NEW TECHNOLOGY: AIR FRANCE WHITE PAPER: WEB MANUALS • ALTON AVIATION CONSULTANCY HOW TECHNOLOGIES WORK: STORKJET

AIRCRAFT IT Operations

SEPTEMBER-OCTOBER 2021 • V10.4

Predictive analytics drive savings at Air France

Presenting pilots with the right information improves in-flight fuel and CO_2 savings

Why tail-specific performance?

AI and flight data deliver a model specific to each aircraft

Looking to a connected future

Driving passenger comfort and better retail sales in flights

Paperless and securely mounted

Paperless documentation and putting it where the pilot can see it

SITA

FOR AIRCRAFT

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AIRCRAFT IT Operations

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AircraftIT Operations is published bi-monthly and is an affiliate of Aircraft Commerce and part of the AviationNextGen Ltd group.

COMMENT

Aircraft IT Ops: Looking forward to new ways of working with future-ready ideas and solutions

WORDS: ED HASKEY

After what is undoubtedly the most challenging year or more ever faced by commercial aviation in peacetime, we can, at last, lift our eyes from the day-to-day pandemic issues and dare to think about, as well as start to plan for, the new order, the future. It will mean having to consider some new ideas and the IT solutions that support them or even, in many cases, make them possible. It will also mean looking again at ideas that, before the pandemic, airlines might have regarded as too exotic or 'not yet' ideas, in order to re-evaluate not whether they can afford them but whether they can afford to be without them. It would be a foolish director or executive today who did not approach all new ideas, or ideas they had not previously considered, with an open mind.

In this bumper issue of AircraftIT Operations, our contributors have really stepped up to the plate with some great ideas for the future. Ideas to save money, to save time and to add value... starting with a new section, 'New Technology' and a great article from Air France and Safety Line, part of SITA FOR AIRCRAFT, on the perennial issues of fuel efficiency and CO_2 reduction. It tells how having the technology to engage pilots in the program has improved decisions and performance. Another new section is 'How Technologies work' with an article from StorkJet about the value of applying artificial intelligence and real flight data to develop tail-specific performance models and ensure the optimum performance for every aircraft in the fleet. Alton Aviation Consultancy explains how the pandemic has moved aircraft connectivity from the 'nice to have' category into a business-critical supporter of better services for less cost to drive higher profit from non-flying activities such as retail and catering. Nearly every large passenger aircraft and freighter now has EFB capability; the article from PIVOT sets out the importance of a reliable and consistent mounting solution to ensure optimum performance of the EFB. With all this airlines still need to keep track of procedures and regulations to ensure compliance at all times. The article from Web Manuals is about ensuring not only that all documentation is always up-to-date but also that it is instantly available to whoever needs to see it.

As befits a bumper issue, we also have a bumper set of four Vendor Flight Logs from StorkJet, Safety Line, Evoke Systems and Bytron Aviation Systems. There is also the regular round-up of news and technology developments: plus, of course, the comprehensive 'Operations Software Directory'. **Aircraft IT Operations:** looking to the future with ideas and solutions that will make it work profitably.


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Royal Brunei Airlines signs up for N-Flight Planning

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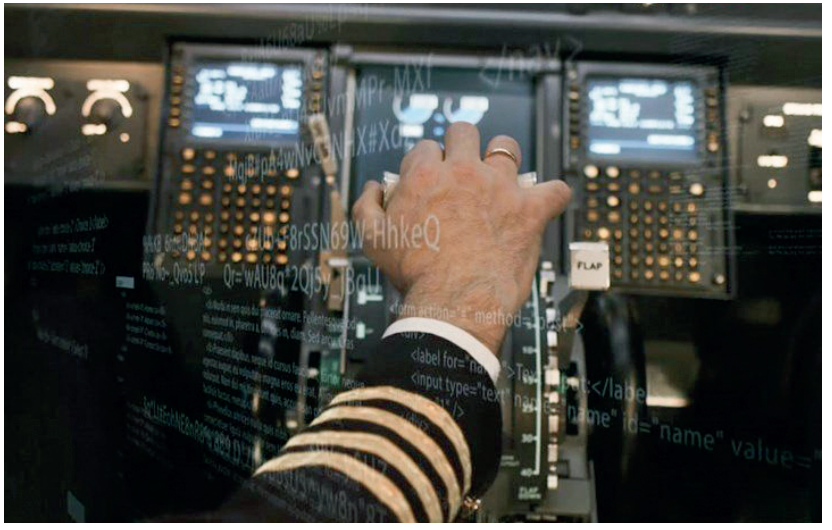
SITA acquires Safety Line to strengthen the Digital Day of Operations portfolio and support sustainable aviation



SITA takes the lead in deploying predictive data analytics for co-innovating with customer airlines and airports to reduce CO_2 emissions and improve fuel savings. In mid-July 2021, SITA, the global IT provider for the air transport industry, announced the acquisition of Safety Line S.A.S., the Paris based start-up specializing in digital solutions for aviation safety and efficiency.

This acquisition will strengthen SITA's Digital Day of Operations portfolio, helping airlines drive more efficiencies and fuel savings around the aircraft while taking immediate and sustainable steps to reduce their carbon footprint.

With air transport accounting for about 3% of the worldwide carbon emissions, there is growing pressure on airlines to reduce their overall emissions. At the same time the COVID-19 pandemic requires airlines to make their aircraft operations leaner, in particular reducing costly fuel burn. Safety Line has successfully applied predictive analytics to deliver significant improvements to aircraft

operations, strongly complementing SITA's existing portfolio. With this acquisition, SITA will accelerate the development of sustainable solutions that can be integrated with its existing suite of airline and airport solutions.

Reducing aircraft CO_2 emissions in-flight and at airports

The acquisition comes as a logical follow-up to the commercial partnership signed between the two companies in September 2020, focused on helping airlines reduce their CO_2 emissions with OptiFlight, the only predictive in-flight fuel efficiency solution leveraging machine learning performance models for each aircraft to optimize all flight phases including climb-out, cruise and descent. OptiFlight is already fully integrated with existing applications in SITA's Digital Day of Operations portfolio, and current joint customers include Air France, Transavia Airlines, Aerologic and Condor.

On the ground, Safety Line's AirsideWatch will allow SITA to expand its airports offering to airside operations, using surface movement radar data to better understand, analyze and optimize the ground traffic of aircraft between gates and runways with an aim to reduce unnecessary emissions.

Using data to improve safety and risk management

With safety being a key pillar in aviation alongside efficiency, the acquisition also covers SafetyCube, a solution that enables aviation stakeholders to proactively manage their safety and compliance. Key customers include large airports such as Paris-CDG and Paris-Orly or OEMs such as Airbus Helicopters, as well as airlines and ATM providers, all of which also compose SITA's main customer base. SITA will, therefore, be able to expand its offering to include safety-enhancing services to existing customers.

Co-Innovating with airline and airport customers

"We were impressed with the way Safety Line have been able to transform the research from their data science team into real-life applications thanks to innovation partnerships with strategic airline customers such as Transavia or Air France or airports such as Group ADP. Through our existing partnership, we have already delivered real value to our customers and this acquisition fits perfectly with SITA's approach of partnering and co-innovating with our customers to increase efficiency and reduce emissions. We are excited to welcome the Safety Line team to SITA." stated Sébastien Fabre, CEO of SITA FOR AIRCRAFT.

"We are delighted to join the SITA family, which should accelerate the global growth of our innovative solutions, for the benefit of more efficient and greener aviation operations." added Pierre Jouniaux, Founder & CEO of Safety Line.

Andy Graham joins QOCO Systems as Chief Commercial Officer & Partner

At the beginning of August 2021, Andy Graham joined the QOCO Systems team as a Chief Commercial Officer (CCO). Andy brings to QOCO Systems diverse and solid experience in the aviation industry. Working with all the teams, Andy will be reporting directly to QOCO's Managing Director, Markku Nyman.

Andy has worked for some of the world's leading aerospace technologies companies and will be joining QOCO from flydocs where he was VP of Global Business Development. He has also worked for some of the leading M&E companies in global commercial positions covering EMEA, APAC and the Americas. He will be leading the new business teams within QOCO and concentrating on developing the QOCO new business globally. Working with the Leadership team, Andy will be ensuring QOCO is commercially ready for its next exciting chapters. He will be working from QOCO's Dublin office (opening January 2022) and from the company's Helsinki HQ office as required.

"I am extremely excited to be joining QOCO Systems as CCO and Partner. The chance to work with QOCO and the very talented people within, was very compelling. From the moment I met with Markku Nyman and Ilari Neitola (Chairman of the Board and Founder of the company), we connected on so many levels on how we see the business growing over the next few years. With an already impressive customer base, QOCO is offering to the market some compelling digital applications that reduce cost, improve efficiencies, support compliance and allow companies to make commercially prudent decisions based on actual 'live' data. I am looking forward to building a global commercial department, to allow us to be able to support our growing global customer base." said Andy Graham, CCO & Partner, QOCO Systems.

Markku Nyman, Managing Director & Partner of QOCO Systems added: "Andy's long and wide experience within the industry combined with his vision for the future immediately resonated with QOCO's ultimate objective of helping the aviation industry to succeed in the changing world by creating new ways to work, to communicate, and to utilise data. I am personally, as is the whole QOCO core team, extremely excited that Andy has joined us in realising our mission to be long-term trusted partner of the leading companies in aviation.

The SA Group expand capabilities

In mid-September 2021, the SA Group was very excited to announce the addition of aircraft interior services, complementing the group's extensive capabilities within avionics and training solutions.

With the acquisition of the aircraft division of Classic Trim ApS, a renowned interiors company out of Munkebo, Denmark, The SA Group is extending its offerings to entail a full range of interior solutions, to existing and new customers. The new company is named Classic Trim Aircraft Interiors and will deliver turn-key interior solutions, including cleaning, restoration, refurbishment and modifications to any flying cabin in both the civilian and military domain.

The relation between The SA Group and Classic Trim goes back almost 25 years, paving a solid foundation for a close and highly positive relationship going forward.

The founders of Classic Trim, Ellen Reichstein and Erik Sørensen, reached out to The SA Group several

years ago, planting the idea of a merger/acquisition in relation to the scheduling of their retirement. Based on the long-lasting relationship and shared values, a way to unfold the common desire to continue the recognizable work of Classic Trim, was identified. The experience, sense of quality and solid craftsmanship that Ellen Reichstein and Erik Sørensen have built over the last three decades, cannot just be moved to a new setup, hence a new constellation securing both the past and the future is now in place.

"We are very happy and proud that Ellen and Erik found The SA Group to be the suitable fit, to carry on the legacy of their life's work. We see this new constellation as the best possible outcome, as we are securing both the past and the future of a really impressive company," said Michael R. Truelsen, CEO of Scandinavian Avionics A/S.

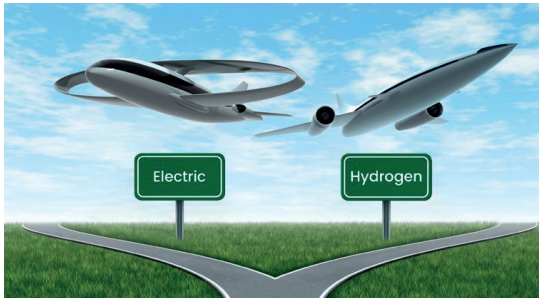
It is extremely important for The SA Group that the experience and know-how that Ellen Reichstein and Erik Sørensen possess, is retained in Classic Trim Aircraft Interiors. That is enabled by keeping them as part owners and active mentors in the new company, going forward. In addition, the next generation is secured by including Grønning & Juelsgaard — a young entrepreneurial upholstery company, as part owners as well. Grønning & Juelsgaard is known for its high skills and exceptional standards within the field delivering high-end interior solutions for exclusive housing, automotive and naval environments.

Read the full story on Aircraft IT Website

PACE design and analysis software to support UK's FlyZero zero-carbon emission aircraft initiative

TXT Group company PACE, a leading provider of pioneering aerospace and aviation software, announced in late July 2021 that it will supply licenses of its preliminary aircraft and systems design suite Pacelab APD/SysArc and its route and aircraft economic analysis tool Pacelab Mission Suite to the Aerospace Technology Institute's (ATI) FlyZero project. Led by the ATI and backed by the UK Government, the project is investigating the design challenges, manufacturing demands and market opportunities of zero-carbon emission aircraft.

Developing concepts for a sustainable future for aviation calls for a re-evaluation of every single design aspect, from fuselage and wing geometry to propulsion and fuel systems. FlyZero's



multidisciplinary, collaborative approach plays to the strengths of the Pacelab APD/SysArc platform, which streamlines the setup of unconventional aircraft configurations, integrates proprietary methods and analysis tools, and provides sophisticated MDO capabilities, including the option to offload compute-intensive trade studies to an HPC server cluster.

"Having created a range of different scout aircraft the FlyZero engineers are now working on the design and development of three zero-carbon emission aircraft concepts. These concepts will be the basis for developing the manufacturing roadmaps, economic analyses and sustainability assessments which will support the UK aerospace sector in gearing up for the next generation of aircraft," said David Debney, FlyZero's Chief Engineer for Whole Aircraft Integration. "Pacelab APD/SysArc provides us with crucial design and performance data for strategic technology decisions."

PACE Managing Director Fabio Ortalli added: "PACE is fully committed to building a more

sustainable future for aviation, through supporting innovative aircraft designs as envisioned by FlyZero, but also by enabling cost and eco-efficient flight operations. Like all companies in the TXT Group ecosystem of excellencies, we think sustainability in everything we do, from operations, to product innovations, to investment decisions."

PACE GmbH, a TXT company: Founded in 1995, PACE has built a reputation for developing trail-blazing software products, which took them from university spin-off to international market player and partner of choice for leading aerospace and aviation companies. As part of TXT e-solutions, the company focuses on high-quality niches such as preliminary design and evaluation, product configuration, flight operations and extended reality.

ATI Aerospace Technology Institute: The Aerospace Technology Institute (ATI) is at the heart of UK aerospace R&T. Working collaboratively across the UK aerospace sector and beyond, the Institute sets the national technology strategy to reflect the sector's vision and ambition. The ATI program is a joint government and industry commitment to invest £3.9 billion in research to 2026. In addition to the ATI Programme and FlyZero, the Institute also supports the supply chain through NATEP and aerospace start-ups through the ATI Boeing Accelerator.

FlyZero: Led by the Aerospace Technology Institute and backed by the UK Government FlyZero is a one-of-a-kind research project aiming to realise zero-carbon emission commercial air travel by the end of the decade. The intensive 12-month strategic research programme is bringing experts together from across the UK to conduct a detailed and holistic study of the design challenges, manufacturing demands, operational requirements and market opportunity of potential zero-carbon emission aircraft concepts. FlyZero will shape the future of global aviation with the intention of gearing up the UK to stand at the forefront of sustainable flight in design, manufacture, technology and skills for years to come.

Air Malta sign with Evoke Systems for EFOS Leave Management Suite

Air Malta, the national airline of the Maltese Islands, has signed a 5-year agreement with Evoke for the EFOS Leave Management Suite. Replacing the current manual paper-based system currently used by the airline for their holiday booking processes, EFOS Leave will streamline the leave bidding process for their Pilots and Cabin Crew through immediate and prioritised bidding windows. The system will provide deterministic validation of their staff leave rules, delivering a judicially fair and transparent process to support and boost staff morale within the emotive area of leave.

EFOS Leave will encompass bespoke validation rules in line with Air Malta's current procedures, applying these in a just and deterministic manner throughout the leave booking process. This project will also see Evoke and Air Malta collaborate to introduce an innovative new method of integration between EFOS and Air Malta's internal rostering and crew HR systems, allowing for increased operating efficiencies for their flight operations team.

"The EFOS Leave Management Suite is always a great solution to implement, as airline staff react so positively to the fair, transparent and rapid response they see with their leave requests. We are delighted to welcome Air Malta on board, and very much look forward to continuing and growing our relationship with this exciting airline as the project continues." Evoke co-founder and CTO Dr Craig Howard.

Evoke: Evoke is a British software company founded in 2003 by Dr Craig Howard and Captain Mark Linney. Based in the UK, Evoke supplies intelligent software systems exclusively for the aviation industry across three customer product suites; EFOS Training Management, EFOS Leave

Management and EFOS Flight Management. The EFOS product suites are approved for use in several aviation jurisdictions through Evoke's global clients, including CAA, EASA, IAA, CAAI, and GCAA.

Air Malta: Air Malta is a point-to-point airline transporting mainly leisure-based customers to the Maltese Islands. Having started operations on the 1st April 1974 to seven scheduled services across Europe with two wet-leased aircraft, the airline now operates a fleet of seven Airbus A320 aircraft (four of which are A320neo) to 20 scheduled destinations in Europe. Over the course of its history, it transported over 57 million passengers safely to and from Malta.
For more information on Air Malta please visit www.airmalta.com

IQSMS – Regulatory Compliance made easy

In an environment as highly regulated as the aviation industry, compliance can be a tedious task and often involves a lot of work. It means keeping a constant eye on the regulatory landscape to keep up with amendments and new regulations. However, with the right tool at hand, managing compliance changes significantly.

With the IQSMS Quality Module, announced in mid-August 2021, regulatory compliance is no longer complex, but simple, as the regulatory landscape is continuously monitored for amendments and new regulations on the behalf of ASQS's customers. IQSMS features a consolidated database of an extensive number of national and international regulations and standards, which is fully maintained and updated once a week by ASQS. These include all relevant EASA (European Union Aviation Safety Agency) parts, Federal Aviation Administration (FAA) regulations and checklists, Transport Canada, UAE General Civil Aviation Authority (GCAA), SACAA, IOSA/ ISAGO, which are directly retrieved from International Air Transport Association (IATA), and many other national civil aviation regulations. Additionally required regulations can be added according to the user's needs to support them in ensuring that their organization's operations are running in full accordance with the law.

Royal Brunei Airlines signs up for N-Flight Planning

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Azores Airlines (SATA) successfully implements Flysmart+

Azores Airlines completes a decisive step in the modernization of its flight operations by implementing NAVBLUE's Flysmart+ solution. Flysmart+ is the leading market solution of Airbus aircraft performance computation. The solution aims at optimizing aircraft performance determination, as well as providing efficient flight operations documentation management and consultation including electronic Quick Reference Handbook (eQRH). Flysmart+ allows users to get more accurate performance results with maximum optimization (less conservatism) for all flight phases.

Azores Airlines will be the first mainline airline in Portugal to use the AIRBUS/NAVBLUE eQRH. The eQRH is the last application which joined the

NAVBLUE EFB suite, it replaces the traditional paper procedures and checklists, presenting them digitally and interactively according to the phase of the flight.

This transition from paper use to Electronic Flight Bag (EFB) is fully in line with the on-going EFB as Standard Operations Airbus project which aims at establishing fully digital operations for A320/A330 and A340 aircraft by November 2021.

Air Serbia chooses SkyBreathe eco-flying solution to reduce their CO_2 emissions and fuel consumption

Air Serbia, the Republic of Serbia's national airline, announced the implementation of SkyBreathe® eco-flying solution to pursue their commitment to greener aviation. SkyBreathe® is an innovative eco-flying solution that features an Artificial Intelligence engine with cutting-edge algorithms to automatically analyze large amounts of flight data and assess operational efficiency improvements at the fleet, route, and individual flight stage level. The Big Data solution integrates multiple data sources for each flight in a single database. Then it computes achieved and potential savings taking into account the actual flight conditions, such as weather, flight path, Air Traffic Control, and payload, to produce highly accurate fuel metrics.

This digital solution enables the airline to quickly implement the most appropriate best practices to reduce fuel consumption and CO_2 emissions from 2% to 5%, which is the core focus of airlines as fuel accounts for 30% of operational expenses.

Duncan Naysmith, CEO of Air Serbia said, "Care for the environment represents an inseparable part of our everyday operations, and we are satisfied that the initiatives we launched are yielding results. During 2019, we have managed to reduce carbon dioxide emissions by almost three thousand

tons. Our pilots are the main contributors to our fuel consumption reduction because the procedures toward this goal are generally undertaken during flights. The use of this mobile application will further enhance the optimization process, and we are looking forward to every new step toward a more sustainable future of the airline industry."

Alexandre Feray, CEO of OpenAirlines, "Today, we are pleased to see that this trend to favor a clean recovery is getting more momentum everywhere in the world. Air Serbia launched its fuel-efficiency program years before this crisis. Still, despite the unprecedented disruption that the Covid-19 catastrophe has caused on airline operations, it is significant that Air Serbia has chosen this moment to push its fuel-efficiency program to the next level. We are proud that they have chosen SkyBreathe® to increase their competitiveness while reducing their carbon footprint, joining the greenest airlines in the world."

Air Serbia joins more than 45 airlines adopting SkyBreathe® to improve their fuel efficiency, including Air France, Norwegian, Malaysia Airlines, Atlas Air.

About Air Serbia: Air Serbia has been a leader in air transport since the company was founded in 1927. The airline already flies or plans flying to more than 60 destinations in Europe, the Mediterranean, the Middle East, North America and Africa, both in passenger and freight traffic. They offer flights to international destinations in Asia, Australia, North America and Africa through Etihad Airways and other partner airlines.

Air Serbia's priority is to provide exceptional quality of service to their passengers. They aim to give their company's customers the utmost comfort while traveling, regardless of the class in which they fly.

More information: www.airserbia.com

About OpenAirlines: OpenAirlines provides consulting and software solutions for airlines flight operations. Since 2006, OpenAirlines has been on a mission to help airlines save 2-5% of their fuel consumption with its innovative SkyBreathe® solution.

The software uses Big Data algorithms and automatically analyses the large amount of available data in flight data recorders to assess flights' efficiency.

Today, more than 45 airlines all over the world use OpenAirlines' software. In 2019, their customers saved more than 150 million USD and 590,000 tons of CO_2.

Introducing the new Emissions module to fill up CORSIA and EU-ETS reports

Interview Anaïk Trihoreau, Product Owner at OpenAirlines. A few words about her background: she has 17 years of experience in software production in the Aeronautical Industry and has been working at OpenAirlines for 11 years, providing expertise in software development, customer support, and product definition.

