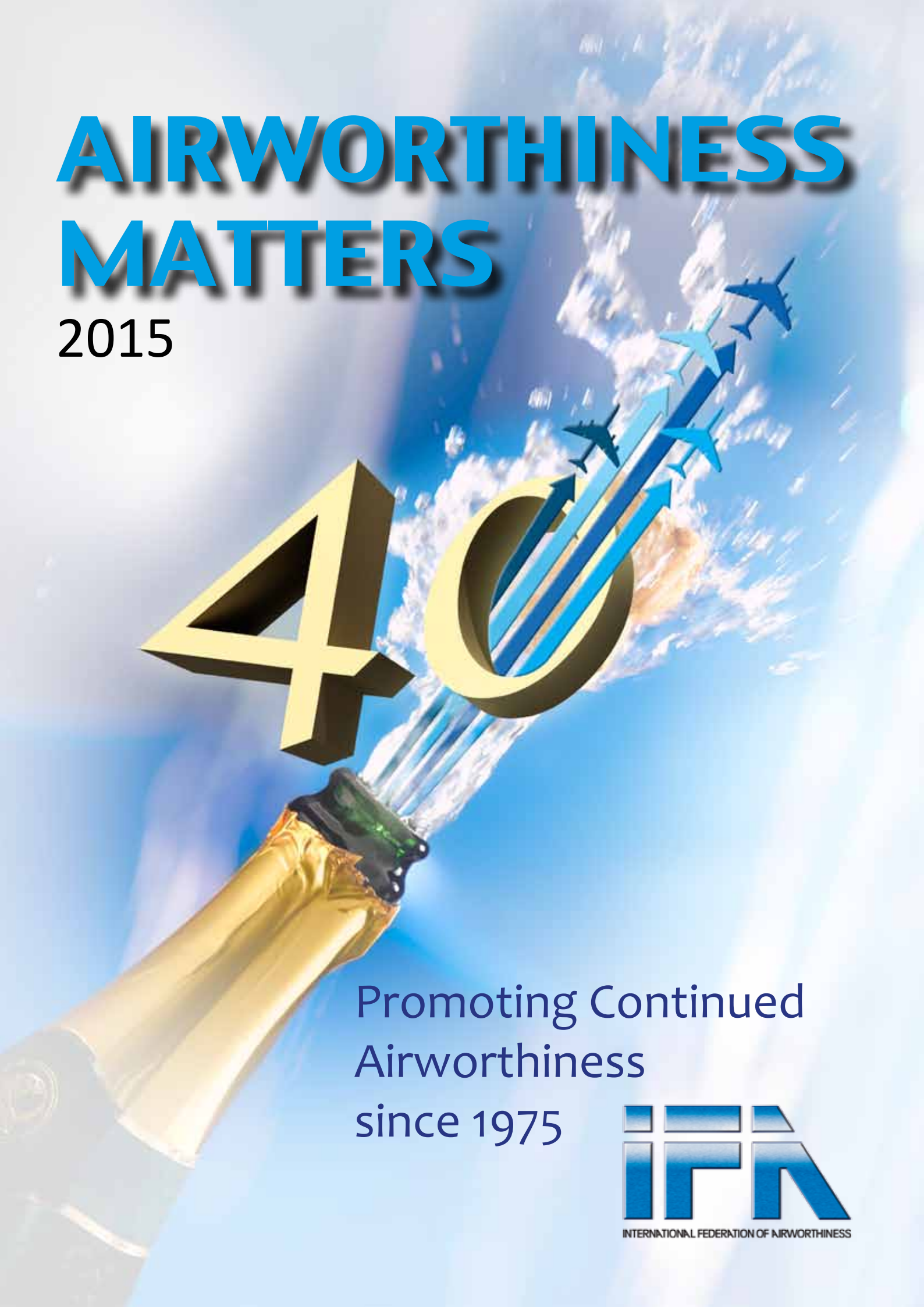
AIRWORTHINESS MATTERS

2015



Promoting Continued Airworthiness since 1975

IFA

INTERNATIONAL FEDERATION OF AIRWORTHINESS

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Airworthiness Matters is published annually.

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Foreword

John Saull,
IFA Executive Director

40 years on - welcome to the first edition of our re-branded organisation annual publication re-titled `Airworthiness Matters`. Rebranding of IFA has been carried out over the past year, largely driven by our President Frank Turner and our Secretary Linda Hare. It includes the introduction of a re-vamped website, a changed logo and organisation strategic focus.

It is important that we continue to review the commercial airliner accident trends – the fatal accident rate in calendar year 2014 was the best ever for airline safety as reported by Ascend, a *Flightglobal* advisory service. The rate dropped to an average of one per 2.38 million flights, narrowly improving on the previous best in 2012. This includes the loss of MH370, (which has yet to be found) but not that of MH17 which was the tragic result of hostile action. The number of fatalities were recorded as 671 in 19 accidents, if MH370 is included, representing over twice the fatalities in 2013, the lowest recorded year. It is dependent on the number of passengers carried on each fatal flight and the type of aircraft.

Flightglobal also records the loss of four Turboprop airliners (Regional & Commuter) with fatalities in 2014, but accident rates are not quoted.

IATA member airline results show that there were fewer jet hull loss accidents in 2014 and gave a rate of one per 4.4 million flights, with recorded fatalities of 641. The safety performance for 2014 showed an improvement for all areas of the world when compared with the five-year rate for the period 2009- 2013.

Although fatal airliner losses are considered a rare event, each one as always, receives a considerable amount of publicity. In the latest fatal accident data, airworthiness causal factors are not specifically highlighted. Accident data/statistics will obviously vary depending on the assessment parameters chosen: this variation is demonstrated in a further presentation chart included in this magazine.

The human performance element remains the dominant challenge to the industry which needs continual awareness/attention at all industry personnel levels together with associated changes to regulations, requirements, procedures and training: now including Performance Based Auditing/ Monitoring and Risk Based Oversight.

IFA have recently issued its updated version of its Human Factors training film re-titled `Day by Day` which also contains a pivotal safety management interview with the CEO of Emirates Airlines, a major supporter of IFA work on airworthiness issues.

IFA acknowledges the data provided by Flightglobal and IATA magazines

President's Message

Frank Turner
IFA President

It is my privilege to write the introduction to this the first issue of 'Airworthiness Matters', which is the new title for the IFA Annual Magazine, and is part of the rebranding of The International Federation of Airworthiness in its 40th year of existence. The new title further emphasizes the importance of initial and continuing airworthiness as a part of the industry's obligation to safety.The new IFA brand is not just about image. It is a demonstration of our commitment to our sponsors and members by continuing to provide information and guidance which is more relevant to your current operational and compliance environment.

IFA has embarked on a long and exhaustive process that has involved revising our strategy, vision, mission, values and our constitution. In doing this we have been careful to protect what you say that we currently do well, such as our forums, topic white papers and the content of our newsletters.

An important change is the introduction of new Student/Apprentice membership category that allows our future engineers to join the IFA free of charge during their initial training period, and to involve them, such that they gain a comprehensive understanding of the subject of Airworthiness and its contribution to aviation safety early in their careers.

The word 'International' also demonstrates IFA's global reach, which we intend to enhance further by introducing technologies that will enable us to communicate with our members and the industry as a whole. The employment of webinars and the ability of holding key IFA meetings electronically will be crucial to the continued success and valuable work carried out by IFA and its membership.

Challenging the aviation status quo will always be an important engine of change for the greater good, and we are often criticised by our membership for not being proactive. To this effect, IFA has also decided to be more proactive in expressing its independent and informed technical opinion, not only to members, but also the regulators, the industry at large and the media. This will be of particular importance where safety and airworthiness can be potentially affected by uninformed and political decisions.

An example of this is the recent ruling in Europe that imposes denied boarding compensation to passengers from airlines as a result of delays caused by technical issues. This will emphasize the short-term risk of a financial penalty to the airline versus the longer term, potentially greater financial impact of a safety incident or accident. This will undoubtedly place greater strain on IFA volunteers, however, we believe that by working in co-operation with our members, the industry, regulatory bodies, industry associations and academia, it will be possible for the IFA to assume the key role of being the catalyst for positive coherent and safe change that we insist must be equitable for all aviation and air-transport stakeholders.

In writing this report I am acutely aware that the recent incidents in commercial aviation have resulted in the largest numbers of fatalities in the history of the industry. At the moment it appears that none of these incidents were associated with airworthiness issues but there are lessons to be learned.

This is particularly so with the German Wings accident, which, as currently reported, is a most tragic Human Factors incident, similar to the Japan Airlines flight 350 accident in February 1982. Whilst neither of these accidents appear

to be the result of an airworthiness issue, they were clearly Human Factors and Risk Assessment issues, which can also affect the airworthiness of an aircraft. IFA will be addressing wider implications of this in our Critical Interface sessions and workshops during the forthcoming Technical Forums, which will continue in Hong Kong in November this year and subsequently in the Middle East in 2016.

Finally I would like to thank Sir Tim Clark, President of Emirates Airline our Main Sponsor, our Corporate and Associate Members, the members of the Executive Council, Technical Committee and Linda Hare our Secretary for their continued support.

IFA Vision

To be the most internationally respected independent authority on the subject of Airworthiness.

IFA Mission

To contribute to the debate and formation of policies, which affect the airworthiness of Commercial Aircraft worldwide, and to influence Regulators, Airlines, Maintenance Organisations and Governments to adopt practices that constantly improve aviation safety.

IFA Values

- We will represent and involve members in the formulation of policies and practices, which by continually improving the airworthiness of aircraft will improve the already safe operation of aircraft in service and those about to enter service.
- We will recruit the widely experienced members to our working Groups and Committees and encourage the involvement of younger members in these groups to increase their knowledge base.
- Members of the Committees will be actively involved in the collaborative forums between the regulatory forming bodies and industry stakeholders, to ensure that an unbiased technical contribution is made on behalf of the membership, in order to influence positively the safety of aviation.
- We will share our technical knowledge through the Forums we arrange worldwide, in our Newsletters, White Papers, the IFA Website and Annual Report.
- We will facilitate active involvement of our membership in regulatory and advisory bodies.
- We will promote actively the involvement of young people at an early stage of their careers in the development of thinking through our Student and Apprentices scheme and involvement with Universities, Societies and other training bodies.
- We will always act with integrity in our investigations, reports, white papers and involvement in the industry debates and will always present an unbiased technical opinion on all aspects of aviation safety related to airworthiness.
- We will continue to develop our Scholarships and Award opportunities to encourage active participation in Airworthiness subjects

IFA 40 years

IFA is celebrating its 40th year. Set up in 1975, the representatives of international Licensed Aircraft Engineer bodies who attended the formation meeting could all see the benefit of worldwide communication (at a time when communication technology was very basic) and of the gathering of information and like minds. They could also see the possibility of improving air safety through changes to engineering standards and of sharing 'good practices'. At that time these individuals were very modern in their thinking and can be commended for their beliefs in the future of air travel.

1975

1976 First commerical flight by Concorde. Several current IFA members worked on the certification of Concorde which claimed many firsts in design

1976 First IFA Conference was held in Karachi, Pakistan, the theme was 'International Airworthiness'

1977 Provisions for the carriage of Ground Proximity Warning Systems (GPWS)

1978 ARINC introduced ACARS (Aircraft Communications Addressing and Reporting System)

1980 First IFA Scholarship Awarded to Mr Tsang Yuk Poon who was a LAE with HAECo. He spent a year with Boeing in Seattle on a work placement.

