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STANDARDIZATION AND BUSINESS DEVELOPMENT: THE GLOBAL IMPACT OF THE IOSA STANDARDS AND THE VALUE OF ANTICIPATION

David Hodgkinson

Abstract

The IATA Operational Safety Audit (IOSA) programme consists of standards against which the operational, management and control systems of an airline are assessed. Developed between 2001 and 2003 as a result of collaboration between disparate aviation industry stakeholders, IOSA is having a global impact on airline safety standards.

In developing the IOSA standards and an audit programme for assessing conformity with those standards, the industry stakeholders responsible for IOSA anticipated change and regulatory action. They steered the process of change, shaped the standards and engaged with regulatory authorities. In so doing, the development and use of the IOSA standards has had a significant economic, business and social impact on the airline industry and the travelling public at a critical time. IOSA demonstrates what this paper refers to as the value of anticipation, and it has application beyond the airline industry.

The strategies utilised in the IOSA standards development process and its unique and innovative features, given the programme's success in terms of addressing particular social concerns, reducing costs and facilitating business, also have implications for other industries and for standards development generally.

This case study of IOSA examines the impetus for the programme and its standards development process. It then analyses the economic, business and social impact of the development and use of the IOSA standards, with a focus on the linkages between standardization and business development. The paper concludes with some of the implications and applications of the IOSA standards, programme and process.

1. Introduction

Worldwide trade liberalization has resulted in business being exposed to many of the same technological, economic and social pressures and influences. Such liberalization and "the integration of economic activities across borders, through markets"[1] – economic globalization – has meant that the link between business development and standards is ever more significant.

Globalisation, whether technological, economic or social, depends on aviation. Yet international aviation itself has long been one of the most highly regulated and protected industries. International air services, whether passenger or cargo, can only be operated, and traffic rights exchanged, through government-to-government air services agreements or treaties. These agreements are increasingly being liberalized, however, with the removal of many restraints on the ability of airlines to run international air services.

From 2001 to 2003 a revolution took place in the development and use of international aviation safety standards and conformity assessment. With impetus coming from increasing liberalization of international air services and a proliferation of airline safety audits as airlines increasingly code-shared to take account of new business opportunities, a new, unique international audit standard, the IATA Operational Safety Audit (IOSA), was created.

Under the stewardship of the International Air Transport Association (IATA),[2] disparate stakeholders, working within a collaborative and innovative framework, and in a short two year period, produced IOSA standards and recommended practices. These groups produced a framework in which airline safety audits under the IOSA process could be performed worldwide.

There is a clear link between the IOSA standards and development of airline business; indeed, part of the rationale for development of IOSA was to reduce airline costs and facilitate code-sharing between airlines. The development process of the IOSA standards, the standards themselves and the framework within which conformity assessment against those standards takes place, however, all have wider implications for, and application to, business beyond the aviation industry. This is so in addition to an indirect implication: standards which affect the global airline business, given its nature, also affect the global economy.

This paper - a case study - considers the economic, business and social impact of the development and use of the IOSA standards for two sets of end-users: the airline industry and airline passengers. In so doing it examines the connection between standards and business development, with specific reference to electronic standardization.

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1 Martin Wolf, *Why Globalization Works* (New Haven, Yale University Press, 2004), p 14.

2 The organisation of the word's scheduled international airlines.

2. The IATA Operational Safety Audit

Under the IOSA programme IATA accredits Audit Organizations (AOs) to provide audit services pursuant to an accreditation agreement. AOs and their teams of auditors then conduct audits to determine the level of conformity with IOSA standards and recommended practices (ISARPs). Such audits are conducted pursuant to an audit agreement made between the relevant AO, the auditee airline, and IATA. After audit closure, the AO submits the audit report to IATA. The audit report is entered in an IOSA database so that an interested party can utilize the audit of the relevant airline, conducted by a third party under IOSA, to satisfy its own requirement for an audit of that same airline. IATA then enters the name of the airline on the online IOSA registry; the IOSA registry displays the airline as an "IOSA Operator." Registration as an IOSA Operator is valid for a period of 24 months.

