Number of Modules.....5

KEY BUSINESS/SOFTWARE AREAS

- **EFB Document Management**
- **Airline content management**
- **Flight crew notices management**
- **Mobile document viewer apps**
- **EFB document viewer**

Arconics is a leader in content management software and services for airline operators. Our team has over 10 years of world-class expertise in airline operations and document standards, web and mobile applications and XML data processing. Arconics provides EFB Document Management for Notices, Manuals and Forms on EFB Class 1, 2 & 3, Web and Mobile.

Arconics products reduce costs, improve efficiency, and ensure regulatory compliance. Thousands of flight and ground operations staff, pilots and cabin crew depend on Arconics products to help safely and efficiently operate their fleets every day.

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AVIASO INC.

W: www.aviaso.com
T: +41 55 422 0000
E: info@aviaso.com

Company formed: 2003; Office Location: Pfaeffikon, Switzerland

NAME OF PRODUCT MARKETED

- **Airline Portal, Fuel Efficiency, EU-ETS, ART-Aviation Reporting Tool, Additional Products.**

Number of Modules..... n/a

KEY BUSINESS/SOFTWARE AREAS

- **Airline Portal**
- **Fuel Efficiency**
- **EU-ETS**
- **ART - Aviation Reporting Tool**
- **Additional Products**

Aviaso is an international software company developing products exclusively for the aviation industry.

The focus of Aviaso is on complex, operational aviation topics, such as Fuel Efficiency, EU-ETS,Aviation Reporting, and Crew Communication. Additionally, Aviaso has a long experience in integratingaviation IT systems and also develops the Aviation Portal - a leading intranet solution for aviation companies.

Furthermore, Aviaso maintains data centers in Switzerland and Sofia and provides customized hostingsolutions for aviation companies.

Aviaso has its head office in Switzerland and a software development center in Sofia/Bulgaria. The companywas founded in 2003 by Nicola Fantini, Rudolf Christen, Georgi Mitov, and Ivan Markov and has nowa total staff of 23 employees..

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AVIOVISION NV

W: www.aviobook.aero
T: + 32 16 29 89 80
E: info@aviovision.aero

Company formed: 2010; Office Location: Leuven, Belgium

NAME OF PRODUCT MARKETED

- **AVIOBOOK / EFB for Airlines & Business Aviation**

Number of Modules.....10

KEY BUSINESS/SOFTWARE AREAS

- **Main**
- **Operational Flight Plan**
- **Briefing**
- **Weight & Balance**
- **Charts**
- **Performance**
- **Reports**
- **Library**
- **Tools**
- **EFB Ground Administration Tool**

AvioVision N.V. is a young Belgian company that is offering an innovative and comprehensive EFB solution, by facilitating integration of technologies in its EFB products, combining them with operational excellence into smart solutions for front line and back-office staff.

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AVIIT LTD

W: www.aviit.com
T: +44 (0)1383 620922
E: info@aviit.com

Company formed: 2004; Office Location: Fife, Scotland.

NAME OF PRODUCT MARKETED

- **Archimedes & eMan**

Number of Modules.....2

KEY BUSINESS/SOFTWARE AREAS

- **ACARS data management - Archimedes**
- **ACARS Technical Consultancy**
- **Technical publications Distribution - eMan**
- **Document Acknowledment - eMan Read & Sign**
- **IT systems management & support**

AviiT is exclusively focused on the provision of software solutions to the aviation sector.

Drawing upon data sources such as ACARS, Archimedes provides a powerful capability to capture, analyse and present valuable, real time data in a clear and flexible format to Operation and Engineering teams.

eMan provides an efficient capability for the distribution of technical publications across the maintenance and repair estate. Used by aircraft operators and 3rd party MROs alike, eMan unlocks the benefits of smooth and efficient distribution of engineering and process documentation. eMan is available as an on-premise or hosted offering for complete deployment flexibility.

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THE BOEING COMPANY

W: www.boeing.com/boeingedge/informationservices
E: TheBoeingEdge@boeing.com

Company formed: 1916

KEY BUSINESS/SOFTWARE AREAS

- **Electronic Flight Bag Solutions**
- **Flight Operations Solutions**

Boeing offers the industry's broadest range of aviation services to provide our customers the ultimate competitive advantage. We call this the Boeing Edge. In the information services field, we are keenly focused on addressing our customers' continuous need for integration and optimization of information. Using data, software, analytics and IT infrastructure, we connect airplanes, operators and data. We strive to enable smart and informed decision-making to take operational efficiency of their aircraft fleet and operations to the next level.