What is the SkyBreathe® Emissions module?

Every year, international airlines must fill up two reports about their CO_2 emissions and fuel burn:

- For all airlines flying international: Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). CORSIA is "a carbon offset and carbon reduction scheme to lower CO_2 emissions for international flights, to curb the aviation impact on climate change." (1). ICAO adopted CORSIA in October 2016 as one of the four pillars used to reduce aviation net CO_2 emissions.

To learn more about CORSIA, click here.

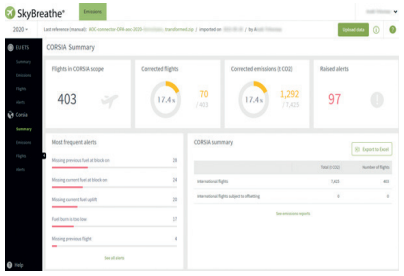
- For all airlines flying in the Europe Union: European Union EU Emissions Trading System (EU-ETS). EU-ETS is "a cornerstone of the EU's policy to combat climate change and its key tool for reducing greenhouse gas emissions cost-effectively" (2).

The SkyBreathe® Emissions module is dedicated to help users to fill up faster both the official CORSIA and EU-ETS declarations and to monitor the data gaps and their causes at a glance.

SkyBreathe® Emissions module homepage. Identify data quality at a glance

Why SkyBreathe® Emissions module?

For an airline, it is a challenge to list all the flights and compute their fuel



consumption, identify out-of-scope flights, reach less than 5% of flights with 'data gaps', and fill up the expected reports. The task is tedious and time-consuming, leading to mistakes. In addition, the verification step by an external entity is usually a source of stress.

As an expert in collecting fuel data from airlines, based on our SkyBreathe Analytics eco-flying solution, and because we have a good and up-to-date knowledge of the official rules for the declarations, it has been natural to help airline professionals with such reports. We offer a tool for computing and compiling the emissions in one click to ease the declarations filling in.

What are the top 4 key features of the module?

- Reports ready to copy-paste in the declarations, using all five methods proposed by CORSIA and the two methods for EU-ETS.
- Automated alerts raised on missing or erroneous data ('data gaps').
- Automatic correction with the official tools CERT and SET.
- Export of flights and alerts to fulfill specific demands during the external verification audit.

What are the top benefits of the module?

- Reduced margin of error thanks to scope and exemptions check: which flights must be declared, with up-to-date rules about countries, flight service types, maximum takeoff weight, etc.
- Alert of gaps all along the year to anticipate the last-minute issues.
- A user-friendly interface to quickly fill out the final declaration.
- Autonomous data integration in a few minutes.

Get alerts on missing and inconsistent data for CORSIA and EU-ETS

How does it work?

It's very simple! The user just needs to extract data from its airline information system in a specified format, then upload it in the SkyBreathe® Emissions module to get the results in a few minutes and check the data gaps.

In case of missing data, it is easy to identify the involved flights. Then, the user fixes the gap in the airline system and starts the process again.

Our users usually run this process once a year on the eve of the deadline to declare. Ideally, we recommend doing this once a month to fix data all along the year. You probably know the quote from Jez Humble "If it hurts, do it more often, and bring the pain forward."

At the end of the year, the user must upload the full-year data in the Emissions module and copy-paste the generated reports in the CORSIA and EU-ETS templates.

How Transavia France reduces CO_2 emissions with SkyBreathe

Transavia France, the low-cost airline of the AIR FRANCE KLM Group, operates scheduled and charter flights out of France (Orly, Nantes, Montpellier and Lyon) and the Netherlands (Amsterdam, Rotterdam, Eindhoven and Groningen) to more than 109 destinations, primarily in Europe and Northern Africa.

Reducing environmental impact has always been a priority for Transavia France.

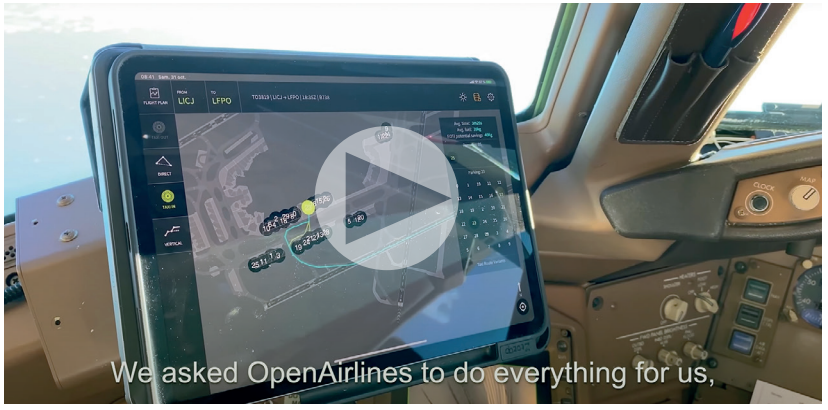
"We take our responsibility to reduce the negative effects of flying on the environment. We do this by reducing our CO_2 emissions and minimising waste. Our target is to reduce Transavia's CO_2 emissions by 35% in 2030."

In this interview, Emmanuel Cachia, Director of Flight Operations at Transavia France explains how they lower flight footprint by using SkyBreathe®, an eco-flying solution. Implemented in just 1 month, it helped them save about 10,000 tons of CO_2 emissions in 2019, representing between 4 and 5% of reduction of their total fuel consumption.

"Transavia is a low-cost carrier so the implementation of this tool is not our core business. We asked OpenAirlines to do everything for us. We just provided them some information to do the link between their system and our IT network and after one month, everything was done in total autonomy.

Our pilots like SkyBreathe®, it's very clear and friendly, it's very easy for them to replay their flights and to identify the areas of improvement and thus to have a better eco-flying, which is a pilot skill today.

In 2019, they save, with eco-flying about 3200 tons of fuel in Transavia France so it's between 4 and 5% of our total fuel consumption".



Evionica launches new Weight and Balance Application

The market is in a need of an easy to use, allowing throughout integrations application that automates workflows, even allowing a zero click loadsheet. Therefore, Evionica decided to invest in developing a new weight and balance software that will be available end of September 2021 to meet this demand.

Below you will find an overview of Airlines opinion on nowadays' requirements.

*Qualitative interview with 176 Airlines containing opinion from Ground Ops, Flight Ops and Operation Control Center (OCC)

"After I received a personal demonstration of the new application, I can say that it is quicker, more intuitive although even till now our entire ground handling network was very satisfied with the simplicity of the current system and continuous automation of workflows" said Maciej Zochowski, Regional Ground Operations Manager, Wizz Air

How Evionica will provide the value to the Airlines Operations?

1. Loadsheet in a matter of seconds, where you can generate a Loadsheet just in 60 seconds. Integrations with Flight Scheduling, Flight Planning, DCS, Performance and EFB Application will increase workflow efficiency. No matter what Vendor Evionica will find a way to integrate.
2. Reduce Costs on operations. With the business model 'pay as you fly' here you will have the ideal fit in today's dynamic environment. Additional flights will operate on time and Weight & Balance delay will be zero.
3. Safe Process. You can retrieve any action and additionally there is no space for human error in the software.
4. Effortless implementation. There is no installation required and system training takes only 60 minutes instead of weeks.
5. Available always and everywhere. The Application can be launched on any device either offline or online and, as an Airline, you don't have to rely on airport infrastructure.

"My team achieved another important objective during this challenging time but investments in digitalisation and automation of processes is a key to success. Airlines will appreciate our competitive and valuable services. I am really proud of my team making this happen" said Mateusz Godun, CEO, Evionica

About Wizz Air: Wizz Air is a European ultra-low-cost airline with its head office in Budapest. The airline serves many cities across Europe, as well as some destinations in North Africa and the Middle East. It currently serves 70 destinations and 44 countries. In 2019 the airline transported 39.8 million passengers. The fleet includes several types from the A320 family of jets.

Read the full story on Aircraft IT Website

PLAY chooses NAVBLUE's innovative Plan & Control suite to optimize their Flight Operations

New Icelandic start-up airline operating Airbus A321neo

NAVBLUE's full Plan & Control suite for optimized entry into service mid 2021

PLAY, the Iceland based start-up airline that started operations in June 2021, has signed a long-term deal with NAVBLUE for its innovative OCC suite. NAVBLUE's Plan & Control suite covers Flight Planning, Flight Following, Operations Control, Crew Management and Aircraft Performance. Additionally, PLAY has also signed on for NAVBLUE's electronic flight bag solution Flysmart+.

N-Ops & Crew from NAVBLUE will enable PLAY to manage long term schedule and crew planning as well as day-of-operations with a single highly-configurable system within one application (schedule planning, day-of-ops management, crew scheduling, crew payroll, crew planning and crew qualifications).

NAVBLUE's N-Flight Planning and N-Tracking are solutions that empower flight dispatchers and flight followers with optimized routes and Aircraft Situational

Display (ASD) to optimize PLAY's flight planning and enroute operations.

PLAY launched operations in June 2021, operating Airbus A321 aircraft. The airline plans to expand into North America later next year and increase its European

destinations to 10 over the next three years.

Arnaud Voermans, Vice President of Plan and Control Software Solutions and Services at NAVBLUE, said: "PLAY is a start-up airline with a great expansion plan into the future. By signing for NAVBLUE's full OCC suite, the airline will ensure smooth entry into service through a unique end-to-end operations solution. This partnership marks the first step in PLAY's growing plan to assure all operation related events are automated and optimized from end-to-end".

Finnbogi Karl Bjarnason, Director Flight Operations, at PLAY, said: "When we first started our preparations for the airline start-up, we initiated a demanding RFP to various software developers, both newly developed as well as established organizations. After reviewing the results, NAVBLUE was a very easy choice, with a robust yet dynamic product with knowledgeable people supporting the infrastructure of their platforms. I sincerely look forward working closely with NAVBLUE in the future".

NAVBLUE: NAVBLUE is an Airbus Services company, wholly owned by Airbus, and dedicated to Flight Operations and Air Traffic Management Solutions. The developer provides digital solutions and services, and supports both civil and military environments, on the ground and onboard any aircraft, and offers expertise in a range of areas, including digital cockpit operations, Operations Control Centre (OCC) systems, Flight Ops Engineering, Performance Based Navigation (PBN) and Air Traffic Management (ATM). NAVBLUE employs 480 personnel spread across Canada, USA, UK, France, and Thailand, with representatives in several other countries across the globe.

The Green Pilot movement is growing

Hugo Possamaï was one of the very first pilots to join Green Pilot last winter. First officer on the Boeing 777, he is about to become Captain on the Boeing 737. In this video, he explains what made him join the community and his commitment to sustainable aviation.

If, like Hugo, whether you are a pilot, an aviation professional, or simply passionate, you feel concerned about climate change and want to contribute to greener aviation, Join the Green Pilot community.

StorkJet's tips

STORKJET FuelPro™

TAKE-OFF FUEL CONSUMPTION

Embraer E-Jet	Flaps High	Flaps Low
Acceleration HIGH	**248kg**	**236** (-12kg) 540 000 USD*
Acceleration LOW	**227** (-21kg) 945 000 USD*	**219** (-29kg) 1 305 000 USD*

Boeing 737-8	Flaps High	Flaps Low
Acceleration HIGH	**439kg**	**417** (-22kg) 990 000 USD*
Acceleration LOW	**400** (-39kg) 1 755 000 USD*	**390** (-49kg) 2 205 000 USD*

Airbus A320	Flaps High	Flaps Low
Acceleration HIGH	**445kg**	**419** (-26kg) 1 170 000 USD*
Acceleration LOW	**408** (-37kg) 1 665 000 USD*	**394** (-51kg) 2 295 000 USD*

StorkJet on saving fuel with better informed application of low acceleration altitude and low flaps configuration

StorkJet has prepared analyses for three aircraft types based on averages for 1 million flights. The graphic shows the results of the analyses: numbers in red indicate the yearly savings for the fleet of 50 aircraft.

Assumptions:

- Fuel proce $600/mt
- 1500 sectors yearly/tail
- Average acceleration altitude for flight classified as LOW is 1000ft and 3000ft for HIGH

Recommendation: Use the combination of low flaps setting and low acceleration altitude to achieve the maximum savings!

Factors taken into consideration for the analyses

The cost of take-off depends on many factors. Usually the 'optimum' of aircraft manufacturer performance take-off configuration does not result in the lowest cost. Typically, aircraft performance software optimizes:

- Level of thrust reduction. Optimum configuration will result in a flap setting which provides the highest level of thrust reduction. This is the most popular scenario. Typically, the difference in thrust reduction between various flap settings will be in a range of 0-2%.
- Performance limited maximum take-off weight. Optimum configuration will result in performance limited maximum take-off weight which is the highest amongst all flap settings. Case in which performance limited take-off weight is above maximum take-off weight is generally rare.

To accurately calculate take-off cost, additional factors must be included:

- Take-off fuel consumption, which depends on flap setting and acceleration altitude;
- Take-off thrust reduction related penalty;
- Taxi fuel — for airports where layout and traffic permits departures from intersection;
- Cost index, separate for taxi and in-flights phases.

Most often each of listed component's saving potential overcome savings achievable from thrust reduction optimization itself. Based on QAR driven performance models, FuelPro provides the optimum configuration for each departure including all correlations: SE taxi, thrust reduction cost, flap setting, and acceleration altitude.

Web Manuals announces partnership with Australian Avinet and Air Maestro Integration

In late August 2021, Web Manuals announced a partnership with Australian Avinet and Air Maestro Integration. Avinet is an Australian company specializing in aviation software solutions. Its primary product, Air Maestro, is used by almost 300 operators in more than 48 countries. Customers operate in a range of sectors including aeromedical, charter airlines, aerial fire, fighting in agriculture, and others.

Earlier this year, Web Manuals and Avinet chose to form a partnership to facilitate easier document management for regulatory requirements. A spokesperson for Avinet explained, "After reviewing the Web Manuals application and meeting the team, Avinet formed the opinion that our customers could benefit greatly from a relationship between the two organizations. Our products are very complementary, with Web Manuals application offering a document management and authoring solution for the aviation industry that we believe is run rival by any other software of its nature."

Air Maestro includes a range of modules from fatigue management, currency tracking, scheduling, to SMS, all in one combined application. The spokesperson added, "We believe that the integration between the Web Manuals and Air Maestro products will result in greater efficiency for our mutual customers. We are very excited to work together to deliver these outcomes in the next few months."

To celebrate the launch of the new partnership, Avinet is offering all of its Air Maestro customers free access to Web Manuals for a limited period of time.

Air Maestro & Avinet: Avinet was founded in 2005 from the desire to create an application to assist crew with meeting that their regulatory requirements. The company had identified that many operators at the time were still using whiteboards and paper-based systems. Although cloud computing was in its infancy, Avinet decided to develop a web-based application to assist with this endeavor, having been founded with the belief that data could be consolidated into one application that would provide greater visibility and proactively prompt crew of critical information.

Initially focusing on rostering currency management, flight, and duty recording, and FTL management, Air Maestro as a product was launched. 15 years later on Air Maestro is used by fixed-wing, rotor-wing, and medical operators across the globe and encompasses 20 modules.

New Swedish technology to support a greener aviation recovery

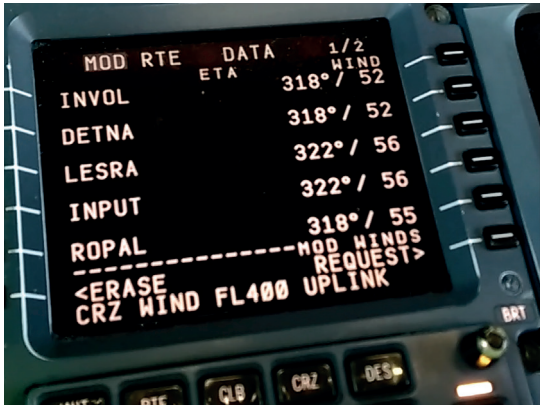
Flying is like competition sailing: it is all about using good winds and avoiding unfavorable air currents. To allow airlines to fully use the favorable winds there is a new weather optimization service available (launched at the end of 2020) that shows exactly how the wind blows and where there is bad weather in the atmosphere. With this knowledge airlines can save hundreds of tons of fuel per month which also means less emissions.

The best feature of the new optimization service, delivered by AVTECH Sweden, is that airlines don't have to make any investments to use it. All heavy calculations are made on the ground and just a small amount of data is uploaded to already existing onboard equipment.

Low-cost airline Norwegian is acknowledged as one of the most fuel-efficient airlines in the world. The company is also one of the early adopters of AVTECH's services, including tools to optimize the climb, cruise and descent phases for any single aircraft.

"By optimizing the different phases of a flight, we can easily avoid unnecessary use of the engines, which means fuel savings,", says Norwegian pilot and project manager Stig Patey. "Just by flying smarter, we have counted an average fuel saving of 22 kg per flight in the descent phase and about 1.6 % in the cruise phase."

At first glance it may not sound very much but multiplied by the 4.4 billion passenger flights that operated worldwide during 2018 pre-COVID-19, the overall fuel savings in the aviation industry in a normal year without a pandemic could be over 1.24 million tonnes per year. A saving that corresponds to the yearly CO_2 emissions of around 300 000 Swedish households.



Today, things look very different as many airlines have been forced to heavily reduce their operation due to the pandemic and thus, for these companies, survival is paramount. With these potential savings in mind, when the travel situation begins to return to normal the Cruise Profile Optimizer is a great tool to return as a smarter and greener airline. Both saving money on fuel and heavily reducing emissions is achieved with very little effort from the airlines' side.

"The savings we have achieved is good business for us and good news for the environment", Patey says. "The best thing is that we did not have to invest in any new onboard equipment to achieve the reductions, since all calculations are delivered as a service individually to all aircraft."

For the price of a cup of coffee

Among AVTECH's other customers, are for instance Southwest Airlines, Easyjet and Eurowings. David Rytter, CEO of AVTECH, is sure that more airlines will

sign up for the services now that the portfolio has expanded to cover all phases of the flight and proven to deliver as promised.

"The cost per flight for the weather service is about the price of a cup of coffee, while the saving is far greater, so the price tag should not be an obstacle", Rytter says. "The aviation business is, however, generally speaking conservative and cautious with new ideas. But we are speaking with several interested airlines and I am confident that our services will be seen as a simple way for airlines to be more efficient and environmentally conscious. To further lower the threshold, AVTECH also offers a free trial period with a performance guarantee."

AVTECH's services have not come out of the blue. The company started as an aviation research institute almost 30 years ago and is now listed on Nasdaq First North in Stockholm. At the heart of the company's services is the high-definition weather data provided by Met Office in UK.

"As we have access to this data through a unique API, we are the only optimization service that can offer a four-dimensional weather forecast with an accuracy of 10 km, compared to the normal global aviation weather grid of 140 km", Rytter says. "It means that each individual flight can save fuel and reduce emissions simply by taking advantage of the best winds along the route, just like a sailboat seeking the best wind at sea."

The achievement is a year ahead of the organization's original target

In early September 2021, SITA, a world leading IT provider for the air transport industry, announced it has achieved CarbonNeutral® company certification. This major milestone — realized a full year ahead of SITA's original target of 2022 — resulted from decisive actions to significantly reduce emissions associated with its business operations in 2020.

SITA has reduced its overall emissions of greenhouse gases by 48% between 2019 and 2020. SITA's UN recognized carbon neutrality Planet+ program has been key to lowering the company's emissions with initiatives designed to create sustainable and energy-efficient workplaces and reduce internal business travel.

SITA also compensates 100% of any carbon emissions that it has been unable to reduce or eliminate by financing projects that help cut and negate existing and future carbon emissions while supporting multiple United Nations Sustainable Development Goals. These

offsetting projects include supporting reforestation and protecting biodiversity.

The journey to achieving carbon neutrality and formal accreditation has involved working with several independent expert environmental bodies. To develop a credible carbon neutral program, the organization has followed The CarbonNeutral Protocol's rigorous framework, which is managed by Natural Capital Partners, the leading experts on carbon neutrality and climate finance. Working with independent emissions assessor RSK Group, a comprehensive review of emissions relating to operations and business travel was undertaken to calculate SITA's carbon footprint. In 2020, this was extended to include many more indirect emissions generated from activities such as homeworking, which was commonplace for SITA employees during the pandemic. The decrease in SITA's carbon footprint reflects its actions since 2018 to reduce, eliminate and offset its emissions to achieve certification.

Following the organization's carbon neutrality achievement, the company is firmly committed to further decrease emissions and achieve its challenging

reduction targets for the years to come. In parallel, SITA is turning its attention to developing new technology to help its customers and the wider aviation industry reduce its carbon footprint. This work is predominately focused on streamlining aircraft operations and reducing fuel burn, with a clear and measurable reduction in carbon emissions.

The company's recent acquisition of Safety Line was designed to strengthen the organization's portfolio to help drive greater operational efficiencies around fuel consumption and limiting aircraft CO_2 emissions at key flight stages.

Barbara Dalibard, CEO of SITA, said: "We are delighted to have OM57W achieved our carbon neutral goal as part of our ongoing sustainability journey. I want to thank our employees who have been critical in reaching this ambitious milestone, one year ahead of our original deadline. Being a trusted partner to the air transport industry, we are firmly committed to helping aviation reduce its emissions and achieve its carbon reduction objectives."

FitsAir begins partnership with NAVBLUE

In early September 2021, the Sri Lankan airline FitsAir signed a contract with NAVBLUE to use several NAVBLUE solutions. These include: Flysmart+ for iOS, EFB Management Service, Gateway Hosting Service, AODB, Charts+, Navigation+, N-Flight Planning, N-Tracking and FDA Service.

FitsAir, that took delivery of its first A320 earlier in 2021, is an airline based in Sri Lanka that operates commercial routes within Sri Lanka as well as international cargo flights to several cities in the Middle East, Asia, and Africa. FitsAir also operates charter flights to India.