1984 Pratt & Whitney 2000 was the first engine in commercial service with Full-Authority Digital Engine Control (FADEC).

1985

1985 IFA gained UK Charity Status

1986 Provisions for extended range operations by aeroplanes with two engines (ETOPS)

1988 Airbus A320 First commercial aircraft in service with digital fly by wire flight controls

1991 IFA Trust Fund formed, 9 members contributed to a total of £150,000. The aim of the Trust Fund was to pay for the administration of IFA.

1992 IFA new logo and corporate identity established.

INTERNATIONAL FEDERATION OF AIRWORTHINESS

1994 Rolls Royce High Bypass turbo fan engine Trent 700 certificated.

1995

1995 IFA gained Non Governmental Organisation status

1996 Provisions for the carriage of airborne collision avoidance (ACAS - TCAS)

1998 IFA presented the first 'Whittle Safety Award' to Mr Al-Zabin of Kuwait Airways. The award was established to honour the global aerospace community's most outstanding achievements in the field of air safety.

1998 IFA made a Human Factors Training Film entitled 'Every Day'

1999 ICAO's Universal Safety Oversight Audit Programme (USOAP) was initially launched in January 1999, in response to widespread concerns about the adequacy of aviation safety oversight around the world.

2003 _EASA formed, finally taking over the full roles of the JAA in 2008.

2004 IATA Operational Safety Audit (IOSA)introduced as requirement for all IATA member carriers.

2005 IFA published a white paper entitled 'Extended Work Hours (Maintenance)'

2005

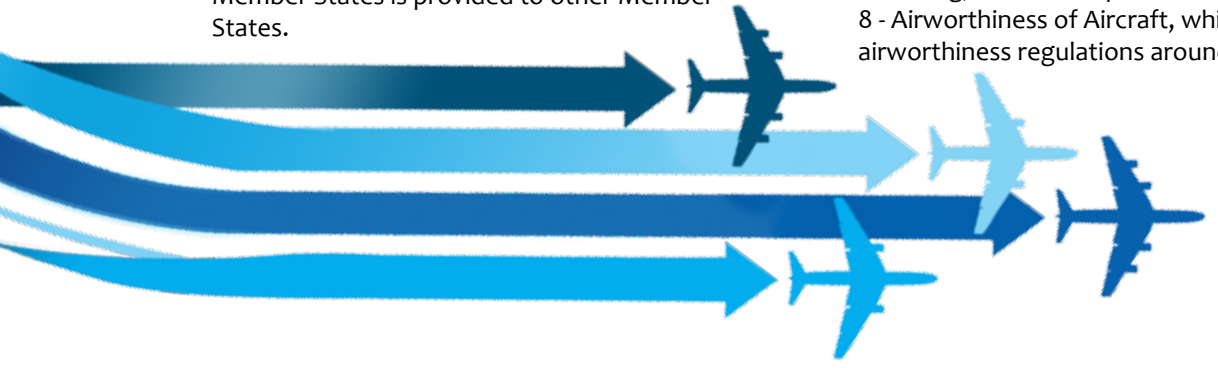
2006 ICAO issued Safety Management Manual (Doc 9859) concerning implementation of Safety Management Systems (SMS)

2009 Boeing 787 Dreamliner -Maiden flight 1st commercial airplane to use Composite material (50%) in primary structure-.Type Certificate FAA & EASA

2013 USOAP CMA is fully launced and its various tools, mechanisms and guidance materials are constantly reviewed for improvement.

2010 The evolution of USOAP to the Continuous Monitoring Approach (CMA) should continue to be a top priority to ensure that infomation on the safety Performance of ICAO Member States is provided to other Member States.

2014 The Annex 19, which became applicable on the 14th November 2014 consolidates existing overarching safety management provisions from various annexes including Annex 1 - Personnel Licensing, Annex 6 - Operation of Aircraft, Annex 8 - Airworthiness of Aircraft, which form the basis of airworthiness regulations around the world.



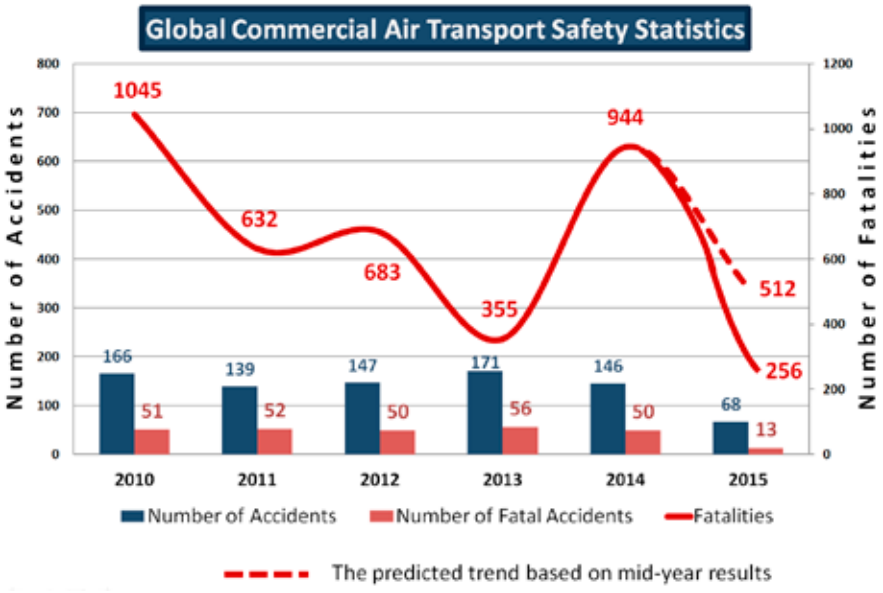
2015

Sustaining the Remarkable Safety Performance! 'Black Swans' and 'Elephants in the Room'!

Cengiz Turkoglu
IFA Chair of Technical Committee

The global commercial air transport industry continues to enjoy growth and despite the concerns about the possibility of this growth resulting in increased accident numbers, the number of both fatal and non-fatal accidents is remarkably low. Unfortunately, – what I consider as – 'Black Swan' events such as MH370, MH17 and 4U9525 in 2014 and 2015 respectively caused high number of fatalities. The graph below indicates that a small number of high fatality accidents can adversely affect the trends. While various initiatives and the collaboration between industry stakeholders including regulatory authorities, trade and professional associations, pay dividends to achieve this remarkable safety record, the data also clearly demonstrates the challenge of identifying the pre-cursors of future accidents.

An important point from IFA's point of view is that, fortunately, none of these high profile accidents are the result of serious airworthiness issues. Of course, there are some lessons to be learned and improvements to be made related to initial airworthiness (i.e. design and production) as well as continuing airworthiness, which is IFA's main focus. This excellent safety performance and particularly the extremely low number of airworthiness and maintenance related accidents and high profile events, creates a huge challenge for all people contributing airworthy products around the world. Because policy decisions and safety initiatives have to be based on evidence, by achieving such performance engineers become the victim of their own success. In this regard, IFA can and should continue contributing various industry committees and forums to highlight the potential risks by raising the concerns of its members.



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	The Most Fatal Accidents (The Number of Fatalities)	
2010	158 (Air India Express - VT-AXV - B737-800)	152 (Air Blue - AP-BJB - A321)
2011	77 (Hewa Bora Airways - 9Q-COP - B727)	77 (Iran Air - EP-IRP - B727)
2012	163 (Dana Air - 5N RAM - MD80)	127 (Bhoja Airlines - AP-BKC - B737-200)
2013	50 (Tatarstan - VQ-BBN - B737-500)	49 (LAO Airlines - RDPL-34233 - ATR-72)
2014	298 (Malaysian - 9M-MRO) - B777)	239 (Malaysian - 9M-MRO - B777)
2015*	150 (Germanwings - D-AIPX - A320)	43 (TransAsia Airways - B-22816 - ATR72-600)

2015 data includes all accidents until 21 Jun 2015.
Source: Data compiled from Aviation Safety Network Database (http://aviation-safety.net/database/) & analysed by Cengiz Turkoglu. Military aviation accidents and also events caused by hostile action (i.e. a number of aircraft destroyed on the ground at Tripoli in 2014) were excluded.

While predicting the next accident is getting more and more difficult, one of the ways to sustain the existing low accident rate is not only to continue collaborating but also to challenge the existing norms and policies. Such an approach may not be easy and create some polarised debates between different stakeholders in the industry such as

trade associations and professional bodies. As a result, the regulatory authorities find themselves in a 'damned if they do, damned if they don't' situation. The controversies and dilemmas during the flight time limitations rule making activities in Europe a few years ago were the typical examples of such a situation. When such complex issues need resolution, I think the evidence based approach to rulemaking and oversight has some fundamental limitations because as the safety performance is getting better and the evidence is disappearing, we are losing the opportunity to learn from accidents and incidents. This means that we need to analyse how we achieve this excellent safety performance and disseminate the lessons and best practice across the industry. This can be achieved by various committees and forums in the industry as well as the conferences and workshops organised by organisations such as IFA, Royal Aeronautical Society, Flight Safety Foundation and many others around the world. Another way to further improve existing practices is to continually challenge each others' views to go beyond the 'evidence based approach' because in order to manage risks, we need not only to consider all of the above but also discuss 'what if' scenarios.

Now, I would like to introduce – what I call – 'elephants in the room' and perhaps ask some fundamental questions rather than provide answers or pragmatic solutions but I do believe that today's issues are so complex and we need to question existing policies and industry practices more if we wish to make even further safety improvements. Before I do that, in order to set the context, let me remind you some of the targets mentioned in the two key EU documents.

PUBLISHED IN 2001	PUBLISHED IN 2011
European Aeronautics: A Vision for 2020 – 'Meeting society's needs and winning global leadership' (Report of the group of personalities)	Flightpath 2050: Europe's Vision for Aviation – 'Maintaining Global Leadership and Serving Society's Needs' (Report of the High Level Group on Aviation Research)
GOALS TO MEET SOCIETAL & MARKET NEEDS Punctuality: 99% of all flights arriving and departing within 15 minutes of the published timetable, in all weather conditions. Time spent in airports: no more than 15 minutes in the airport before departure and after arrival for shorthaul flights, and 30 minutes for longhaul.	GOALS TO MEET SOCIETAL & MARKET NEEDS Flights arrive within 1 minute of the planned arrival time regardless of weather conditions. 90% of travellers within Europe are able to complete their journey, door-to-door within 4 hours.
SPECIFIC SAFETY GOALS Aircraft will achieve a five-fold reduction in the average accident rate of global operators. Aircraft will drastically reduce the impact of human error.	SPECIFIC SAFETY GOALS In 2050, European aviation has achieved unprecedented levels of safety and continues to improve. Manned, unmanned, legacy and next generation, autonomous aircraft and all types of rotorcraft operate simultaneously in the same airspace and in most weather conditions. A holistic, total system approach to aviation safety is integrated across all components and stakeholders. This is supported by new safety management, safety assurance and certification techniques that account for all system developments.

In addition to the above, these two documents also include many other challenging and competing/conflicting goals and targets i.e. security, environmental impact etc. I applaud those involved in the development of such reports aiming to achieve a reliable, safe, secure and sustainable future commercial air transport system but as we are only 5 years away from 2020, I also can't stop asking myself if some of these ideas are visionary or misguided.