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CGX AERO

W: www.cgxaero.com
T: ++33 6 14 66 68 00
E: michael.benhamed@cgxaero.com

Company formed: 1996; Office Location: Castres (France), Labège (Toulouse, France)

NAME OF PRODUCT MARKETED

- **Odyssee, Sat4flight, Man4flight, Geotitan**

Number of Modules.....5

KEY BUSINESS/SOFTWARE AREAS

- **ODYSSEE**
- **PBN Ops Approval**
- **Assistance for regulatory compliance**
- **GEOTITAN**
- **SAT4FLIGHT**

CGX AERO develops, integrates, distributes, implements and helps to operate high added value aeronautical information systems optimized to Civil and Military Aviation around the world. Key areas include: Flight Efficiency and EFB Implementation, PBN implementation (ops approval), RAIM prediction, and instrument flight procedures design (including RNP AR). CGX AERO is also very glad to have successfully started ODYSSEE, a decision aid system for operational manager. ODYSSEE adapts Business Intelligence principles for operational managers (Operational Intelligence), and provide with dynamic dashboards and KPIs to get new savings and save fuel.

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CONTROLS AND DATA SERVICES (CDS)

W: www.controlsdata.com
T: +44 (0)1332 771700
E: Helen.Pennington@Controlsdata.com

Company formed: 1999; Office Location: HQ Reston, VA; Houston, TX;
San Diego, CA; Indianapolis, IN; Derby, UK; Bristol, UK; Gateshead, UK; Singapore; Qatar

NAME OF PRODUCT MARKETED

- **Fuel Management and Optimization; Emissions Trading Scheme MRV; Electronic Flight Bag (EFB); Asset and Equipment Health Monitoring; MRO Business and Parts Management; JetSCAN® Engine Health Monitoring**

Number of Modules..... n/a

KEY BUSINESS/SOFTWARE AREAS

- **Fuel Management/Optimization**
- **Emissions MRV**
- **Electronic Flight Bag/EFB**
- **Equipment Health Monitoring**
- **MRO Business and Parts Management**

With a heritage of providing IT value-added services for the Rolls-Royce aftermarket, and delivering services commercially since 1999, Controls and Data Services (CDS) has proven solutions for commercial aviation and defense. CDS provides a complete range of best-in-class aviation services to enhance fleet performance and business operations. CDS monitors more than 9,000 engines belonging to hundreds of civil aviation customers, helps meet compliance requirements with our products and services. Customers are able to increase availability of their critical assets, minimize risk and operational disruption, simplify data management to gain more value from IT investments, and improve operational efficiency.

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DAC INTERNATIONAL, INC.

W: www.dacint.com
T: +512-331-5323
E: info@dacint.com

Company formed: 1984; Office Location: Austin, Texas

NAME OF PRODUCT MARKETED

- **Electronic Flight Bag, GDC64 (Tablet to Aircraft Interface unit)**

DAC International, Inc. specializes in Avionics systems for a wide range of aircraft including major and regional airliners. We offer cockpit system upgrades to meet new operational requirements as well as replacement for older systems. In-house capabilities include a range of analog-digital (A/D), digital-analog (D/A), digital-digital (D/D) converters, Electronic Flight Bags (EFB) and Tablet to Aircraft Interface Units. (TAIU)

Talk to us about anything from FMS, Cockpit Displays, CVR/FDR, Cabin Passenger Briefing systems, ARINC 615 data loaders and more. Certification and integration packages can be included.

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EASYBROWSE GMBH

W: www.easybrowse.com
T: +49 385 343146-20
E: imke.koop@ovidius.com

Company formed: 1994; Office Location: Schwerin

NAME OF PRODUCT MARKETED

- **TCToolbox Airline Edition**

Number of Modules..... n/a

KEY BUSINESS/SOFTWARE AREAS

- **EFB Software Solutions**
- **Digital Documentation Management**
- **Communication Optimisationy**

With the electronic publishing solution from EasyBrowse you create electronic publications ready to use on EFBs, in the Intranet or on iPads.

- Powerful search options
- Virtual publications based on aircraft type / registration
- Automatic database updates
- Incremental updates
- Bookmarks, notes
- Zero footprint installation
- Distribution management and monitoring
- Support any SGML/XML structure plus a wide varity of their formats (PDF, graphics and video)

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ETS AVIATION LTD.