Capt Druvi Perera, Chief Officer Global Operations at FitsAir, said, "FitsAir is the largest private Airline in Sri Lanka and we have embarked on an expansion plan using state of the art Airbus aircraft and on this journey we have chosen NAVBLUE to be our partner on operational support".

NAVBLUE: NAVBLUE is an Airbus Services company, wholly owned by Airbus, and dedicated to Flight Operations and Air Traffic Management Solutions. The developer provides digital solutions and services, and supports both civil and military environments, on the ground and onboard any aircraft and offers expertise in a range of areas, including digital cockpit operations, Operations Control Centre (OCC) systems, Flight Ops Engineering, Performance Based Navigation (PBN) and Air Traffic Management (ATM). NAVBLUE employs 480 employees spread across Canada, USA, UK, France, and Thailand, with representatives in several other countries across the globe.

Leveraging predictive analytics towards in-flight fuel savings

Delphine Guérin, Head of Flight Efficiency Department, Air France; **Kim Heap**, Project Manager – Flight Efficiency, Air France; **Elisabeth Monteiller**, Europe Sales Manager, Safety Line.

FUEL EFFICIENCY AT AIR FRANCE

Before we consider why and how OptiFlight was deployed at Air France, and before we look at the details, we'll give you a very brief introduction to Air France's environmental commitment and the flight efficiency program (figure 1).

Figure 1

Reducing Air France's CO_2 emissions goes hand-in-hand with reducing fuel use. Therefore, one of the cornerstones of the airline's environmental policy is to reduce the use of fuel. Air France is continuously investing in new equipment; a modern fleet not only provides greater comfort to passengers, but also helps to achieve significant fuel saving and to meet the airline's sustainable development commitments by reducing CO_2 emissions and noise levels. One area where Air France is making a difference is in the promotion and use of sustainable aviation fuels; an important factor in emissions reduction. Both Air France and sister airline KLM have policies in place that encourage and support the development and use of alternative fuels. However, currently there are not enough supplies available to allow a full switch to sustainable alternative fuels; therefore, carbon offsetting is a further way to offset the airline's environmental footprint. Last, but not least, improving flight operations and implementing weight reduction measures on board, optimizing flight routes and using up-to-date weather information all contribute to the reduction of fuel used.

At Air France, there have been fuel plans in operation since 2009. The first actions to improve fuel consumption were implemented between 2012 and 2014. It was decided to generate a fuel plan during 2016-17 (figure 2) which resulted, over two years, in a reduction of CO_2 emissions by 60,000 tonnes per year. Subject to the strict rules of flight safety, every possible fuel saving measure is identified and

implemented at Air France. All Air France departments are involved in the fuel plan, and the aim is to reduce fuel consumption by improving the operations processes, by making partnerships and innovating in the supply chain, and by mobilizing staff and the industry.

Figure 2

> "One area where Air France is making a difference is in the promotion and use of sustainable aviation fuels; an important factor in emissions reduction. Both Air France and sister airline KLM have policies in place that encourage and support the development and use of alternative fuels."

IMPLEMENTING OPTIDIRECT

Now, we'll share with readers the reasons why OptiFlight was deployed at Air France and how that was done. To ensure better weather awareness for flights, Air France together with SITA FOR AIRCRAFT has developed eWAS. The development started in 2017 and has since been upgraded (figure 3).

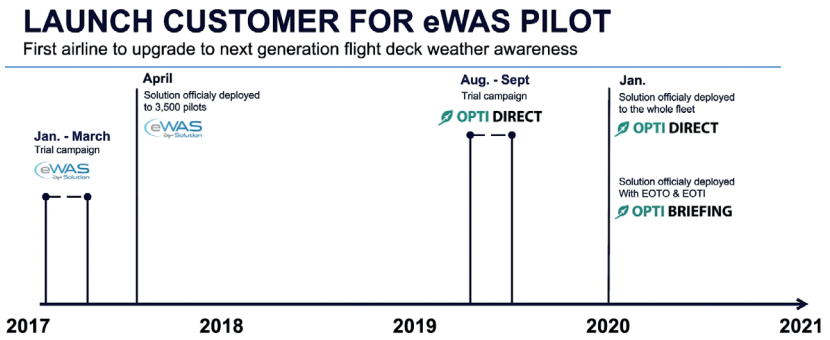


Figure 3

CONVEYING FLIGHT-SPECIFIC BEST PRACTICES

The opportunity that came about in 2019 was to integrate OptiDirect advice with eWAS and the same for the other OptiFlight modules. What happens with OptiFlight takes fuel efficiency to the next level (figure 4).

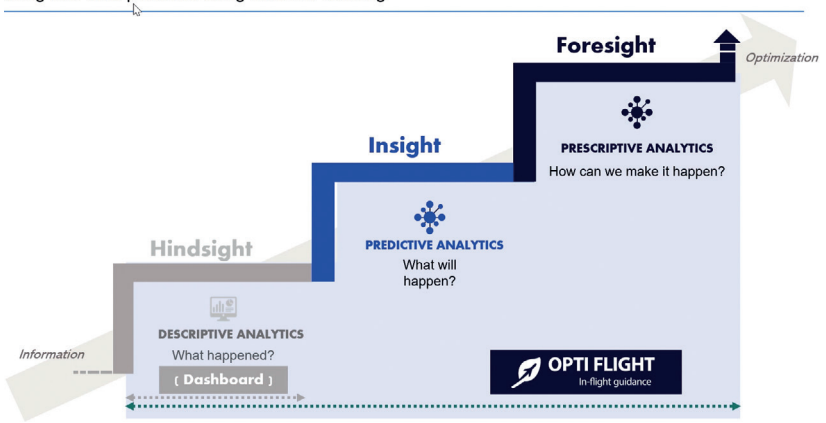


Figure 4

Most airlines are familiar with Excel sheet fuel dashboards that offer descriptive analytics: but, importantly, compared to those solutions that only analyze best practices, OptiFlight takes fuel efficiency two steps further on by using predictive analytics with machine learning performance models that allow users to predict fuel consumption in different scenarios and to prescribe recommendations directly to pilots to enable them to select the best scenario for

each flight. That is achieved by bringing data science into the cockpit; leveraging historical flight data towards developing flight specific pilot recommendations. Historical data is used to build machine learning performance models for each tail number and then that is combined with the OFP (Operational Flight Plan) data and the 4D weather forecast of the day. Next, a 'what-if' engine is run considering tens of thousands of different scenarios to identify the best scenario and send that, by the simplest way, to the pilot. It can be integrated into OptiBriefing or also be directly available into the eWAS Pilot App.

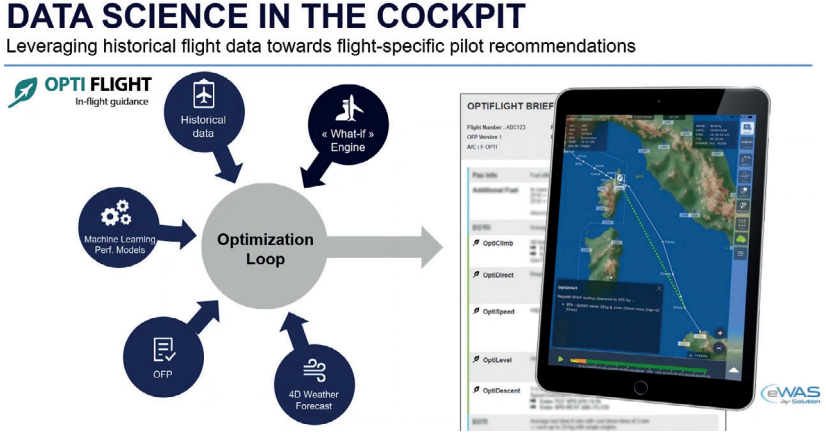


Figure 5

What happens, more specifically, with OptiDirect (figure 6) is that the historical flight data of the user company is matched with the global waypoints database. That way, by using machine learning, the system is able to identify which waypoints the actual trajectory went through.

> "...the historical flight data of the user company is matched with the global waypoints database. That way, by using machine learning, the system is able to identify which waypoints the actual trajectory went through."

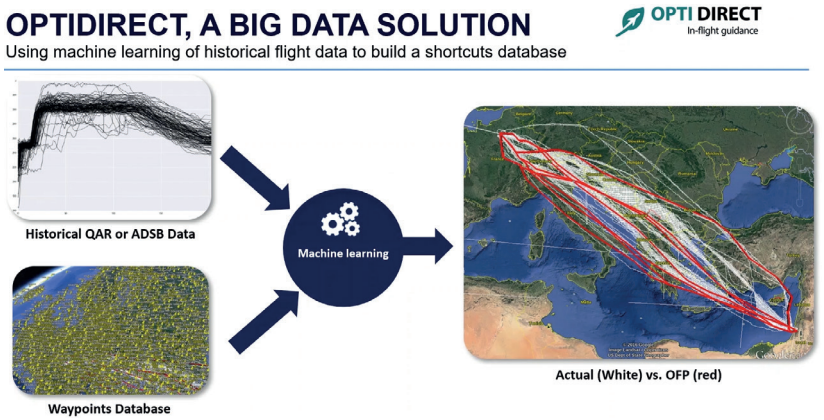


Figure 6

That is done because the actual trajectories, shown as white on the chart, are quite different from the OFP data that is shown in red. For that reason, OptiDirect uses machine learning to identify each waypoint of the actual trajectory and then connecting the dots, waypoint by waypoint, to re-create those trajectories and then build the historical flight track database of the company.

The next step is to deliver shortcut opportunities based on those historical tracks flown (figure 7).

Figure 7

This allows pilots to do what they have always done when requesting directs from the ATC to save time and fuel, but to do that better. They have not previously had the right information to be able to determine which direct they should take or how much saving they will achieve through that choice. They didn't really have those answers and that's why airlines use OptiDirect to implement shortcuts based on historical tracks flown with an indication of fuel and time savings.

In the figure is an example from OptiDirect between the two Waypoints RANUX and ARCKY that would save 71kg of fuel and two minutes flight time; the information also indicates the number of times that the direct has been flown before, nine times in this case, and with this information, pilots can be confident that if they request this direct from the ATC, they might get it again.

OptiDirect received a new patent in June 2020 and that solution has already been implemented at Transavia, Air France and at AeroLogic, representing more than 300 aircraft and up to 900 flights a day

In order to get ready to implement and to test OptiDirect, Air France started a two months trial with a group of fifty key users, pilots, who continuously provided feedback, positive or negative, related either to OptiDirect or to the integration with eWAS. A shortcuts database was built for the trial, based on six months' historical ADS-B data covering the Air France network. The trial involved pilots from the whole Air France fleet except the A380 aircraft.

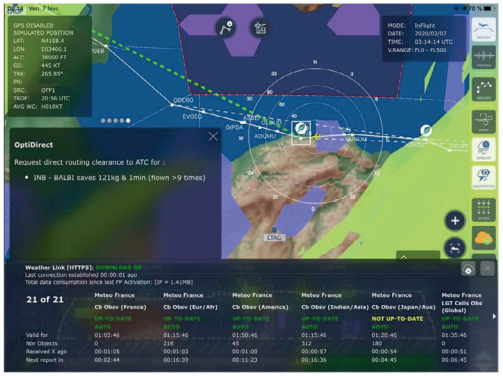
During the two-month trial, the OptiDirect module was tailored to deliver the most relevant advices. That was the reason for excluding any direct proposal below flight level 120. At this stage, there had to be limitations in order to display the five best direct advices, otherwise the flight path was too overloaded with advices. Associated with it, there was a minimum saving of 20kg of fuel per direct required. Similarly, the maximum number of directs per waypoint was limited to one. Also, there was a limitation on the length of direct. And, finally, at least six occurrences

within the past month must be observed in order to be displayed.

During this trial, due to ADS-B data precision, there was some OptiDirect advice that took flights too close to no-fly zone areas (figure 8).

PILOT FEEDBACK

No-fly zones



- Pilots reported that some directs were crossing no-fly zones

Integration of no-fly zones and possibility to exclude specific directs

Figure 8

Air France mentioned that to Safety Line and they worked together towards integrating the no-fly zones specific to Air France as the implementation evolved over time. An example, would be when OptiDirect advice was to overfly the Ukraine no-fly zone area: after pilot feedback provided the information, Safety Line quickly adapted the OptiDirect engine.

Another challenge faced for medium-haul flights was that OptiDirect's advices cover multiple areas that require an ATC co-ordination. As an example, flights out of Paris to destinations in Italy. On the other hand, and a positive thing, illustrated in figure 9 is a flight out of an area where Air France doesn't often request a new direct. This direct was requested by the crew and they got it.

> "...the historical flight data of the user company is matched with the global waypoints database. That way, by using machine learning, the system is able to identify which waypoints the actual trajectory went through."

PILOT FEEDBACK

Unexpected directs

> "Congrats for the implementation of OptiDirect. We requested the direct ARPAX to PARKA and we got it!! We would never have requested it without OptiDirect. Many Thanks."

Figure 9

Thanks to the trial campaign, Air France was able to build a strong business case for OptiDirect. Over the two months of the trial, more than 146 directs were proposed for each aircraft every month, with an average saving per direct proposed of 65kg which led to a breakeven being reached if only 1.9 percent of directs are granted.

Since OptiDirect is statistics driven, the first engine was based on ADS-B data which, depending on the context, is more or less accurate. To advance it, Safety Line and Air France are working on adding QAR data with much better data quality in terms of precision and data sampling.

Air France expects its partnership with Safety Line and the OptiFlight modules to further improve fuel use rates.

To support Engine Out Taxi Out procedures, Air France embedded the advices in eWAS, attached to the departing airport and, if applicable, the arrival airport (figure 10).

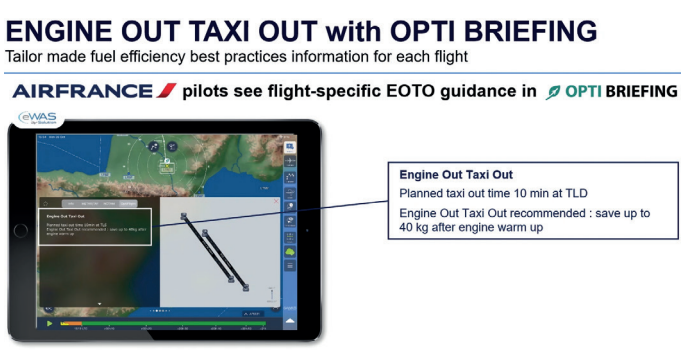


Figure 10

The OptiDirect module is available with eWAS, an operation application widely used by Air France pilots. Using the OptiDirect module is intuitive (figure 11). Once the flight has been selected in

Figure 11

the flight planning manager, a green leaf icon along the route, identifies where short-cut information is available.

By clicking on the icon, a window opens and gives short-cut details, waypoints, fuel, flight-time savings and the number of times this short-cut has been flown. A green dotted line also displays the short-cut on the map. eWAS integration allows access to information without having to open another application or document. Integration will be the key for the coming years with a

SITA acquires Safety Line and takes the lead in deploying predictive data analytics to reduce CO_2 emissions and improve fuel savings

SITA, the global IT provider for the air transport industry announced, in July 2021, the acquisition of Safety Line S.A.S., the Paris based start-up specializing in digital solutions for aviation safety and efficiency. This acquisition will strengthen SITA's Digital Day of Operations portfolio, helping airlines drive more efficiencies and fuel savings around the aircraft while taking immediate and sustainable steps to reduce their carbon footprint.

With air transport accounting for about 3% of the worldwide carbon emissions, there is growing pressure on airlines to reduce their overall emissions. At the same time the COVID-19 pandemic requires airlines to make their aircraft operations leaner, in particular reducing costly fuel burn. Safety Line has successfully applied predictive analytics to deliver significant improvements to aircraft operations, strongly complementing SITA's existing portfolio. With this acquisition, SITA will accelerate the development of sustainable solutions that can be integrated with its existing suite of airline and airport solutions.

Reducing aircraft CO_2 emissions in-flight and at airports

The acquisition comes as a logical follow-up to the commercial partnership signed between the two companies in September 2020, focused on helping airlines reduce their CO_2 emissions. OptiFlight is the only predictive in-flight fuel efficiency solution leveraging machine learning performance models for each aircraft to optimize all flight phases including climb-out, cruise and descent. OptiFlight is already fully integrated with existing applications in SITA's Digital Day of Operations portfolio, and current joint customers include Air France, Transavia Airlines, Aerologic and Condor.

On the ground, Safety Line's AirsideWatch will allow SITA to expand its airports offering to airside operations, using surface movement radar data to better understand, analyze and optimize the ground traffic of aircraft between gates and runways with an aim to reduce unnecessary emissions.

Using data to improve safety and risk management

With safety being a key pillar in aviation alongside efficiency, the acquisition also covers SafetyCube, a solution that enables aviation stakeholders to pro-actively manage their safety and compliance. Key customers include large airports such as Paris-CDG and Paris-Orly or OEMs such as Airbus Helicopters, as well as airlines and ATM providers, all of which also compose SITA's main customer base. SITA will, therefore, be able to expand its offering to include safety-enhancing services to existing customers.

large number of products and onboard innovations. The icon, at the arrival airport will give information on applicable operating procedures and associated fuel savings.

CO-INNOVATING IN FUEL EFFICIENCY

In spite of these difficult times, both Air France and Safety Line are committed to reducing the environmental footprint of aviation and that's why they are co-innovating to improve fuel efficiency. Air France is an innovation partner with Safety Line which means that the two are exploring together further innovation opportunities such as OptiClimb which is an App for flight optimization in the climb, OptiLevel to optimize flight levels during the cruise and OptiDescent which helps pilots anticipate the most likely approach plan. Also, collaborating with eWAS pilots, a Green Operating Practices (GOP) module has been developed (figure 12).

GREEN OPERATING PRATICES MODULE

Overview of flight efficiency opportunities in all flight phases

Figure 12

GOP module is a new eco-flying module available in eWAS where the pilot can find all fuel efficiency best practices tailer-made for each flight that covers all flight phases.

"OptiFlight is the only predictive in-flight fuel efficiency solution leveraging machine learning performance models for each aircraft to optimize all flight phases including climb-out, cruise and descent."

DELPHINE GUÉRIN

Delphine Guérin is the Head of Air France Flight Support and Efficiency Department, a position she has held since 2017. A graduate from a French Aeronautical Engineering School, Delphine joined Air France in 2004 and has had professional experiences in Ground Operations, Dispatch, OCC and Flight Operations. She has taken part in many key Air France projects such as the opening of S3 and S4 terminals at Roissy Charles de Gaulle Airport and the integration of LIDO flight planning.

KIM HEAP

Kim Heap is a project manager specialized in Flight Efficiency, a position he has held since 2019. A graduate from the French engineering school (ECE Paris), Kim Heap joined Air France in 2013 and has had experience in Freight and Flight Operations.

ELISABETH MONTEILLER

Elisabeth Monteiller is Safety Line regional sales manager in charge of the EMEA region, a position she has held since 2020. After graduating from ESCP Europe French business school, she started her career at Textron Aviation, as part of Textron's Sales Development program. She had professional experiences in Business aviation aircraft sales and aftermarket sales. Before joining Safety Line in March 2020, she was aftermarket sales associate for Cessna Service Center based at Le Bourget, Paris, France.

AIR FRANCE

AIRFRANCE

With an activity divided between passenger transport, cargo transport and aeronautical maintenance, Air France is a major air transport player. Its modern fleet includes more than 200 aircraft from the Airbus A320, A330 and A350 families as well as Boeing 777 and 787 types. As part of its Horizon 2030 program, Air France is committed to reducing its CO_2 emissions per passenger kilometer by 50% by 2030.

SITA FOR AIRCRAFT

SITA FOR AIRCRAFT

SITA is the IT provider for the air transport industry and is 100% owned by the industry, delivering solutions for airlines, airports, aircraft and governments. SITA FOR AIRCRAFT is powering a digital shift to make air travel more connected, seamless, efficient, safe and sustainable. Its communications network connects every corner of the globe and handles vast volumes of data every second.

VENDOR FLIGHT LOG: SAFETY LINE

Pierre Jouniaux, Founder, Safety Line shares the pilot focused approach that makes Safety Line products work so well

Aerospace engineer (ENAC) and principal investigator at the BEA for 12 years, Pierre was involved in many major accident investigations as IIC or Accredited representative. He continued his work in aviation safety as special advisor for Vietnam Airlines on FOQA and SMS matters, as well as first officer on ATR72. He has 30 years experience in air operations and safety. Pierre founded Safety Line in 2010, and after the acquisition of the company by SITA in 2021, he remains at the helm of the Safety Line team within SITA.

Aircraft IT: Your name, your job title and the name of the business?
Pierre Jouniaux: Pierre Jouniaux, Founder, Safety Line.

Aircraft IT: How did Safety Line get started?
PJ: As a former airline pilot, I came to realize that there were often many changes between the flight plans pilots received and what was actually flown, with pilots not always having appropriate tools in the cockpit to manage such changes. I came to the conclusion that there was a need for better tactical tools in the cockpit to enable pilots to optimize their flights. It quickly became clear that the flight phase that could benefit the most from optimization was the climb-out phase, the first 20 to 30 minutes of the flight at high thrust levels, which also happens to be the most complex, with many parameters evolving as the aircraft ascends. To tackle this complexity, Safety Line initiated a partnership with academic data science research labs to explore how aircraft flight data could be leveraged towards optimizing the climb-out phase.

The result was OptiClimb, a unique fuel efficiency solution allowing airlines to save 5% to 6% of climb fuel thanks to machine learning performance models for each tail, accurate 4D weather forecasts, and the issuance of customized climb speeds to pilots for each flight.

Aircraft IT: What is the attraction of aircraft-related software?
PJ: It's fascinating to see how aviation is both a very conservative and very innovative industry at the same time. We're very proud of being able to bring predictive analytics into the cockpit to enable airlines to not only reduce their carbon footprint but also reduce their costs. As we enter a new chapter with IT provider SITA's acquisition of Safety Line recently, we believe that we can continue to accelerate the development of these solutions.