The fundamental enabler of achieving such extremely challenging goals is of course, 'research and innovation'. While considerable amount of funding is allocated for safety research projects[1], such as ASCOS[2] (EU contribution: 3.365.884€), ACROSS[3] (EU contribution: 19.482.059€). In comparison, I also question the level of funding provided for some other projects focused on passenger comfort (i.e. IN-LIGHT[4] - EU contribution: 2.980.805€) while the EASA's Budget[5] for Research Programmes is well below such level of funding. I think this is again due to the fact that without any evidence (i.e. high accident rate), it is extremely difficult to convince the policy makers to continually invest in safety research and improvements.

Although I mentioned earlier that accidents and incidents caused by airworthiness and maintenance related factors are extremely rare, the potential risks do continually exist as stated by the ICAO[6] (i.e. in-flight engine fire/shutdown caused by fan cowls being left unlatched and aircraft being released to service). For example, "research conducted by NTSB shows since 1992, 15 engine cowl events involving Airbus aircraft and 33 domestic and foreign instances of engine cowl separation on Bombardier aircraft."[7]; fortunately none of these events resulted in fatal accidents but unfortunately this makes it more difficult to design human error out by introducing a modification to the system, which may require considerable investment. While the cost of such modification programmes is scrutinised and becomes a barrier for introducing safety improvements, in contrast, some of the EU airlines plan $4.5 billion cabin upgrades to rival Middle East carriers as other airlines launch multi-million dollar marketing campaigns and celebrity adverts. This comparison reminds me the cliché 'In aviation, many rules were written by blood' but it is also another illustration of the challenge we face. Should we focus on addressing risks based on repetitive events of the past or should we aim to identify future hazards and predict the next accident by asking the 'what if' questions?

Finally, I would like to discuss the passenger rights legislation by asking the question, 'Can the blanket approach to implementation of EU Passenger Rights Legislation potentially compromise safety'?

'EC261/2004 Passenger Rights Legislation' was first introduced in 2005 to prevent airlines overbooking and not taking care of their customers. Within the last decade, the air traffic grew significantly and the safety performance of the commercial air transport industry has been remarkable; however as recently described by an airline executive, the brutal competition in the industry and the consumer protection law such as EC261 have been putting tremendous pressure on airlines to achieve on-time performance. As a result, the airlines drive operational staff such as pilots and engineers to keep the aircraft flying in order to achieve on time performance targets, in some cases by paying bonuses as well. Such external pressures are ultimately the result of travelling public's expectation to fly faster, further, safer and cheaper without questioning how today's complex commercial air transport system works and how it is funded.

Over the last 10 years, there have been many court decisions setting precedence and putting more pressure on airlines. In 2013, 'National Enforcement Bodies' issued a guidance document, 'Draft list of extraordinary circumstances'[8] with a view to clarifying some of the controversial circumstances including delays caused by technical faults / defects; however the latest court decision towards the end of last year in the UK not to include technical faults within extraordinary circumstances was seen as a victory by the travelling public, media and the litigation lawyers, who might benefit from these decisions and policies. Subsequently, the UK CAA had no option but to announce its decision[9] to take enforcement action against some airlines.

While I am not entirely against the principles of passenger compensation which is a requirement introduced by not only EC261/2004 in Europe but also similar regulations in other countries around the world, I am very concerned about the continuing pressure we (the travelling public) are putting on engineers and technicians in operational environment. Since the industry is strictly regulated, some would argue that there is hardly any opportunity for people to take risks. In my opinion, there will always be circumstances where operational decision makers need to make a judgment such as whether to release an aircraft to service or not or in flight crew's case, whether to accept an aircraft with certain defects. So let's not influence their decisions by setting them conflicting goals. Therefore I believe the guidelines produced by the 'National Enforcement Bodies', were measured and proportionate approach and they should be part of the enforceable law.

1 Aeronautics and Air Transport Research 7th Framework Programme 2007-2013 Project Synopses - Volume 3 Calls 2012 & 2013
2 https://www.ascos-project.eu
3 http://www.across-fp7.eu
4 http://inlight-project.eu
5 EASA Management Board Decision 02-2015 25/02/2015 Adopting the 2016 Draft Budget ANNEX – Detailed 2016 Draft Budget
6 SECOND HIGH-LEVEL SAFETY CONFERENCE 2015 (HLSC 2015) PLANNING FOR GLOBAL AVIATION SAFETY IMPROVEMENT
7 http://www.flightglobal.com/news/articles/engine-fan-cowl-separation-under-scrutiny-by-us-safety-317355/
8 Draft list of extraordinary circumstances following the National Enforcement Bodies (NEB) meeting held on 12 April 2013 - Understanding between NEB –NEB on a non-exhaustive and non-binding list of extraordinary circumstances for the application of the current Regulation (EC) 261/2004
9 http://www.caa.co.uk/application.aspx?catid=14&pagetype=65&appid=7&mode=detail&nid=2437

Whittle Award

The annual 2014 Whittle Safety Award was presented by John Saull, IFA Executive Director most appropriately at the RAeS Human Factors Engineering Group Conference at Cranfield University on 12th May 2015 to

Professor David King
MBA, DEng, CEng, FRAes

'In recognition of his dedicated work in the field of accident investigation and in particular his contribution to better understanding the role of human performance in maintenance related accidents.'

During David's time at the UK Air Accident Investigation Branch (1972-2010), he rose to the position of Chief Inspector where he took a specific interest in aircraft maintenance human factors. Through the investigations he participated in and led, he made a significant contribution to the understanding of human error and the role of investigators, regulators, manufacturers, maintainers and operators in trapping or managing such errors, particularly within the engineering and maintenance areas. Additionally, he has chaired the UK MEMS (Maintenance Error Management System (MEMS) Working Group and acted as a Trustee of UK CHIRP (Aviation and Marine Confidential Incident Reporting). He is now the Independent Safety Chair for Cathay Pacific and was appointed as a Board member of the UK CAA in 2013.

Obituary - Don Smith, FRAeS (1919 - 2015)

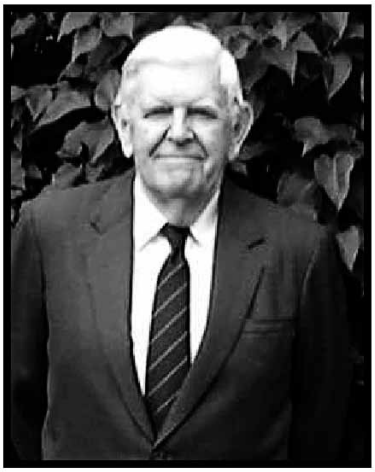
We are sad to record the passing of Don Smith, on 30th March 2015, age 95, after a short illness.

Don was a founding member of IFA finally retiring in 1999 as Director Membership & Publicity. Upon retirement from British Airways in 1976 he took the role of Secretary General / Executive Director following the formation of IFA in March 1975.

His 40 year aircraft engineering career commenced when he joined the Royal Air Force in November 1939 and served in Training, Fighter and Bomber Commands, until 1943 when he was transferred to the Royal Navy Fleet Air Arm as a Petty officer until demobilisation in December 1945. He then joined BOAC (European Division) which later became British European Airways and subsequently British Airways, becoming a Licensed Aircraft Engineer until retirement as an Assistant Engineering Superintendent in 1976.

Don worked for a number of years with SLAET (UK), serving a term as its Chairmen. He was also made an Honorary Fellow of SLAET(NZ)

Don, as a member of the IFA Executive Council, was a great enthusiast in promoting the independent safety work of IFA, his many trips and tours gained IFA numerous members and he was key in organising many of the IFA conferences. Don recorded his life in a diary and it was this document that enabled the IFA History to be written and published in 2005. He fully embraced new technologies and until recently had been a key e-mailer and internet user. IFA would not have grown and developed without Don's work, sad that he has passed, but a life well lived.



Secretary General/Executive Director
1975 - 1984

Assistant Executive Director
1984 - 1993

Director Membership & Publicity
1993 - 1999

Honorary Fellow
1999 - current

IFA Regional Updates

Middle East

Captain Nasir Iqbal, IFA VP Middle East

IFA is pleased to introduce our latest Vice President, Captain Nasir Iqbal, Chief Safety Risk Specialist & Acting Manager Safety Risk Management Section, UAE General Civil Aviaiton Authority. Nasir worked closely with IFA to co host the Dubai Forum in 2014 and has since agreed to become our Vice President for the Middle East.

Captain Nasir Iqbal started his aviation career in 1987 with Pakistan Air Force where he held various operational, command, staff and instructional appointments. In 2006 he joined commercial aviation and worked on instructional assignment with FTO and later joined business jet operator as post holder safety and line pilot. He joined GCAA in 2012.

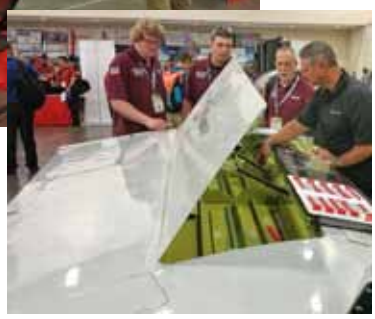
He holds numerous aviation safety, management, regulatory and instructional qualifications. He has represented and presented UAE State Safety Program, safety performance measurement and safety risk management at various national and international forums.

Americas

Mr John Goglia, IFA VP Americas

Aerospace Maintenance Competition (AMC) which was held in Miami on April 14, 15 & 16th, 2015 in conjunction with Aviation Week & Space Technology's MRO Americas convention in the Miami Convention Center. This competition is a venue for Aircraft Maintenance Technicians, Aircraft Maintenance Engineers and Students from around the world to compete against each other in events that highlight just some of the many responsibilities that we as skilled Craftsmen and Craftswomen carry in order to provide safe airworthy aircraft 7/24, 365. Each of the events are timed and there are 6 different categories for teams of 5 individuals each to compete in. There is a Commercial Aviation Category, General Aviation Category, School Category, Military Category, MRO/OEM Category and Space Category. There are 1st, 2nd & 3rd Place awards for the teams in each category that have the lowest over all score as well as awards for teams that have the lowest score in each of the individual events. With events sponsored by industry such as Boeing, FedEx, Alaska Airlines, CAE the level of competition is always being raised.

Explaining Testing Procedures



Sealant Application Test

This year there were 39 teams, 195 competitors plus a number of team support members , from 7 Countries. Approximately $75,000 in tool prizes was awarded to the winning teams. Additionally a $10,000 fiber optic horoscope was given to the winning school team.

Tire and brake test

I would add that it was wonderful to see the IFA logo as a sponsor.

Australasia

Mr Steve Swift, IFA VP Australasia

- 'Australasia' includes Australia, New Zealand, Papa New Guinea and nearby islands in the Pacific Ocean.
- Australasia has three corporate and two associate members. It is hoped the IFA's new initiatives (see The President's Letter) will encourage growth in 2015.
- The Australian Transport Safety Bureau (ATSB) does not report any concerning airworthiness trends.[1] However, its database shows airworthiness is still an issue, contributing to one in five accidents. Almost all were airframe or engine failures, split equally[2]. The ATSB will soon publish its final reports on two fatal airframe failures in 2013. While the accident databases of the New Zealand and Papua New Guinea Transport Accident Investigation Commissions are not publicly searchable, current investigations on their web sites include airframe and engine failures.
- The ATSB investigated engine reliability. The small piston engines in Light Sport Aircraft (LSA) are now nearly as reliable as the larger ones in general aviation[3] But, piston engines are only half as reliable as jet engines.[4]
- Australia's Civil Aviation Safety Authority (CASA) is still changing its regulations to be like EASA's. Airline maintenance is now to CASR 42, based on EASA Part M. Design approval is moving to become more organisational, to Subpart 21.J. (New Zealand modelled its rules on the FAA).