3. Impetus for IOSA

The impetus for development of the IOSA programme came from an increase in the number and cost of safety audits. In 2001 it was noted that "over 70,000 audits are performed, costing in excess of $3 billion worldwide," and that such audits overlapped in terms of content and intent.[3] As liberalization of air services and opportunities for growth increased, so too did the practice of code sharing, whereby the designator code of one airline is included on flights operated by another airline.

Indeed, exacerbating matters were US Department of Transportation (DOT) and Federal Aviation Administration (FAA) code-share audit guidelines[4] that called for US carriers to undertake periodic safety audits of their foreign code-share partners. The Air Transport Association (ATA) and the US Department of Defence (DOD) also announced safety and operational reviews of certain non-US airlines, the costs of the reviews to be borne by the airlines.

This proliferation of audits was impliedly recognised by the FAA when it announced in 2004 that US airlines would not have to undertake an audit of each prospective code-share partners if such partner airline had been audited under the IOSA programme.[5]

Other problems attended airline audits in addition to their number and cost. These included redundant and overlapping audits, no common audit standards, no defined auditor qualifications, uneven audit results and no audit sharing. The IOSA Advisory Group (IAG), established to provide oversight of the development and implementation of IOSA, was of the view that benefits accruing to industry as a result of the programme

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3 David Learmount, "New IATA audit system will improve safety and cut cost," (2001) 159 *Flight International*, No 4783, p 14.

4 US Department of Transportation, "Secretary Slater Outlines Steps To Assure Safety of Code-Share Flight," *News*, 6 December 1999; Department of Transportation, *Code-share Safety Program Guidelines* (Washington, DC, Department of Transportation, 2000).

5 Federal Aviation Administration, "FAA Recognizes International Safety Audit Program," *Press Release*, 2 July 2004.

would include the establishment of an international operational audit standard, accredited and certified auditors, elimination of audit redundancy, a reduction of audit costs and an improvement in safety through performance standards.[6]

4. IOSA standards development process

With a mandate from the IATA Board of Governors to "identify opportunities to standardise, harmonise and rationalise existing airline audits and auditing standards,"[7] IATA, its advisory group of airlines, regulatory authorities, industry organizations and task forces commenced a work schedule in 2001 which involved drafting a set of audit standards and recommended practices. The IAG provided oversight of this work schedule and implementation of the IOSA programme.

The terms of reference of the IAG provided that, in addition to IATA member airline membership, membership of the IAG should

> involve all main airline global alliance groups, the main national and regional airline associations, representative international and national regulatory authorities and include a wide range of safety management, quality assurance and other specialist auditing skills.[8]

The IAG's airline membership was geographically balanced; no airline or airline alliance was dominant, either regionally or otherwise. Membership also comprised individuals from IATA management and the IOSA project manager.

In terms of representative regulatory authorities, membership of the IAG included the International Civil Aviation Organization (the specialized UN aviation agency), the FAA, the Australian Civil Aviation Safety Authority and Transport Canada. The US DOD was also a member. Non-member participants included the now European Aviation Safety Agency. A number of invited industry groups also participated, such as the Flight Safety Foundation, with whom IATA consulted prior to the development of the IOSA programme. It consulted additionally with ICAO and major safety regulators.

Twelve IOSA task forces were created, again operating under IATA terms of reference, directed and supervised by the IAG. Each task force consisted primarily of suitably qualified airline representatives and regulatory authorities. The task forces contributed to the establishment of the IOSA standards, associated auditor checklists and guidance material, with the goal being "a mutually accepted uniform audit standard, which will enable airlines to share audit results in order to achieve maximum efficiency, whilst

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6 Jim Anderson, "IATA Operational Safety Audit (IOSA)," Presentation to IOSA Legal Task Force, 24 June 2002, London.

7 International Air Transport Association, *Terms of Reference: IATA Operational Safety Audit (IOSA) Advisory Group (IAG)* (International Air Transport Association, Montreal, 2001), p 1.

