

Integrative Augmentation of Standardized Management Systems

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Abstract: *The development, features and integrating abilities of different international standards related to management systems are discussed. A group of such standards that augment the performance of quality management systems in organizations is specifically focused on. The concept, characteristics and an illustrative example of one augmenting standard, namely ISO 10001, are addressed. Integration of standardized augmenting systems, both by themselves and within the overall management system, is examined. It is argued that, in research and practice alike, integrative augmentation represents the future of standardized quality and other management systems.*

Keywords: *Standards, Quality, Integrated Management Systems, ISO 10001, Customer Satisfaction*

1. INTRODUCTION

The development of standardized Management Systems (MSs), both generally and within the more specific areas of MS support and integration, has gone through an almost unbelievable expansion in the last ten years. Looking at the changes overall, the number of fundamental management system standards (MSSs) focused on establishing MSs for a particular organizational function or stakeholder has at least tripled, to include standards like ISO 27001 on information security and ISO 28000 on supply chain security, even if only application-generic and internationally-approved MSSs are counted. In addition, there are now probably around a million organizations in the world holding MS registration certificates, which itself represents roughly a six-fold increase in a decade [1]. The work on the supporting and integration methodologies for standardized MSs has been impressive, as well. Dozens of supporting guidelines were created, including, for example, the customer satisfaction series in quality management (ISO 10001 to ISO 10004) and greenhouse gas reporting standards in environmental management (ISO 14064). The

first cross-functional supporting standard, namely the ISO 19011 for quality and environmental MS auditing, was not only published (in 2002), but is already going through its first revision (starting this year). On the integration side, the International Organization for Standardization (ISO) is just about to publish a “*Handbook for the Integrated Use of Management System Standards*” (IUMSS), providing very practical and proven integration methodologies.

However, in spite of all these advances, certain points made and discussed ten years ago still remain (see, for instance, papers [2] and [3] for a discussion of some integration and auditing issues, respectively). Most specifically, there is a necessity to look at MS integration with attention paid to auditing and various other supporting and now standardized subsystems. While most of the research and practical considerations in both the standardization and integration of MSs have been given to the minimum-requirement standards such as ISO 9001 or ISO 14001, there is a whole group of additional new standards that organizations need and will likely gain substantial benefits

from. These standards can be classified as “augmenting”, since they enhance the performance of an overall MS by providing a model for establishing and improving a specific component of the MS [4]. As Dee et al. [5] demonstrated for the case of the standardized Customer Satisfaction Complaints System (CSCS) based on ISO 10001, ISO 10002 and ISO 10003, one of the most important features of the systems built in accordance with the augmenting standards is that they can be deployed by themselves or integrated within or together with other MSs [6].

Therefore, this paper will concentrate on integrative augmentation, in other words the application and integration of augmenting

2. DIRECTIONS IN STANDARDIZED MANAGEMENT SYSTEMS

Three different directions of standardization and use seem to characterize the development of standardized MSs and consequently determine the scope of their integration: assimilation, ascension and augmentation [4]. With assimilation, organizations are using minimal-requirement standards such as ISO 9001, ISO 14001 and ISO 27001 to establish a function- or stakeholder-specific MS. Ascending standards provide additional criteria for all MS components to improve the overall performance level of an organization, with examples including ISO 9004, ISO 14004 and various industry-sector-specific standards. Finally, augmentation refers to the addition or improvement of a specific MS component, modeled in an augmenting standard such as ISO 19011 or ISO 10002. Fig. 1 illustrates these directions and provides examples of standards from the three corresponding categories.

While these developments are thoroughly discussed from the theoretical perspective in, for instance, papers [7] and [4], it is interesting to illustrate some empirical results that point out the need to, on one hand, focus on only two such directions in the realm of standardized MSs, and on the other, to foster augmentative integration as a methodology to capitalize on the application on these systems. The results are from a 2006 survey of 529 ISO 9001-registered companies in Catalonia

systems, in the area of quality management. Some of the reasons for such a focus will be discussed first, through a brief summary of the three directions of the development of standardized MSs and the illustration of some empirical findings that point to the importance of augmenting standards. Subsequently, the concept, features and an example of one such standard will be illustrated, followed by a further discussion of the related integration. Finally, a brief summary of the main points and the reasoning behind the argument that augmented integration will become particularly important in the realm of standardized MSs concludes the paper.