W: www.etsaviation.com
T: +351 91 580 1007
E: dscarlisle@etsaviation.com

Company formed: 2009; Office Location: Gibraltar, UK

NAME OF PRODUCT MARKETED

- **Aviation FuelSaver™, Aviation Footprinter™, ETS Support Service**

Number of Modules.....2

KEY BUSINESS/SOFTWARE AREAS

- **Fuel-efficiency Software Solutions**
- **EU ETS Data Management and Reporting Verification Software**
- **Fuel Saving Consultancy**
- **ETS Data management consultancy**

ETS Aviation Ltd. are specialists in fuel-efficiency programmes and emissions data management.

Since early 2009 our team of aviation specialists and software designers has helped hundreds of aviation operators all over the world. We work with airlines, business aviation operators and trip support companies. And we make their life easier.

We created the ground breaking Aviation FuelSaver™, software and consultancy programme - the easiest to use and lowest cost fuel efficiency system on the market - having already launched a software and consultancy solution called Aviation Footprinter™, for managing EU ETS (Emissions Trading Scheme) requirements.

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EVOKE SYSTEMS

W: www.evoke-systems.com
T: +44 (3)456 521240
E: info@evoke-systems.com

Company formed: 2001; Office Location: Norwich, England

NAME OF PRODUCT MARKETED

- **EFOS (Electronic Flight Operations System)**

Number of Modules..... n/a

KEY BUSINESS/SOFTWARE AREAS

- **Training Records and Expiry Management**
- **Cabin Crew Flight Reports**
- **Journey Log and Fuel Analysis**
- **EU-ETS Management**
- **Document Library and Notices**

Evoke Systems is a British software company founded in 2001 to provide innovative, cost effective solutions to the airline industry. EFOS (Electronic Flight Operations System) is a web-based crew portal and flight operations management system with supporting mobile device software for use as part of an EFB solution.

Evoke Systems has clients in both the commercial and business aviation sectors operating from the UK, Europe and the Middle East. They include start-ups and established airlines looking to streamline their processes. Our customers tell us that we provide exceptional levels of support and provide creative solutions to their problems.

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FLATIRONS SOLUTIONS

W: www.flatironssolutions.com
W: www.corena.com
T: +1.303.627.6535
E: Julie.Fouque@flatironssolutions.com

Company formed: 1994, Office Locations: Europe, Asia, and the United States

NAME OF PRODUCT MARKETED

CORENA Suite

Number of Modules.....10+

KEY BUSINESS/SOFTWARE AREAS

- **Content Management System (CMS)**
- **Interactive Electronic Technical Publisher (IETP)**
- **Maintenance & Engineering**
- **Flight Operations**
- **Tablet Solutions & Mobility**

Flatirons provides consulting, technology, and outsourcing for content lifecycle management (CLM). For more than 20 years, we have served global Fortune 1000 customers in aerospace, automotive, electronics, financial services, government, healthcare, and publishing. Our customer engagements help organizations efficiently deliver the right information, at the right time, to the right people by leveraging structured content and digital media — Turning Content into Knowledge®.

The CORENA Suite by Flatirons is the leading content lifecycle management (CLM) solution developed specifically for organizations that rely on mission-critical data to design, manufacture, operate, or maintain complex assets over their product and service lifecycles as well as across multi-echelon business networks. For more than 25 years, the world's leading airlines, aerospace manufacturers, OEMs, and defense organizations have relied on the CORENA product suite to create, manage, and deliver large volumes of technical information throughout its lifecycle. Today, CORENA customers rely on the CORENA suite to modernize their IT infrastructures, improve customer satisfaction, and maintain their competitive advantage.

Click here for software details
Click here to request private demo

FLYGPRESTANDA AB

W: www.flygp.se
T: +46 40 642 00 10
E: sales@flygp.se

Company formed: 1969; Office Location: Malmö/Sweden, Connecticut/USA

NAME OF PRODUCT MARKETED

- **Airport Analysis, Performance GURU, FOCS**

Number of Modules..... n/a

KEY BUSINESS/SOFTWARE AREAS

- **Aircraft Performance Services**
- **Flight Planning Software**
- **Performance Engineering**
- **Special Performance Calculations**
- **Engine Failure Procedures**

Flygprestanda AB, a pioneer in aircraft performance calculations, was founded 1969.

For over 40 years Flygprestanda has been in the forefront of providing aircraft operators of all kind with high quality services. Today Flygprestanda is serving around 200 customers worldwide from the head office in Malmö, Sweden and continues to lead innovation in this part of the aviation industry with its well known Airport Analyses, Performance GURU and Flight Operations Control System (FOCS).