- While airlines are buying new-jets, such as Boeing's 787, other fleets are getting older. In Australia, the average piston-engine aircraft is now 40 years old. CASA's Ageing Aircraft Management Plan is trying to help operators keep their old aircraft airworthy.
- The international BARS (Basic Aviation Risk Standard) Audit Program, which includes airworthiness, is headquartered in Australia. One member is the United Nations World Food Program, whose aircraft delivered emergency supplies after the earthquake in Nepal.
- A review of safety regulation in Australia concluded with 37 recommendations.[5] This thoughtful report should interest any IFA member with an interest in the regulation of airworthiness. For example, it discusses human factors such as safety culture and rule clarity.
- The ATSB is leading the underwater search for 'MH370', the Boeing 777 that mysteriously disappeared somewhere in the Indian Ocean. The IFA shares everyone's hopes that the wreakage might eventually be found, not least because there could be airworthiness lessons.
- Steve Swift, VP-Australasia, presented the Airworthiness Report, an annual airworthiness round-up, at the 2014 Aircraft Airworthiness and Sustainment Conference in Brisbane.[6]

1 Australian Transport Safety Bureau, *Emerging Trends in Australian aviation safety*, 13 November 2014
2 Australian Transport Safety Bureau, National Aviation Occurrence Database, 2014
3 Australian Transport Safety Bureau, *Research investigation into the reliability of light sport aeroplane engines*, last updated 10 December 2014
4 Australian Transport Safety Bureau, *Power plant failures in turbofan-powered aircraft*, 2008-2012, 19 June 2014
5 Australian Government, *Aviation Safety Regulation Review*, May 2014
6 In the 2014 Proceedings on the conference's website: www.ageingaircraft.com.au/aasc.php

Asia

Mr Victor Liu, IFA VP Asia

Aviation remains vibrant in the Asia and Pacific regions. To enhance communication and collaboration amongst the aviation authorities as well as the industry partners, some of them are also members of the IFA family, the Hong Kong Civil Aviation Department (HKCAD) hosted the 2015 FAA/Asia Pacific Bilateral Partners Dialogue from 14 to 16 April 2015 at its Headquarters.

The theme for this year's Dialogue is *"Increasing need for continued international collaboration on global aviation safety and regulation."* Particular emphasis was given to streamlining validation and supplier surveillance procedures, continued operational safety, emerging technologies and regional training requirements.

The first two days of the Dialogue were authority-only engagements while the final day was a dedicated industry day and the industry representatives were invited to participate with the authorities.

Civil Unmanned Aircraft System (UAS) activities have become more active and popular in different countries and places in recent years. It was therefore one of the hot topics in this year's Dialogue. The emerging technologies, diversifying operational requirements together with the increasing public expectations on safety and privacy have shown that there is a need for the regulatory authorities to consider pragmatic as well as sustainable approaches to the regulation on UAS activities.

Cooperation was another main subject of discussion. With our Technical Arrangements with the CAAC of the Mainland China and AACM of Macau, EASA and FAA on subjects such as Type Validation, Continued Airworthiness and certification activities, it is noticeable to HKCAD the synergies and experiences gained amongst the participating authorities. Through the streamlined procedures on validation and/or direct acceptance of each other's approvals, the authorities could release some of their stringent resources for other regulatory activities. By avoiding the unnecessary duplicated certification activities from different authorities, the industry's economic burden could also be reduced at the same time. HKCAD will continue to explore and work with other authorities on similar arrangements.

These kinds of seminars and forums could serve as a platform for better sharing of experiences and collaboration amongst aviation authorities and the industry. We look forward to the next IFA Forum to be held in Hong Kong, China in November 2015. That will certainly be another effective platform for us to share our experiences and knowledge, as well as to enhance our partnership. Please register early.

Confirmed Speakers:

Mr David King
Consultant, Ex Chief Inspector UK AAIB

Mr Manfred Leung, Senior Airworthiness Officer, CAD Hong Kong

Mr John McColl, Chief Surveyor, CAA UK

Mr Steve Swift, IFA VP - Australasia

Madam Wang, Deputy Director General CAAC - AAD

Co-Hosted by:

民航處
CIVIL AVIATION DEPARTMENT

Tuesday 3rd November – Workshop

Lunch and registration prior to workshop commencing at 2.00pm

The Workshop will start with two short presentations and continue with open debate expected contribution from the attendees.

- Industry perspective
- Regulatory perspective

Wednesday 4th November – Forum

Commence at 9.00am, close at 3.00pm.

Session 1 – Critical Interface between Flight Operations and Engineering

Session 2 – Critical Interface between TC Holders & Airlines / Maintenance Organisations

Session 3 - Critical Interface between Airlines (Engineering) and Maintenance Organisations

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Reality of Implementing and Sustaining the Safety Management System

Andrew Lawson
Manager Quality & Safety, Dubai AIr Wing

Hazard Identification may be objective – we can agree the 'potential' for things to happen, but 'Risk' is subjective – a fighter pilot has a different perception of risk than an office worker. We all see situations that appear to us to be dangerous but the persons involved seem oblivious, even complacent about the risk of injury.

We drive past horrific car crashes and slow down for a while but after a few minutes we've forgotten about it and we're back up to speed. We see plane crashes but we still get on aircraft to travel. It is human nature to think that accidents happen to other people, not to us.

We watch wars, fighting, tragic accidents and natural disasters live from around the world with unanimous agreement about the tragedy, the truth is that unless the tragedy affected us personally or our family – do we really care?

Safety is not a naturally occurring event in any industry. Other than natural forces (wind, fire, flood, earthquake, lightning etc) hazardous situations have been introduced by mankind. Every technical invention ever made by man has the potential to fail causing possible risk of injury or death. Some inventions obviously have greater risk or more severe consequences than others. Operating and maintaining aircraft is certainly high risk!

Potential hazard threats could be latent by design or a mistake at manufacture but remain undetected (hidden safety) or could be quite evident safety – either way they are caused by human intervention.

Quality vs. Safety
Is it not the same thing because both are about 'doing the right things right'? As with everything in this universe – both are governed by the Universal Law of 'Cause & Effect'. With a Quality system we plan to cause things to happen to get the desired effect, whereas with a safety system we plan to stop the causes in order to stop the undesired effect or consequences. The fact is that Quality systems and Safety systems are almost the same thing but from a different approach.

We all have a choice and it is our choice to be in the aviation industry. As it is our choice we should be obliged to assess all risks and consequences of having accidents by carrying out risk assessment of all areas of our business. It may not be possible to eliminate all risks but it may be possible to reduce the risk.

The old way of thinking was very 'reactive' - to have an accident plan in the event of a crash. Whilst this is still necessary the latest buzz word is to be 'proactive' and prevent the accident before it happens.

Both Quality and Safety rely on the attitude of personnel involved – this is the biggest problem – Attitude! An attitude towards quality and safety is a 'mind set' – a way of thinking and without the right attitude there will be no buy-in by anyone. Why? Because it is human nature to ask, "What's in it for me?"

In the workplace it is usually the personnel at the 'sharp end' that easily accept safety systems because they see the benefits for themselves. Middle Management generally finds it hard to accept because it hits their budgets with no tangible gain (we had a good safety record before, now we spend all this money and we still have a good safety record – why bother!). Top executive management tend to assume all personnel should be doing it anyway – that's what they get paid for – it's common sense, which it is most of the time but unfortunately humans make mistakes!

'Doing the right thing' is about leadership which is why it is essential that they buy-in and support the objectives. If the Boss doesn't believe in it, no one else will either!

'Making sure they are done right' is the responsibility of the management which is why their buy-in is essential too. Management are required to offer supportive culture to subordinates but will be held accountable by executive management when things go wrong.

Quality and Safety management systems require that 'things are done right' in every aspect of the business. This is a never ending process that needs continual assessment.

We can prove it - We have an excellent safety record
Whilst this may be true, an excellent safety record is just that – 'a record' of the past. As with all financial advisers disclaimer, *the past performance is in no way a guarantee for performance in the future.* All we can do is to show that we have at least considered all aspects of risk to our business that may cause injury or accidents by a systematic risk assessment. It is the difference between believing we have a safe operation versus knowing we have a safe operation – If it is not measured, it is not managed.

The Shell Aviation Safety Case was used to help identify generic hazardous situations of an aviation business. This is being tailored to highlight consequences or effects of hazards and includes a comprehensive list of threats that could possibly cause the undesirable effect.

What do we need to do to make it work?

No 1. You must have 'buy-in' and belief by Top Executive Management. Without this there is no point proceeding any further. Even though Regulations require implementation of a Safety Management System without buy-in of top management, it would be no more than 'lip service' and a waste of time, effort and money.

No 2. Select a team of representatives with a positive attitude from all departments of the organization. Remember, volunteers are worth more than ten pressed men. The team leader needs to be assertive and prepared to 'Champion the cause'.

No 3. Provide the team with Safety management System awareness training and risk analysis.

No 4. Prepare your people for change – attempt to change the mind set of all personnel involved – attempt to change their attitude.

The reality about attempting to change peoples attitude is that some people can and will change, some can't or won't! That's the way life is so don't fight it!

If the world's wealth was spread evenly throughout all people on the planet it would not take long for the imbalance to reappear – why? – Because some people can and will look after their money, other people can't or won't.

Some companies can and will better themselves regardless of regulations, other can't be bothered and won't.

It is no different with individuals – some people are industrious and want to better themselves, others are lazy and can't be bothered.

Life is all about Attitude, everything in our life depends on our attitude towards it; our marriage, our health, our work, our finances, our mind set – we have the ability to choose our attitude by the way we think.

Changing people's mind set in the workplace is like popcorn; first you heat the oil but there is no reaction from the corn at first. Then there is random spontaneous explosions leading to a chain reaction of intense activity mixed with stubborn refusal of some kernels to ever pop. There will always be a reluctance to change, its human nature.

In order to successfully implement and sustain a Safety Management System a Business Plan should be drawn up as you would with any project. The plan should include:

- A Mission Statement – from Top executive management
- Objectives defined
- Team Leader and Team selection
- Financial Plan – i.e. budget
- Resources requirements
- Training – Safety management, human factors
- Implementation Plan – defining key issues and milestones along the way.
- Contingency plan – if things not going to plan

Safety Analysis - Examples

The following are two brief examples of safety analysis taking a couple sections from the organization Maintenance Organization Exposition. The first is Data control, the second is Supplier Evaluation.

