IOSA

Digital Transformation

Strategic Paper

IATA IOSA
IATA Operational Safety Audit

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1. Background and Business Need

1.1 IOSA Program

Since the first IOSA Audit in 2003, the IOSA program operation, participation and recognition has grown steadily. The growth in output paired with an increase in program complexity confronts the IOSA program with challenges of effectiveness and efficiency. These challenges represent an integrity risk to the program that may lead to inaccurate information, uninformed decision-making, cost inefficiencies to comply and inconsistent outcomes.

IOSA has to evolve and innovate to respond to the industry's changing needs for the coming decades. The emerging digital technologies need to be explored and leveraged to build the foundations for a pertinent and scalable IOSA platform. Such platform will carry the potential to benefit existing Audit Programs such as ISAGO as well and would be expanded to accommodate those.

1.2 Industry

Through industry trends such as outsourcing, the airlines have an increasing need to effectively exchange information about, and to monitor each other's compliance with international standards. IATA must facilitate this information exchange through a secure and effective collaboration platform that is flexible enough to accommodate future evolutions. Additionally, the fast pace of change in the industry necessitate agile audit programs that can adapt its standards and program management.

The program has increasingly attracted regulators worldwide to complement their oversight activities with IOSA. The ICAO Assembly has supported this trend by recognizing IOSA's benefit to global safety. The FAA re-iterated its confidence in the IOSA program and expressed its support for the benefits that a digitalization will bring. EASA has assessed the IOSA Program to verify compliance of IOSA registered operators with applicable ICAO standards for the purposes of code-share agreements and Third Country Operator (TCO) Authorization in accordance with EU regulations. The assessment also included the verification of the IOSA IT infrastructure. IATA's aim to assist regulators in relying on IOSA can only be sustainable if these are provided with valuable and reliable information.

Initiatives and suggestions such as a risk-based auditing of operators which can sustainably meet the industry's needs for efficiencies, and at the same time ensure integrity of the audit process can only be accomplished if the IOSA Program reaches a digital maturity that allows for such leap in the auditing concept.

1.3 Program Oversight

The initial IOSA program design necessitated a Quality Assurance Program and a Quality Control process capable to monitor the program performance within the limits of such program which had a low complexity.

This need to evolve and innovate also spans the IOSA Quality Assurance Program, the Quality Control processes and the Performance Monitoring Program. A solid, data-driven and risk-based oversight that is designed to assess the conformance with the IOSA program requirements and the

audit effectiveness will support continuous improvement, measurement, and performance monitoring of the IOSA program providers.

The use of digital technology in the Quality Assurance program, whilst primarily to ensure the integrity of the IOSA programs will also, over time, benefit developing the appropriate oversight for the ISAGO and ISSA programs.