Aircraft IT: What is the guiding business principle that drives Safety Line?
PJ: To innovate and deliver. When it comes to innovation, Safety Line has chosen to maintain an in-house lab of data scientists who are constantly exploring new solutions. Full IT development is kept in-house as well, which gives us the agility to quickly turn the results of our research projects into actual products. Each airline has a set of IT solutions in place for flight data management, OFP systems, pilot briefings and/or EFB applications which we need to integrate with in order to make sure our innovative

solutions can deliver actual savings. We always strive to find the most efficient way to make our solutions work for each airline.

Aircraft IT: What has been Safety Line's greatest technical achievement to date, and why?
PJ: Our greatest technical achievement to date has been to have built a bridge between aviation and data science that allows airlines to save fuel in all flight phases by bringing predictive analytics into the cockpit.

Aircraft IT: What has been Safety Line's greatest business achievement to date, and why?
PJ: Our biggest business achievement to date has been to turn a strategic commercial partnership with SITA into a successful integration of Safety Line into the SITA with the acquisition of the company that was announced last month. We are confident that this should allow us to reach out to even more airline customers globally.

Aircraft IT: What have been Safety Line's disappointments and what have you learned from them?
PJ: One disappointment was to witness that some of the larger airlines are still blocked from sharing their flight data and unlocking its value. This is changing and working closely with their fuel efficiency teams, we have already been able to gain access to the flight data of a couple of legacy carriers who were initially barred from sharing it.

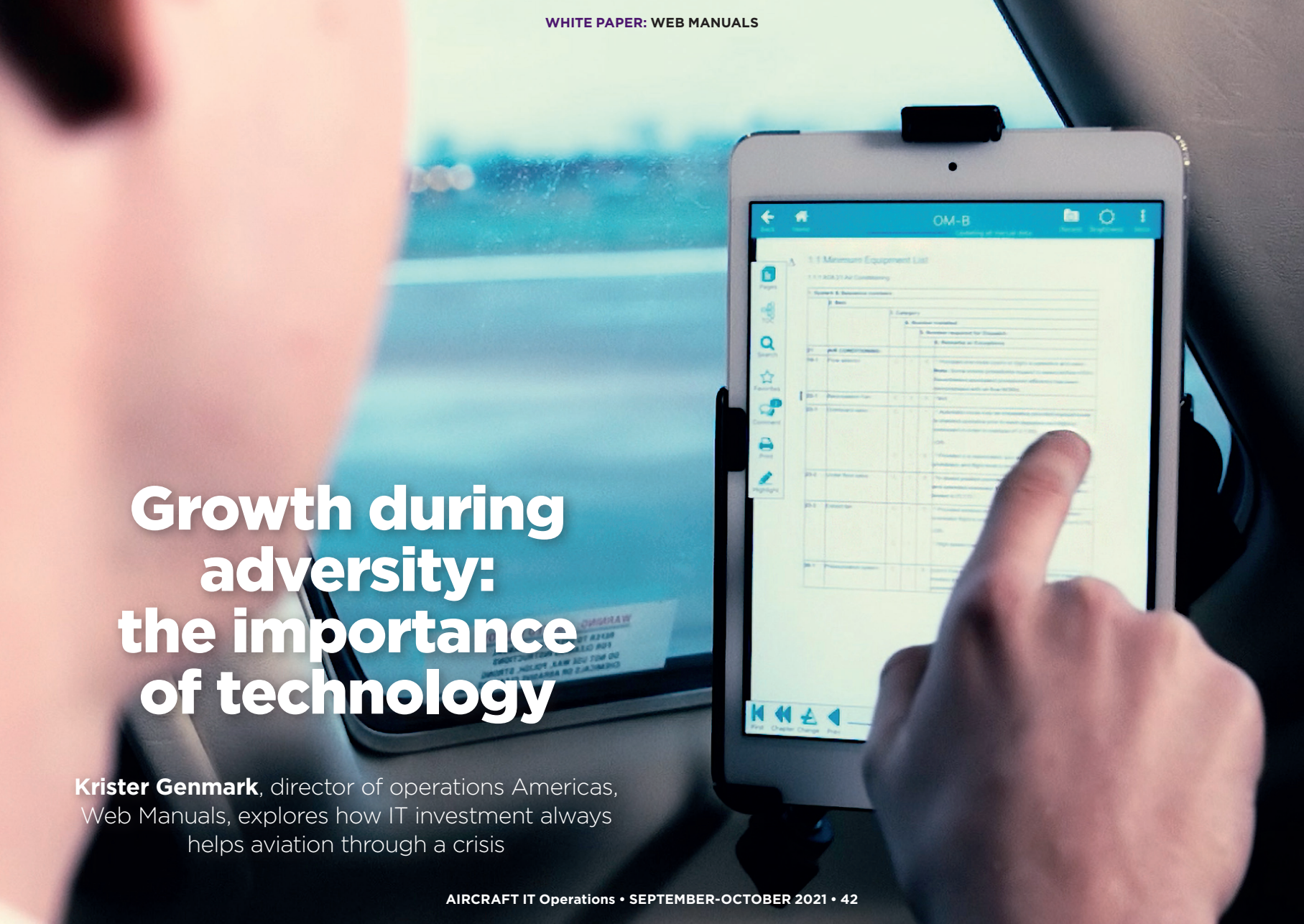
Aircraft IT: In a sentence, how would you summarize what Safety Line does for aviation customers?
PJ: Safety Line provides high tech, easy to use solutions that allow pilots to better contribute to fuel savings and reduce their airline's CO_2 footprint.

Aircraft IT: What is new on Safety Line's development horizon?
PJ: We're very excited about having recently joined SITA. Together with the team we will continue to develop our geographical footprint. We have also seen a greater focus from airlines to reduce their emissions and become more environmentally sustainable. With OptiFlight we can help more airlines achieve this ambition.

Aircraft IT: What will be the next big thing in Aviation IT?
PJ: Cockpit connectivity will further enhance flight optimization by bringing the power of cloud-based computations into the cockpit to update pilot recommendations in real-time for longer flights.

Aircraft IT: What do you want your customers to say about Safety Line?
PJ: 'Safety Line get it. They deliver the most innovative solutions in the most effective way'.

Aircraft IT: Pierre Jouniaux, thank you for your time.



Growth during adversity: the importance of technology

Krister Genmark, director of operations Americas, Web Manuals, explores how IT investment always helps aviation through a crisis

Every company in the aviation industry has been affected by COVID-19 but not every company has suffered equally. Why have some businesses and organisations performed better than their competitors through the pandemic? How do you maximise your chances of surviving and thriving in adversity? Can we all build for long-term progress even during a crisis?

One word appears again and again in all good answers to these questions — technology.

The first key factor in making the most of technology is your attitude. You need a positive approach to the environment in which you find yourself. Don't fight adversity. Hug it. Become one with it. And then, when you survive those challenges, you'll come out the other side even stronger than before.

Digital infrastructure vital

Regardless of size or activity, the companies that have coped best in the past 18 months either had a strong digital infrastructure in place when the pandemic began or rapidly and willingly embraced new technologies when COVID-19 struck.

To give a high-profile example, if your staff weren't able to access your IT systems and work from home in Q1 2020, you needed to set up remote solutions quickly. Similarly, if you weren't already equipped to support your customers with videotelephony and videoconferencing early last year, you had to act fast to fix that problem. Companies familiar with these technologies, and many other forms of digitisation, adapted swiftly and saw the benefits when coronavirus arrived. Companies slow or resistant to change fell behind their rivals.

Technology has helped with the most vital issue of all too — health. With the priority of keeping staff safe, aviation companies (such as services provider ACI Jet) set up telephone hotlines and messaging services to ensure personnel were informed of the latest coronavirus news and, for example, opportunities for free COVID-19 testing.

Aviation's unique challenges...and solutions

Many benefits of digitization specific to aviation became clear early in the pandemic. Online records could be used to identify maintenance work or pilot/staff training that could be carried out when fleets were grounded by lockdowns and international travel restrictions. Companies with cutting-edge compliance and maintenance technology that was easy to access and interrogate, leapt on the opportunity to quickly survey their upcoming needs and pull scheduled work forward. Everything, even just a scratch on aircraft woodwork, could and should be addressed at once. After all, who knew when maintenance centres and pilot training facilities would close and for how long? Even when those operations reopened, the backlogs might be huge. Companies using slow and inefficient IT, or worse still paper records, often didn't see those opportunities to act until it was too late.

"Companies using slow and inefficient IT, or worse still paper records, often didn't see those opportunities to act until it was too late."

We've also seen aircraft operators, for the first time, maintaining compliance with their national aviation authorities such as the US Federal Aviation Administration (FAA) through video calls. Unable to travel during the pandemic, FAA staff have been able to carry out aircraft conformity inspections remotely, verifying an aircraft conforms to its type design and is configured or bridged to the approved programme and operations.

Positive news has been hard to find in the COVID-19 crisis but this necessary acceleration of aviation authorities' telecommunications capabilities and digitisation programmes during the pandemic has been a big win.

We've all become experts in videotelephony in the past 18 months, from Microsoft Teams and FaceTime to Zoom. We must build on that progress to establish an era of unprecedented openness and transparency in aviation communications.

And as Neil Rose, director of operations for private air travel business Jet It, says in a rallying call to the aviation industry: "We have to encourage the authorities to support us in what we are doing. It's up to us to force digitization but by being collaborative, not adversarial."

Safety and compliance critical

Let's turn now to an area even more important than telecommunications. The need for aviation safety does not disappear, or even reduce by a fraction for a second, during a crisis. Regulatory compliance therefore always remains vital too. Disseminating safety-critical updates quickly and directly to pilots and crews, through an efficient and consolidated digital system, has never been more important. So we haven't been at all surprised at Web Manuals to see aircraft operators introduce and accelerate the use of our document digitization to become more agile and effective during the pandemic.

If you want to avoid being punished by aviation authorities, you need to ensure your manuals are rapidly and reliably updated to reflect regulations coming into effect. From new operational procedures to intensified maintenance and safety requirements, you must be ready for anything. If you're not, you could be risking a financial penalty or, worse yet, an accident. And that's not a risk worth taking.

Improved regulatory compliance (leading to improved flight safety) is just one benefit of digitizing your industry manuals. When the authoring, reviewing, revision, publishing and distribution of your operational documentation is so simple, you save time and administrative costs. What was once a laborious task — managing the thousands of pages of your entire manuals library — is now a fast and seamless operation. You can focus on building your business.

Scaleable and flexible solutions

Adaptable digitization also allows companies to respond to rising and falling market demand easily and efficiently without, for example, having to manage wildly fluctuating staffing levels and the consequent risk of expensive organizational chaos.

Sadly, some airlines have suffered continuously through the pandemic but many companies in private aviation saw business surge and fall and surge again. Flexible and scaleable digitisation such as scheduling systems helped those companies keep working smoothly, responding quickly to dramatically varying demand, without major and disruptive organizational changes.

Progress, not paperwork

Automation allows your staff to focus on what really matters to your business — serving your customers — rather than forcing your teams to spend far too much of their precious time preparing and organizing paperwork, from invoicing to compliance documentation.

This key point deserves repetition — many of the businesses that have outperformed their competitors over the past 18 months have done so largely because they were already operating with a strong IT infrastructure when COVID-19 struck. Their business models already supported remote working. These companies (such as Solairus Aviation in the private jet sector) weren't just lucky; they had built their working practices understanding the importance of technology.

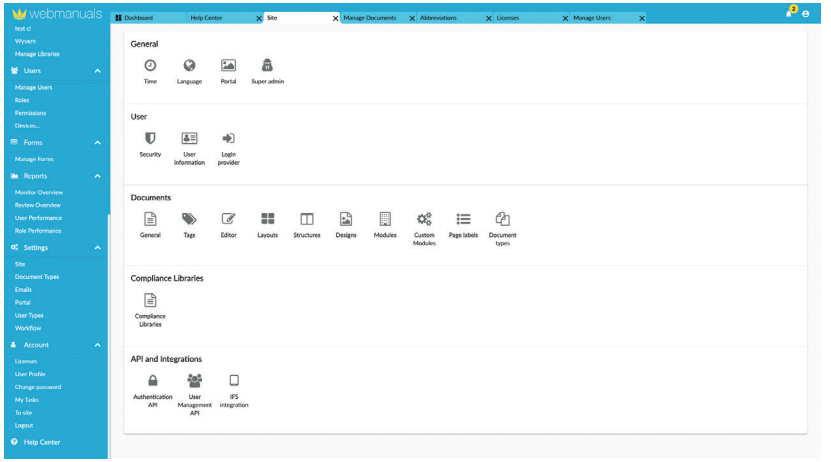
Plan your IT ROI

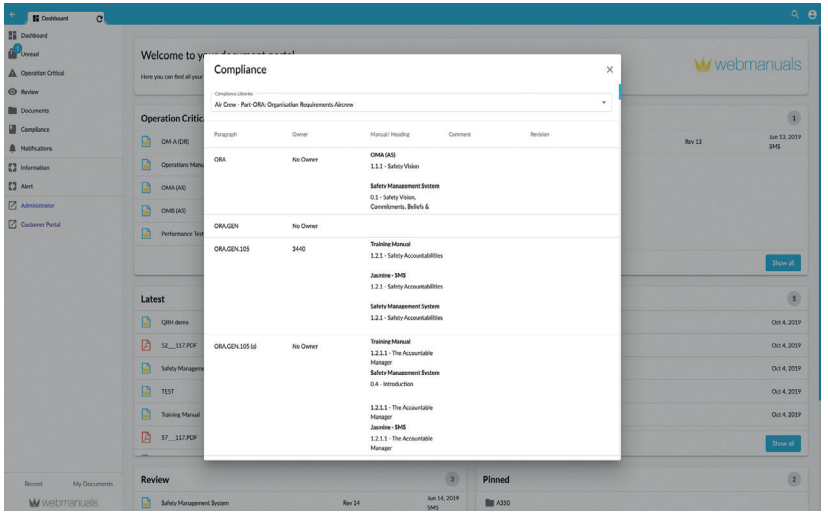
When the seriousness of the coronavirus crisis began to become clear in early 2020, many aviation companies were understandably anxious but smart businesses didn't panic. No one was sure what would develop in the year ahead.

Looking back at what we have now learnt, what advice can we give moving forward? Calm thinking is always essential in business, not just during a crisis. Don't simply invest in any technology to provide you and your company with a false sense of security.

Finding strong, mature IT in the private aviation sector, for example, can be challenging. After all, the size and value of the market means demand for these technologies (and the consequent levels of investment developers are able to make) hardly compares to the demand for, say, Microsoft Word or, indeed, commercial airline IT. Does this fact mean there are no good technologies for the private aviation sector? Absolutely not. But you must choose carefully to avoid immature IT that simply won't provide the real-world results and return on investment (ROI) you need.

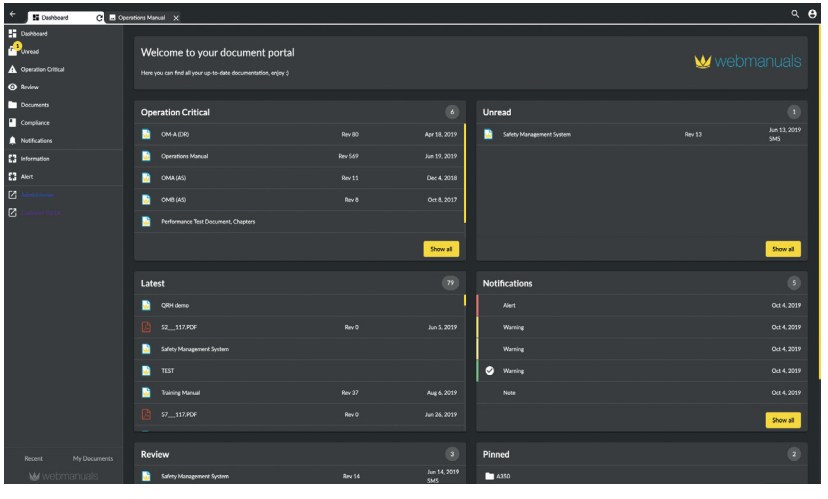
Take your time and take advice to ensure you only invest in the right IT for your business. Understand your needs and your clients' needs. How are those requirements likely to change? And what if an unexpected crisis happens? Spend time and money wisely on IT now and you'll be saving time and money across your business for years to come. And those savings could be the difference between success and failure.





The eVTOL revolution

If you still have doubts about the importance of technology to the future success of the aviation industry, in adversity or prosperity, consider the aircraft themselves.



The advance of 'electric vertical takeoff and landing' ('eVTOL') aircraft (sometimes known as 'autonomous aircraft' or 'urban mobility solutions') continues. During this pandemic, one of the key reasons passengers have chosen private jet flights over commercial airline travel has been to minimise human interactions for health and safety. That fact alone proves the desire for pilotless passenger aircraft can only have grown in the past 18 months.

Invest wisely, prepare now

Planning for the unpredictable is a challenge we all face every day in aviation. When any corporate emergency hits, despite the urge to act dramatically at speed, a strong first step is often to do nothing more than look around. Assess the situation. Calmly decide if you need to move in a new direction or not.

Coronavirus has shown us yet again that the companies best placed to take composed, correct decisions in an unavoidable crisis are the companies that went into that crisis with a strong digital infrastructure.

Wherever you need to go, the right IT will always help you get there as quickly and efficiently as possible. Be ready for anything. Put that technology in place now.

KRISTER GENMARK

Krister Genmark is the Director of Operations for the Americas at Web Manuals, the world leader in aviation document digitization solutions. In his role, Krister is responsible for managing the day-to-day business for the US organization of Web Manuals, including sales, support, training and partner relations. Prior to joining Web Manuals In 2016, Krister successfully developed and managed training, safety and quality systems for different companies in the aviation sector, including Nordic Aero and Aviation Port Services.

WEB MANUALS

webmanuals

Web Manuals specializes in developing digital document management solutions for the aviation industry. It is revolutionizing aviation manuals and regulatory compliance by making the digitization, authoring and distribution of operational documentation easy and accessible to operators of all sizes. What used to be a laborious manual task is now made simple: the rapid authoring, reviewing, publishing, distribution and control of an entire manuals library is now a seamless operation. This brings significant savings in time and administrative costs, while improving regulatory compliance and flight safety. For more information visit www.webmanuals.aero

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VENDOR FLIGHT LOG: STORKJET

Dr. Emil Kaptur, Head of Research and Development, StorkJet explains how easy and reliable information helps stakeholders to achieve fuel and CO_2 reductions

Emil Kaptur is Head of Research and Development at StorkJet. He holds a PhD degree in experimental physics and his expertise in big data analysis and machine learning comes from his previous work at the European Organization for Nuclear Research (CERN). His adventure in aviation started with working on tail specific performance models for flight path optimization. Currently, he leads a team of machine learning researchers with diverse backgrounds extending StorkJet's performance models to cover not only inflight performance, but all areas of aircraft operations where fuel can be saved.

Aircraft IT: Your name, your job title and the name of the business?
Dr. Emil Kaptur: Dr. Emil Kaptur, Head of Research and Development, StorkJet

Aircraft IT: How did StorkJet get started?
EK: At the beginning of StorkJet I was only helping occasionally with my expertise in data analysis and aircraft performance modelling, as I was working as an experimental physicist in the European Organization for Nuclear Research (CERN) in Geneva. I decided to join StorkJet full-time when we were awarded European Union research grants to master StorkJet's technology.

StorkJet from the very beginning consisted of a strong analytical team, which, having access to this treasure trove of flight data, started to build a new data-based solution for aviation.

Aircraft IT: What is the attraction of aircraft-related software?
EK: For me personally, an experimental physicist, aircraft-related software incorporates what I am most interested in. Physics and statistical modelling on big data in real world problems.

On a larger scale, the climate crisis is ongoing, but aviation is and, I believe, will be reliant on fossil fuels for quite some time. Even with introduction of sustainable biofuels their cost will be high and better fuel efficiency will lower both costs and reduce the land area used for biofuel crops. A small help can be provided by fuel efficiency and aircraft performance software. With that, airlines can increase efficiency of operations, engage pilots to be more eco-conscious and as a result save fuel and CO_2 emissions.

Aircraft IT: What is the guiding business principle that drives StorkJet?
EK: Our goal is to deliver the most precise and reliable data to our customers.

With that, airlines we work with can focus on areas most important for their operations, where the largest savings are. Very often these are low hanging fruits, however they become visible only if proper software is in place. And the key to estimate precise saving

potential is in correct data for analysis and innovative technology. StorkJet's Data Quality and R&D teams consists of over 50% of our employees. This ensures that our customers get what they need.

Aircraft IT: What has been StorkJet's greatest technical achievement to date, and why?
EK: Integration of our machine learning, tail-specific aircraft performance models in multiple areas of operations. StorkJet started with machine learning performance models in Aircraft Performance Monitoring software (AdvancedAPM). Based on this experience, over the past three years we started using our tail specific models in various other applications.

In flight path optimization we are able to calculate exact penalty (or savings) related to pilots flying with not optimal speeds and altitudes for climb, cruise, and descent. Thanks to that, pilots know not only what was their compliance to airline policy, but also how much fuel, CO_2 and time they can save by flying more efficiently.

We are also able to calculate and present to the pilot true optimum speeds and altitudes for a particular aircraft performing the flight. Sometimes optimum cruise speed can differ between two aircraft of the same type by more than 0.01 Mach.

We also use our models for calculating the precise savings (or sometimes penalty) of Single Engine Taxi; best take-off and landing configuration of the aircraft; real Cost of Weight for each flight, and many more.

Aircraft IT: What has been StorkJet's greatest business achievement to date, and why?
EK: While entering the market we had to decide what we want to be the best in and what would be StorkJet's unique selling proposition. We saw many opportunities for optimization, however the area which was really outdated was the Aircraft Performance Monitoring process. For performance engineers handling APM was and in many cases still is a nightmare. With AdvancedAPM we have revolutionized this market segment and now we can proudly say that StorkJet is the market leader in aircraft performance monitoring.