8 *Supra*, p 2.

maintaining high safety standards."[9] The IAG integrated the work output of the IOSA task forces into a comprehensive IOSA Standards Manual.

ICAO standards and recommended practices were used as a basis for those of IOSA. It should be noted that the Chicago Convention, which includes the constitution of ICAO, provides that ICAO "shall adopt and amend from time to time … international standards and recommended practices and procedures …."[10] However, contracting States are not obliged to adhere to or implement such standards and recommended practices,[11] the non-mandatory nature of the Chicago Convention's standards has been criticized by a number of writers.[12] While the ICAO standards and recommended practices were used as a basis for those of IOSA, an awareness of some of the issues attending the ICAO standards and recommended practices, then, informed the development of the IOSA programme, particularly in terms of consistency and standardization. In the event, the IOSA standards meet or exceed both those of ICAO and the minimum standards required by the most demanding aviation safety programmes.

The starting point for the development of the IOSA standards and recommended practices was the ATA's "Codeshare Operational Review Standards."[13] However, other relevant government and more demanding regulatory authority requirements were considered, together with standards and processes from other industries and disciplines. In addition to ICAO, the ATA and the DOD, material and ideas gleaned from the ISO, the US National Institute of Automotive Service Excellence (standards for the certification of providers of continuing automotive service education [CASE]), the Society of Automotive Engineers International (SAE), the American National Standards Institute (ANSI) and the American Society for Quality, amongst others, were also considered. Where necessary, copyright permissions were obtained.

A total of eight IAG meetings were held between 2001 and the inauguration of the IOSA programme in 2003. During that same time 8 "operations" task forces met at dates determined by each task force, and each task force duly reported progress at each IAG meeting. Much of the work of the IAG and of the task forces was undertaken electronically. In the order in which they appear in the IOSA Standards Manual (ISM)[14]

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9 International Air Transport Association, *Terms of Reference: IATA Operational Safety Audit (IOSA) Task Force (ITF)* (Montreal, International Air Transport Association, 2001), p 6.

10 *Convention on International Civil Aviation*, 7 December 1944, 15 UNTS 295, ICAO Doc 7300/6, Article 37, "Adoption of international standards and procedures."

11 *Supra*, Article 38, "Departures from international standards and procedures."

12 M Milde, "Problems of Safety Oversight: Enforcement of ICAO Standards," in Cheng (ed), *The Use of Air Space and Outer Space: Cooperation and Competition*, Proceedings of the International Symposium on the Use of the Air and Outer Space at the Service of World Peace and Prosperity (Beijing, 1995), pp 252-272; R D Margo, "Kicking and Screaming into the Twenty-First Century: A Practitioner's Prescription for Updating the Chicago Convention," (1995) 20 *Air & Space Law*, No 1, pp 54 and 60.

13 Air Transport Association of America, *Codeshare Operational Review Standards* (Washington, DC, Air Transport Association of America, 2000).

14 International Air Transport Association, *IOSA Standards Manual* (Montreal, International Air Transport Association, 2003).

the task forces created IOSA standards and recommended practices in the following categories: (a) Corporate Organization and Management System; (b) Flight Operations; (c) Operational Control – Flight Dispatch; (d) Aircraft Engineering and Maintenance; (e) Cabin Operations; (f) Aircraft Ground Handling; (g) Cargo Operations; and (g) Operational Security.

Additionally, four other task forces convened during the above period. One of these, the Data Management Task Force, designed a data management system "to support and facilitate audit sharing, and to ensure the security and confidentiality of the information that results from audits conducted under IOSA." As section 6.0 of the IOSA Programme Manual (IPM) states, "[s]haring of audits is a fundamental element of IOSA and effective data management is essential for achieving successful audit sharing."[15]

The IOSA documentation consists of the IPM, the ISM and the IOSA Auditor Handbook (IAH). The IPM contains standards[16] that govern all aspects of the IOSA programme for the purpose of ensuring "that each audit is conducted in a standardized manner to achieve consistent results."[17] The standards contained in the IPM apply to AOs, Operators and IATA. Sections of the IPM provide standards in relation to accreditation of AOs, IOSA registration, auditor qualification, auditor training, the audit programme (the conduct of an audit), data management (including ongoing standards change management and standards review), audit sharing, IOSA programme administration and dispute resolution.