Safety Analysis:	MOE 2.8 - Maintenance Instructions (aircraft / compo		
Purpose (Function):	To provide adequate reference or airworthiness data t		
Failure: (Functional Failure)	Fails to provide adequate reference or airworthiness d		
Hazardous Event (Effect):	Release of an Unairworthy Aircraft to Service (HE15)		
Hazard:	Actions or implications of people and their interface w		
Threats:	#8	Poor Planning	
	#9	Inadequate Handover	
	#10	Lack of competence, skill	
	#11	Mistakes, errors, violations	
	#26	Insufficient funding, people etc	
	#27	Inadequate working environment	
	#28	Inadequate reference information	
	#32	Ergonomic issues - Documentation user f	
			RISK
Location of Threats	Ramp/Apron		High - aircraft / pers
	Hangar		High - aircraft / pers
	General W/S		medium - personne
	Avionic W/S		medium - personne
	Battery W/S		High - personnel / c
	Planning		High - all aircraft
	Tech Records		High - all aircraft
	Cabin Interior W/S		small - all aircraft
	Purchasing		medium - all aircraf
	Logistics		medium - all aircraf
	Engineering		High - aircraft / pers
	Ground Service Equipment		medium - aircraft / p
	Quality Assurance		High - all aircraft
	Engineering Manager		High - aircraft / pers

Safety Analysis:	MOE 2.1 - Supplier Evaluation		
Purpose (Function):	To provide products / services that meet UAE GCAA requirements.		
Failure: (Functional Failure)	Fails to provide products / services that meet UAE GCAA services.		
Hazardous Event (Effect):	Release of an Unairworthy Aircraft to Service (HE15)		
Hazard:	Actions or implications of people and their interface with the work environment - Human Factors (Generic Aviation Hazard #3).		
Threats:	#4	Aircraft Handling by ground staff (inappropriate human behavior)	
	#5	Non-compliance with mandatory requirements (inappropriate human behavior)	
	#6	Inadequate recording (inappropriate human behaviour)	
	#7	Non compliant practice (inappropriate human behaviour)	
	#8	Poor Planning (inappropriate human behaviour)	
	#10	Lack of competence or skill (inappropriate human behaviour)	
	#11	Mistakes, errors, violations	
	#14	AircraftSystem Failures (including dynamic failures of components)	
	#16	Third party GSE or system failure	
	#21	Ineffective ground traffic management	
	#26	Insufficient funding, people etc	
	#27	Inadequate working environment	
	#28	Inadequate reference information	
	#29	Inappropriate parts (lack of resources)	
	#30	Fuel, Oils & Lubricants (failure to manage or contain causing damage or potential fire)	
	#31	Flamable materials (failure to manage or contain causing damage or potential fire)	
	#32	Ergonomic issues - Documentation user friendly	
	#36	Toxic Materials (failure to contain toxic materials, threat to DAW maint & crew	
	#37	Corrosive materials (failure to contain or manage effectively during maintenance)	
	#38	Birds, animals, insects (failure to control during maintenance causing damage, blockage)	
	#39	Fluid under pressure (failure to contain causing damage to aircraft or injury to personnel. Eg Oleo)	
	#40	Gas under pressure (failure to contain compressed gas, oxygen, nitrogen etc)	
	#41	Electricity (ground mains power and current with high amperage)	
	#43	Open flame (failure to manage or contain sources of ignited material	
	#47	Aircraft balance (failure to maintain aircraft balance when components removed for maint)	
	#48	Ineffective operational Control (lack of direct management involvement, complaceancy, poor quality etc)	
	#49	Failure to learn from experience	
	#54 New	Security (potential threat of terrorist attempt at aircraft)	
		RISK	**Remarks**
Location of Threats	All suppliers of products or services		
		Standard parts - small / medium risk	Nuts, bolts, O rings etc - aircraft /personnel
		Aircraft parts - medium / high risk	Components - including engines
		aircraft maint - high risk	Any T/P performing maintenance
		Special services - medium / high risk	NDT, paint spraying, weighing

onents), updating & availability to staff							
o allow for safe maintenance and operation of aircraft.							
data to allow for safe maintenance and operation of aircraft.							
with the work environment - Human Factors (Generic Aviation Hazard #3).							
riendly							
K		**Remarks**					
sonnel		Very busy enviroment -direct impact on aircraft/personnel					
sonnel		Very busy enviroment -direct impact on aircraft/personnel					
l / component		Personnel using documentation at component level					
l / component		Personnel using documentation at component level					
component		Personnel exposed to potential high risk work environment					
		Personnel working with documents for all aircraft					
		Personnel working with documents for all aircraft					
		Little risk of documents affecting safety (possibly IFE related)					
t		Using wrong docs to order wrong parts is possible					
t		Issuing wrong parts possible					
sonnel		Use of inadequate reference documents					
personnel		Use of inadequate reference documents to service GSE					
		Use of inadequate reference documents					
sonnel		Use of inadequate reference documents to make decisions					

Data Control

The purpose of Data Control is to provide personnel with adequate reference or airworthiness data for safe maintenance and operation of aircraft. If this failed to happen then the hazardous event would be the release of an unairworthy aircraft to service.

A new definition of Data Control is Information Integrity, which means, "The trustworthiness or dependability of information, more specifically, it is the accuracy, consistency, and reliability of the information content, process, and system." It is going to be a huge problem in the future and a challenge for the Quality and Safety systems. Why?

It is considered that mankind has gone through three revolutions in its existence:

1. The Agricultural Revolution – 8000 years ago man started living together in communities and worked the land to feed the people. Less people work the land today but feed more people.

2. The Industrial Revolution - 1800's in Europe, 1900 for USA – mass production, smokestack industry. One thing to consider – 1.4 billion cars have been made in the last 100 years, what will be the long term effect of taking all of the oil out of the ground, recycling steel, tyres, batteries etc.

3. The Information Revolution – 1950's to date has seen information being generated and distributed at the speed of light due to the internet. Consider this – 1.5 trillion pieces of information are being produced each month, and accelerating. What will be the long term effect? – answer, Polluted Information!

   According to a recent survey at the University of California, more information will be produced in the next two years than all the information created so far in human history.

   Information errors or polluted information can and will result in failures, economic loss and even loss of lives. How do you manage, control and guarantee the integrity of the information needed to run your business, all of those internally produced documents and also those of external origin.

Supplier Evaluation
As with many aircraft operators and maintenance facilities, the Dubai Air Wing is very reliant on its many suppliers in order to provide the expected quality of VVIP service. Suppliers provide services such as:

- Distributors supplying standard parts, i.e. nuts, bolts, 'O' rings, rivets etc
- Aircraft parts supplied with proper release certificates in order to trace back to birth if necessary.
- Raw materials, consumables
- Aircraft turn round and dispatch services – particularly challenging in some parts of the world such as Africa.
- Aircraft Maintenance Inspections
- Specialized services, i.e. Non-Destructive Testing (NDT), aircraft painting, weighing, VVIP aircraft interior installations

Evaluation of suppliers requires audit and assessment techniques depending on the level that their services impact the quality of the service you are trying to provide, for example a supplier of rags for the maintenance department would require little assessment compared to a company contracted to perform maintenance on an aircraft.

There is a difference between auditing and assessing and the analogy can be likened to an iceberg:

- An audit is an objective 'snap-shot' that records a moment in time. The findings are tangible and cannot be altered – it happened and now it is history. Fixing tangible problems is easy because we can physically verify (see, touch etc). This is the tip of the iceberg that is visible. Concerning supplier evaluation it is the checking of quality manuals, procedures, facilities, manpower etc (all basic pre-requisite stuff for 145 approved Maintenance Organisations).

- Assessment concerns the intangible things that can only be sensed and are therefore subjective, such as customer relations, safety culture, attitude etc. This can be considered as the part of the iceberg under water that can't be seen. This is where the 'real quality' of a company is determined and it can only be sensed by visiting companies and talking to them. It may take two or three days to get an accurate picture of their true values.

Using the safety analysis philosophy produces a comprehensive checklist of requirements that can be tailored for the various types of supplier (distributor, vendor, aircraft maintenance etc) and used to assess them and even educate them.

Conclusion

Risk analysis is the easy part, it may be time consuming initially but it is relatively easy.

Changing peoples attitude is the most difficult to achieve – the human factors side. There will always be resistance to change but this is exactly what needs to happen. Change management is all about preparing your people.

No system can create safety – only humans can do that – only we can do that. After all it was human's aviation inventions that placed us at risk in the first place

SAFETY FOR ALL SIZES - IATA CHANGES

To cover the large numbers of commercial operators ineligible for IOSA, IATA has developed the IATA Standard Safety Assessment (ISSA). Catalin Cotrut, Diretor of Audit Programs for IATA, says: "Many countries do not yet require a safety management system (SMS) for smaller airplanes, so ISSA is a way to introduce the strategy of SMS."

ISSA is "ready to start engines", according to Cotrut. After trialing the new program last year with five carriers, "all the infrastructure is in place and the key is ready."

In-scope criteria for ISSA includes:

- Commerical passenger/cargo operations
- Aircraft with one or more turbine-powered or multiple reciporcating engines
- Single or two pilot operations
- Instrument flight rules (IFR) and/or visual flight rules (VFR) operations
- Aircraft below 5,700 kg (12566lb) maximum take off weight.

EASA/FAA Safety Conference 2015 Debrief & Summary

Paul Merrick
IFA Associate Member

The conference was well attended by a broad spectrum of global industry and regulators, 37 countries, 350+ attendants and 300 organisations were represented. The keynote speaker pointed out aviation is a fundamental part of global economy with 27,000 flights daily over Europe representing 26% of worldwide aviation activities.

The key area for the conference was to consider the views of both industry and regulators, on the changing face of aviation activities over the coming decades. How aviation will be best placed to expand to support global economy at the same time as maintaining and improving the industry's good safety performance. How the impact of new technologies, such as Drones impact on aviation as we know it today, were all discussed.

Risk based oversight was discussed throughout the conference in all panels. Pressure on finances within State regulators, the need for a review of existing ICAO SARPS and state regulations set out for very different aviation technologies. The importance of industry / regulator partnerships in a risk based aviation world in achieving safety improvements globally is dependent upon establishing a singular standard and regulatory convergence for a more level worldwide playing field, especially with the fast developing areas in India, SE Asia and China.

Today's main drivers in aviation were observed as: consumer expectations; needs and demands costs; effective use of resources and expertise; speed and volume of change to support the expansion of industry and speed of technology. Delegating additional privileges to industry in certification, operations, airworthiness and maintenance, can regulators trust them? A system has to be developed for the future to gain this confidence.

FAA and EASA laid out their views and proposals on the future and the actions already being put into place. Particularly in the area of UAS as the Drones industry and technology are racing ahead of the regulators. How to define, certify and categorise their operation has not yet been established but production and operation of these is expanding exponentially. Industry forecasts the number and use of Drones to exceed those of aircraft in the near future. The benefits for their use are clear in many areas but what about the risks? How will these be integrated into different categories of airspace and our daily lives with "Amazon Prime Air" proposing to have our Internet shopping to our houses automatically by drones?

The availability, use and analysis of data is becoming increasingly important to industry and regulators if the aviation industry is to succeed in developing a safer holistic system covering compliance, safety performance, security, environment and research. Partnership and cooperation between EASA the FAA and their respective industry stakeholders will be the catalyst for driving improvements and changes globally in this regard.

Effective implementation of SMS will change the aviation landscape from technology to safety focus. Effective safety analysis of safety data, including FDM, will be the capability step change for spotting trends and taking action before incidents and accidents occur. This will enable better risk based decision and making better use of resource and efforts. Agreements on harmonised rule making will be key to raising the safety bar; also cyber security threats to aviation safety need to be considered. The recommendations to EC from the German Wings accident task force report will hopefully minimise the possibility of "trauma and Media" based regulation and restrictive rules being introduced.