High quality performance calculations for take off and landing are essential for safe flight operations and a modern flight planning solution is the key to achieve the most cost efficient operations possible.

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FUELPLUS SOFTWARE GMBH

W: www.fuelplus.com
T: +49 (511) 496050
E: info@fuelplus.com

Company formed: 2000; Office Location: Hannover (Germany), Brasov (Romania), Johannesburg (South Africa), Boston (USA)

NAME OF PRODUCT MARKETED

- **FuelPlus**

Number of Modules.....15

KEY BUSINESS/SOFTWARE AREAS

- **Fuel and Operational Analysis**
- **Emission Monitoring & Reporting**
- **Fuel Supply Management**
- **Fuel Operations Support**
- **Fuel Accounting**

FuelPlus, a leading provider of fuel management IT solutions for the global aviation industry, enables airlines to implement and operate sophisticated fuel management processes which improve internal efficiencies, and achieve substantial savings.

FuelPlus consists of a set of modules to handle fuel planning, tendering, contract management, inventory and supply chain management, operations, tankering, EU ETS emissions monitoring and reporting, prepayment, and accounting.

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AERO DIVISION OF GRANDTRUST INFOTECH PVT LTD

W: www.g-aero.com
T: +91 9995801266
E: raju.v@grandtrustinfo.com

Company formed: 2008; Office Location: Cochin, India

NAME OF PRODUCT MARKETED

- **G-COMS Airline Cost & Contract Management System**
- **G-RPS Airline Route Profitability System**
- **G-ARMS Airport Revenue & Contract Management System**
- **G-GRMS Ground Handling Services Revenue & Contracts Management System**

Number of Modules..... n/a

KEY BUSINESS/SOFTWARE AREAS

- **Airline Contract Management**
- **Airline Cost Management, Budgeting and MIS/Dashboard Reporting**
- **Airline Route Profitability**
- **Airports / GHA Contracts Management**
- **Airports / GHA Revenue Management**

G-AERO offers a suite of innovative software products for Airline, Airports and Ground Handling Agents for their Contracts, Cost and Revenue Management. G-AERO product suite not only helps to implement proven industry best practices but also assures direct financial benefits. G-AERO uses latest, secure Microsoft .Net technology in developing its solutions. G-AERO believes in providing best value for money for their customers and there by ensures quick ROI.

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Click Here to Request Private Demo

IDMR SOLUTIONS

W: www.IDMR-Solutions.com
T: 347-565-4367(IDMR)
E: irevivo@IDMR-Solutions.com

Company formed: 2008; Office Location: New York, USA

NAME OF PRODUCT MARKETED

- **InForm**

Number of Modules.....20+

KEY BUSINESS/SOFTWARE AREAS

- **Technical Manuals**
- **Ground Ops**
- **Audits**
- **Distribution**

IDMR is a global provider of easy to use and all encompassing Technical Documentation Management Solutions which have been designed exclusively for Fleet operators, MRO providers and OEM organizations. IDMR's Technical Documentation Management Solutions have proven success in increasing operational performance and decreasing operational cost while insuring airworthiness, safety and regulatory compliance.

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Click Here to Request Private Demo

IFR SKEYES

W: www.ifrskeyes.com
T: +33 (0) 562 74 75 00
E: commercial@ifrskeyes.com

Office location: HQ: Colomiers / France. Offices in Moscow ; Singapore ; Quito (Ecuador)

NAME OF PRODUCT MARKETED

- **AMASIS -> 7 core modules + 6 add-ons**
- **KEOPS -> 8 core modules + 11 add-ons**
- **IBIS -> 6 core modules**

Number of Modules.....13

KEY BUSINESS/SOFTWARE AREAS

- **Flight Scheduling and Flight tracking**
- **Crew rostering / Management**
- **Communication management (movements, load, ATC slots, web based crew portal)**
- **Budgeting and post flight analysis**
- **Business intelligencee**

KEOPS as a complete information system is the spine of Airline operations. The information is controlled and enhanced as the events occur (Flight scheduling, Crew management, Logistics, Flight tracking, Performances, DOC Analysis …) to analyse the activity and monitor associated costs. These financial data enrich a database to generate budget simulations, or hypothetic flight quotation. The combination of the 19 modules and add-ons of this integrated software ensures the company a full operational and financial control of the whole activity. Powerful communication functions spread and automatically integrate the messages linked to the different operational participants (services, crew, suppliers, IATA)..