The ISM contains all of the IOSA ISARPs. As the ISM makes clear, during an audit, an Operator is assessed against the ISARPs as set out in the ISM. Compliance is determined by the extent to which specifications are documented and implemented by the Operator. Part Two of the ISM contains the IOSA Guidance Material (IGM). The purpose of the IGM is to promote uniformity in interpretation of the ISARPs for both Operators and auditors. While standards and conformity assessment are separate matters, they are, of course, integral to each other. While the focus here is on standards, conformity assessment is key.

Finally, in terms of documentation, the IAH provides guidance to auditors carrying out audits so as to ensure a high level of standardization and consistency during the conduct of such audits, "to achieve the highest level of standardization in terms of auditor competency and the application of IOSA Standards."[18]

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15 International Air Transport Association, *IOSA Programme Manual*, 2nd ed (Montreal, International Air Transport Association, 2004), p 6-1.

16 The use of "standards" here in the context of the IOSA programme should not be confused with the "standards" which form part of IOSA standards and recommended practices (ISARPs). Standards in this latter context are those that are considered an operational necessity and with which a potential IOSA Operator will be expected to be in conformity at the end of an audit in ordered to be registered as an Operator.

17 International Air Transport Association, *supra*, note 15, p vii.

18 International Air Transport Association, *IOSA Auditor Handbook* (Montreal, International Air Transport Association, 2004), p ix.

The development of the IOSA project consisted of four phases: Establishment of standards, together with associated guidance material; development of the IOSA programme and procedures; transition of the IOSA project to the IOSA programme and trial implementation; and industry recognition and acceptance.

The first AO was accredited in August 2003 and eight AOs have been accredited thus far. There are currently 111 IATA Operators listed on the IOSA registry.[19] At the beginning of June 2006, 246 airlines, 80% of scheduled international air traffic, were in the IOSA process.[20] IATA's Board of Governors has resolved to make an IOSA audit mandatory for current IATA members and a condition for IATA membership.[21] Thus, by 2007, all current IATA members will need to have successfully undergone an IOSA audit.[22]

5. The economic, business and social impact of the development and use of the IOSA standards for end-users

There are two sets of end users with regard to the IOSA standards: airlines, who are assessed against the standards and who benefit from increased business development and opportunities through IOSA programme implementation, and passengers, who benefit from enhanced safety and who may come to rely on the standards.

5.1 Business development

Impetus for the development of the IOSA standards came from increasing financial costs associated with a proliferation of safety audits, specifically audits of proposed airline code share partners. Prior to the implementation of IOSA such audit standards were often inconsistent and variable, and the results uneven. Audits were redundant and overlapped. The costs to the airline industry were high not only because of the number of such audits but also because of the inefficiencies associated with the standards themselves and conformity assessment.

In collaborating on the development of the IOSA standards and a framework for conformity assessment, international airlines together with regulatory authorities and industry organisations created standards (and an audit programme) that enabled airline business opportunities to be taken up. Through use and application of the IOSA standards and audit sharing, costs were significantly reduced and, through facilitation of code sharing and the opening up of new markets as a result of air services liberalization,

19 http://www.iata.org/ps/services/iosa/registry.htm (accessed 29 August 2006).

20 IATA, "IOSA: Government Acceptance Grows as Safety Audit Becomes a Condition for Membership," *Press Releases*, 6 June 2006: http://www.iata.org/pressroom/pr/2006-06-06-01.htm (accessed 29 August 2006).

21 Jens Flottau, "Safety Targets," *Aviation Week & Space Technology*, 9 January 2006, p 37; David Learmount, "Safety," *Flight International*, 3-9 January 2006, p 27.