> "With AdvancedAPM we have revolutionized this market segment and now we can proudly say that StorkJet is the market leader in aircraft performance monitoring."

Aircraft IT: What have been StorkJet's disappointments and what have you learned from them?
EK: Most disappointments come from flight data. The procedures to download it from the aircraft can be challenging for an airline, especially for older aircraft. This can cause delay in data processing and results availability. In our modern, connected world it is a disappointment that quite often flight data is not transmitted wirelessly. We have learned to support our customers in the process by reporting problems to ensure the delays are minimal.

In addition, the quality of recorded data can be poor. Some parameters have very low resolution, while other can give flat-out wrong values. To mitigate these problems we have to perform extensive tests and calibration to ensure best quality of data presented to airlines.

Aircraft IT: In a sentence, how would you summarize what StorkJet does for aviation customers?
EK: We provide easy and reliable information to fuel efficiency departments, performance engineers and pilots on how to fly more efficiently and burn less fuel.

Aircraft IT: What is new on StorkJet's development horizon?
EK: Right now we are focusing on using our expertise and precise calculation to give pilots in-flight, real-time recommendations that are easy to follow and provide real impact on fuel efficiency for every aspect of the flight, from briefing, flight preparation and departure, through climb, cruise, and descent, to landing and taxi-in.

One of the most important aspect of fuel efficiency is pilots' involvement and we want to improve our current pilot-centric solutions even more.

Aircraft IT: What will be the next big thing in Aviation IT?
EK: I believe that better integration of solutions from specialized vendors will be important. For example, in fuel efficiency it is crucial to provide a single message about what's efficient to all of the stakeholders: fuel efficiency departments, performance engineers, pilots (both pre-, in-, and post- flight), maintenance, air traffic controllers and policymakers. This is what we already do at StorkJet. Closer integration with flight planning providers, ATM or even FMS would ensure that all information sources for pilots are consistent with each other and that the pilot have a single, definite source of information.

Aircraft IT: What do you want your customers to say about StorkJet?
EK: I would like our customers to say that we listen to their problems and provide solutions and actionable data which helps them make correct decisions, save fuel, and make their work easier.

Aircraft IT: Dr. Emil Kaptur, thank you for your time.

Why tail-specific performance models matter

Dr Emil Kaptur explains how understanding the performance of each specific aircraft in a fleet can optimize fuel and time costs

'Tail-specific performance model' is an innovation, which has become increasingly popular in the aviation industry. However, readers might wonder what exactly performance models are and what does it mean when they are described as 'tail specific'?

The main goal of a performance model is to calculate fuel consumption over time at defined conditions. For example, if you would like to know the flight time, distance and fuel burn of a descent; you need a performance model. If you put into the model an aircraft's weight and speed, and a weather forecast, you will get information about how your descent profile will look. Because such a model 'knows' how much you will burn under every possible condition, it can calculate the speed that will give the lowest fuel burn or cost.

So why there is so much discussion about tail-specific models? In a nutshell, each aircraft is different from the others: some have higher drag; in others, engines are a bit less efficient and some are modified beyond their legacy performance model. All of these factors have an impact on fuel burn. If you put all aircraft of the same type into one model, you lose what makes each aircraft individual. With tail-specific performance models, you get the highest precision of fuel consumption calculation. Although FMS or Flight Planning Software usually has one legacy model for all aircraft of a given type, nowadays it is possible to get a separate model for each tail number, each engine and each APU.

While legacy models were mostly used for calculating approximate in-flight fuel consumption, by using machine learning and big data from QAR/FDR the new generation of tail-specific performance models can answer many more questions:

- **What is the true difference in fuel consumption between single and dual engine taxi, taking into account uphill and downhill gradients, engine aging and APU model?**
- **How fuel burn depends on intersection take-off, flaps and acceleration altitude for any airport?**
- **By how much tail-specific optimums differ from FMS speed and altitude and what penalty does that incur?**
- **What is the accuracy of flight planning's fuel policy calculations?**
- **Does the low setting of air conditioning packs include fuel saving?**

Let's look at some real cases to see how tail-specific performance models can lower airlines' costs.

INDIVIDUAL DEGRADATION FACTORS DELIVERED ASAP

In the traditional Aircraft Performance Monitoring (APM) process, the degradation factors can vary from month to month by as much as 1%. As a result, airlines need to average the results over one or three months. It means, that when there is a large change in aircraft performance (e.g., by 2% if there is an engine change to a more efficient one), the airline will fly for even three months, planning 2% more fuel than needed. In the opposite situation, when degradation would increase by 2%, pilots could notice overburns and as a result, start to plan higher discretionary fuel. Both situations result in a fuel penalty.

> "If you put into the model an aircraft's weight and speed, and a weather forecast, you will get information about how your descent profile will look."

With tail-specific performance models, airlines can very precisely determine the performance of an aircraft at any specific point in time. On the chart below (figure 1) you can see that, after an airline switched from traditional APM to tail-specific models, aircraft deterioration calculations looked much smoother. Also, there were two engine changes, with more than 2% change of Total Deterioration visible on the first flight after the maintenance action. Thanks to that, airlines can change the fuel factor on their flight plan right after any changes occur and, as a result, save fuel.

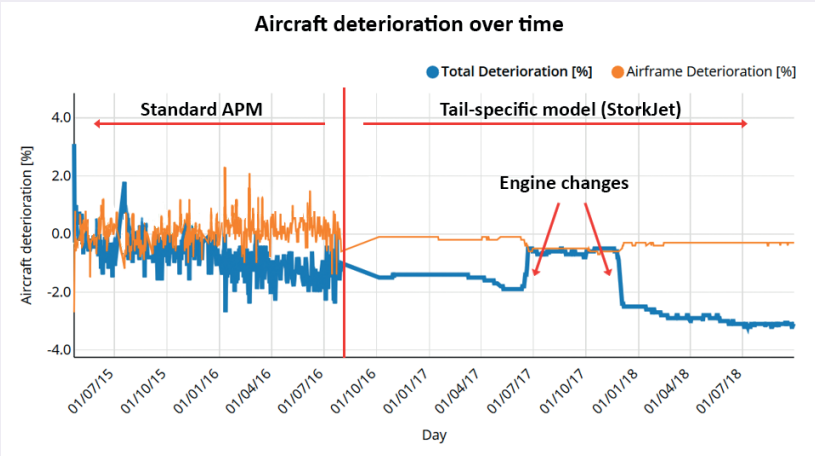

Figure 1

OPTIMUM SPEEDS AND ALTITUDES DESIGNED FOR EACH TAIL

Another case where individual aircraft characteristics matter is Flight Profile Optimization. Let's analyze real data from two aircraft of the same type. For the same gross weight, route and weather conditions both flight plan and FMS would give the same ECON speeds and altitudes for them.

On the chart below (figure 2) you can see what is the actual Direct Operation Cost (fuel burn + cost of time) for these aircraft. As you can see with the grey points and dashed lines, the economical speed on cruise differs by up to 0.01 Mach between the two aircraft. It shows that these two aircraft of the same type are in fact very different.

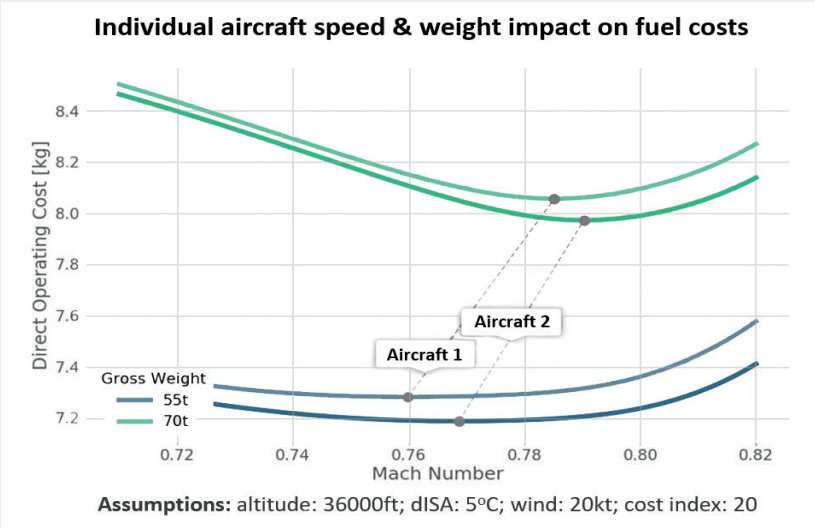

Figure 2

When we delve deeper onto how much can be saved as a result of this difference, the saving potential of AC-2 is 20% larger than saving potential of AC-1. By using tail specific performance models airlines can see such difference and advise pilots to fly differently (in this case a bit faster) on AC-2 to realize all of the possible savings. This can be done by scheduling AC-2 on flights with a bit higher cost index.

Detailed feedback to pilots

As readers know, pilots are the key players in fuel efficiency. But they also need to understand what impact their behavior has on fuel consumption. With machine-learning models, pilots, after each flight, receive a comparison of their flight path flown with the most optimum one. Such charts can optimize flight speed and vertical profile during climb, cruise, and descent.

Below (figure 3), an example of the cruise speed optimization chart is presented. The optimum speed is marked as the green line while the blue line represents the actual one selected by the pilot. The green area is the saving potential, which in that flight is equal to 1554 kg. With such information, pilots can check where the areas for improvement are and what actions might have the biggest impact on CO_2 reduction.

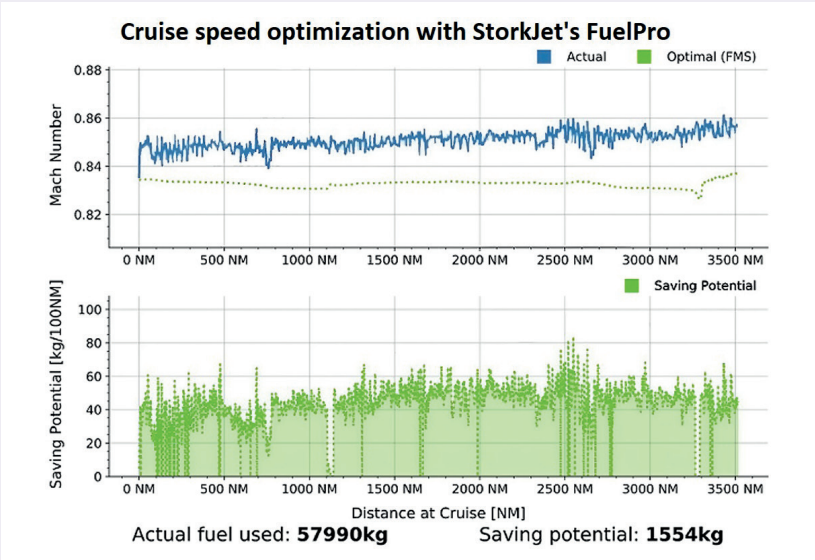

Figure 3

TRUE SAVINGS FROM SINGLE ENGINE TAXI

It is common knowledge in the market that while taxiing with a single engine, an airline will save, for example, 5 kg per minute of taxiing time on a medium range aircraft (after a cooling period). However, this might lead to wrong conclusions, because taxiing on a single engine takes longer than a dual-engine taxi, which generates a fuel penalty. Some airports might have uphill gradients, in which case single engine taxiing will be even slower. Or, on the contrary, there might be traffic on some airports — in that case single engine taxiing generates more savings because the aircraft will be in a queue but only on one engine.

With creating dedicated models for taxi, it is possible to take into calculation all the above mentioned considerations (figure 4). When a pilot performs dual engine (grey line), he might compare it to the single one, which is fully simulated (the blue one).

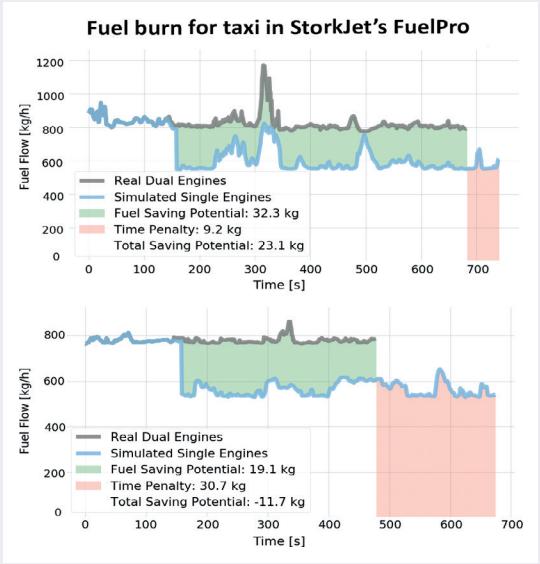

Figure 4

On the charts, we can see what is the fuel saving potential (green area) as well as the additional fuel that needs to be used because of longer taxi (red area). The top chart shows an example when a pilot in total saved 23 kg of fuel. The example under that shows a case when single engine would generate fuel penalty equal to 11.7 kg. On the contrary, in the traditional calculation approach both cases would show the same fuel savings.

Thanks to apple to apple comparison calculated for each flight and for each fuel initiative, analysts can easily find those areas of operations where the biggest savings are hidden.

> "... pilots are the key players in fuel efficiency. But they also need to understand what impact their behavior has on fuel consumption. With machine-learning models, pilots, after each flight, receive a comparison of their flight path flown with the most optimum one."

DR EMIL KAPTUR

Emil Kaptur is Head of Research and Development at StorkJet. He holds a PhD degree in experimental physics and his expertise in big data analysis and machine learning comes as a result of his previous work at the European Organization for Nuclear Research (CERN). His adventure in aviation started with working on tail specific performance models for flight path optimization. Currently, he leads a team of machine learning researchers with diverse backgrounds extending StorkJet's performance models to cover not only inflight performance, but all areas of aircraft operations where fuel can be saved.

STORKJET

StorkJet is the expert in aircraft performance and fuel efficiency based on real flight data, supporting airlines through revealing new saving potentials and optimizing flight operations. Airlines use StorkJet's software to track over 44 fuel initiatives, monitor the performance of each aircraft in the fleet and engage pilots to be more eco-friendly.

REAL LIFE ESSENTIALS IN FIVE-MINUTE CASE STUDIES

PIVOT and the EFB

Mike Schulter, Managing Director at PIVOT considers how good mounting can add to EFB effectiveness, efficiency and safety with enhanced investment return

> "Being able to choose the tablet that is right for the program, not just the one which fits the mount, can equate to millions of dollars in savings on hardware, labor and AOG (aircraft on ground) time."

The PIVOT line of EFB cases and mounts began in 2013 by happenstance in the cockpit of a Southwest Airlines jet. At that time, many airlines were just starting EFB operations using standard commercial-off-the-shelf (COTS) tablets like iPad and Surface instead of the typical installed EFB hardware. Installed EFBs were losing popularity due to the high cost of hardware, certification costs and short lifespan in a rapidly changing tech environment. Simultaneously, the function gap between installed and tablet EFBs was shrinking rapidly. Airlines were keen to move to portable EFBs, and there were many mounting choices available, but limitations such as hardware cost, function, safety, and installation expenses and timeline loomed large.

A MOUNTING SYSTEM SHOULD SUPPORT BUT NOT DETERMINE EFB CHOICE

Maximizing the Return on Invested Capital or ROIC is a must for survival in an ultracompetitive landscape. The process of maximizing ROIC in the EFB space is a combination of managing up front mount and device costs, deployment labor, user profile and program management. In the long-term, IT flexibility is paramount. Being able to choose the tablet that is right for the program, not just the one which fits the mount, can equate to millions of dollars in savings on hardware, labor and AOG (aircraft on ground) time. Choices must be made but there is no reason to make them hastily.

Prior to joining Southwest Airlines, I founded FlyBoys creating gear for military pilots. In 2013, most portable EFB mounts available weren't pilot-friendly and were expensive with very little opportunity for ROIC. While flying as a commercial pilot I realized the opportunity to design something that would provide the features pilots need to make the most of the EFB. The typical solutions did not have any pilot perspective in the design process - and as such EFB in the cockpit needed to be reimagined. Also, understanding the need for measurable ROIC, it was clear an entirely new system must be favored by pilots and also make sense strategically and financially for the airline in the short- and long-term.

PIVOT comes to market

Fast forward nine months and PIVOT was developed, tested, and approved for use. PIVOT became the EFB platform choice for Southwest Airline's new EFB program serving 9000 pilots and 700 aircraft. This was immediately followed by FedEx, WestJet, Delta, and United. Now, over 160 airlines from around the world use PIVOT EFB cases with thousands of mounts flying millions of miles. PIVOT is the fastest growing EFB solution in the world for the last seven years and it isn't slowing down any time soon.

WHY AIRLINES CHOOSE PIVOT

There are many reasons why airlines choose PIVOT but, in the end, it boils down to maximizing ROIC (figure 1).

Figure 1

- **Universal connectivity**
  - PIVOT's patented mounting plate guarantees user have an identical experience for connection and function in every aircraft type and throughout EFB device upgrades. This allows multiple form factors to be utilized by the same mount, further enhancing operational stability during deployments.
- **Designed in the cockpit by a pilot for pilot functionality**
  - Designed from inside the cockpit means pilots enjoy single hand adjustment for installation and removal, plus the ability to easily tilt and rotate the EFB as needed. Making common cockpit tasks easier enhances the utilization rate of the device and produces fewer screen interpretation errors. The drop protection protects users from accidental damage in transit, reducing the potential for unnecessary flight delays.
- **Upfront and ongoing cost management**
  - A variety of mounting options provide a wide variety of cost-effective deployment strategies, minimizing maintenance, hardware, regulatory and AOG time.
- **Deployment planning and management**
  - Fewer work hours are required to execute a PIVOT deployment due to the universal nature of the mount. PIVOT devices can be deployed at any rate or schedule the airline would like because the mount works with past, present and future PIVOT EFB cases.
- **Long-term IT flexibility**
  - The ability to choose the right device for the airline's IT needs is paramount. PIVOT allows EFB programs to choose the device that fits their needs, not existing, outdated tablet cradles.
- **Asset and residual value protection**
  - EFBs are expensive and cost a lot to fix if damaged. PIVOT users average a break rate of less than 1% annually, thereby reducing the cost of replacing or fixing devices in an EFB program. Devices protected by PIVOT also regularly attain an 80% 'A' condition rating for valuation at lease turn in or resale. This improves the average value of each device by $25 USD, further offsetting the cost of initial deployments and upgrades when using the PIVOT system.

"There are many choices to make related to developing and managing an effective EFB program, one of the most important being how to mount EFBs in the flight deck in a safe, effective, and affordable way."

A KEY COMPONENT IN EFB UTILITY

There are many choices to make related to developing and managing an effective EFB program. One of the most important is how to mount EFBs in the flight deck in a safe, effective, and affordable way. When COTS EFB devices first became an option for most airlines, the only mounting options were STCs and large, unreliable double suction cups, all utilizing form specific cradles.

The PIVOT case and mounting system is immediately appealing to airline leadership from a financial standpoint for ease of acquisition, approval and deployment. This provides truly universal opportunities to save money and streamline operations thereby enhancing and maximizing ROIC.

PIVOT provides a common starting point for EFB for either small or large user groups flying many different aircraft types in geographically separated locations. No matter where, or in which type of aircraft, PIVOT experience and familiarity is the common underpinning of the program.

PIVOT EFB cases and mounting solutions are also a success story beyond the flight deck. Anywhere an employee can reference a tablet device as part of their job duties, PIVOT offers a mounting solution and an EFB case that can work with any of PIVOT's mounts. This includes Flight Attendants, aircraft maintenance technicians (AMT), and other ground support employees.

While airline EFB administrators continue to shape the EFB world, they also continue to shape product development at PIVOT. Our customers have continued to push us towards innovation with requests for upgraded product options and the development of entirely new solutions to meet unique customer needs. In addition to EFB mounts and cases, we have also worked with numerous airlines to provide EFB power via flight deck power plugs and charging cables. The PIVOT R&D team collaborates closely with EFB programs and our partner network of aircraft manufactures and parts manufacturers across the globe to develop custom designs for both installed mounts and Long-Term Removable Mounts™ (LTRM™). The LTRM™ systems are a very popular solution for EFB operations because they can be deployed rapidly and affordably in comparison to permanently installed mounts. The PIVOT team is always eager to innovate and disrupt outdated trends in EFB. We relish the opportunity solve unique challenges in our continued support of EFB administrators and the rest of the industry.

MIKE SCHULTER

Mike is a career aviation professional having flown aircraft such as the F-16 and B-737 for more than 10,000 total flight hours. Mike leads a talent-filled pool of 15 professionals dedicated to customer service and innovation in aviation. Mike is dedicated to needs of pilots and EFB programs, and also oversees the expansion to marine, rail and other mass transit solutions in need of PIVOT functionality. Mike is a dedicated family man and enjoys golf and offshore fishing when the opportunity presents.

PIVOT

PIVOT is the world leader in portable, protective EFB cases and mounting solutions. Designed from a pilot's perspective, PIVOT products enhance EFB function and user experience, while increasing device protection and flexibility when selecting devices. The PIVOT universal mounting system provides EFB operators with the only future-proof solution on the market, providing protection from the ever-changing selection of EFB devices.

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VENDOR FLIGHT LOG: EVOKE SYSTEMS

Dr Craig Howard, Chief Technical Officer and co-founder of Evoke Systems explains that great software and customer focus power success

Dr Craig Howard is the Chief Technical Officer and co-founder of Evoke Systems. An expert in data mining, Craig brings a significant level of consulting expertise to Evoke's software solutions and their implementation, with a wealth of experience developing business efficiency software for commercial and cargo airlines across aviation training, vacation management and flight operations.

Aircraft IT: Your name, your job title and the name of the business?
Dr Craig Howard: Dr Craig Howard, Co-Founder and Chief Technical Officer, Evoke Systems

Aircraft IT: How did Evoke Systems get started?
CH: I met Evoke Co-Founder and Captain Mark Linney in the early 2000s before airlines were commercially using the Internet, and before smartphones and tablets. The term 'paperless cockpit' was just emerging, and Mark had a vision for improving data collection, crew communication, and just about every process that would remove paper and manual processes. I had just spent over a decade in academia lecturing computer science whilst completing a PhD in data mining and knowledge discovery, and the opportunity to put academic experience into practice in such an exciting industry was one not to be missed.