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IFS - INTERNATIONAL FLIGHT SUPPORT APS

W: www.ifs.aero
T: +45 33464600
E: sales@ifs.aero

Company formed: 2001; Office Location: Skindergade 43 - 2MF, DK-1159 Copenhagen K., Denmark

NAME OF PRODUCT MARKETED

- **PFB Paperless Flight Bag solution, PFB Back-Office Platform, PFB Document Management & Library Module, PFB Web Crew Portal & Notification Module, PFB Electronic Flight Planning Module, PFB Voyage/Journey Log Reporting Module (Pre+Post flight), PFB W & B/eLoadsheet Module w/electronic sign-off, PFB Take-Off Performance ON-line, PFB Take-Off Performance OFF-line, PFB Landing Performance OFF-line, PFB eTechlog Module w/MEL data import/export, PFB eReporting Module, PFB Duty Time Registration Module**

Number of Modules.....11

KEY BUSINESS/SOFTWARE AREAS

- **EModular PFB Platform Architecture**
- **Modular PFB GUI Architecture**
- **Seamless integrations with multiple back-end systems**
- **Fully customized set-ups without expensive R & D costs**
- **Designed for simplicity, userfriendliness and effectiveness**

IFS – International Flight Support is an innovative and experienced supplier of iPad OS and Windows XP/7/8 based EFB Platform solutions aimed exclusively at the aviation industry. The company was founded in 2001 and has a full decade of operational experience providing in-cockpit calculation solutions to airlines, business aircraft operators and military users. The PFB™ Paperless flight Bag software solution defines a new standard for high quality modular EFB architecture. It was built to achieve complete data integration to any back-end software systems used by the operator while offering a unique degree of customization options that reflects each operator's preferences.

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OVIDIUS GMBH

W: www.ovidius.com
T: +49 30 4081895-0
E: imke.koop@ovidius.com

Company formed: 1996; Office Location: Berlin

NAME OF PRODUCT MARKETED

- **TCToolbox Airline Edition**

Number of Modules..... n/a+

KEY BUSINESS/SOFTWARE AREAS

- **EFB Software Solutions**
- **Digital Documentation Management**
- **Communication Optimisation**

TCToolbox Airline Edition is a comprehensive package consiting of tools that support the complete workflow of the manual creation and distribution process: TCToolbox being an approved and robust Content Management System (CMS); SGML-/XML-based CMS; Versioning, access control; Rights management; Supports any graphics format; Importing of Excel tables; Re-use of information modules and graphics; Effectivity management; and Automatic generation of change marks

The powerful typesetting system TopLeaf from Turnkey supports the automatic generation of PDF files and revision packages.

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NAVTECH, INC.

W: www.navtech.aero
T: +1 519 747 1170
E: info@navtech.aero

Company formed: 2002; Office Location: Waterloo, Canada; Surrey, UK; Kista, Sweden

NAME OF PRODUCT MARKETED

- **Aircraft Performance Family: ToDc, Weight & Balance, Airport Obstade Database, Driftdown Data, WiFly. • Charts Family: Aerocharts, Enroute Charts, eCharts, iCharts• Crew Family: Navtech PBS, Navtech Optimizer + partner offerings from IBS, IBR and eTripTrader • Electronic Flight Bag - solutions for viewing Navtech eCharts, Aircraft Performance products, and Navtech Flight Plan via EFB • Flight Planning Family: Navtech Flight Plan + weather services • Navigation Data: data from suppliers such as: GE, Honeywell, ARINC, Universal etc.**

Number of Modules.....6

KEY BUSINESS/SOFTWARE AREAS

- **Aircraft Performance**
- **Flight Planning**
- **Flight Dispatch and Weather & NOTAM**
- **Crew Scheduling/Planning**
- **EFB Software Solutions**
- **Weight & Balance**

Navtech, Inc. is a leading global provider of flight operations solutions, serving more than 350 airlines and aviation services customers. Navtech's product suite includes aeronautical charts, navigation data solutions, flight planning, aircraft performance software (take-off/landing, weight and balance), and crew planning solutions. Many of Navtech's products can be configured as part of an EFB solution, including take-off data calculation, weight and balance, and aeronautical charts. These products, supported by Navtech's AS9100 and ISO:9001 certification, directly support millions of flights each year and help Navtech customers maximize efficiency, reduce costs, ensure compliance with complex national and international safety regulations, and effectively deliver their services.