22 IATA, *supra*, note 19.

business was and is created and developed. Standards and business development are linked.[23]

Indeed, international traffic data for May 2006 released by IATA on 30 June 2006 shows 7% growth in passenger demand and 5.1% growth for freight over the same period in 2005.[24] Airbus' most recent assessment is that global air passenger traffic will average growth of 5.3% per year over the period 2004-2023;[25] other forecasts predict twice as much air traffic in 2020 as exists today.[26] Boeing states that just over 27,000 new aircraft will be delivered over the next 20 years (more than doubling the current worldwide fleet of aircraft) for a total value of USD 2.6 trillion.[27]

Changing regulatory regimes are facilitating this growth; competition increases in response to liberalization. Increasing liberalization of international air services is taking place in key global markets. Such liberalization will accelerate given the clear causal link between liberalization, traffic growth and economic development.[28]

This leads to a more obvious point: The improvement in safety through performance standards which the IOSA standards represents leads to a safer and more secure flying environment which, in turn, encourages people to fly. Indeed, the aviation industry accident rate in 2005 was 0.76 per million flights, the best rate ever achieved. Among IATA members the rate was 0.35.[29] This point is taken up again later in the paper.

5.2 Anticipation

In developing the IOSA standards and an audit for assessing conformity with those standards, and in addressing the myriad of problems which attended airline safety audits, the coalition of airlines referred to above took a proactive stance. Ahead of inevitable collective State regulatory action at some point to address these problems (almost certainly through ICAO, itself attended by previously identified problems), a wide coalition of airlines, co-opting and engaging with regulatory authorities, itself anticipated

23 See Laura E Hitchcock, "Standards during times of change: aerospace strategies for keeping standards and business linked," *ISO Bulletin*, April 2003, pp 14-19.

24 IATA, "Economic growth reflected in strong passenger and freight demand 30 June, 2006," *Press Releases*, 30 June 2006: http://www.iata.org/pressroom/pr/2006-06-30-02.htm (last accessed 29 August 2006).

25 Airbus, *Global Market Forecast 2004-2023*, p 10: http://www.airbus.com/store/mm_repository/pdf/att00003033/media_object_GMF2004_full_issue.pdf (last accessed 29 August 2006).

26 John Hayhurst, Boeing, June 2003 cited in bmi, *20:20 – A Review of 20 years of deregulation in European Aviation*: http://www.flybmi.com/downloads/bmi/2020Reportfinal.pdf (last accessed 29 August 2006).

27 Boeing, *2006 Current Market Outlook*: http://boeing.com/commercial/cmo/highlights.html (last accessed 29 August 2006).

28 See Inter*VISTAS*-ga2 Consulting, Inc, *The Economic Impact of Air Service Liberalization* (Washington, DC, Inter*VISTAS*-ga2 Consulting, Inc, 2006), p ES-6.

29 IATA, "Giant Steps for Aviation Safety: Chile First to Announce IOSA in National Regulation - IATA and ICAO Agree to Share Information," *Press Releases*, 29 March 2006: http://www.iata.org/pressroom/pr/2006-03-29-01.htm (last accessed 29 August 2006).

such action. It steered the process of change, shaped the standards and engaged with regulatory authorities; it self-regulated. In so doing, significant business advantages accrued to the airlines: predictability, certainty rather than uncertainty, and focus – thus, what is called here the value of anticipation.

A proactive policy is more likely to focus the managerial capacity of corporations on constructive policy initiatives, as IOSA illustrates. Other advantages of a proactive policy stance, taking action and being seen to take action, include enhanced profitability and positive public relations implications. This applies particularly with regard to safety and security matters in the current aviation environment.

Anticipation of changes in regulatory policy, taking action before being required to do so and anticipating future risks and opportunities makes good business sense.

In anticipating regulatory change and in developing the IOSA standards, airlines moved ahead of governments with attendant business and social impact. The value for airlines of such anticipation is now reinforced when one considers that States in 2006 are either changing or considering changing their regulations so as to make IOSA a requirement for Air Operator Certificate (AOC) applications – that is, IOSA would be a requirement for airline operators. Chile and Egypt have so changed their regulations;[30] States such as Jordan, Turkey and Mexico are working with IATA to incorporate IOSA into their respective certification processes.[31] And the FAA also recognises IOSA.