1.4 Vision

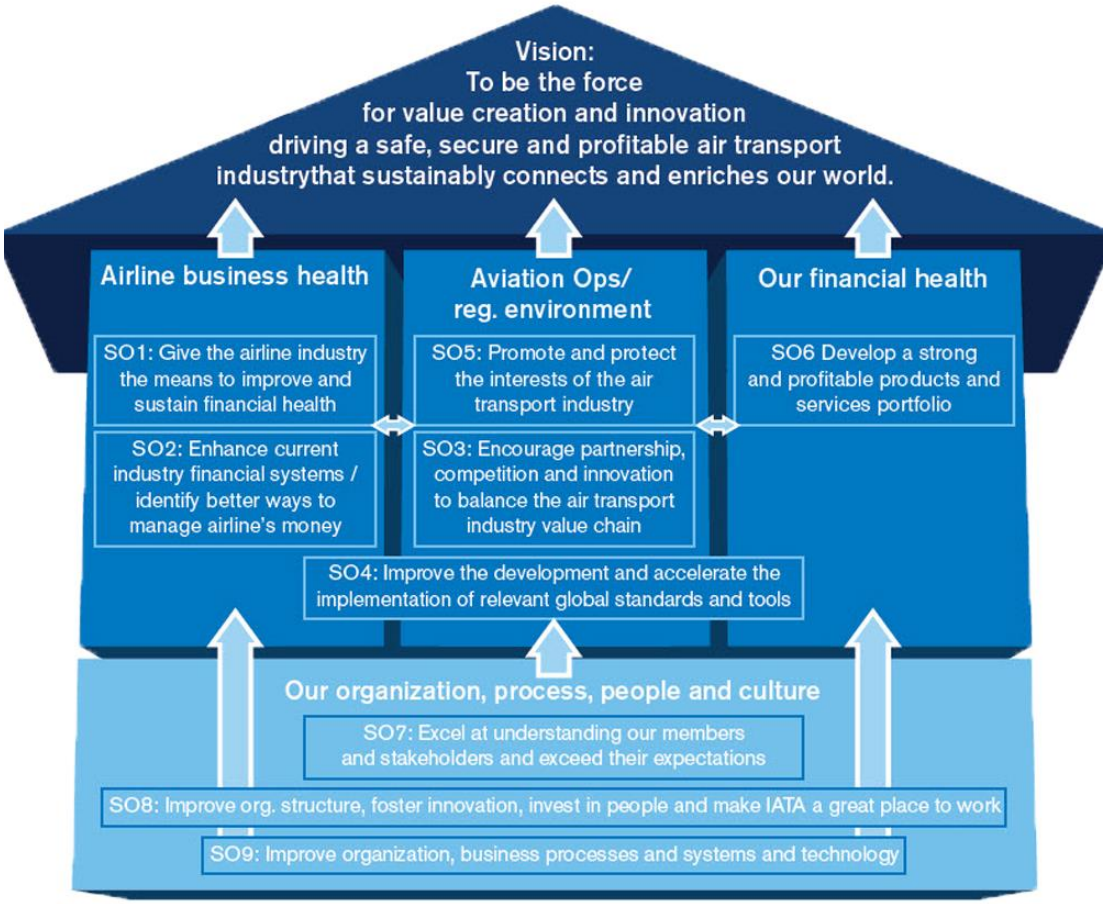

Figure 1 IATA's Strategic House

The digital transformation of the IOSA program is based on IATA's vision and strategic house. It serves the objective of "Aviation operations and regulatory environment". An improved and innovative IOSA program and program oversight will support the strategic objectives under SO4 and SO9.

Figure 2 IOSA Vision

Digitalizing the program is fully aligned with the IOSA vision and its strategic pillars of driving safety, effectiveness and integrity.

2. The Three Pillars of Digital Transformation

The digital strategy is based on three pillars:

- Data Management Approach
- IOSA as Collaboration Platform
- Digital Re-mastering of the Audit Program Processes

2.1 Advanced Data Management Approach

The IOSA Program performance has been achieved to date with very basic data and which was unable to drive the needed program support.

The existing data collection and analysis capacity is very limited and does not provide the needed support in various areas of the audit programs.

Enhancement of IOSA data management capabilities is a fundamental and mandatory prerequisite for enabling digital transformation and ensure the program's sustainability. The main capabilities that program must invest in urgently are:

Data Governance and Data Quality Management – Deploy a data quality framework and implement proactive management of data quality. Alignment of business processes and data governance processes to manage critical and confidential organizational data and allow for easier integration of the IOSA data with other industry data for advanced analysis.

Advanced Business Analytics – Implement an advanced analytics store to leverage the power of both, the program's structured and unstructured data and to allow for tactical (e.g. granular operational reports, audit reports trending, AOs performance management, auditor profiling, etc.) and strategic data analysis (e.g. standards management, airline profiling, correlations with incident data, etc.)

The main benefits of investing into the Advanced Data Management Approach are:

Data-Driven Program Operation: Comprehensive program data analysis and performance management will allow a proper and effective management of resources, and optimization of administrative and technical program functions. Trends will be detected earlier and the program will be more responsive to changes in the industry, such as evolving airline business, and new forms of cooperation.

Improved Standards Management: Improved data collection and analysis will also enable the IOSA Technical Groups to measure the effect of the IOSA standards and recommended practices (ISARPs) that are developed by them. Data that backs up the standards management will assist in enhancing and eliminating redundancies within the ISARPs.

Effective Quality Assurance Program: The IOSA quality assurance and quality control can only be effective with adequate quality data management and advanced analytics. Improved performance measurement and data-driven monitoring will allow a relevant performance-based oversight, the identification of potential weaknesses and the enforcement of the program rules and boundaries in all stages of the Audit production process aiming to continuous improvement.

Added Value to Industry: Through advanced reporting and analytics, IOSA will be able to provide both, operators and regulators with pertinent audit information that will deliver additional value. This will be achieved through the IOSA platform explained in the next chapter. Operators will be able to spot trends in their own IOSA audit performance, to benchmark themselves against others and to

interactively monitor their code-share partners and lessors. Regulators will have easy-access to audit information about the operator of their interest – all in accordance with established program rules.

The data which IOSA could collect, analyze and provide, can be grouped in three categories as described below. To illustrate the data that IOSA already collects, relevant items are marked in green. However, presently, this data is being only collected throughout the audit process once every two years and it is not being analyzed and utilized for effective decision-making. Mining already existing data and collecting additional data will provide significantly more value.