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NVABLE LTD

W: www.nvable.com
T: +44 141 280 0050
E: contact@nvable.com

Company formed: 2005. Office Location: Glasgow, UK

NAME OF PRODUCT MARKETED

- **Appixo, Appixo ETL**

Number of Modules.....4

KEY BUSINESS/SOFTWARE AREAS

- **Electronic Technical Log**
- **Alternative Training & Qualification Programme (ATQP)**
- **Station Operational Compliance (SOC)**
- **Management Dashboards & Analysis**

NVable (pronounced "enviable") was founded as a specialist software development consultancy creating bespoke solutions that allow customers to exploit the full value of their operational data. NVable now also offers its own software products. NVable recently launched Appixo – a platform that combines large scale data handling with a framework to support multiple mobile data acquisition applications.

The Appixo ETL is one such application, first launched in May 2012 with BA CityFlyer. NVable is now expanding its suite of aviation focussed applications. The growing list now includes ATQP and SOC Management. The data gathered from each application is fed into the Appixo analysis platform to feed the Management Dashboard & Analytics. This allows for real-time analysis of aircraft status, fuel burn/uplift, defects, Out of Phase Maintenance etc.

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OPEN AIRLINES

W: www.openairlines.com
T: +33 531 61 52 10
E: amaury.defenoyl@openairlines.com

Company formed: 2006; Office Location: 1 rue Baour Lormian 31000 Toulouse

NAME OF PRODUCT MARKETED

- **SkyBreathe Fuel Efficiency ; Crew Intelligence ; OptiFleet; CrewPad**

Number of Modules.....5

KEY BUSINESS/SOFTWARE AREAS

- **Crew Efficiency**
- **Fuel Efficiency**
- **Fleet Efficiency**
- **EU-ETS**
- **Cabin Crew CRM**

OpenAirlines was founded in 2006 by former airline operations top executives with the vision to bring innovation to the industry. We are committed to approach our customers with great listening skills and professionalism to deliver results and added value and by combining unique business and IT skills, OpenAirlines proposes innovative solutions to reduce costs and bring a competitive advantage to our customers.

We believe that innovation is very important with more than 25% of turnover devoted to R&D – we have also won the award for Best Innivative company at AGIFORS Crew for 2008 and 2010.

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PACE GMBH

W: www.pace.de
T: +4930293620
E: info@pace.de

Company formed: 1995; Office Location: Berlin (Germany), Seattle (USA)

NAME OF PRODUCT MARKETED

- **Pacelab CI OPS, Live View, Trajectory Designer, EFB Data Recorder, Post Flight Server**

Number of Modules.....3

KEY BUSINESS/SOFTWARE AREAS

- **Cost Index Operations**
- **Fuel Efficiency Monitoring**
- **Electronic Flight Bag**
- **Takeoff and Landing Performance**
- **Cabin Configuration**

Working with leading OEMs, engine manufacturers and airlines for more than 15 years has enabled PACE to develop a range of innovative products that directly respond to the trends and challenges of the international aviation community. PACE closely collaborates with performance engineers, senior training captains, fuel conservation and operational efficiency managers and consultants to deliver real solutions for real people. PACE's portfolio of flight operations solutions is designed to support airlines' universal efforts to improve their daily operations, strategic planning and operational efficiency and to offset high fuel prices and environmental demands with a more effective fuel management.

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ROCKETROUTE

W: www.rocketroute.com
T: +44 1273 782130 / +1 321 473 7423
E: sales@rocketroute.com

Company formed: 2009; Office Location: UK

NAME OF PRODUCT MARKETED

- **RocketRoute**

Number of Modules.....3

KEY BUSINESS/SOFTWARE AREAS

- **Worldwide Flight Planning**
- **Worldwide Navigation**

RocketRoute was established in 2009. The solutions has processed more than one million flights and has more than 50,000 users flying around the world. RocketRoute's system is built by pilots for pilots and now incorporates all the features that airlines and business jet operators are looking for in their next generation of mobile connected flight planning system.

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THE SA GROUP

W: www.scanav.com
T: +45 7950 8000
E: sa@scanav.com

Company formed in 1978; Office Locations: Denmark, Sweden, Norway, Czech Republic, Greece, Bahrain, CIS, India and Malaysia

NAME OF PRODUCT MARKETED

- **Scandinavian Avionics' Tablet Based EFB Solution**

Number of Modules..... n/a

KEY BUSINESS/SOFTWARE AREAS

- **Electronic Flight Bag Solutions**
- **Avionics Certification**
- **Avionics Installation**
- **Avionics Maintenance, Repair & Overhaul**
- **Avionics Training**

Scandinavian Avionics offers a state-of-the-art, future-proof, tablet based Class 2 EFB solution, which provides the functionality to meet today's operational requirements of airlines and aircraft operators and in addition is simple to upgrade in the future to meet coming requirements.