(Spain), with an overall response rate of 23%, as detailed in the Karapetrovic et al. book [8]. One of the questions in the survey asked the organizations’ representatives to identify the priority for future application of each of the three groups of standards or models in their organizations, together with an option of not implementing any new standards or models in the future. The top part of Fig. 1 shows the indicated first priority responses in terms of the proportion of the total sample. Since the sample contained two strata, namely the organizations that were registered solely to ISO 9001 (353 responding companies with the 20% response rate) and the ones that had both the ISO 9001 and ISO 14001 certificates (176 respondents and the 33% response rate), Fig. 1 illustrates the results from both strata, in the inner and outer circle, respectively.

As evident from Fig. 1 and as discussed in [8], ISO 9001-registered companies indicate the intention to use augmenting standards, examples of which are presented in bold in Fig. 1, as their first priority (31%), followed by the assimilating standards (27%). On the other hand, companies with dual cross-functional certificates focus more on the assimilating standards (43%), with the augmenting standards receiving the first priority in 22% of the responding organizations. The other two alternatives, namely the use of business excellence models (ascension) and no new application (no addition), received relatively low proportion of responses as the first priority. Due to the preponderance of ISO 9001-only registered companies in the overall population of organizations with standardized systems, and the overall temporal changes in the perception

of ISO 9001-based quality MS within those companies (see, for instance, the most recent such study in [9], spanning three time instances and eight years), a clear focus on augmentation and addition of new standards in general seem

to characterize the future application in organizations. The following section will discuss the standards underlying the augmentation direction.

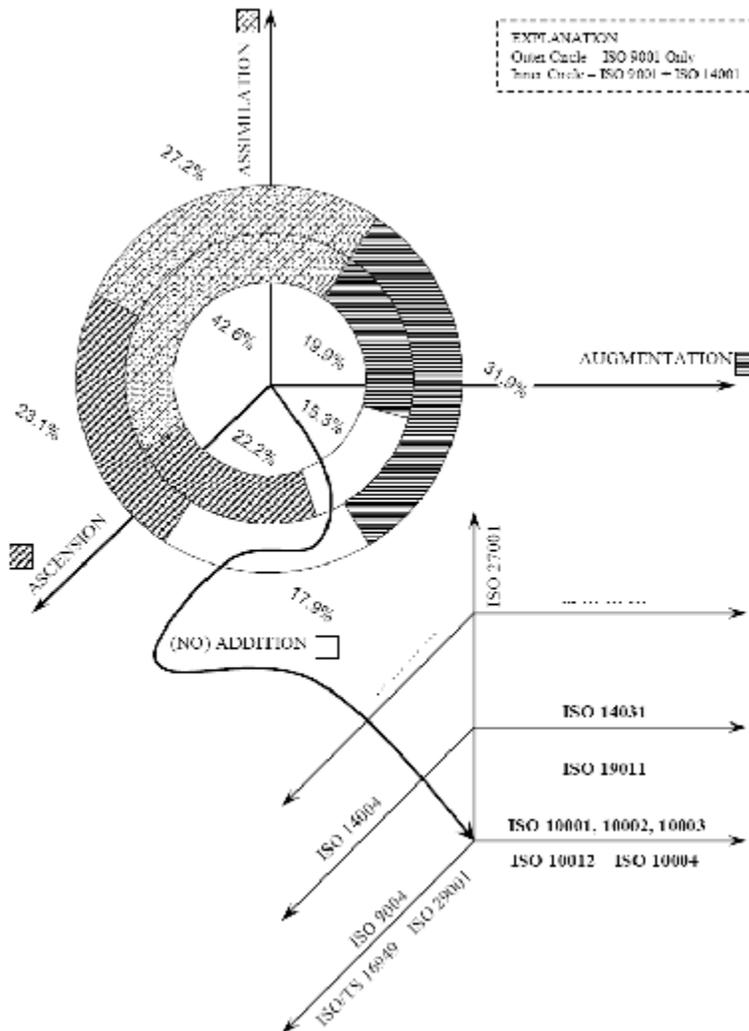


Figure 1. Development of Standardized Management Systems (adapted from [4] and [6])

3. AUGMENTING STANDARDS

3.1. Concept

Although the need for the availability of standardized models for specific subsystems or processes of the overall management system of an organization was evident at the time that the

first MSSs were rolled out, for example in the 1970s and 1980s with the emergence of quality assurance standards and ultimately ISO 9001, only recently have augmenting standards become prominent enough, both in content and numbers, to create their own distinct category [10].

Basically a subset of the group of standards that support minimal and function-specific MS models like ISO 9001 and 14001, and that are written by the so-called “supporting” Sub-Committees (SC) within the larger Technical Committees (TC) of ISO, for example SC3 of ISO/TC176 on quality management, augmenting standards focus on a single MS component that can then be used to supplement and improve the MS itself. For example, the audit system is an essential component of any MS, and is now covered by the ISO 19011 augmenting standard for quality and environmental MS auditing [11]. ISO 10002 provides a model for a complaint-handling process, which can be built as a subsystem into an ISO 9001-based quality MS [12, 5].