5.3 Social impact

The IOSA programme is affecting the development of States' airline safety standards. It represents a set of standardized and consistent airline safety audit standards which draws upon, and either meets or exceeds, ICAO standards and recommended practices and ATA standards, together with airline "best practices" and requirements of regulatory authorities around the world. Taken together, these elements result in a unique set of standards. Because of its scope and effectiveness, it provides a model and substance against which State airline safety standards can be measured, and those standards subsequently amended as a result at the national and international levels.

States and State agencies have approached IATA "on using the IOSA as a tool in improving the standards of airlines in their countries."[32] Further,

> most signs indicate that what state regulators can do to improve safety in developed economies is limited, and higher standards will be driven more by industry self-regulation – like IATA's IOSA – and technological improvements that have always been a major factor in raising the safety and reliability bar.[33]

30 IATA, *supra*, note 20.
31 IATA, *supra*, note 29.
32 Learmount, *supra*, note 21.
33 *Supra*.

There have always been social concerns about airline safety. In the current political and security environments they are greater than ever. As McKinsey notes,

> [t]he most successful companies see beyond competitive rivalries and look for collaborative ways to both meet social concerns and to find new ways for industries to create value. The difficulty is knowing when to work with others and when to go it alone.[34]

The IOSA collaborative framework has been outlined above. And implementation of the IOSA standards has been global; 80% of international air traffic is in the IOSA process. The impact of the IOSA programme has also been global in terms of safety and addressing passenger safety concerns. For example, in Africa the risk to passengers flying on African airlines is 17% greater than on North American carriers.[35] As a result, IATA's Partnership for Safety initiative, which consists of seminars conducted on a regional basis, primarily in developing areas of the world, was first rolled out in Africa. It provides "a baseline assessment of operational capabilities that will lead to the identification of measures needed to reach the IOSA standard."[36]

One new way to create value and address safety concerns is the manner in which the IOSA safety regime is transparent to the travelling public. Standards are accessible online,[37] as are those organisations accredited as AOs.[38] Also accessible online is the IOSA Registry, which lists those airlines that have achieved the status of "IATA Operator,"[39] in part as a "resource for travellers to help evaluate airlines."[40] Passengers, then, as end users, can choose to rely on IOSA.

5.4 Technology

The short, two-year IOSA standards development cycle was possible in part because much of the work of the IAG and the IOSA task forces, including meetings, was undertaken electronically. The development process was not a paper-based one; drafts, for example, were shared electronically. Moreover, there was often coordination of drafts and establishment of consensus in real-time.

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34 Sheila M J Bonini et al, "When social issues become strategic," *The McKinsey Quarterly*, No 2, 2006.

35 David Learmount, "Crash highlights IATA safety drive," *Flight International*, 20 December 2005 - 2 January 2006, p 9.

36 IATA, "IATA Focuses on Africa with Safety Initiatives," *Press Releases*, 31 May 2005: http://www.iata.org/pressroom/pr/2005-05-31-02.htm (accessed 29 August 2006).

37 http://www.iata.org/ps/services/iosa/index.htm (accessed 29 August 2006).

38 http://www.iata.org/ps/services/iosa/accreditation.htm (accessed 29 August 2006).

39 http://www.iata.org/ps/services/iosa/registry.htm (accessed 29 August 2006).

40 Scott McCartney, "Researching Your Airline's Safety Record," *The Wall Street Journal*, 6 September 2005.

Reflecting its development, the core elements of the IOSA programme – audit sharing, maintenance of the IOSA database (the system repository for IOSA audit reports) and access by an interested party to an IOSA audit report – are facilitated by electronic means. Moreover, again, IOSA standards and IOSA Registry and Operator details are available online.