Airline-specific Information	**Audit Program-related Information**	**IOSA Audit Results**
↗ Organizational info (affiliated operators, outsourced functions, network etc.) ↗ Operational info (fleets, AOC, ops specs, network, etc.) ↗ Record of changes/mergers/acquisitions, etc. ↗ Airline reportings: changes to AOC, organization, operational functions, etc. ↗ Verification Audits ↗ etc.	↗ IOSA Auditor Qualification ↗ Auditor Performance (no. of audits, findings, repeats, qualifications, etc.) ↗ AO performance ↗ IATA performance ↗ Auditor information ↗ AO documentation ↗ Utilization rates per AO/Auditor ↗ IOSA Auditor Training information ↗ Quality Risk Model ↗ SFO Quality Auditors training, qualification and currency information ↗ Quality Assurance and Quality Control information ↗ AO Accreditation information ↗ Data from various sources (ICAO, FAA, EASA, GADM, etc.)	↗ Findings/observations/N/A/per region/airline/AO/Auditor, etc. ↗ Root cause analysis ↗ Audit closure time ↗ Information on Operators who lose IOSA registration ↗ Airline validity correlation: internal findings, internal assessment ↗ Audit agreement info ↗ Audit survey by customers: AO performance, IATA performance ↗ Regulatory cross reference lists

2.2 IOSA As a Collaboration Platform

IOSA has been operating as a conventional 'pipeline' business where audits are produced and pushed out to the airlines, whereas the value added is the safety benefit and the reduction in redundant audits.

To meet the changing needs of the airline industry and to respond to the increasing involvement of regulatory bodies and to accommodate additional program complexity, the IOSA program needs a shift towards a collaboration platform concept to concentrate the benefits and the value of IOSA, where different players in the IOSA ecosystem interact with each other seamlessly using a network that will match airlines and regulators needs of a wide variety of services allowing increasing returns to scale.. Additional values could include the production of interactive audit results as well as facilitated collaboration among platform participants around industry safety initiatives, standards, and practices.

A platform is a business model that creates value by facilitating exchanges between two or more interdependent groups, usually consumers and producers. Successful platforms facilitate exchanges by reducing transaction costs and/or by enabling externalized innovation. As a byproduct, platforms also create ecosystems and leverage their inherent network effects. With the advent of connected technology, these ecosystems enable platforms to scale in ways that traditional businesses cannot. In the future, any company that can engage its users in a connected ecosystem can build a platform and attract third parties to create a thriving ecosystem of value exchange.

The next page shows the value proposition matrix of the IOSA as a Collaboration Platform Model.