In the EU, the reorganisation of EASA forming a strategy and safety management directorate, coupled with a new work program integrated into operational directorates should enable an approach more consistent with "safety benefit" rule making. Their "Vision 2020" includes a strategy for improving competitiveness across the EU and a new aviation basic regulation within 10-15 years. A realistic framework for industry growth and a continuous risk based monitoring target approach for regulators, should

remove duplicated regulatory effort and encourage adoption of risk based regulation across the EU, the USA and the rest of the world.

An alignment of effort across the major world agencies has resulted in a target for converging regulations and a review of ICAO SARPS to reflect modern technology, aviation regulations industry and consumer needs.

Review and amendment of FAR23 and CS23 by FAA and EASA within 2015 will produce NPA's to simplify General Aviation and Drone activities, plus the level of involvement (LOI) NPA is making substantial steps in shifting the balance of regulator workload on certification of new products to give more responsibility to industry.

Airlines, drone operators manufacturers and MRO's are lobbying governments and regulators for more appropriate, simpler and more transparent regulations to allow them to improve standards looking to exceed regulatory compliance to allow a less restrictive level of compliance and better self-regulation and risk management by industry where a safety culture standard is becoming an integral part of how the aviation business is being managed.

Common terminology is required (UAS, UAV or RPAS?), as is the education of the public and organisations new to aviation activities, training the new public users and commercial workforce using drones will be a challenge. Certification and operational regulations and guidance, failure modes, aerial conflict, data link reliability, cyber-crime security, beyond line of sight operations etc. are some, but not all of the areas that need addressing.

In aviation operations adapting to an ever changing and expanding aviation world is a constant challenge. Regulatory / industry partnership, flexibility and safety improvement is needed, establishing the criteria for the transition from prescriptive to performance based rules will be key to achieving this. Shared responsibility and partnership with industry demonstrating the appropriate level of safety. The operator's primary responsibility is to identify hazards, risks and manage them effectively dealing with UAV's.

The right balance and combination of compliance and performance is required. Not all stakeholders are ready across the world. Identification of best practices and publishing safety data to produce intelligent information and recommendations on SPI's will take time to achieve. Resolving current issues such as the need to regulate ground handling or react to media driven "Trauma based" regulation following the recent German wings tragedy will give an indication if things are moving in the right direction.

Initial and continuing training will need to have different needs and profiles to facilitate the move to risk based regulation, maintaining competency and proficiency of regulator and industry staff for the future and an SMS based aviation world. How regulation best can add both compliance and safety value to the Aviation system? How can regulators be best financed and supported by the world's countries?

The lack of qualified experienced and competent inspectors is currently a common finding by EASA and ICAO with the worlds regulators year on year and all inspectors are not ready and competent, or have the mind set in establishing implementation of risk based oversight and assessment of the newly established industry SMS.

A different set of competencies and skills is needed for the inspector of the future a "why not?" open mind approach is more suited, a gap analysis on this and a rethink on ICAO SARPS to establish what qualifications, experience, skills and training are needed. These new skills are more focused on management systems; SMS knowledge based on identifying SPI metrics as well as the existing basic compliance audit skills. Aircraft "Type" qualified regulators may become the exception rather than the rule!

Dissimilar global regulations and standards cost the industry millions of dollars per year. As an example the estimated leasing transfer costs are in excess of $300M per year for the worldwide aircraft fleet that is leased… a lot of paperwork and cost with no evident safety benefits, duplication of regulatory effort is a burden on industry and needs to be removed. ICAO SARPS expectations are becoming out-dated; they are not State law and need to be reviewed and brought up to date to enable more flexible state laws for the future. The increasing use of industry best practice, defined standards and SMS techniques were seen by the conference as being preferred to regulations and prescriptive oversight.

Update of IFA Training Film

In 1998 IFA produced a training film to highlight Human Factor issues, it took a considerable effort from the volunteer members of IFA plus numerous contributions from other members for the project to be completed. The cost of making such a film was over £30,000. In line with with the ethos of IFA, the film was sold at a fraction of the production costs, they wanted the message to be distributed rather than try to recoup the costs. Since then the world has changed from video to CD's to DVD's to Drop boxes. There are now hundreds of training aids covering human factors.

The IFA Executive Council considered various options for making a new film, but the core message of the original film given by Professor James Reason was still very relevant although it was just the types of aircraft and the maintenance procedures that were making it dated. So the decision was taken to re-vamp, with new messages from the current IFA President and new images but with the original core film.

It was also decided to expand the information given by IFA and to develop short films/clips of interviews and discussions with key members of the aviation community on relevant topics and to package these with the updated 'Every Day' to give a more complete training package titled 'Day by Day'.

IFA President, Frank Turner met with Sir Tim Clark, President, Emirates Airline for a discussion on Safety Leadership, there were three main questions and the answers were frank and informative and have made a welcome addition to the IFA Training package.

The film is free to IFA members, there is a small charge to non-members to cover basic costs.

'Day by Day'

Two 20 min training films on Human Factors in Engineering

£18 (US$30)
FREE to IFA Members

Safety Leadership - An Airline President's View

An interview with **Sir Tim Clark**, President of Emirates Airline, focusing on leadership from the top covering

- Safety Culture
- Critical Interface Communications
- Human Factors

'Every Day'

Could it happen to you? If not - why not? If yes, what can you do about it?
With the guidance of **Prof. Reason** the film suggests the way forward with:

- An explanation of why defences fail
- Why Safety Management Systems need a Just Culture in the work place
- Strategies to remove error provoking conditions before they can cause harm
- How Human Factors Error Management is bringing a global tide of change.

EASA - EHFAG

Paul Merrick
IFA Associate Member

The Global aviation system is very safe, with thousands of successful operations worldwide every day. The system relies on the behaviours and performance of individuals and teams for safety, efficiency and effectiveness. However, human error continues to be a major factor in aviation accidents and incidents. Successfully addressing human error must consider that error is often a symptom of systemic and organisational issues, involving multiple factors which affect human performance.

Human Factors is 'anything that affects human performance', it cuts across the entire aviation system. Finding ways to improve can have a significant positive impact on aviation safety and operational effectiveness. The European Aviation Safety plan (EASp) has a European Human Factors Strategy. The European Human Factors Advisory Group (EHFAG) working in close conjunction with EASA has helped to develop and maintain this. IFA has a member on the EHFAG Continuing Airworthiness focus group. (EASA HF Strategy is available to view at https://easa.europa.eu/system/files/dfu/sms-docs-EASp-HFP1.1-European-HF-Strategy---1-Sept-2012.pdf, direct link from the IFA website, Technical page)

During the last 12 years, EASA has developed a regulatory system foundation and now needs to focus on supporting Member States and Industry in implementing and maintaining the regulatory framework. Recently there have been some major organisational structure and strategy changes within EASA that will affect the way that the EHFAG is managed and coordinates with EASA.

There have been three key management changes following the new structure initiated by Executive Director Patrick Ky announced on 1 September 2014. In brief, EASA Rulemaking, Approvals and pan-European Standardisation activity is now absorbed into the Certification & Flight Standards directorates, there is also a newly created Strategy and Safety Management Directorate.

After these changes EASA's objective now includes continuous improvement of safety in economically challenging times. This means revising the way EASA defines its strategic priorities giving a more consistent, data-centered, risk based approach. The following issues are being discussed and considered:

- EASA accountability and leadership on HF;
- Clear HF Goals and work program;
- Co-ordination and alignment of efforts with ECAST, EGAST
- HF to be included in the EASp and Annual aviation safety reviews.

However implementation of NPA's 2003/01 & 19 (implementation of SMS into the Airworthiness Codes Commission Regulation (EU) No 1321/2014) have been delayed due to the impact of the reorganisation and priority changes within EASA, these will not be in place before 2017.

(The new EASA Structure can be viewed at https://www.easa.europa.eu/the-agency/agency-organisation-structure\)

The full effect of these changes on the EHFAG work has not yet been fully assessed, however it is evident, that in the future, the group's output will need to be more integrated into EASA work streams. EASA wants to ensure that human factors are addressed across the aviation system in a consistent and proportionate manner. It recognizes that current and future operations rely on people for safety, efficiency and effectiveness and that Human factors and performance affects all aspects of the Aviation System (Individual and Organizational) and these cannot be addressed in isolation.

The EHFAG membership includes the active involvement of FAA members, which adds to the group's influence on EASA in respect of its HF strategy and policy. The relationship of this group with EASA remains as important now as it's ever been. The way in which this will be maintained is still to be decided. IFA remains committed to be a key part of the group and its influence on EASA.

The EHFAG meets thrice annually, initially in a plenary session and then in sub-groups comprised of Operations and Licensing; Certification & Design; Maintenance & Continued Airworthiness. EHFAG adapts its working groups and tasks according to the evolving needs of the Agency.

The Current Plenary Activities are:

- Developing, and continuously updating, a European Human Factors strategy. Making a Human Factors action plan, in all aspects of aviation, as part of the European Aviation Safety.
- Review of the HF effects due to the new regulation 376/2014. Reporting incidents, analysis and follow up (entry into force 15 Nov 2015) – this affects more organisations than those currently regulated. i.e. Ground handling, de-icing, etc.

The current Airworthiness Working-group Activities include:

- Developing regulatory inspector competencies and Aide Memoire Checklists to assess the HF programs and procedures within the Aviation Industry
- Supporting EASA on the MDM.055 RMT task for implementation of SMS into the continuing airworthiness codes

Further useful information and guidance can be found on Skybrary http://www.skybrary.aero/index.php/Human_Factors

FAA Lessons Learned Website

This Lessons Learned project was presented by Project Manager, Dan Cheney (FAA retired) at a workshop at the 2004 joint FSF/IFA.IATA International Air Safety Seminar , held in Beijing, China.

This FAA safety information initiative continues to be updated , using assessed official accident report data. It is listed under 3 Groups:

I) Airplane Life Cycle,
2) Accident Threat Categories/Groupings
3) Accident Common Themes,

It is a most useful library containing safety information – great reference / training material.

http://lessonslearned.faa.gov

A North American View of Human Factors in Engineering

Dr. Bill Johnson
US Federal Aviation Administration

I take this opportunity to offer a North American, viewpoint of the EASA regulations, guidelines, and strategic directions and their direct effect on US aviation maintenance and repair industries. One aspect of my role is to ensure that the EASA Human engineering human factors activities and plans complement FAA directions. This is partly due to the fact that an estimated 1,400 US Repair Stations have EASA 145 Certificates. In those cases the combination of FAA and EASA rules help guide safety, quality, and general business practices.

The purpose of this article is to highlight some of the shared challenges between North America and EASA-regulated countries. The challenges emerged from two studies; one in 2010 and the other in 2014 and have been widely reported on (1, 2). The most important findings were:

1) The list of challenges did not change radically from 2010 to 2014. This is interesting because the list was created from an open-ended short answer survey rather than from a pre-determined, multiple-choice list. The top challenges are shown in Table 1.

2) There is about an 80% alignment/overlap between Europe and North American. We have very similar maintenance human factors challenges!

3) While there were 21 categories of findings, the top 3 (Culture/Leadership, Technical Documentation, and Fatigue) represented over 50% of the responses. Voluntary Reporting and ROI represented another 17% of the challenges.

Rank	Category
1	Culture/Leadership
2	Tech Documentation
3	Fatigue
4	Voluntary Reporting
5	ROI
6	HF Training
7	Pressure/Stress
8	Oversight/Regulations
9	Professionalism
10	Other

Table 1. The North American and European Challenges

In summary, there are five *shared* primary target areas to focus on as we cooperate to ensure continuing safety.

