



They are different  
but complementary  
business principles.

BY MARIO PIEROBON

# Quality and Safety

Given the evolution of the aviation safety regulatory framework in the European Union (EU), the United States and other aviation markets, in particular with regard to mandating safety management systems (SMSs), it is important to reflect on the principles of *quality* and *safety*, to understand what each has to offer to an aviation operator's bottom line, and to reflect on the future of aviation management systems.

Before beginning, it is best to clarify the terms under consideration. "Quality," as defined by the International Organization for Standardization (ISO) standard 9000:2005,<sup>1</sup> is "the

degree to which a set of inherent characteristics fulfils requirements." "Safety," as defined in the International Civil Aviation Organization (ICAO) *Safety Management Manual*,<sup>2</sup> is "the state in which the possibility of harm to persons or of property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and safety risk management."

The first thing that emerges from the definitions is that quality and safety are not the same. Quality refers to meeting requirements, and safety refers to keeping people and property from harm. The two principles are nevertheless related.

Customers and regulators require certain safety requirements to be met by an air operator; therefore, a quality product is also necessarily safe.

ISO standard 9001:2008 requires the implementation of a quality management system (QMS) oriented to meeting customer requirements, thus improving customer satisfaction. The scope of a QMS as required by ISO goes well beyond the compliance of an air operator with regulatory safety requirements. Many areas related to the customer experience that have little if anything to do with safety fall under the competence of a QMS as required by ISO.

The European Joint Aviation Authorities (JAA), through its Joint Aviation Requirements, first promoted the compulsory introduction of quality management in airline operations in the European Union.<sup>3</sup> Several other countries (for example, in the Gulf regions) have followed the JAA's regulatory efforts with regard to quality management, in many cases adopting the same regulations by simply changing their names. This is a path, however, that many important aviation markets, most notably the United States,

have not followed. The European regulation that currently establishes a mandatory QMS is EU Regulation on Air Operations (EU OPS) 1.035, but it prescribes only basic quality requirements, "to monitor compliance with, and adequacy of, procedures required to ensure safe operational practices and airworthy aeroplanes."<sup>4</sup> In airline operations, QMSs are mandatory with only safety in mind and with no consideration for other, more strategic, business areas.

### SMS Quality Principles

In the past decade, ICAO has developed the *ICAO Safety Management Manual*, which accounts for a key innovation: the promotion of SMSs and the provision of guidance on how to implement them. According to ICAO,<sup>2</sup> an SMS shares many commonalities with a QMS, and specific SMS processes are nurtured by quality principles. QMSs and SMSs both need to be planned and managed; both depend on measurement and monitoring; both involve every function, process and person in the organization; and both strive for continuous improvement.<sup>2</sup> In the safety assurance component of an SMS, the application of quality assurance principles helps to ensure that the requisite system-wide safety measures have been taken to support the organization in achieving its safety objectives.<sup>2</sup>

Although QMSs and SMSs share many common features, the peculiarities of SMSs should not be underestimated. SMSs promote the achievement of high safety standards by encouraging a safety culture that considers the human dimension organization-wide and by promoting a hazard identification/risk management-based approach to safety management. In a QMS, two parts can be identified: quality control and quality assurance. Quality control is reactive — that "part of quality management focused on fulfilling requirements."<sup>1</sup>

Quality assurance is proactive — the "part of quality management focused on providing confidence that quality requirements will be fulfilled."<sup>1</sup> Just as the scope of QMS goes well beyond monitoring compliance with safety requirements, its inclusion in SMSs extends the scope of safety management beyond ensuring the



conformance of working practices with safety requirements toward thoroughly identifying hazards, some of which are organization-specific. An SMS is therefore considerably more proactive than a QMS; furthermore, the theory that supports SMS has been developed with only safety in mind, while the theory supporting QMS has been developed with customer satisfaction in mind.

Quality and safety are both fundamental for an organization to attain its corporate goals. Air operators have disparate goals, but they almost all attempt to transport passengers and/or cargo by air at a profit. The fundamental importance of safety in allowing an air operator to operate safely and profitably is unquestionable, because an airline with a poor safety record can be banned from flying to some countries and is not likely to attract many customers. As airlines are increasingly operating in commercially unregulated environments, the ability to meet customer requirements and to improve customer satisfaction is increasingly becoming the determinant of airline profitability. It is to improve its business performance that an air operator can benefit from the implementation of a QMS, without necessarily obtaining a certification.

### Integrated Aviation Management Systems

Some countries (e.g., Australia and Canada) have already made SMSs mandatory. Many other countries, including the United States and those in the EU, will soon require SMS implementation as mandated by ICAO. Since air operators are or will be mandated to implement another system — the SMS — it would be more efficient to implement an SMS with the intention of adopting also a more comprehensive integrated aviation management system (IAMS).

An IAMS is the result of the integration of all management systems within an airline, and “describes the relationship and operational responsibility of each supporting management system within the overall enterprise.”<sup>5</sup> Air operators are complex businesses: they require multiple management systems (including several trans-organizational systems), have dispersed operations, have many technical functions requiring skilled employees, and are highly regulated and characterized by overlapping state jurisdictions.<sup>5</sup>


Within this operational complexity, inefficiencies can arise from the overlapping of different systems. If, with the appropriate approach and the appropriate culture, the numerous management systems are integrated, airlines will benefit not only from the contribution each system brings but from a smoother functioning of each system — because of the higher efficiencies generated by the integration. The systems will support one another in optimally achieving the air operator’s business objectives.

### Total Quality Management

Although air operators around the world have succeeded in offering a quality product that is highly safe and usually affordable (meeting another customer requirement: low fares), the air operators have not been rewarded for the quality of their services. The airline industry is notorious for never having paid returns to its shareholders in the aggregate. The problem of the profitability of the industry needs to be urgently targeted.

For efficiency and profitability, airlines can benefit from an advanced form of quality management, total quality management (TQM). This tool goes well beyond satisfying the customer or offering quality products as required by ISO 9000.<sup>3</sup> TQM is a management

approach in which all members of an organization participate in improving processes, products, services and the culture in which they work.<sup>3</sup> Airlines can benefit from TQM because it is widely agreed that the industry needs cost reduction and control, without losing the focus on product safety.

TQM emphasizes, among other things, eradicating defects and waste from operations, reducing development cycle times, reducing product and service costs, and challenging quantified goals and benchmarking.<sup>3</sup> In implementing TQM, airlines could follow the European Foundation for Quality Management model or the U.S. Malcolm Baldrige model. The latter provides a framework for business excellence that stresses the importance of financial and marketplace performance. 

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### Notes

1. ISO. *ISO 9000:2005 Quality Management Systems — Fundamentals and Vocabulary*, 2005.
2. ICAO. *Safety Management Manual (SMM)*, Doc 9859, AN/474, second edition, 2009.
3. Buono, G. *Course Book of Quality Management in Airline Operations*. City University London, 2010.
4. EU Regulation No 1899/2006 of the European Parliament and of the Council of 12 December 2006. Published in *Official Journal of the European Union*, Dec. 12, 2006.
5. Lonsbury, S. “Integrated Aviation Management Systems (IAMS).” Presentation at City University London, May 28, 2010. Sandra Lonsbury is senior vice president aviation and aerospace practice, Aviation Risk Advisory Solutions at Marsh.