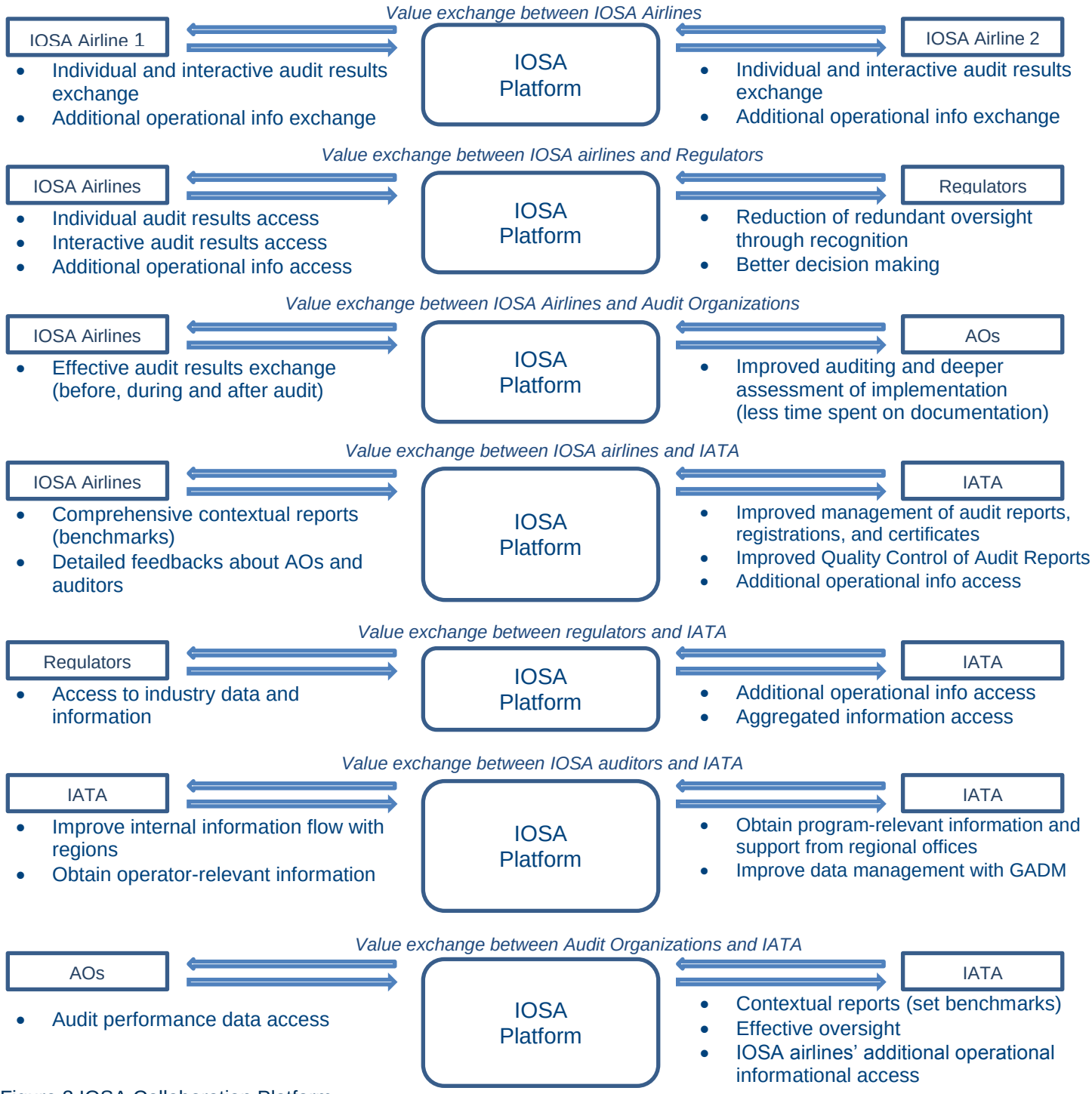

Figure 3 IOSA Collaboration Platform Value Matrix

2.3 Digital Re-mastering of Audit Program Processes

The third pillar of the Digital Transformation include the creation of business processes that are built-in for change for both, the Audit Programs and the corresponding Quality Assurance and Quality Control processes.

A digitally mature IOSA program will not only follow a data-driven decision-making process (see section 4.1), it will also help creating value in the IOSA core processes. Through automated processes, data and metrics, program functions can be deployed more efficiently and flexibly.

Example: Requests to exempt a fleet from an audit can be submitted to IATA automatically. Systemic handling of exemption requests will speed up the process and ensure collection of reliable data which can be used for program development and data analysis purposes.

The Data Management Approach and the IOSA Platform will support the IOSA Program Operation, the Quality Assurance (QA) Program and the Quality Control (QC) processes as well as the Performance Monitoring Program.

Automated Program processes and functions: A platform in which operators enter program relevant information for the processing and information allows IATA to automate program functions.

Example: Today, operators report operational, organizational or fleet changes, etc. to IATA by completing a 37-page MS Word document which lacks user-friendliness and does not allow further processing.

By entering information related to the operational profile in the operator's portal, Audit Programs will be able to receive the information in a structured and controlled manner. This level of automation will allow faster and more efficient processing at higher volumes (scalability). The processing of higher volumes of operators' reporting will be crucial for a reliable program and accurate IOSA registry, as the number of airlines on the IOSA registry, and consequently their reports are increasing.

Improved Audit Processes: The collection and mining of operator-relevant information will significantly impact the effectiveness of the IOSA Audit. More accessible and comprehensive information in regards the airline's organization and operational structures will allow the Audit Organization (AO) to prepare for the Audit more efficiently and to focus on critical areas during the on-site phase of the IOSA Audit. The need to focus on implementation has been a focus area in the IOSA program.

Example: Processed information will be fed into the platform so that other audit processes can be improved:

The AO will be able to track organizational changes of the operator that happened in the previous two years. The history of organizational changes will allow the IOS Auditors to consider these organizational changes during their audit which will lead to a more accurate assessment.

Quality Assurance Program: The collection and mining of operator-relevant information will significantly impact the effectiveness of the IOSA Quality Assurance Program activities. Information about auditors and AOs will help targeting specific areas of oversight and to better steer program improvements. Quality Control activities can be modified to consider historical data and to enlarge the scope of the process. The digitization of the Quality Assurance, Quality Control and of the Performance (Risk) Monitoring processes will replace the current manual and repetitive work and associated Excel databases and eliminate human errors.

Network IOSA Auditors: Through the platform, IATA will be able to create a network for the IOSA Auditors to connect with each other and with IATA. This network will contain all relevant auditor details and, from personal details that are relevant to the auditing activity, over to performance data (e.g. number of audits, locations, etc.). The network will enable auditors to get in touch with IATA and IATA to directly reach out to IOSA Auditors when needed, for example in training related matters or when important program updates need to be communicated.

Example: In case a major audit method or IOSA policy changes, IATA will be able to organize a webinar with all IOSA auditors and track their participation directly. Additionally, IOSA Alerts and Bulletins addressing IOSA auditors can be shared directly with the auditor community.

Statistics about the IOSA auditor community will enable the analysis of potential short falls and the timely response to such.

Through an open innovation approach, the IOSA program will create new value propositions that will be supported by data, the platform vision, and an agile and effective program operation.

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