The concept consists of two ruggedized 10.1" Panasonic tablets installed in the cockpit combined with a data integration center and a communication unit installed in the avionics compartment. The data integration center is used for power, aircraft interface and server capability and the communication unit enables and controls the data communication between the EFB system and the airline's ground infrastructure.

The SA Group provides complete turn-key avionics solutions for civil and military aircraft.

Click Here for Product Details
Click Here to Request Private Demo

SHEOREY DIGITAL SYSTEMS LTD.

W: www.sds.co.in
T: (+91-22) 2281 9198/ 2281 1086
E: contact@sds.co.in

Company formed: 1993; Office Location: India: Mumbai & Bangalore, Singapore besides Representative Offices in UAE, Saudi Arabia, UK/Europe and Latin America

NAME OF PRODUCT MARKETED

- **ARMS®V2 (Aviation Resource Management) Integrated InfoTech Suite**

Number of Modules: 12 Sub-systems + 5 more under development

KEY BUSINESS/SOFTWARE AREAS

- **ARMS® Commercial Planning (CPSS)**
- **ARMS® Flight Operations (FOSS)**
- **ARMS® Crew Management (CMSS)**
- **ARMS® Flight Planning & Dispatch (FPDS)**
- **ARMS® Optimizers + ARMS® on the TAB (EFB/ETL))**

Sheorey Digital Systems Ltd. (SDS) an ISO 9001:2008 & 27001:2005 software company, brings you ARMS®V2. A current-generation, state-of-the-art Information Technology System which effectively addresses the extremely critical and cost-sensitive nature of Commercial Airlines/ Air Transport operations.

The ARMS® V2 InfoTech Suite is the only solution in the industry capable of seamlessly integrating all of the functional and operational areas of an Airline or Air Transport operator with a unified database; i.e. a single repository of data with which all ARMS® modules interact.

ARMS® V2 increases process efficiencies and reduces costs while assuring strict Statutory Compliance and uncompromising Safety.

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SITA

W: www.SITA.aero
E: info@SITA.aero

Company formed: 1949; Office Location: Head Office: Geneva, Switzerland. Main Regional Offices in: Rio De Janiero, Brazil; Beirut, Lebanon; Atlanta, USA; Singapore; Rome, Italy .

NAME OF PRODUCT MARKETED

- **e-Aircraft Application Services, e-Aircraft AirportLink WiFi Service, Messaging Services**

Number of Modules.....21

KEY BUSINESS/SOFTWARE AREAS

- **e-Aircraft Application Services (for EFB) • e-Aircraft Connectivity Services**
- **AIRCOM ACARS Services • AIRCOM Datalink Applications • AIRCOM Cockpit Voice**

SITA is the world's leading specialist in air transport communications and IT solutions. We deliver and manage business solutions for airline, airport, GDS, government and other customers over the world's most extensive network, which forms the communications backbone of the global air transport industry. We innovate collaboratively with the air transport industry, and the industry itself drives the company's portfolio and strategic direction. We are the only IT and communications company to run annual, industry-renowned IT surveys for airlines, airports and passenger self-service. Our portfolio includes managed global communications, infrastructure and outsourcing services, as well as services for airline commercial management, passenger operations, flight operations, aircraft operations, air-to-ground communications, airport management and operations, baggage operations, transportation security and border management, cargo operations and more. In addition, we sponsor .aero, the top-level internet domain reserved exclusively for aviation. We are one of world's most international companies. Our global reach is based on local presence, with services for over 550 air transport industry members and 3,200 customers in over 200 countries and territories. Set up in 1949 with 11 member airlines, today we employ people of more than 140 nationalities, speaking over 70 different languages. SITA had consolidated revenues of US $1.49 billion in 2010.