Nevertheless, unlike the other supporting standards, such as ISO 10014 on the economics of quality and ISO 10019 on quality consultants, which can be meaningfully used only in conjunction with the standards they actually support or the related standardized MSs, augmenting standards can be applied to establish stand-alone systems [6]. Examples of quality management standards that would fit within the augmenting group include the existing ISO 10012 on measurement and the above-mentioned ISO 10002 and ISO 19011, ISO 10001 on customer satisfaction codes of conduct and ISO 10003 on dispute resolution, which are just about to be published, and the upcoming ISO/TS 10004 on customer satisfaction measurement and monitoring. Because of their fairly narrow, but much focused scope, and immediately evident benefits of implementation, augmenting standards may just represent the future of standardization in quality management [10]. Additional characteristics of these standards are outlined next.

3.2. Characteristics

Augmenting standards (AUGS) possess a number of defining features that not only shape these standards into a distinctive group, but also help in determining the needs and possibilities for their future deployment (see [5], [6] and [8]). A list of seven such features is presented here, together with a brief discussion of each feature. The features are numbered alphabetically for easier identification, and are further illustrated in Fig. 2.

(A) AUGS can be applied in an independent and an integrative manner alike. An organization can, therefore, choose any augmenting standard and deploy it without ever having implemented a single other assimilating, ascending or augmenting MSS. It is also possible, however not necessarily desirable, for an organization that has an overall standardized MS in place, not to connect it with the system built in accordance with an augmenting standard. On the other hand, both the structure and content of augmenting standards allow for the integration of their respective systems with other management systems in an organization. For example, Dee et al. [5] describe how an ISO 10002 complaint-handling system can be established as a stand-alone system, or as a subsystem within the CSCS and in the overall Quality Management System (QMS) based on the ISO 9001 standard.

(B) AUGS are generic. In other words, they are universally applicable, regardless of the industry sector or the size, location or type of the organization. This distinguishes them, for instance, from the various so-called “sector-specific” standards, such as ISO/TS 16949 or ISO 22000.

(C) AUGS can be both function-specific and function-generic. For example, while the standards from the CSCS series cover product-related issues and are aimed at customer satisfaction, and are therefore focused on quality management, ISO 19011 targets the auditing of both quality and environmental MSs.

(D) AUGS are MSSs. They focus on establishing and connecting a set of processes that use various human, information, financial, infrastructure and other resources to achieve specific objectives, by essentially providing models for the related MSs. When integrated within other systems, the systems designed and implemented according to the assimilating standards become subsystems. For instance, audit is a system on its own, but is normally used as a subsystem of function-specific MSS and the overall MS in an organization [11].

(E) AUGS contain all the necessary components for MS establishment, including performance measurement through auditing. Therefore, an organization can monitor, measure and audit the performance of a system established in accordance with an augmenting standard. These MS components can either be explicitly provided for in the standard, such as

in ISO 10002, which contains separate sections on, for example, monitoring and auditing, or be implicit in the overall standard framework, such as in ISO 10001, where maintenance and improvement of the code is specifically addressed.

(F) AUGS can form and be integrated within their own, and therefore unique, overall systems. For example, when used in combination, ISO 10001, ISO 10002 and ISO 10003 create a standardized MS aimed at customer satisfaction through codes of conduct and effective and efficient handling of complaints and disputes [5]. It is possible that another customer satisfaction standard currently under development, namely ISO/TS 10004 on monitoring and measurement, is applied to provide an additional component of an augmentative super-system for customer

satisfaction.

(G) AUGS are neither “guidelines for use” nor “technical reports” in the international standardization terminology. This characteristic differentiates them from other supporting standards, such as ISO 10019 on quality consultants or ISO/TR 10017 on statistical techniques. Karapetrovic and Casadesus [10] further argue that there is a need to focus on the development of augmenting standards at the expense of various guidelines for use of other standards.

To demonstrate the concept behind and the characteristics of augmenting standards, the following section provides a brief outline of the augmentative content and the integrative context of one such standard, namely ISO 10001.