Aircraft IT: What is the attraction of aircraft-related software?
CH: The main attraction was the sheer challenge of a mobile workforce in such a fascinating industry. The emerging commercial Internet was a perfect platform for a worldwide crew base, and there were so many paper-based processes at the time that could improve operational efficiency whilst also supporting regulatory compliance. Now of course, most of the paper has already been removed, so we're always looking for new ways to collect and present the data to continually improve the user experience.

Aircraft IT: What is the guiding business principle that drives Evoke Systems?
CH: As a business, we exist to not only provide solutions, but to also provide value in everything we do. Back when I was involved in data mining projects, we used to refer to the knowledge pyramid; at the wide base is data, above that information, then knowledge, and finally at the peak, decisions. Whilst we collect a very large amount of data, the business value lies in the decisions made at the top of the pyramid. Whenever we start any new developments or customer projects, we always think about why we are doing this work to ensure the

"... there were so many paper-based processes at the time that could improve operational efficiency whilst also supporting regulatory compliance."

"By having significant amounts of clean data within EFOS, we were able to quickly provide new business intelligence dashboards, allowing both us and our customers to monitor the rapidly changing landscape in areas such as the flying programme, flight crew licensing, and crew leave."

tools we provide support the analytics and insights the customer is looking for.

Aircraft IT: What has been Evoke Systems' greatest technical achievement to date, and why?
CH: Having come from a computer science background, the most technically impressive feature is the free bidding process our team have created in the EFOS Leave Management Suite. At a given time of day, the 'window' is open, and crew can book any remaining vacation slots that are available. This normally involves thousands of requests being submitted and processed in a few minutes in a completely fair, transparent, and resilient manner. After six years of having this in place, it's still fascinating to watch the real-time statistics, seeing how quickly these arrive and are then processed to give immediate responses to both the crew member and the airline on leave availability. We receive incredible feedback from our customers every time this runs and consider this to be an industry leading solution.

Aircraft IT: What have been Evoke Systems disappointments and what have you learned from them?
CH: It goes without saying that the Covid pandemic has had a substantial impact on our industry. Some of our new innovations have slowed down; we work closely with customers to develop and validate these ideas, and airlines simply haven't had the resource to support these recently. We've learned that having a fully electronic web and app system already in place allowed our customers to carry on regardless of their workplace. By having significant amounts of clean data within EFOS, we were able to quickly provide new business intelligence dashboards, allowing both us and our customers to monitor the rapidly changing landscape in areas such as the flying programme, flight crew licensing, and crew leave.

Aircraft IT: In a sentence, how would you summarize what Evoke Systems does for aviation customers?
CH: Our team provides intuitive software and great customer service that together consistently delivers value to the airline through data capture, processing, and analytics.

Aircraft IT: What is new on Evoke Systems development horizon?
CH: We've recently finished a series of dedicated customer workshops which focused on Evidence Based Training, our customer's EBT plans, and our product development roadmap which will assist our clients in delivering their EBT programmes. Since the conclusion of these sessions, we've been focusing on EBT specific analytic reports to support compliance, examine competency mapping, and monitor instructor concordance. These robust reports will be available through our Query Engine, and we are excited to support and work with our customers as they transition into EBT.

"We've worked in this industry for almost 20 years now and I'm always impressed at the level of knowledge within the team and how we learn from every project to continually deliver value, excellence, and insights to every customer."

Aircraft IT: What will be the next big thing in Aviation IT?
CH: This is always a difficult question to answer and it's easy to say the main industry trends such as big data and artificial intelligence. I believe the former is already in place and it's the application of the latter that provides us all with the challenges for the coming years. In addition, the increase in integrations between systems as legacy infrastructure gets replaced and information security continues to be prominent, will lead to improved real-time data sharing and ultimately more accurate and faster decision making.

Aircraft IT: What do you want your customers to say about Evoke Systems?
CH: I would hope they would say they enjoy working with us as much as we enjoy working with them. We've worked in this industry for almost 20 years now and I'm always impressed at the level of knowledge within the team and how we learn from every project to continually deliver value, excellence, and insights to every customer.

Aircraft IT: Dr. Craig Howard, thank you for your time.

The Connected Aircraft: Future Possibilities

Joshua Ng and **Alan Lim** from Alton Aviation Consultancy explore the 'connectivity revolution' for airlines and their passengers, and how recent innovations in the space and satellite technology sector are driving down the costs of inflight connectivity

On the ground, we are witnessing the democratization of connectivity. Smartphones have become ubiquitous, and fast 4G/5G data is available for a fraction of what data transfer at slower transmission speeds cost 10 years ago. Many in developing nations have jumped straight to mobile — bypassing the telephone and computer altogether.

The same cannot be said for connectivity onboard passenger aircraft. Aircraft connectivity has been expensive, slow, and intermittent — issues that limit the widespread usage by air travelers and air crews. However, we are seeing the beginnings of a connectivity revolution that will open the envelope of opportunities for both passengers and airlines alike.

CONNECTIVITY BANDWIDTH IS INCREASING, DRIVING DOWN CONNECTIVITY COSTS

Recent innovations and huge amounts of Research & Development (R&D) in the space and satellite technology sector is driving down the costs of inflight connectivity. The cost of satellite launches has declined substantially in recent times, from US$18,500 per kg (NASA data) to slightly under $3,000 per kg based on the recent launch cost for SpaceX rockets

In addition, smaller satellite form factors, with weight reductions of over 50%, allow more satellites to be lofted in a single mission and improved antenna technology not only drives weight reductions, but also increases the satellite bandwidth throughput.

According to various reports, the total sellable satellite bandwidth capacity is expected to grow from 2.2 Terabytes per second (Tbps) in 2019 to 25 — 40 Tbps in 2025. New and existing satellite providers have plans to add satellite capacity over the next 10 years, as shown in the table (figure 1) below.

Exhibit 1. Selected Satellite Providers (non-exhaustive list)

Provider	Service	Technology	Future Plans
Inmarsat	SwiftBroadband GX (Global Express) EAN	L-band Ka-band S-band + ATG	GX plans to launch 7 additional satellites in 2022 and beyond
Viasat	Viasat	Ku-band Ka-band	ViaSat-3 is a 3 satellite geo-stationary constellation expected to launch in 2022
Iridium	Iridium NEXT	L-band and Ka-Band	66 satellite constellation in low-Earth orbit launched between 2017 and 2019 No plans for additional satellite launches
OneWeb	OneWeb	Ku-band and Ka-band	Entered bankruptcy in 2020, and exited bankruptcy with investment from UK Government and Bharti Global in the same year Deploying a constellation of 650 satellites in low Earth orbit (LEO) with limited-service launch in 2020 and broader service available in 2021
SpaceX	Starlink	Ku-band, Ka-b and and V-band	4,425 satellite Ku/Ka-band constellation and 7,500 V-band constellation, with plans for another 30,000 satellites 1,400 satellites launched to-date
Amazon	Kuiper System	Ka-band	Received approvals in 2020 for 3,200 satellites in low-Earth orbit Half of the constellation expected to be deployed by 2026, with full constellation in orbit by 2030

Source: Company websites, Alton analysis

Figure 1.

HOW WE WANT TO TRAVEL IS CHANGING

According to an eMarketer survey, we are spending more of our waking hours connected with others. Connected time has more than doubled over the last 10 years, to nearly eight hours per day in 2020. As we stay connected for longer, it is no wonder that the same consumers are demanding aircraft connectivity. According to an Inmarsat survey, 66% of survey participants feel that Wi-Fi is fundamental to daily life and believe that inflight Wi-Fi is an absolute necessity. Two-thirds of passengers would also be more likely to rebook with an airline if quality inflight Wi-Fi were available.

> "...we are seeing the beginnings of a connectivity revolution that will open the envelope of opportunities for both passengers and airlines alike."

In response to consumer needs, many airlines have made plans for fleet-wide free onboard Wi-Fi (Delta Air Lines, JetBlue Airways) or fleet-wide paid Wi-Fi (Singapore Airlines, Qatar Airways) as part of their value proposition to ensure that customers will soon never need to be disconnected while travelling.

COVID-19 HAS ACCELERATED THE CONNECTIVITY TRANSFORMATION

The COVID-19 pandemic brought unprecedented change to the aviation industry. One of the results from the crisis is the expected retirements of a significant percentage of the current fleet. Many aircraft were parked or stored at the start of the pandemic in 2020, and we expect models that are less fuel-efficient like the A380s and A340s, as well as a number of older aircraft, to stay parked even as the recovery gets underway. Our Alton analysis forecasts 6,100 aircraft retirements between 2020 — 2024 (figure 2).

Aircraft retirements, historical and forecast

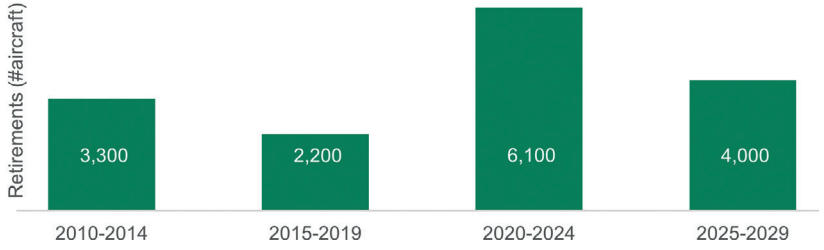

Figure 2. (Source: Alton analysis)

Prior to COVID-19, approximately a third of the global fleet had connectivity systems installed, with reluctance from a wide spectrum of carriers that had not been able to substantiate the return on investment.

For health and safety reasons, COVID-19 has accelerated various digital trends. Passengers are demanding more self-service travel options, leveraging their own devices to interact at the airport during check-in, and to stream content while in-flight. While not necessarily as a means to deliver Wi-Fi-connectivity inflight, connectivity systems also open up an aircraft-wide communications network onboard, allowing hosted airline applications (services, content) to be delivered to the passenger's own device, without needing to touch common use equipment such as Inflight Entertainment (IFE) systems, or speak with flight crew members.

Through the crisis, our sources have indicated that airlines continue to install connectivity systems on new production aircraft despite the additional costs; in the retrofit market, airlines have not cancelled their connectivity systems, but merely delayed the modifications until the aircraft comes out of storage or requires an airframe check.

WHAT IS AT STAKE? PASSENGER-FACING USE CASES

What a passenger does onboard the aircraft will likely stay the same; but the interaction medium will change and that might have wider implications off the aircraft.

- Passengers will still consume media content onboard. Once provided as part of the IFE system, passengers will now be able to select not only the airline's curated IFE content, but also a wide range of media from their favorite streaming sites as well as from general internet browsing. Connectivity will also allow passengers to connect with their loved ones, colleagues and others through social media, emails and other online platforms.
- Passenger Personal Electronic Devices (PEDs) will complement seatback IFE systems. From a passenger's perspective, consuming media all through a single device has its benefits, and in the age of COVID-19 avoids the need to touch common-use IFE systems. From an airline's perspective, the airlines will increasingly shift their investments towards internally-developed platforms and systems within the airline app, creating feature-rich options that would likely surpass what an IFE system can do.
- The airline app will be the center of airline — passenger interactions. A digital-first application ecosystem will not only support onboard use cases such as Wi-Fi connectivity access, digital media streaming and meal ordering, but travel journey-related use cases such as flight bookings, check-in, customer support and other touchpoints.
- The airline app can do more than manage the travel journey. Airlines have a loyal and international customer base that can be further monetized across non-travel related retail spend.

AIRLINE OPERATIONS USE CASES

Airline operations can also benefit from the increasingly available connectivity in the following ways.

- Flight path optimization and fuel efficiency. One of the key benefits of increased connectivity concerns flight path optimization. While at various levels of technology readiness, flight planning systems can now incorporate a lot more data from the aircraft, including aircraft-related performance as well as weather data, to optimize their flight paths, reduce fuel consumption and avoid costs. Some flight planning software algorithms are promoting savings of a few percentage points, with higher savings benefits available for long-haul flights.
- ACARS over IP (AoIP). Aircraft Communications Addressing and Reporting System (ACARS) messages are largely transmitted over VHF and HF spectrums and with greater connectivity there is potential to move some of those messages onto IP-based ACARS protocols ACARS Over IP (AoIP). Airlines are generally paying hundreds of dollars per month per aircraft in ACARS costs today, and with AoIP this cost can be substantially reduced, or

"Aircraft Communications Addressing and Reporting System (ACARS) messages are largely transmitted over VHF and HF spectrums and with greater connectivity there is potential to move some of those messages onto IP-based ACARS protocols ACARS Over IP (AoIP). "

data transmission can be increased with minimal cost. This evolution in the traditional ACARS operating model will likely be similar to the text message, where pricing has been reduced significantly in the wake of WhatsApp / WeChat and other IP-based text messaging systems, but its relevance has not diminished with new use cases taking advantage of the existing network.

- Flight tracking and Global Aeronautical Distress and Safety System (GADSS) compliance. The Air France flight 447 and Malaysia Airlines flight 370 incidents both highlighted the need for continuous monitoring of aircraft flight positioning, to alert airline operation centers when aircraft are in distress. Connectivity systems can provide a means of GADSS compliance and provide an alternative to deployable Flight Data Recorders (FDRs), by squawking aircraft positional data while inflight.
- Predictive aircraft maintenance. A broader range of aircraft data can also be transmitted in real-time to provide an accurate digital picture of the health of the aircraft and its systems. Flight cancellations caused by aircraft technical issues can cost airlines tens to hundreds of thousands of dollars in compensation payments, accommodation and travel incidentals. The ability to reliably predict when aircraft systems will fail, and have remediation solutions in place to prevent delays or cancellations can help improve schedule reliability and customer satisfaction.
- In-flight verification of POS data. SITA estimates that 5 -7% of inflight sales are fraudulent, due to the delayed verification of Point of Sale (POS) credit card data. Connectivity will allow for real-time transaction processing, driving up ancillary profit margins, and potentially opening up in-flight retailing to high value products, currently restricted due to the risk of fraud.

IN CONCLUSION

COVID-19 has made the global citizenry more digitally plugged-in, and likely to demand more services through their mobile phones and via the internet. As travel demand picks up, airlines that have positioned themselves to support this trend may have additional value propositions to the would-be passenger, aside from the price competitiveness of the airfare. Connectivity also has benefits for airline operations, further enhancing the business case for connectivity systems installations by reducing the payback period.

JOSHUA NG

DIRECTOR AND EXPERT ON AIRLINE APPS AND CONNECTIVITY

Joshua Ng brings nearly a decade of experience in the aviation and aerospace industry with significant expertise in business strategy development, market demand forecasting, supply chain management, operational performance improvement, and financial modelling. Prior to joining Alton, Joshua began his career at ST Aerospace and later joined the New York-based consulting team of ICF, where he was a key member in the aviation & aerospace practice. Joshua earned his BS in Mechanical Engineering from Cornell University and his Masters of Engineering in Logistics from MIT.

ALAN LIM

ENGAGEMENT MANAGER

Alan Lim is a seasoned aviation professional with almost a decade of management consulting and line management experience. He started his career with Singapore Airlines and was one of the pioneer members of the airline's Business Transformation team, where he helped to kickstart its three-year long transformation program. Prior to Alton, Alan was a management consultant with Partners in Performance, an implementation-focused consultancy. He earned his BS in Economics from University College London and his Master of Science in Financial and Managerial Economics from HEC Paris.

ALTON AVIATION CONSULTANCY

ALTON AVIATION CONSULTANCY

Alton Aviation Consultancy is a specialist advisory firm dedicated to serving the aviation and aerospace industries. Clients trust the Alton team to deliver the objective, data-driven guidance and insight required to inform their business strategies, allocate capital, prioritize resources, and manage risk. Alton works with clients on engagements that span the aviation and aerospace value chain to include commercial, financial and technical aspects. Clients include airlines, manufacturers, MROs, and aftermarket service providers, airports, lessors, as well as the broader financial and investment community.

VENDOR FLIGHT LOG: BYTRON AVIATION SYSTEMS

Simon Clayton, Chief Operating Officer at Bytron Aviation Systems shares how driving users' efficiency has made a successful business

Simon Clayton first joined the Bytron team in 1989 as a software developer. In 1997, after eight years within the aviation software development team Simon was made Development Manager. In 2001, he became the Solutions Manager, a role that encompassed both product ownership and customer account management. 2013 was a pinnacle year for Simon as he became Technical Director, before most recently becoming Chief Operating Officer in 2021 at Bytron Aviation Systems.

Aircraft IT: Your name, your job title and the name of the business?
Simon Clayton: Simon Clayton, Chief Operating Officer at Bytron Aviation Systems

Aircraft IT: How did Bytron Aviation Systems get started?
SC: Bytron was formed in 1984 by a long-haul pilot looking for a solution to the constant challenge of inconsistent crew briefings. Our first solution, however, was the first computerized ATC system in the UK which was light years ahead at the time; our pilot flight briefing system actually came out the following year and we have followed the same innovative problem centered approach to developing solutions ever since.

Aircraft IT: What is the attraction of aircraft-related software?
SC: The constant challenge as the industry pushes for new ways to be more efficient across so many aspects. This is why we are so proud that our software makes a real difference for our customers by helping them drive improvements across safety, efficiency and reduction in their carbon footprints

Aircraft IT: What is the guiding business principle that drives Bytron Aviation Systems?
SC: Our guiding principles are the core values of our company which are woven through everything we do. These being United, Professional, Aspirational, Innovative and Driven. Each and every member of our team demonstrate these strong attributes daily and we are hugely proud of our values. They set us apart from other companies and they drive us forward to achieve our collective vision as a business.

If I could home in on just one though it would be the innovation strand as, all too often, companies talk about it but rarely deliver it. We know that innovation comes in many forms and we are constantly challenging ourselves to find new and better ways of delivering what our customers and the wider industry needs. It's not about constant reinvention, it's about a state of mind and challenging the status quo — something we love to do at Bytron.

Aircraft IT: What has been Bytron Aviation Systems' greatest technical achievement to date, and why?
SC: Although there are a number of technical achievements that I'm hugely proud of at Bytron, I would have to choose skybook as our most effective to date as there simply isn't another solution out there as flexible, comprehensive, configurable or integrated as our skybook range. Plus, I know what's on the horizon and this makes me very excited indeed.

Aircraft IT: What has been Bytron Aviation Systems' greatest business achievement to date, and why?
SC: I would have to say that our partnership with Boeing Global has been our greatest business achievement to date and it makes us immensely proud to have skybook at the heart of Boeing's

supply chain and playing a vital role in helping their customers and products benefit from our knowledge and expertise. It's a partnership that is simply going from strength to strength.

> "... our partnership with Boeing Global has been our greatest business achievement to date and it makes us immensely proud to have skybook at the heart of Boeing's supply chain..."

Aircraft IT: What have been Bytron Aviation Systems' disappointments and what have you learned from them?
SC: It's not really a disappointment; however, when the iPad was first released, we recognized that this was the future of cockpit EFBs. At the time, EFB technology was new and we didn't have the weight in the marketplace to maximize on our development efforts, but we sure did disrupt the market at the time.

Aircraft IT: In a sentence, how would you summarize what Bytron Aviation Systems does for aviation customers?
SC: Bytron Aviation Systems help operators to drive efficiency, plus improve data management and performance through fully automated connected platforms spanning flight operations and dispatch, flight deck and maintenance.

Aircraft IT: What is new on Bytron Aviation Systems' development horizon?
SC: It's a busy year ahead for us at Bytron as we prepare to launch new reporting modules, a document library, improved Airfield Watch and Flight Tracking, eTech Log and much more besides. It's also the year that we will continue our push towards the fully connected cockpit, more on this later next year.

Aircraft IT: What will be the next big thing in Aviation IT?
SC: I think it's clear to see what's on the horizon in our industry in terms of making air travel more accessible locally, further automation and digitization through intelligent platforms but I think the biggest priority for us all across the industry has to be the continued drive to bring emissions down as we all have a big part to play in becoming carbon neutral — something we are working towards at Bytron.

Aircraft IT: What do you want your customers to say about Bytron Aviation Systems?
SC: The biggest reward for us is to know that our customers would recommend Bytron, our products and our services to others in the industry. When this happens, we know we are getting it right!

Aircraft IT: Simon Clayton, thank you for your time.

Operations Software Directory

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

IT is a powerful force but, to leverage its greatest value, it must be harnessed and directed. It must also be able to handle huge and growing data streams that record every aspect in the ways that aircraft fly, how they are readied and the conditions they will meet. This challenge has attracted the best brains and most innovative enterprises to create IT solutions for one of the most demanding working environments, Aircraft Operations. Inevitably, there are many such developers and vendors offering solutions ranging from single function 'Specialist Point Solutions' to complete 'End-to-End' solutions covering the whole process.

Only readers will know the specific requirements of their businesses but we have assembled a directory of the best Operations software providers and listed them alphabetically to make it easier for you to undertake a brief-ish (there are 44 providers and the number continues to grow) survey of the market, preliminary to starting on any specification and selection process. Or you might simply read it to keep up to date with what is available today.

ACFT PERFO

W: www.acftperfo.com
T: +32 476 76 76 08
E: info@acftperfo.com

Location: Waterloo, Belgium

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 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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CLICK HERE to Request Private Demo

Air Support A/S

W: www.ppsflightplanning.com
W: flightwatch.ppsflightplanning.com
T: +45 7533 8889
E: sales@airsupport.dk

Location: Billund, Denmark

NAME OF PRODUCT MARKETED

- **PPS Flight Planning, CrewBriefing**
- **Ops Control | Flight Watch**

KEY BUSINESS/SOFTWARE AREAS

- **Flight Planning**
- **Flight tracking**
- **Crew briefing facilities**

AIR SUPPORT specializes in the provision of the desktop and cloud-based flight planning software PPS Flight Planning System (PPS) and the integrated CrewBriefing web application and flight tracking. The PPS Flight Planning System (PPS) is one of the leading flight planning systems in the world due to the optimization of operating costs along with its incredible and flexible usability. PPS generates a complete briefing package available directly on CrewBriefing or its accompanying app, providing the crew with online access to company messages, flight log, trip-tailored surface weather data, NOTAMs, wind- and significant weather charts and the high-quality vertical cross-sectional chart.