Products and Regulations to Address the Maintenance HF Challenges

The easy part of research is to identify challenges. The more difficult task is to find and test *practical solutions* to the challenges identified. I offer the top five challenges and some of the regulatory responses including rules and compliance advice. My descriptions favor FAA solutions but are not meant to discount the work of EASA, the UKCAA, and so many National Aviation Authorities worldwide.

1. Safety Culture and Leadership

An excellent safety culture requires excellent leadership. Safety commitment must be expressed and demonstrated from the top and then implemented by each person in the organization. Every worker should "buy-in" to safety and be able to describe what specific role they have to ensure safety. This worker understanding must be fostered with appropriate resources through training, documentation, support materials, time to document work, proper use of technical instructions, and so much more. In accordance, both EASA and FAA have provided guidance for airlines and maintenance organizations in the requirement to implement SMS documentation. The continuing use of SMS documentation ensures that reactive, proactive and predictive data become and remain common place in maintenance organizations.

One way this is happening is in a growing number of international maintenance organizations that are adopting the Line Operations Safety Assessment (LOSA) for maintenance and ramp organizations (3). LOSA, modeled from 20

years of application on the flight deck, use peer-to-peer assessments during normal operations. Simply stated, LOSA is "workers watching co-workers". United Airlines, Air France, and Lufthansa Technic are examples of early adopters of LOSA for maintenance. These airlines have also been a part of the voluntary reporting process which is described in more detail below.

These steps to encourage safety and leadership are promising. However, culture change takes time. Indeed, there are many components necessary to impact the corporate culture. Let's look at some of the additional challenges that affect the safety culture.

2. Technical Documentation

The first lesson that every pilot, engineer, and other aviation worker learns is the criticality of adhering to checklists, maintenance instructions, and company procedures. We are a procedure -based industry to ensure safety. Yet, "failure to follow procedures" appears in event/accident reports too frequently.

Regulators try to approach the procedure issues with oversight, enforcement actions, and fines. Such practices have not been effective. In my opinion, insufficient root cause analysis may be the "root cause" of the difficulty of resolving the technical documentation issue. Too often, investigations find that the pilot or engineer did not follow the procedures. It is not sufficient to stop there. Further root cause analysis would identify the *why* behind failure to follow procedures can help identify and mitigate the challenge.

FAA has done extensive research and development (R&D) on maintenance publications. The entire applied R&D, since the mid-nineties, is published on the FAA maintenance human factors website at www.humanfactorsinfo.com. The FAA-Industry Commercial Aviation Safety Team (CAST) recently conducted a Safety Enhancement study that looked at technical publications. A description of their general findings is available and there are a number of suggestions regarding the life cycle of publications. (4, 5)

3. Fatigue Risk Management

Fatigue is a known, yet regulatory unaddressed, challenge in maintenance. The Work Directives of the European Union appear to be a safety net for EU aviation workers. However clauses and exceptions within the Directive permit work hours that are not ideal. The FAA has rules that address maintenance work schedules but they are currently not aligned with recommendations from fatigue experts. IFA publishes a list of reasonable recommendations regarding scheduling to avoid the hazards associated with worker fatigue. Implementing these recommendations would mitigate a great deal of fatigue related incidents without requiring regulation or oversight.

The FAA has documented, on its website an extensive array of reports, training materials, and multi-media offerings. These documents, not tied to regulation, appeal to companies that want to ensure worker safety, flight safety, and efficient-effective work. Proper scheduling of maintenance is good business practice.

It is inevitable that development and formalization of Safety Management Systems will identify the hazards associated with worker fatigue. The result will be improved scheduling with fewer fatigued-related events.

4. Voluntary Reporting

The industry has come a long way on voluntary reporting over the past decade. Safety Management Systems and Risk-Based Decision-Making rely on good data. Employees are the best source of information about how the organization works and also about what goes wrong. The term "Just Culture" is known industry jargon. Engineers are usually able to report when they made an honest mistake. That information, should result in no punishment (assuming no deliberate actions and/or negligence) and mitigating actions taken to prevent a repeated error.

While the concept of just culture is excellent everyone in the industry is not a believer. Whilst Senior Management may expound the corporate just culture policy a mid-level supervisor is pushing employees to complete the job quickly and to get the flight off on time. There is often a difference between the theory of "fairness" and the reality of the workplace.

The FAA's Aviation Safety Action Program (ASAP) is a very good voluntary reporting system that involves the reporter and a tri-party committee comprised of labor, management, and regulator. When honest human error is present ASAP permits the organization to learn from the reporting employee to save a repeat of the error. ASAP information is available on the FAA.gov website.

5. Measuring the Impact

Engineering departments may be good at maintaining flight safety of equipment. However, they simply do not take the time to show either the safety impact or the financial impact of programs like voluntary reporting, LOSA, or human factors in general. As a result they find that they are often resource limited when they want to enhance safety programs.

The FAA has worked hard to empower the engineering community with training and tools to calculate Return-on-Investment. Companies have used it to show the return on equipment repair, personal protection equipment, fatigue training, and so much more (6). That information is available at www.humanfactorsinfo.com.

Summary

The European Human Factors Advisory Group is an excellent conduit for the exchange of ideas and advisory materials between EU and North America. The Continuing Airworthiness Group, permits experienced engineering human factors personnel to ensure that good ideas and practices are shared. It is clear that engineering human factors are seldom specific to a copy, a country, or a continent. For that reason the EHFAG not only serves Europe but also the entire world.

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Risks Associated with Frozen De-icing Fluid

On 26 December 2012, a Boeing 737-800 experienced an uncommanded pitch up in IMC when intercepting the ILS GS at Kittilä. Initial crew response could not prevent a rapid transition to a very high nose up attitude and stick shaker activation occurred. Recovery from this upset was eventually achieved. The Investigation found that frozen de icing fluid had prevented three of the four input cranks for both elevator PCUs from functioning normally. As a result of this incident, Accident Investigation Board of Norway issued recommendations mainly related to aircraft certification requirement and processes; however from Continuing Airworthiness point of view, it is important that operators and maintenance organisations should assess the risk of flight control restrictions caused by the regular application of de-icing fluid and introduce inspection tasks at appropriate intervals.

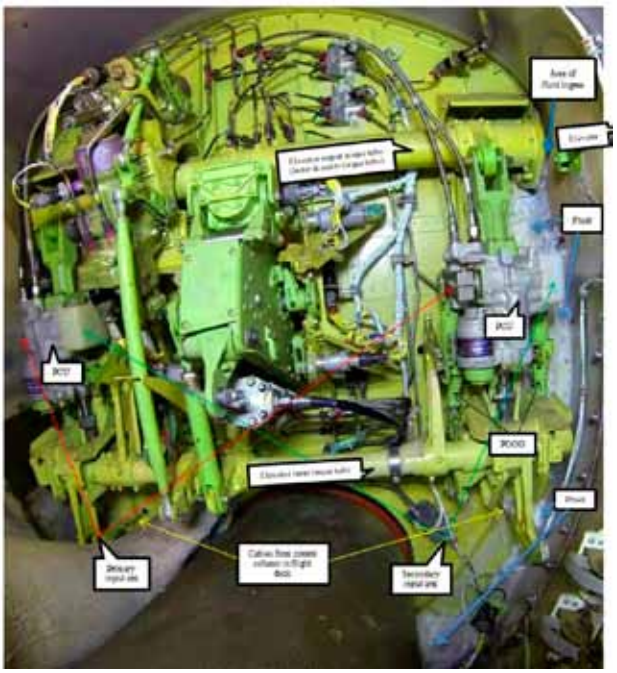

Figure 11: Shows fluid penetration and spray potential toward the input cranks on the PCUs. (Photo taken in the aircraft's direction of travel in connection with simulated de-icing of the aircraft's right side). The pipe at the bottom of the photo is the exhaust pipe from the aircraft's Auxiliary Power Unit (APU). Photo: AIBN

MEMS MEDA REPORT

(CHIRP Feedback 114 2/15)

Incident Summary - The Aircraft had been parked up, unpowered and sealed. The aircrew and engineer arrived at the aircraft at the same time. On entering the cockpit the Captain noticed a Tech Log entry stating "Covers and Pins removed", this had already been signed off as completed by the engineer. The airline uses a control column placard system and this was in place stating "Covers and Pins Installed" although the pitot head covers were not on the tubes or in the storage pouch. The engineer was engaged in removing the engine covers and did eventually arrive in the flight deck to stow the pitot covers. The Captain informed the engineer that his actions had caused confusion particularly signing off the task before it was fully completed, which is unacceptable. The engineer stated that he was trying to avoid delays and this was his rationale for signing the technical log before completing the task.

Training - The engineer while holding a 'B1' licence had only been issued a lower level 'A' licence approval by the company, this is normal policy for a new staff member during probationary periods. Normally as a new staff member he would have been subject to additional supervision from the station 'B1' engineer. This was overlooked due to the fact he held a 'B1' licence and it was assumed, by the supervisor that he knew what he was doing. Both of the 'B1' engineers have since undergone refresher training on technical procedures.

Analysis - Individual Error – The engineer felt he was alleviating pressure to prevent a delay by completing the technical paperwork prior to accomplishing the task. Clearly this is unacceptable.

Organisational Factors - The company felt strongly enough about this issue that they issued a Quality Notice to all staff to alert them to the importance of completing the technical log only after all work has been accomplished.

CHIRP Comment: This is a particularly dangerous trap when under pressure to prevent delays and while trying to get aircraft away on time. Clearly the organisation took the issue seriously and has taken steps to ensure all engineers are reminded of this important lesson. It is a cornerstone principle of continued airworthiness that work is only signed off after it has been completed; the signoff should then be done promptly to minimise the opportunity for other errors to occur.

ICAO

Airworthiness Panel Update

Dave Lewis
IFA Technical Support

History

On 12 February 1987, the ICAO Air Navigation Commission (ANC) agreed to the establishment of the Continuing Airworthiness Panel (CAP). On 8 June 2000, the ANC agreed to change the name of the panel to the Airworthiness Panel (AIRP). The AIRP, together with other specialist panels, undertakes specific studies, as approved by the ANC, with a view of advising the ANC on technically practical and operationally feasible ICAO provisions, as necessary, to meet the objectives specified in the work programme approved by the ANC.

Member States and international organisations can nominate members who are appointed as individual experts to assist the ANC in the resolution of technical issues for the benefit of all Member States. IFA has observer representation at the AIRP and contributes to the AIRP work programme by participation in working groups and sub-groups to develop and propose solutions to the ANC.

The Panel functions in accordance with the provisions of the ICAO *Directives for Panels of the Air Navigation Commission* (Doc 7984)

Current work programme

The current work programme of the AIRP comprises:

Safety management systems (SMS) for organizations responsible for aircraft type design or manufacture of engines and propellers

Approval and global recognition of approved maintenance organisations (AMOs)
Suspension and revocation of Type Certificate (TC)
Validity of Certificate of Airworthiness (TC suspended or revoked)
Design standards for light aircraft under 750 kg
Security sensitive airworthiness information
Electronic aircraft maintenance records (EMAR)

Annex 8 general amendments
The deliverables for the items may include proposed amendments to associated ICAO standards and recommended practices (SARPs) and/or supporting guidance information in ICAO Docs.

Additions to the work programme.