Most importantly, in terms of electronic standardization, the next generation of IOSA standards will contain a requirement that an IOSA Operator have monitoring and control processes that are applicable to all external organisations that (a) conduct outsourced operational functions; and (b) are suppliers of products that have the potential to affect operational safety or security outcomes. This latter category includes products such as navigation data bases, flight planning software and other similar operational electronic programmes. The IOSA standards will be consistent with Chicago Convention Annex 6, 7.4.1, directed at electronic navigation products, whereby contracting States must ensure that operators have

> procedures for ensuring that the process applied (for application of the product in the air and on the ground) and the products delivered have met acceptable standards of integrity and that the products are compatible with the intended function of the equipment that will use them.

Ultimately these standards should lead to accreditation of suppliers of critical operational electronic data products and, equally as important, ensuring that operators only purchase such products from such suppliers as are accredited.

6. The value of anticipation and economic growth

The IOSA standards - borne of a coalition that moved ahead of governments, took a proactive stance and steered the process of standards development - may well do more to improve safety, particularly in developing countries, than government regulations. Indeed, governments are incorporating IOSA into their certification processes and using IATA as a tool to raise airline safety standards. Put another way, governments have followed.

The development of global aviation safety audit standards[41] has been facilitated by the IOSA programme; "[g]lobal standards and regulations are critical to the efficient operation of the global aviation system and international markets."[42]

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41 A "global standard" can be defined as one that is globally recognised ("all stakeholders around the world acknowledge its technical accuracy and relevance"), globally accepted ("regulatory agencies and customers around the world recognize the standard as meeting the applicable requirements") and globally used ("all stakeholders use the standard"): The Future of Aerospace Standardization Working Group, Aerospace Industries Association of America, Inc, *The Future of Aerospace Standardization*, January 2005: http://www.aia-aerospace.org/library/reports/aerospace_standardization0105.pdf#search=%22future%20of%20aerospace%20standardization%22 (last accessed 30 August 2006).

The business and social impact of the development and use of the IOSA standards for two sets of end-users, airlines and their passengers, has been significant. IOSA has enabled airline business growth and opportunities to be taken up; global international air services liberalization has led to traffic growth and economic development. IOSA has also met industry and social concerns about international airline safety (and security), concerns exacerbated by terror attacks and aviation accidents since 2001, and at a time of international air services liberalization.

Given this, development of the IOSA standards may be instructive for other industries which, like that of aviation, are global in scope and critical to global economic growth, and for standards development generally. In particular, the success of IOSA demonstrates the value of anticipation, of taking action before being required to do so and of looking ahead to future risks and opportunities. It makes good business sense.

Further, the IOSA standards development process utilised a number of strategies and contained a number of unique and innovative features which, when taken together, may also be instructive. These include (a) a bold decision to create a new international standards system, and to provide a single forum for its development and for post implementation matters such that standards can continue to evolve and be refined; (b) a transparent development process with standards, programme documentation and the registration status of those airlines audited under IOSA freely available online; (c) input from disparate categories of industry stakeholders, many of them competitors; (d) a short standards development cycle, characterised by an often electronic development process and fast response times; and (e) creation of a collaborative framework involving teams (task forces) to facilitate the standards development process, such teams often linked and with cross-membership.

Finally, taken together, these aspects of the IOSA standards process may be of assistance for industries seeking to address current issues of global economic and other concern – climate change, for example. Diamond has asked whether business "has the courage to practice long-term thinking, and to make bold … anticipatory decisions at a time when problems have become perceptible but before they have reached crisis proportions."[43] IOSA demonstrates that long-term, anticipatory and innovative thinking, practiced by coalitions made up of disparate parties and moving quickly, can have a significant economic, business and social impact. And in developing solutions – in developing standards – business can move ahead of and push governments.

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42 Commission on the Future of the United States Aerospace Industry, *Final Report of the Commission on the Future of the United States Aerospace Industry*, 2002, p xiii: http://www.ita.doc.gov/td/aerospace/aerospacecommission/AeroCommissionFinalReport.pdf (last accessed 29 August 2006).

43 Jared Diamond, *Collapse: How Societies Choose to Fail or Succeed* (New York, Viking, 2005), p 522.