The combined synergy of PPS will ensure that your airline will have the most modern and powerful flight planning system available.

PPS offers:

- World's most flexible airline flight planning system
- Automated filing, calculation and dispatch of all selected flights
- Automated data import from scheduling/crew/maintenance systems
- Automated data export to EFB solutions
- Automated consideration of company policies and dispatch parameters
- Automated high quality flight briefing packages
- Low acquisition and running costs offering highest cost-benefit ratio in the market
- Premium flight tracking via OpsControl

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Avionics Support Group

W: www.asginc.net
T: +1 305-378-9786
E: info@asginc.net

Location: Florida, USA

NAME OF PRODUCT MARKETED

- **Cockpit EFB Mounts, EFB Power Supplies.**

KEY BUSINESS/SOFTWARE AREAS

- **STC Certification**
- **EFB Mounts**
- **EFB Power Supplies**
- **Avionic Products**
- **Avionics Engineerings**

Avionics Support Group, Inc. (ASG) is a premier Avionics Systems Integration & FAA-PMA approved Aerospace Manufacturing and Avionics Engineering company. ASG's competitive advantage can provide your company with a Single Source Solution for avionics engineering, manufacturing, aircraft installation technical support, Supplemental Type Certificate (STC's), video surveillance, SATCOM, and much more. We lead the aerospace industry with our US patented Constant Friction Mount (cfMount™), EFB Integrated Power Supplies, and EFB Cradles. Contact ASG today to learn how ASG's Single Source Solution can work for your company!

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ASQS (Advanced Safety and Quality Solutions)

W: www.asqs.net
T: +43 1 306 1234
E: sales@asqs.net

Locations: ASQS GmbH, Vienna, Austria, ASQS Ltd., Bangkok, Thailand

NAME OF PRODUCT MARKETED

- IQSMS (Integrated Quality and Safety Management System)
- Flight Data Monitoring (FDM) Service
- The IQSMS Suite consists of a total of 10 modules, varying according to the operator. (Airlines, Business Jets, Helicopter, Airports, MROs...)

KEY BUSINESS SOFTWARE AREAS

- Quality Management Module
- Reporting Module
- Risk Management Module
- Document Distribution Module
- Emergency Response Planning Module

ASQS (Advanced Safety and Quality Solutions) is a global supplier of highly innovative QMS and SMS software for the aviation industry, supporting more than 200 large and small operators, including airlines, business jet and helicopter operators, groundhandling agents/FBOs, airports and maintenance organizations, in creating a safe and productive work environment.

The company specializes in intuitive, integrated, web-based solutions with exceptional customer support. ASQS's core product IQSMS allows clients to manage operational data 24/7 online and offline with a single integrated tool which significantly simplifies daily tasks. The easy handling of the software creates a positive reporting culture, enables comprehensive quality management and proactive risk management to maximize productivity, reduce operating costs, and optimize internal and external working procedures. IQSMS automates laborious processes like the submission of ECCAIRS or IDX compliant incident reports which, combined with a consolidated, up-to-date regulations database, ensures legal compliance with national and international requirements and standards.

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AVIOBOOK

W: www.aviobook.aero
T: +32 11 72 10 30
E: info@avio.com

Location: Belgium (Hasselt), France (Toulouse), Singapore & Piscattaway

NAME OF PRODUCT MARKETED

- AvioBook, AvioBook Connect, AvioBook Cabin, AvioBook Tech, AvioBook Base, AvioBook Systems, AvioBook Data, AvioBook Integrations, AvioBook SaaS

KEY BUSINESS/SOFTWARE AREAS

- EFB software solutions
- EFB hardware solutions
- Suite of ground & flight application
- Navigation DataBase, weather data, ADS-B

AvioBook, a Thales Group company, supports airlines as a partner in their digital strategy. AvioBook offers a comprehensive and highly integrated suite of ground and flight applications, systems and solutions that connect all stakeholders and key assets in a safe and secure manner. This, combined with expertise in data and cyber security, gives airlines an edge through greater efficiency and ultimately sustainable, profitable growth.

Proven solutions from AvioBook make communication between the cockpit, cabin and back office faster and more efficient than even before.

With the integrated and secure AvioBook application suite, pilots, cabin crew, dispatchers and ground staff can be securely connected to each other, making communication more efficient and driving value throughout the operation.

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AVTECH Sweden

W: www.avtech.aero
T: +46 8 544 104 80
E: sales@avtech.aero

Location: Sweden

NAME OF PRODUCT MARKETED

- Aventus NowCastTM - The FMS Optimization
- Aventus SIGMA - Severe Weather service
- Aventus AIR — Weather Uplink
- Consulting Service — ACARS and connection

KEY BUSINESS/SOFTWARE AREAS

- Wind Uplink FMS Optimization
- Reduce Fuel burn and CO2 footprint
- Severe Weather application

AVTECH, specializing in tailored information to the cockpit, offers easy, automated and inexpensive improvements in FMS optimization.

The Aventus NowCast™ weather service give pilots access to weather data of the highest available quality, and when the data is fed into the aircraft Flight Management Computer, the actual aircraft trajectory can be optimized, reduce the fuel burn and CO2 footprint.

Working directly with Met Office (UK), the Aventus SIGMA service supply the cockpit crew with severe weather information, based on Actual route and time in the FMS. The service brings adequate, timely and correct information on turbulence, icing and other weather phenomena that affect safety and comfort. The SIGMA service sets a new standard on how, when and where your crew gets their information.

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The Boeing Company

W: www.boeing.com/supportandservices
T: +1 206-655-2121
E: BoeingSupportandServices@Boeing.com

Location: 65 Offices Worldwide

NAME OF PRODUCT MARKETED

- Business Consulting
- EFB Document Browser
- Electronic Flight Folder
- Fuel Dashboard
- Onboard Performance Tool

KEY BUSINESS/SOFTWARE AREAS

- EFB applications
- Fuel Efficiency Solutions
- Consulting

Boeing is the world's largest aerospace company and leading manufacturer of commercial jetliners and defense, space and security systems. Boeing Support and Services combines airplane design and manufacturing expertise with unique access to fleet-wide operational data to offer optimization solutions.

With these offerings, Boeing addresses the evolving need for integration and optimization of data and information across the aviation ecosystem to empower smart decision-making. The portfolio includes services and solutions for flight operations, maintenance & engineering and procurement organizations to optimize the operational efficiency of airplanes and operations.

Boeing has more than 250 customers for its optimization solutions. The portfolio draws on solutions from a family of Boeing companies: AerData, Inventory Locator Services and Jeppesen, serving operators of Boeing and non-Boeing airplanes.

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Bytron Aviation Systems

W: www.bytron.aero
T: 01652 688 626
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Location: Kirmington, United Kingdom

NAME OF PRODUCT MARKETED
- skybook aviation cloud

KEY BUSINESS/SOFTWARE AREAS
- Dispatch Portal
- EFB Application
- Airfield Watch
- Flight Following
- Crew Briefing

Bytron Aviation Systems has over 35 years of industry experience and understanding driving the development of solutions engineered to make a big impact in the aviation industry.

The business specializes in the design and building of fully fledged, reliable, integrated systems that ensure critical data is consistently distributed to the right place, at the right time on the right device, increasing awareness and accountability, improving information capture, reducing costs and streamlining workflows. Above all, improving communication between flight ops and flight deck.

skybook is Bytron's core aviation solution that offers unrivalled flexibility, automation and integration, using the best and most reliable data sources to deliver all vital information across flight ops and dispatch and the flight deck. skybook enables operators and aircrews to work smarter, not harder and the firm's proven award-winning solutions cover Flight Dispatch, Crew Briefing, Airfield Watch, Flight Tracking plus there is a class leading Electronic Flight Bag application. Contact Bytron today to arrange your introduction and trial.

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Comply365

W: www.comply365.com
T: +1 (877) 366 2365
E: info@comply365.com

Location: USA

NAME OF PRODUCT MARKETED
- ProAuthor (XML-Based Authoring Solution)
- Electronic Flight Bag (EFB)
- Digital Briefing
- Document & Communication Manager
- Training Solution (LMS Learning Manager)

KEY BUSINESS/SOFTWARE AREAS
- XML-Based Authoring Solution (ProAuthor)
- Electronic Flight Bag (EFB)
- Digital Briefing Flight Release
- Document Mgmt. and Distribution Platform
- Targeted Distribution w/ Compliance Tracking

Comply365 delivers secure, cloud-based solutions, focusing on Authoring, EFB and Digital Briefing Solutions, as well as Targeted Distribution of Mobile Manuals.

The Authoring Solution, features ProAuthor: the aviation industry's first and only XML-based solution for authoring, revising and distributing publications.

Comply365's proven Electronic Flight Bag (EFB) solution lets crews access mission-critical information throughout each phase of flight.

Digital Briefing helps turn planes faster for more on-time departures with instant feedback to dispatchers when the flight crew accepts a release and signs Fit for Duty.

Comply365's full-featured Document Management and Targeted Distribution Platform boosts productivity by delivering any type of manual or document directly to any mobile device or stationary workstation.

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Conduce

W: www.conduce.net
T: 0044 333 888 4044
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Location: Nuneaton, UK

NAME OF PRODUCT MARKETED
- eTechLog8
- eCabinLog8
- eCentral8
- eTraining8
- eForm8
- eDoc8

KEY BUSINESS/SOFTWARE AREAS
- Electronic Logbook (ELB)
- Cabin Log
- Electronic Forms Designer
- Document Viewer

Conduce pioneer mobile aviation solutions.

eTechLog8 is our world leading Electronic Log Book (ELB), fully approved by multiple Airworthiness Authorities and trusted by customers worldwide.

eTechLog8 eliminates the paper technical, cabin, and deferred defect logbooks, and replaces these with an easy to use, workflow controlled mobile solution. Available on both Windows and iOS, eTechLog8 is fully integrated with all the leading MRO and M&E systems. All eTechLog8 customers report significant benefits, ranging from improved efficiency, data accuracy and consistency to faster turnarounds, all contributing to reduced costs.

Conduce also offers a fully integrated suite of companion applications, which provide mobile paperless solutions for the cabin log, CBT training, custom forms, and ensuring key documents are at your fingertips.

Conduce has a sliding pricing scale, depending on fleet size and operates as a subscription model, with one flat fee, per tail, per month covering everything: hardware, software, 24/7/365 support, mobile data, future proofed upgrades and more. There are no hidden costs. Ask us today for a tailored proposal.

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CrossConsense

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E: contact@crossconsense.de

Location: Frankfurt Germany
Heusenstamm Germany

NAME OF PRODUCT MARKETED
- Aircraft Fleet View
- ACSIS
- AviationDW

KEY BUSINESS/SOFTWARE AREAS
- Support and Hosting
- Consulting and Data Migration
- Business Intelligence solutions
- App and dashboard development

CrossConsense's portfolio runs from AMOS Support, BI-Management, Data Migration and Hosting to the products Aircraft Fleet View, ACSIS (tool for predictive maintenance) and AviationDW.

AMOS Support: CrossConsense has a long tradition in providing support for AMOS with one single point of contact for 1st and 2nd level; also realizing well-planned and organized data migration projects for airline customers and Reporting and Business Intelligence Analytics for AMOS users.

Aircraft Fleet View is a user-friendly Progressive Web App (PWA) that gives an always up-to-date view on an airline's fleet status. It indicates AOGs, delays and other important information with the right level of detail to be useful but not crowded with information.

ACSIS is a powerful software tool developed to assist any airline, operator, MRO facility and OEM to avoid AOGs, delays and turnbacks, improve aircraft utilization, and enhance safety. ACSIS integrates with any MRO / M&E Software for better insights into aircraft health and potential future problems to be dealt with during scheduled maintenance.

AviationDW: information visualization made easy: AviationDW is a managed data warehouse, tailor-made for use with your backend system, e.g. AMOS. AviationDW simplifies KPI creation based on MRO System data.

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eTT Aviation

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E: info@ettaviation.com
Locations: Boise, ID, USA

NAME OF PRODUCT MARKETED
- SkedFlex

KEY BUSINESS/SOFTWARE AREAS
- Flight & Crew Management
- Fleet (Movement) Management
- Qualification & Training Management
- Crew Pay
- Line & Preferntial Bidding

SkedFlex is a full-featured, affordable, innovative and expertly supported flight and crew management solution designed to meet your needs and exceed your expectations. With its scalable platform and optional modules, SkedFlex provides air operators the ability to successfully schedule and manage crewmembers, flights, and aircraft in a flexible, efficient, and visual manner. Coupled with its proprietary rules engines, SkedFlex helps ensure regularity compliance under the Code of Federal Regulation parts 117, 121, 125, and 135, for flight, duty, and rest limitations and additional company requirements and rule sets from regularity authorities can be incorporated.

Crew and Flight Scheduling are the core components for the visual mastery of complex operations. **Crew Pay** ensures pay accuracy and accountability, freeing employees and administrators to focus on productivity, not paperwork. **Qualification and Training Management** automates simulator and classroom scheduling, crewmember training delivery, currency, and qualification tracking. **Line and Preferential Bidding** provides an airline the option to build lines or trips for crewmember bidding, and allows crewmembers to establish standing bid criteria and further modify their bids as they desire. Entire fleets of aircraft can be scheduled in minutes with **Fleet Management** while scheduled inspections are displayed visually to optimize aircraft utilization around required inspections.

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Evionica

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E: office@evionica.com
Locations: Poland (Warsaw), Austria (Vienna)

NAME OF PRODUCT MARKETED
- Evionica WB
- Evionca FTS

KEY BUSINESS/SOFTWARE AREAS
- Weight & Balance Software
- Flight Training Software
- Computer Based Training

Evionica delivers smart software for Weight & Balance, Flight Training and Computer Based Training to Airlines, Airports and Training Organizations.

With over 100 clients the business is cooperating with recognized partners like Wizz Air, LOT Polish Airlines, Lufthansa Aviation Training, Abu Dhabi Aviation Training Center and many more.

Evionica Weight & Balance Software: The solution allows users to reduce costs and has a very intuitive interface where training requires only 1 hour. Within 60 seconds you are able to produce a load sheet.

Flight Training Software: Streamline administrative processes for training. Automate operations and save time with cloud-based software, plus go paperless.

Computer Based Training: Pilot Training CBT with content explained in a straightforward way, having a natural lector voice, superior graphics and animation. A dark theme prevents users' eyes from tiring. Small portions of information make it easier to remember content.

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Evoke Systems

W: www.evoke-systems.aero
T: +44 (0)3456 521 240
E: info@evoke-systems.aero
Locations: UK

NAME OF PRODUCT MARKETED
- EFOS Training Management Suite
- EFOS Leave Management Suite
- EFOS Flight Management Suite

KEY BUSINESS/SOFTWARE AREAS
- Aviation software solutions
- Aviation leave (vacation) management
- Aviation Training Management System (TMS)
- Flight Management

EFOS Training Management Suite: An established and complete Training Management solution available exclusively for the aviation industry, EFOS TMS provides intelligent forms and records, course management and candidate progress tracking along with qualification and role profile monitoring, and supports AQP, ATQP and EBT programmes. Supported by a dedicated iPad application, EFOS TMS is available on web and for mobile and offline use.

EFOS Leave Management Suite: A sophisticated leave (vacation) management system, designed specifically for airlines. With highly customisable rules, the EFOS Leave Management Suite suits individual airline requirements and offers a fair, deterministic and transparent way to allocate leave. EFOS LMS can be integrated with airline rostering systems to provide a holistic view of staff availability.

EFOS Flight Management Suite: An iPad application for flight journey log information, flight folders, alert event and safety reporting which enables commercial analysis of the associated data to deliver lean airline operating environment. Integrations with other operating systems maximise data efficiency.

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Flatirons

W: www.flatironssolutions.com
T: +1.303.627.6535
E: info@flatironssolutions.com
Locations: Europe, Asia, USA, Middle East

NAME OF PRODUCT MARKETED
- CORENA Suite

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.

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Flightkeys

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T: +43 6991 777 6959
E: christoph@flightkeys.com

Location: Austria, Vienna

NAME OF PRODUCT MARKETED

- FLIGHTKEYS 5D
- SPACEKEYS - RAIM PRO

KEY BUSINESS/SOFTWARE AREAS

- Flight Planning
- 5D Cost Optimization
- Data Services (Nav, Weather)
- Smart NOTAM Services
- Delivery, Integration, 24/7 Support

This Vienna service company was founded in April 2015 by a team of high profile aviation experts with very specific knowledge and long-term experience in the field of flight planning and optimization: Their mission is to completely re-write the science of flight management for the 21st century by precisely meeting the emerging requirements of cost-optimized airline operations, trajectory-based operations and the reduction of emissions. Flightkeys' research takes place in a corporate climate that promotes innovation and a continuous search for excellence. The focus is on user-friendly systems that provide the ultimate level of cost optimization and integrate seamlessly into future airline operations and ATM systems. FLIGHTKEYS 5D - as the only 21st century flight management system - will balance airline network throughput, greenhouse gas emissions and safety in the most cost-efficient way and covers a scope far beyond any solution currently available on the market. By improving communication and collaboration amongst stakeholders in the aviation industry it will lead to a smarter and more productive use of aircraft and airspace. So watch Flightkeys closely, or feel free to invite them to present their new 5D solution."

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Flygprestanda AB

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

Location: Malmö/Sweden, New Milford, CT/USA

NAME OF PRODUCT MARKETED

- Guru2 w &w/o Mass & Balance,
- Airport Analysis, Drift Down,
- Load & Trim, AHM560

KEY BUSINESS/SOFTWARE AREAS

- Aircraft Performance Services
- Performance Engineering
- Special Performance Calculations
- Engine Failure Procedures

Flygprestanda AB, a pioneer in aircraft performance calculations, was founded 1969. For nearly 50 years Flygprestanda has been in the forefront of providing aircraft operators of all kinds 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 and Guru2 application.

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Gigsky

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E: vchand@gigsky.com

Location: United States of America, Denmark, Canada & India. Danish Office For EFB, Aircraft Sales

NAME OF PRODUCT MARKETED

- GSM Roaming Data

KEY BUSINESS/SOFTWARE AREAS

- Consumer Data Roaming Solutions
- Enterprise Data Roaming Solutions
- OEM Data Roaming Solutions

GigSky for Enterprise offers end-to-end mobility services to meet your airline connectivity needs. With global coverage across 190+ countries, GigSky provides superior international network coverage through Tier 1 operators at competitive roaming rates. The GigSky Enterprise Portal provides reports and analysis that help intelligently track mobile data across your organization. GigSky Enterprise Portal Admin Users can create custom notifications, manage data policies, and see usage in real-time.

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International Flight Support

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

Location: Copenhagen, 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

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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Logipad DextraData

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T: +49 201 95975 0
E: info@logipad.aero

Location: Essen, Germany

NAME OF PRODUCT MARKETED

- Logipad

KEY BUSINESS/SOFTWARE AREAS

- eBriefing / EFF
- iPad und Windows EFB Management
- Class-I EFB and Class-II EFB
- Logipad for Pilots, Cabin and Maintenance

Since 2002, Modern.Work has been providing airlines with Logipad, an inhouse-developed Electronic Flight Bag (EFB) solution. Logipad makes flight management simple, fast and smart for pilots, crew and ground members. Due to a Single Sync transaction process and modules like Document Management, eForms and eBriefing / EFF, Logipad reduces paperwork.

In 2017, Modern.Work GmbH merged with DextraData GmbH, an IT consulting company and independent software vendor. Together the companies not only offer comprehensive expertise in IT services and EFB, but also implement and develop IT solutions such as Logipad according to customer needs. Furthermore, clients can profit from the companies' cooperation with important IT and aviation manufacturers (e.g. Microsoft Corporation, Jeppesen Sanderson Inc. and Avialytics GmbH).

DextraData's portfolio includes: Business Consulting, Cloud & Managed Services, IT Service & Enterprise Management, Next Generation Infrastructure, Modern Work / Software Infrastructure and Program & Project Management. The company is located in Gemany.

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Lufthansa Industry Solutions

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T: +49 40 5070 30000
E: marketing.sales@lhind.dlh.de

Location: Germany, Switzerland, USA

NAME OF PRODUCT MARKETED

- DocManage Product Suite,
- DocSurf Mobile, EFFOM, DocCreate

KEY BUSINESS/SOFTWARE AREAS

- IT Solutions and Process
- Consulting for MRO
- Electronic Flight Operation Manuals
- Airline Job Card Content Management
- Predictive Analytics and Maintenance
- RFID

Lufthansa Industry Solutions is an IT service company for process consulting and system integration. This wholly-owned subsidiary of Lufthansa Group supports its customers with the digital transformation of their company. Its customer base includes both companies within Lufthansa Group as well as more than 150 companies in various other industries.

The products EFOM and DocSurf Mobile were developed together with Lufthansa Airlines based on 15 years of common experience and excellence in electronic flight operations manuals and processes to fulfill both current and future requirements. • **EFOM** — A manufacturer independent Content Management System. Functionally mature and based on 17 years of experience, EFOM makes it possible to fulfill FlightOps requirements, e.g. expandable for new publishing backends; flexible to integrate new documents; open for customized enhancements or to integrate business processes such as Compliance Management. • **DocSurf Mobile** — A Library Viewer for MRO and FlightsOps documents is available as a native iOS app or Windows application. The revision service allows change lists to be checked and content to be compared with a previous version. Navigation is intuitive and includes a fast and easy search. A user independent management of favorites and notes is provided, keeping this information revision safe and available.

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Lufthansa Systems

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Location: Germany and in 16 other countries.