Member States and international organisations can submit proposals to ICAO for action in the form of working papers. ICAO held their Second High Level Safety Conference in Montreal from 2-5 February 2015 and a large number of working papers were considered during the proceedings. Future additions to the work programme for the AIRP are likely to arise from actions proposed in working papers submitted to this conference.

www.icao.int

High Level Safety Conference 2015

The Secretariat identified three themes for the conference and the working papers were allocated to the applicable theme.

The three themes identified were:

Theme 1: Reviewing the current situation

Topic 1.1: Achievements and remaining work
Topic 1.2: Emerging safety issues

Theme 2: Future approach to manage aviation safety

Topic 2.1: State safety programme
Topic 2.2: Safety information protection
Topic 2.3: Safety information sharing
Topic 2.4: Evolution of the Global Aviation Safety Plan

Theme 3: Facilitating increased regional cooperation

Topic 3.1: Effective and efficient regional collaboration

ICAO makes tracking standard recommendation

The ICAO recommendation is that aircraft report their position every 15 minutes during normal operations. This applies only to remote areas that are not covered by air traffic services surveillance.

The recommendation is the approach be performance-based, not prescriptive, so airlines can implement the tracking solution best - suited to their specific operational needs.

Taking account of events last year a significant emerging safety issue is to implement actions to address global flight tracking, coordination of search and rescue activities and operations in extreme meteorological conditions.

Full details of the ICAO Second High Level Safety Conference including the agenda, report and working papers are available at: http://www.icao.int/Meetings/HLSC2015/Documents/Reports/10046_en.pdf

Lithium Batteries

Questions over lithium battery transportation continue to be a challenge for air cargo.

Lithium metal batteries are now prohibited as cargo on passenger aircraft, although this does not apply to lithium metal batteries contained in equipment. Freighter aircraft are excluded from the prohibition due to the 'informed consent' priniciple. The logic is that cargo freighter pilots are trained to understand their cargo and have many options not available to passenger aircraft. They can depressurize or stay at a higher altitude where there is much less oxygen to fuel a fire, for example. But there are jurisdictional cracks. A shipment that is sent by road from China to Hong Kong before being loaded onto an aircraft is a case in point. Chinese regulations would apply only to road transport, while Hong Kong has no authority over a shipment originating in China. A framework for a harmonized global solution is already in place. IATA's Dangerous Goods Guidelines provides clear advice on packaging lithium metal batteries. If these guidelines are followed, there is no evidence that the batteries could cause a problem.

New ICAO Guidance for Environmental Assessment of ATM Changes.

In response to a growing need for ICAO Member States to measure environmental impacts (emissions, fuel consumption, noise, etc.) associated with operational air traffic management (ATM) changes in a globally harmonized compatible way, an ICAO technical committee of experts developed a new guidance document: Guidance on Environmental Assessment of Proposed Air Traffic Management Operational Changes, Doc 10031, published in May 2014.

IFA Scholarship

2014 was a bonus year in which two scholarships were awarded.

Mr Runar Sighvatssson, Airworthiness Inspector, Icelandic Transport Authority.

Runar works for the Icelandic Transport Authority. In April this year Runar achieved an MSc degree in Aircraft Maintenance Management with distinction undertaken at City University, London. Runar's final project at City University was to analyse "Difference between EU and US regulation regarding continuing airworthiness".

The Icelandic Transport Authority was delighted that Runar was awarded the scholarship and have fully co-operated with IFA in asking the FAA for an International Training Agreement to be arranged which allowed Runar to attend the FAA Air Carrier Continuing Analysis and Surveillance System (CASS) course which was held in February 2015 in Oklahoma City, USA.

In 2014 I was honoured by IFA with being awarded their annual scholarship. I was nominated by City University London for this scholarship following my MSc graduation in aircraft maintenance management. My final project at City University was to analyse the differences between regulations regarding continuing airworthiness for European air transport operator and US Part 121 air carrier. The reason for this study was to evaluate if Air Transport Agreement signed by EU and US which is aimed to remove market restrictions, ensure effective competition and bring former national bilateral agreements into conformity with EU law is a fair deal as the same rule regarding continuing airworthiness does not apply in EU and US. When I received the scholarship I immediately looked to FAA as my background lies in the European system as an airworthiness inspector for the Icelandic Transport Authority. I looked for training that would further broaden my understanding on airworthiness requirements for US air carrier. The training I selected and attended last February was "Air Carrier Continuing Analysis and Surveillance System" (CASS). This course is designed for US airworthiness inspectors who have direct air carrier certification and surveillance responsibilities under 14 CFR Parts 121 and 135 (10 or more).

This was a five day course taught at FAA training academy at Mike Monroney Aeronautical Centre in Oklahoma City. Another reason I selected this training was to look for further evidence to support findings from my final project.

Following are few examples of key findings in my final project that I got confirmed during my training in Oklahoma.

- Responsibility for maintenance is different. In US air carrier is responsible for all maintenance. Even if contracted maintenance organisation performs the work. While in Europe the maintenance organisation is responsible for any work it performs. This different view of responsibility has a big impact how airlines are managed when it comes to performance of maintenance and is likely to have more competitive advantage for European operator than US air carrier.

- In US air carrier does not need special approval to conduct maintenance as being maintenance entity is part of air carrier certificate. In Europe operator needs to apply specially for such approval. This on the other hand is more favourable for US air carrier.

- US air carrier can perform aircraft type training for its own employees who will receive authority to certify aircraft back to service after maintenance and decide how training should be. While in Europe such training needs to be done by EASA approved Part 147 training schools and the regulator lays down in the rule the duration and framework of such training. This is again more favourable for US air carrier.

- Requirements regarding management personnel are also different. US air carrier is required to have director

- aircraft back to service after maintenance and decide how training should be. While in Europe such training needs to be done by EASA approved Part 147 training schools and the regulator lays down in the rule the duration and framework of such training. This is again more favourable for US air carrier.

- Requirements regarding management personnel are also different. US air carrier is required to have director of maintenance and chief inspector. Chief inspector is responsible for performance of so called required inspection item (RII). Required inspection item is any maintenance that the operator has classified as critical and needs to be especially inspected before release to service. It is common that chief inspector reports directly to director of maintenance. If the air carrier chooses to have quality manager, which is likely but not mandatory, he will also report directly to director of maintenance.

- In Europe the requirement is to have accountable manager which has the financial responsibility. As well as nominated person responsible for continuing airworthiness which reports directly to the accountable manager and a quality manager who also reports directly to the accountable manager. Quality manager is therefore independent from the director of maintenance and should not be involved in day to day activities of maintenance. Ultimate responsibility for continuing airworthiness lies with the accountable manager and not director of maintenance.

At last I would like to mention interesting thing that I learned in Oklahoma and applies to any rule in US. That is so called "Paperwork Reduction Act of 1980". This is a federal law designed to reduce the total amount of paperwork burden the federal government imposes on private businesses and citizens.

This act imposes a number of procedural requirements on an agency that wishes to implement a reporting or recordkeeping requirement on the public. For example:

The agency must determine a specific objective met by the collection of information, develop a plan for use of the information, and in some cases test the collection method through a pilot program.

Mandates that all federal government agencies receive approval from Office of Management and Budget in the form of a "control number" before promulgating a paper form, website, survey or electronic submission that will impose an information collection burden on the general public.

Organisation like air carrier falls under the definition as general public and this act does restrict FAA when it comes to rule making.

Ms Margo Marchbank, Section Head Safety Promotion Communication and Managing Editor 'Flight Safety Australia', Civil Aviation Safety Authority

Margo was delighted to be awarded the scholarship and used her portion of the fund to attend the Airline Engineering and Maintenance Safety Conference held in London in July 2014.

My objective in attending the conference was to gain a clearer understanding of the rate and level of SMS implementation in European maintenance organisations/airlines, and to use that knowledge to inform work I am doing on communicating about SMS to industry, and in particular, updating the SMS resource kit our safety promotion area produced in 2012. We have broadened the scope of the kit, and included two video dramas, which we are describing as From SOS to SMS, so while we are in the process of finalising the updates, it was helpful to see what is happening in other jurisdictions. (For details of the current kit, go to: www.casa.gov.au/sms)

The conference provided some good perspectives on progress of SMS/HF implementation in the airlines represented. There were especially good presentations by:

- Jorge Leite VP Quality and Safety from TAP Portugal Maintenance and Engineering on the implementation of their SMS, giving valuable insight into the challenges even a large airline faces in driving

change, and the innovative safety promotion methods TAP adopted. This included establishing an internal TV station – iGo Safety – dedicated to raising awareness of safety reporting, which led to 210 new items in the risk register.

- Phillip Sproul Manager Quality and Safety, Technical Operations from Air New Zealand on HF training and implementation. Particularly pleasing were the very positive comments he made in his presentation about the usefulness and quality of the Safety Behaviours; Human Factors for Engineers kit CASA's Safety Promotion and Standards branches produced.

- Derek Gibson, Compliance and Service Delivery Director, Monarch Aircraft Engineering spoke on the human aspects of SMS and employee engagement. He outlined the program Monarch has introduced: MSAVI – Monarch standards and values information, which aims to involve all employees in their SMS through innovative communication and training. He gave examples of how Monarch's intranet 'MNET' is organised with readily accessible SMS information, such as reporting forms; audit reports; and quality information bulletins. These bulletins are posted online, but also displayed in prominent company locations such as on toilet walls, where there is a 'captive' audience. An audit of awareness of key safety issues targeted - 'the significant six' – shows the MSAVI approach is working, with a 94-99 per cent average score on completion of checklists and awareness of MSAVI topics.

- Keven Baines, Managing Director UK aviation safety training organisation Baines Simmons, who gave a very passionate, knowledgeable and highly engaging presentation on 'just culture'. He defined it as one which 'recognises that competent professionals make mistakes and acknowledges that even competent professionals will develop unhealthy norms, but does not tolerate reckless behaviour'.

Information from these sessions will inform further development of CASA safety promotion/standards SMS material, including the update of the SMS resource kit and web pages. It will also be useful in developing an SMS seminar series planned for smaller aviation organisations (charter, maintenance and flying training) in early 2015 to reinforce the availability of the revised SMS tool kit, and guide them in implementing an SMS.

The opportunity to meet with Keven Baines, and talk SMS and HF with him was very useful – we worked with their Australasian personnel in developing the Safety Behaviours: Human Factors for Engineers (www.casa.gov.au/hf) kit.

However, I would have liked to have seen less generic information on SMS (many presenters spent too much of their presentation time outlining the elements of an SMS, in other words 'SMS 101') and more on the specific activities and challenges of the various organisations–how they dealt with these.

There were some lost opportunities too, I felt, with the panel discussions, of which there were three on the agenda:

- Looking to management: Who is dealing with the 'bigger picture'?
- Spotlight on technology: Maximising safety through innovation
- Exploring the training culture of today's airlines

Panels one and three were not well coordinated, and lacked a cohesive train of argument (more a product of the conference organiser's briefing and chairing than any lack of panel members' expertise); panel two was a sales pitch for the respective software, rather than being an objective look at how innovative technology can drive safety. It would have been more beneficial to see how technology is being harnessed, for example, to make the copious and ever-expanding maintenance manuals more accessible and user-friendly to minimise maintenance error following poor communication/poorly structured documentation.

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'Excellent! Good topics, well worth attending the event'
Head of Ferry Flight Services, CAE Parc Aviation

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