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SMART4AVIATION

W: www.smart4aviation.aero
T: +31 20 654 1824
E: info@smart4aviation.aero

Company formed: 2009; Office Location: Amsterdam, The Netherlands; Kraków and Gdansk, Poland; New Delhi, India

NAME OF PRODUCT MARKETED

- **Smart BRIEF, Smart BRIEF CABIN, Smart NOTAM MANAGER, Smart FUELING, Smart VIEW, Smart MET, Smart OPS, Smart DOC, Smart EFF, Smart EFB, Smart eFORMS, Smart PERFORMANCE, Smart ALERT, Smart COMM, Smart VIEW+, Smart ULD MANAGER, Smart LOAD, Smart HUB, Smart ONTIME, Smart FUEL MANAGER, Smart MISSION MANAGER**

Number of Modules.....21

KEY BUSINESS/SOFTWARE AREAS

- **Smart BRIEF**
- **Smart COMM**
- **Smart FUEL MANAGER**
- **Smart EFB**
- **Smart PERFORMANCE**

Smart4Aviation was founded to provide web based products and services to optimize, simplify and improve airline operations. The Smart4Aviation's goal is high quality, cost-effective solutions backed up with 24/365 support service. It offers 21 modules which are interoperable, compatible and can be freely composed into the one system as well as software developed on demand, which are used with success by pilots, crew, dispatchers, ground ops and many different departments. The modules work as basic building blocks that can be used to build the system that will meet exactly customer's requirements, that are tailored to the customer's needs.

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T&A SYSTEME GMBH

W: www.logipad.aero
T: +49 23 24 92580
E: info@logipad.aero

Company formed: 1994; Office Location: Hattingen, Germany

NAME OF PRODUCT MARKETED

- **Logipad**

Number of Modules.....6

KEY BUSINESS/SOFTWARE AREAS

- **iPad EFB Management**
- **Class-I EFB**
- **Class-II EFB**
- **Logipad for Cabin**
- **Logipad for Maintenance**

T&A SYSTEME GmbH is an IT-Service & solution provider, founded in 1994 and headquartered in Hattingen, Germany. The company has around 60 employees and focuses on national and international customers that reach up to 10000 devices. We have solid international experiences with customers of global reputation. In addition to consulting services, we are a strategic partner for development of scalable future proven IT-solutions. With Logipad T&A provides a global EFB Management solution, to handle and support any data on Class-I, Class-II and iPad Devices with one standardized ground process.

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THALES

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T: +33 (0)5 6119 65 00
E: topwings@thalesgroup.com

Company formed: 1968; Office Location: Toulouse, France

NAME OF PRODUCT MARKETED

- **TopWings**

Number of Modules.....1

KEY BUSINESS/SOFTWARE AREAS

- **EFB hardware**
- **EFB software solution**
- **Ground Operations**
- **EFB Project guidance**
- **Scalable end-to-end solution**

An integrator to design, customize and support your EFB solution.
TopWings® is an innovative and unique solution that provides a tailored answer to your needs for Electronic Flight Bag (EFB) implementation. Thales's one-stop solution is a global EFB offering for operators, comprising Hardware and Applications for cockpit and cabin. It also provides Data Management and Ground Applications with a wide range of services. With TopWings, operators obtain significant operational savings and quick return on investment. Best in class, TopWings is a customisable, modular solution that helps key decision makers master complexity and make timely decisions for better outcomes.

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ULTRAMAIN SYSTEMS, INC.

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T: +1.505.828.9000
E: sales@ultramain.com

Company formed: 1980; Office Location: Albuquerque, New Mexico USA

NAME OF PRODUCT MARKETED

- **ULTRAMAIN® M&E / MRO • ULTRAMAIN Mobile Mechanics™ • ULTRAMAIN Mobile Inventory™ • efbTechLogs™ • eCabin™**

Number of Modules: ULTRAMAIN for M&E / MRO, 28 Modules; ULTRAMAIN Onboard Systems Software, 5 Modules

KEY BUSINESS/SOFTWARE AREAS

- **Maintenance & Engineering**
- **MRO**
- **Maintenance Planning & Scheduling**
- **Paperless Customer Care on Tablets**
- **Electronic Aircraft Logbook**

Ultramain Systems, Inc. develops M&E / MRO and EFB software for the aviation industry and is the only aviation software provider with customers running full, end-to-end paperless operations from the cockpit to the ground.

ULTRAMAIN® v9™ , featuring Mobile Mechanic™ and Mobile Inventory™, enables real-time paperless data collection for the full maintenance and inventory process. Combine ULTRAMAIN v9 with efbTechLogs™, the easy-to-use electronic logbook, and the entire maintenance process becomes paperless.

Contact us to learn what you need to equip your organization with consumer mobile devices and see why elite aviation customers around the world are choosing ULTRAMAIN to reduce costs and increase aircraft up time.

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