NAME OF PRODUCT MARKETED

- IT Solutions

KEY BUSINESS/SOFTWARE AREAS

- Operations and Commercial Solutions
- Flight Deck Solutions
- Finance Solutions
- In-Flight Entertainment and Mobile Solutions
- Professional Services and Consulting

The company offers its more than 350 airline customers an extensive range of successful and in many cases market-leading products for the aviation industry. The innovative IT products and services in this portfolio offer customers a wide range of economic benefits while also contributing to improving efficiency and competitiveness. In addition, Lufthansa Systems also supports its customers both within and outside the Lufthansa Group with consulting services and the experience it has gained in projects for airlines of every size and business model.

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NAVBLUE

an Airbus Company

W: www.navblue.aero
T: +33 5 82 84 06 18
E: communications@navblue.aero

Location: Toulouse, France; Waterloo, Canada; and Hersham, UK

NAME OF PRODUCT MARKETED

- Electronic Flight Bag applications
- Fuel applications
- Dispatch & Crew Planning
- Airspace & Airport Consulting

KEY BUSINESS/SOFTWARE AREAS

- Electronic Flight Bag & Documentations
- Fuel Solutions
- Ops Control Center Solutions
- Consulting
- Flight Data Analysis

NAVBLUE is an aviation services company, dedicated to Flight Operations & Air Traffic Management Solutions, wholly owned by Airbus. Through digital & collaborative innovation, our passionate and customer-focused team develops solutions to enhance the safety and efficiency of air transport.

NAVBLUE provides solutions and services for mixed fleets and supports both civil and military environments, on the ground or on board any aircraft. NAVBLUE offers the highest level of expertise in digital cockpit operations, Operations Control Centre (OCC) systems, Flight Ops Engineering, Performance Based Navigation (PBN) and Air Traffic Management (ATM).

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NVable

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

Location: UK

NAME OF PRODUCT MARKETED

- ConNVerge for Aviation

KEY BUSINESS/SOFTWARE AREAS

- Electronic Techlog
- Electronic Forms (Assessments)
- Document Management
- Operational Analysis
- Station Operational Compliance

The concept behind our CoNVerge platform is simple. We believe that businesses should have the flexibility to easily innovate and add new applications to their toolbox, without being stifled by legacy technology or a single technology brand.

CoNVerge is all about minimising risk, fuss and capital costs and maximising efficiency. Provided as a service, it combines a hosted environment and web portal with mobile applications and data interfaces to virtually any system.

The platform is easily integrated into your existing business systems and brings together the best tools to handle data acquisition and data analysis — all on scalable infrastructure. Best of all, we even take the day-to-day management off your hands.

Our CoNVerge platform is blazing a trail in the aviation sector. In a hi-tech industry, where the stakes are even higher, long-standing clients such as British Airways Cityflyer know they can rely on NVable and our custom-designed software to make things simple, safer, more secure and streamlined. We provide airlines with technology solutions that reduce effort, improve processes and produce useful information, with one simple goal — to change things for the better.

Bring everything together and do IT better when you bring onboard CoNVerge and NVable.

CLICK HERE for Product Details
CLICK HERE to Request Private Demo

OpenAirlines

W: www.openairlines.com
T: +33 (0)5 31 61 52 18
E: stephane.nitenberg@openairlines.com

Location: France, Asia, USA

NAME OF PRODUCT MARKETED

- SkyBreathe Fuel Efficiency
- Crew Intelligence
- OptiFleet
- CrewPad

KEY BUSINESS/SOFTWARE AREAS

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

Based in Toulouse, the cradle of aeronautics and space, OpenAirlines was created in 2006 to help airlines optimize their operations. Thanks to a highly qualified and committed team of Fuel Experts, Data Scientists, and IT Specialists, OpenAirlines is today a world leader in the market for flight operations optimization software with a range of complete solutions answering all the key requirements of aviation professionals.

Drawing on 8 years of R&D, OpenAirlines has developed SkyBreathe®, an innovative eco-flying solution based on Cloud, Artificial Intelligence, and Big Data to save fuel and reduce airlines' carbon footprint by up to 5%.

Rewarded by many innovation awards and leader in the low-cost market, the software is now used by a very active community of 30+ airlines around the world including Malaysia Airlines, Norwegian, Cebu Pacific, flydubai and Atlas Air...

Now composed of 40 fuel experts with offices in Miami and Hong Kong, OpenAirlines continues its growth and begins in 2018 the development of a new module, called SkyBreathe® OnBoard, designed to be embedded in the cockpit to give recommendations to pilots in real time.

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PACE — a TXT company

W: www.pace.de
T: +4930293620
E: paceinfo@txtgroup.com

Location: Germany, France, USA

NAME OF PRODUCT MARKETED

- Pacelab Flight Profile Optimizer
- Pacelab CI OPS

KEY BUSINESS/SOFTWARE AREAS

- Flight Profile Optimization
- Cost Index Operations
- Fuel Efficiency
- Operational Efficiency
- EFB Library Viewer

Working with many of the leading OEMs, engine manufacturers and airlines for more than two decades has enabled us to develop a range of innovative products that directly respond to the challenges of the international aviation community.

We closely collaborate with performance and cabin engineers, senior training captains, fuel conservation and operational efficiency managers, EFB teams and consultants to deliver hands-on support for strategic and operational tasks.

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Pivot

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Location: Houston, Texas

NAME OF PRODUCT MARKETED
- PIVOT mounting solutions

KEY BUSINESS/SOFTWARE AREAS
- Mounts for EFB
- Mounting plate
- LTRM - Long Term Removable Mounts

PIVOT is a worldwide provider of EFB-related products, which are anchored by the patented and iconic universal PIVOT mounting plate. EFB devices housed in protective PIVOT cases connect directly to the PIVOT mounts. Featuring unequaled pilot EFB functionality while also retaining full corporate IT flexibility, PIVOT is deployed to over 100 airlines including Delta, United, Southwest, Cathay Pacific, Singapore and ANA. PIVOT revolutionized the process of EFB deployments and effectively removed the need for cradles driven by changing form factors, saving customers millions in equipment, labor, and deployment time.

PIVOT mounting solutions include a unique, new class of mounts referred to as LTRM's or Long Term Removable Mounts. LTRM solutions provide the integrated style, security and function of an installed mount at a fraction of the cost with virtually instantaneous deployment.

CLICK HERE for Product Details
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The SA Group

W: www.scanav.com
T: +45 7950 8000
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Locations: Denmark, Sweden, Norway, Czech Republic, Greece, Bahrain, CIS, India and Malaysia

NAME OF PRODUCT MARKETED
- Scandinavian Avionics' Tablet Based EFB Solution

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.

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Safety Line

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Location: Paris, France

NAME OF PRODUCT MARKETED
- SafetyCube, OptiClimb,
- FlightScanner, AirsideWatch

KEY BUSINESS/SOFTWARE AREAS
- Safety Management System (SMS)
- Fuel Efficiency
- Fuel Management Systems
- Flight Data Monitoring (FDM)
- Ground Operations

Safety Line is an innovative digital technology company, specialized in data management software solutions for aviation. With a team of highly experienced Aviation Industry and Safety experts (including former BEA investigators), Data Scientists and IT specialist, Safety Line is in a position to propose an extensive range of products able to match the world's issues challenges in air transport.

OptiClimb is based on Machine Learning combined with Optimization and aims at reducing the fuel consumption through the use of flight data. After 2 years of R&D, it was applied to a fleet of Boeing 737 at Transavia France and demonstrated that 10% of the fuel used during climb ended up in $40 savings per flight. Yearly, it means that for one aircraft the savings can reach $80'000. With 25 aircraft in its fleet, Transavia can save $ 2 M per year. It is a very promising offer for any airline.

SafetyCube is an integrated risk and compliance management software that provides airlines with a ready-to-use solution for new IR-OPS requirements. FlightScanner allows you to automatically identify the factors which explain hazardous situations based on all flights data. AirsideWatch determines the runway condition without interfering with operations at a time when airport safety and capacity issues have become increasingly complex to manage.

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SITA FOR AIRCRAFT

W: www.sita.aero/aircraft
E: media.relations_aircraft@sita.aero

Location: Switzerland. Regional Offices in: USA, UAE, UK, Canada, France, Brazil and Singapore.

NAME OF PRODUCT MARKETED
- AIRCOM applications and services, Datalink, EFB solutions, CrewTab
- eWAS Pilot
- OptiClimb
- OptiDirect
- Opti Level
- OptiSpeed
- Mission Control

KEY BUSINESS/SOFTWARE AREAS
- AIRCOM applications: FlightTracker, FlightMessenger
- Cockpit Applications and Services
- AIRCOM ACARS Services
- AIRCOM Datalink Applications
- AIRCOM Information Services

SITA For Aircraft represents the aircraft arm of SITA. SITA is the IT provider for the air transport industry, delivering solutions for airlines, airports, aircraft and governments. Today, SITA drives operational efficiencies at more than 1,000 airports. SITA's technology provides solutions that help more than 40 governments strike the balance of secure borders and seamless travel, while delivering the promise of the connected aircraft to more than 400 airlines on 17,000 aircraft globally.

SITA is powering a digital shift to make air travel more connected, seamless, efficient, safe and sustainable. Its communications network connects every corner of the globe and handles vast volumes of data every second.

SITA is 100% owned by the air transport industry, with a presence in 200 countries and territories and a customer service team of more than 2,000 people around the world.

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Simpfly

W: www.simpfly.aero
T: +1 303 800 6506
E: hello@simpfly.aero
Location: Fully remote, global operation

NAME OF PRODUCT MARKETED
- **EFB Omni™ Solution**

KEY BUSINESS/SOFTWARE AREAS
- **EFB setup and management**
- **Flight Ops Engineering support**
- **Aircraft Performance studies**
- **Escape Routes design**
- **Airport Briefs**

Simpfly was born from the eagerness to help startup airlines and small operators to implement and manage EFB in a simple and cost-efficient way.

The EFB Omni™ is the all-in-one solution designed with that in mind: Simpfly streamlines Flight Operations processes by implementing EFBs in the client's fleet and managing them on the client's behalf thereupon, including all IT and Flight Operations Engineering related activities: Aircraft Performance, Weight & Balance, Flight Operations documentation and other EFB-related tasks.

An airline's daily operations become EFB-driven with confidence as the Simpfly team of engineers takes care of all back-office tasks needed to assure that the airline's pilots have access to up-to-date data for a safe and compliant operation.

All that backed by a strong know-how of the aviation industry for a total hassle free setup and, the best of all, without hurting your pocket.

Simpfly says: You fly. We take care of the rest.

Ready to get on-board or need more info? Contact Simpfly for a dedicated webinar.

Also check also their website for other specialized services such as Escape Routes and Airport Briefs.

CLICK HERE for Product Details
CLICK HERE to Request Private Demo

Smart4Aviation

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T: +31 20 654 1824
E: info@smart4aviation.aero
Location: Netherlands, Poland, Canada, USA

NAME OF PRODUCT MARKETED
- **Smart LOAD, Smart COMM, Smart BRIEF**
- **Smart VIEW+, Smart OPERATIONS MANAGER**

KEY BUSINESS/SOFTWARE AREAS
- **Weight and Balance**
- **Communication and Alerting**
- **Pilot and Cabin Crew Briefing**
- **Flight Planning and Tracking**
- **Fleet Management**

Smart4Aviation is one of the fastest growing companies in aviation operations, founded to provide web and mobile based products and services designed to optimize, simplify and improve airline operations. Our company is committed to delivery of the highest quality, most innovative and cost-effective, state-of-the-art solutions to support all of your current and future operational business needs. Our products effectively manage all operational business units, such as Operations Control Management, Load Planning and Weight & Balance, Communications (all Operational and Corporate branches), Flight Planning, NOTAM Management, Flight Dispatch, Flight and Cabin Crew Briefing, Weather, Flight Tracking and Aircraft Performance.

Our web based and mobile solutions with an exceptional support are recognized within the industry as being some of the most dependable and innovative in the market. All of our current customers such as Air Canada, Delta Air Lines, Air France, Emirates, Air New Zealand, Qantas, easyJet, Thomas Cook, Thomson Airways, flydubai, Alaska Airlines, Horizon Air, Martinair and Air Austral have all benefitted from implementing Smart4Aviation solutions.

Smart4Aviation's web and mobile-based solutions have been acknowledged as the "Smart Choice" within the industry by a number of international and domestic air carriers.

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StorkJet

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Location: Poland

NAME OF PRODUCT MARKETED
- **fuelPro**
- **advancedAPM**

KEY BUSINESS/SOFTWARE AREAS
- **Fuel efficiency**
- **Aircraft performance monitoring**
- **Diagnosis of performance problems**
- **Aircraft/engine benchmarking**

Aircraft Performance & Fuel Efficiency — Our Passion, Your Savings: We analyze airlines' flight data to provide the most precise aircraft performance and optimize fuel consumption.

fuelPro is a fuel efficiency platform powered by AI to help airlines optimize flight operations and build up a positive fuel efficiency ecosystem. Airlines we work with save on 44 fuel initiatives and engage pilots to be more eco-friendly by sharing feedback and best practices with them.

advancedAPM provides tail-specific performance factors for accurate fuel planning. The process is fully automatic and works for all aircraft types.

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TrustFlight

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T: 44 (0) 330 229 0219
E: info@trustflight.io
Location: Leamington Spa, UK; Edinburgh, UK; Luton, UK; St Helier, Jersey

NAME OF PRODUCT MARKETED
- **Tech Log, Task Cards**
- **Digital Logbook**
- **CAMO (service)**
- **Aircraft Registry (service)**

KEY BUSINESS/SOFTWARE AREAS
- **Aircraft log books**
- **Aircraft maintenance task cards**
- **Digital and paperless working**
- **CAMO support**
- **Aircraft Registry support**

From inception, TrustFlight has been ingrained in the aviation industry. Founded by two commercial pilots with a proven track record at the intersection of technology and business, the business has grown considerably and with stability, having recently celebrated the opening of a fourth office.

Throughout, TrustFlight gained an incredible team with backgrounds spanning different areas of aviation and technology, ensuring a solid presence in the industry. Now offering a range of products and services within the sector, TrustFlight helps to remove costly paperwork and associated errors, preserve aircraft value, and increase efficiency and safety in aircraft operations.

Five values shape TrustFlight's culture, guide the business's work and the way it grows. **Integrity** Transparent and open: offering trust to partners and assuming it from them. **Responsibility** Owning the work they do and taking responsibilty for it: striving to make it the best possible. **Leadership** Leading from within: providing support for the team to do incredible work and drive the industry forwards. **Innovation** Products are crafted for the future needs of the industry, going beyond what exists in the market. **Excellence** Every one of TrustFlight's values contributes towards the excellence in their products.

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Ultramain

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E: sales@ultramain.com

Location: Albuquerque, New Mexico, USA

NAME OF PRODUCT MARKETED

- **ULTRAMAIN® v9™ M&E / MRO**
- **ULTRAMAIN Mobile Mechanic™**
- **ULTRAMAIN Mobile Inventory™**
- **ULTRAMAIN ELB™**
- **ULTRAMAIN M&E / MRO:** 31 modules including: Configuration Management; Line/Base Mx Planning; Line/ Base Mx Scheduling; GATe; Quality Assurance; Asset Management

KEY BUSINESS/SOFTWARE AREAS

- **Maintenance & Engineering**
- **MRO**
- **Military Maintenance**
- **Maintenance Planning & Scheduling**
- **Paperless Customer Care on Mobile Devices**
- **Electronic Technical Logbook**

Ultramain Systems, Inc. develops M&E / MRO and ELB 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 ULTRAMAIN ELB, 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 customer 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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Viasat

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Location: Ireland, USA, India, Australia, Switzerland, UK, China

NAME OF PRODUCT MARKETED

- **AeroDocs Airline Document Management System**
- **Viasat Wireless IFE**
- **Viasat In-flight Internet**
- **Viasat EFB**
- **Viasat Connected Aircraft Platform**

Multiple modules available, deployed to meet airline's specific needs.

KEY BUSINESS/SOFTWARE AREAS

- **Connected Aircraft Platform**
- **AeroDocs Document Management System**
- **Modular EFB**
- **Wireless IFE**
- **In-flight Internet/Connectivity**

A connected aircraft platform with document control, pilot EFB, wireless IFE, and in-flight internet products and services plus a software platform and mobile apps for aircraft and flight-related data; the right information to pilots, flight ops and passengers. AeroDocs document management is easy-to-use in operations of all sizes, globally. It is enterprise-grade, scalable and the only end-to-end system managing the entire document lifecycle while supporting compliance.

AeroDocs is modular, with complete control over editing, distribution and viewing of documents on the ground and in the cockpit. Document control for Flight ops and EFB admins. Customised reporting supports safety and compliance managers, while controlling risk. AeroDocs is designed to transform your airline's approach to document management, and support strategic business goals.

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Vistair Systems

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Location: United Kingdom and USA

NAME OF PRODUCT MARKETED

- **DocuNet**
- **SafetyNet**

KEY BUSINESS/SOFTWARE AREAS

- **Aviation Document Management (All format types inc. PDF, XML, S1000D, I Spec 2200)**
- **Electronic Flight Bag (EFB)**
- **Document Management and Distribution Platform**
- **Maintenance & Engineering**
- **Flight Operations**
- **Compliance Tracking**
- **Form Creation and Management**
- **Aviation Safety Management Software**

Vistair provides document, safety, and quality management technology solutions to support the delivery of improved safety, compliance, and operational efficiency that results in significant commercial savings to aviation organizations. Combining technology, development expertise and service delivery, Vistair's suite of aviation technology solutions provides both commercial airlines, aerospace and defense organizations with an approach that helps demonstrate a clear link between increased reporting and a change in procedures and behaviors, which fundamentally drives a safer organization.

Document Management: DocuNet is the aviation industry's leading end-to end document management solution, providing a coherent, single point of control for editing, publishing, distributing, and viewing all operational documentation. It provides the flexibility to access documents via the web and mobile devices and can also manage documents in all formats.

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Weathernews

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Location: Tokyo, Oklahoma, Copenhagen, London Moscow, New York, Paris, Athens, Sao Poulo, New Delhi, Kathmandu, Yangon, Bangkok, Singapore, Jakarta, Hanoi, Hong Kong, Manila, Taipei, Shanghai, Seoul

NAME OF PRODUCT MARKETED
- Go or No-Go Decision Support
- Personal weather briefings
- En-Route Weather Forecast
- Foster Flight Watch
- Foster EFB
- Flight Operations Control Support
- Airspace Critical Operations Support

KEY BUSINESS/SOFTWARE AREAS
- Airlines weather support
- Daily weather forecast
- Weather IT solutions

Weathernews Inc. is a private weather company operating worldwide within 44 different industries, collecting weather data from various sources as well as using their own proprietary infrastructure. They use their proprietary infrastructure to provide support where there is no or scarce weather information.

Weathernews supports flight dispatchers, operations members and pilots with a wide range of services during all phases of the flight, from planning, en-route and landing. The business serves customers in Star Alliance, SkyTeam, oneworld and Value Alliance, with support for more than 350 airports, Weathernews' risk communicators are available to assist users in any weather-related needs.

Weathernews has more than 30 years experience supporting and servicing airlines, and strives to learn each airline's weather-related needs and challenges to fully support and ensure safety, efficiency and contribute to sustainability.

Weathernews' services are easily accessible through web links, and were developed with the focus of user friendliness and clear user interface.

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Web Manuals International

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Location: Sweden, USA

NAME OF PRODUCT MARKETED
- Web Manuals

KEY BUSINESS/SOFTWARE AREAS
- Monitoring
- Authoring
- Editing
- Publishing
- Distribution

Web Manuals International AB has developed knowledge-management solutions for the aviation industry since 2008, with the headquarters in Malmö, Sweden and an office in San Diego, California. Web Manuals is a tool for digitizing manuals to simplify authoring and distribution of company manuals for the aviation industry.

Web Manuals is available as a Software-as-a-Service subscription, with minimal training and configuration required to get started. The service includes support, hosting, availability monitoring, maintenance, and at least two system upgrades per year.

We set the standard for digitizing manuals for the aviation industry by providing an easy-to-use solution enabling end-to-end control, compliance, agility and cost-efficiency.

In short, our clients save time and money in editing, publishing and distributing their operational manuals while being able to publish new revisions as often as needed and gain a full control of their documentation and communication systems.

The Web Manuals Compliance Libraries enable compliance automation by allowing controlled real-time compliance monitoring of company procedures linked to Implementing Rules and Acceptable Means of Compliance in the EASA and FAA regulations, as well as a number of aviation standards such as IOSA, IS-BAO and ARGUS.

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Yonder

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Location: Zurich, Switzerland

NAME OF PRODUCT MARKETED
- Yonder Mind

KEY BUSINESS/SOFTWARE AREAS
- Content Management System
- Workflow-based Content Distribution
- Compliance Tracking
- Content-based Learning

Stay in control of your content and bring reliable, role-specific information to frontline employees — with one fully customizable content management solution. Yonder Mind is an easy-to-use content management solution designed specifically for controlled information like operation manuals, guidelines, rules, or regulations. Our unique approach allows users to work with dynamic content instead of static documents. Dynamic content will display the right information at the right time, depending on the user profile and on the context of use. A powerful search function further improves end-user satisfaction.

Yonder Mind brings operational documentation and manufacturer manuals together in one solution. Pilots work with the easy to use YM Offline App and enjoy role-specific revision updates instead of having to go through hundreds of revised pages. Editors create and enhance content in the YM Editor while revisions become manageable again thanks to the fully integrated YM Workflow. Company guides (e.g. Winter Ops Guide) can be created without having to worry about duplicates anymore since information is only contained once in Yonder Mind. And never miss a change in regulation again thanks to our IQSMS Connector.

We have over 15 years of experience with electronic documentation in aviation that we can leverage to our customers' benefit. Our team has a diverse background ranging from a former EFB administrator for a large international airline to a long-haul captain knowing, from his own experience, what crews need.

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BOUNDLESS
BACK ISSUES
START YOUR INVESTMENT
WITH OUR EXTENSIVE BACK
ISSUES OF IT SOLUTIONS
CLICK HERE
AIRCRAFT IT
Operations