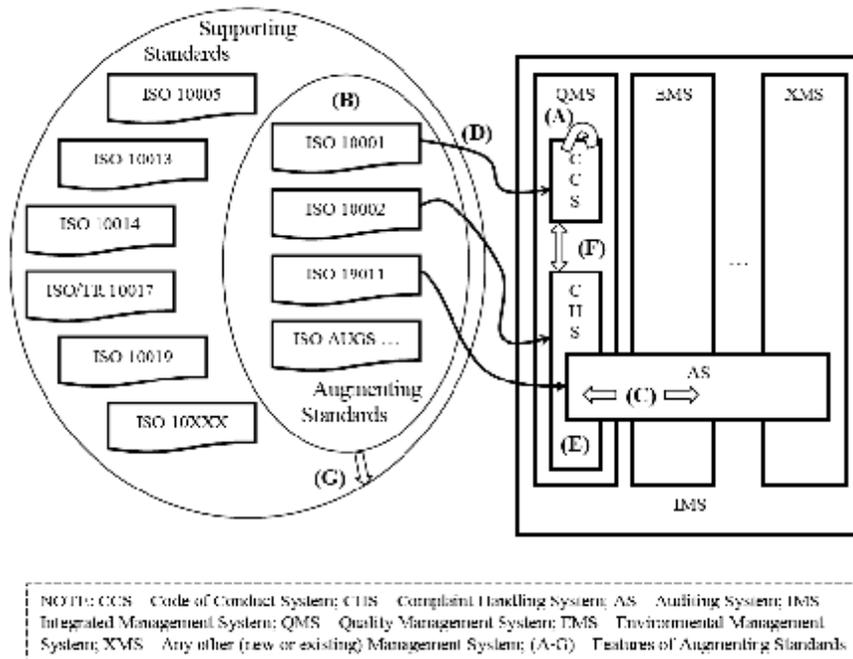


Figure 2. Characteristics of Augmenting Standards

3.3. Example

As Dee et al. [5] discuss in detail, ISO 10001 is a standard for the establishment of codes of conduct aimed at customer satisfaction, and is a part of the CSCS series of standards. The development of this series of

augmenting standards was initiated by the Consumer Policy Committee of the ISO. The actual writing started in early 2001, when the first draft of what was to become the “middle” standard in the series, namely the ISO 10002 on internal complaint-handling, was completed. While this standard was published in mid-2004,

the development of ISO 10003 on external dispute resolution and ISO 10001 actually began in parallel earlier that same year. Presently, ISO 10001 and ISO 10003 are at the Final Draft International Standard (FDIS) stage, with the publication expected immediately.

ISO 10001 [13] covers the processes necessary for effectively and efficiently creating and using product-related promises made to an organization's customers [5]. These processes include code planning, design, development, implementation, maintenance and improvement [13]. ISO 10001 is founded on the same structure as the other two CSCS standards, with a set of guiding principles given in Section Four, the overall framework provided in Section Five, and the actual system processes detailed in Sections Six, Seven and

4. INTEGRATION

Similarly to the traditional integration of standardized MSs, which focuses on assimilating standards and is discussed, for example, in papers [2] and [14], as well as in the ISO "IUMSS Handbook", integrative augmentation refers to the sequential or parallel incorporation of augmenting standards into the organization. Integration is accomplished through the establishment of the corresponding augmenting systems and their immediate or eventual amalgamation. When such augmenting systems are function-specific, as illustrated in the case of auditing in [11], their integration will naturally be cross-functional, just like in the traditional type of integration. However, since augmenting standards address only one component of an MS, integrative augmentation can occur both horizontally and vertically, and is therefore more flexible than the traditional integration.

Fig. 3 illustrates this particular feature. For example, a customer satisfaction code of conduct can be established independently, based on the set of "guiding principles" and a "framework" of "planning, design, development, implementation, maintenance and improvement" processes, in accordance with the ISO 10001 standard. However, the underlying system can also be integrated with various other augmenting systems, for instance

Eight [5 and 12]. It is also the shortest standard in the series, with only seven pages of the main text. The standard exhibits all seven characteristics of the augmenting standards, including the possibility to independently apply it or to integrate its processes with the overarching CSCS or QMS, universal applicability, which will be demonstrated in the following example, specific focus on augmenting a QMS, as well as the availability of all necessary MS components and their interrelationships through the framework given in Section Five of the standard. The following section addresses how systems based on ISO 10001 and other augmenting standards can be integrated both among themselves and within their overarching systems by integrative augmentation.

horizontally with an ISO 10002 complaint-handling system, or vertically within a CSCS or QMS, as shown in [5]. In addition, augmenting systems can become subsystems of their augmenting counterparts, as would be the case when an ISO 19011-based internal auditing subsystem is used to evaluate an ISO 10002 complaint-handling system.

Also important to mention is that integrative augmentation requires amalgamation of both the structure and the content of the constituting systems, as demonstrated in Fig. 3. Structural amalgamation, in other words the integration of the differing models of augmenting systems, is not complicated, since the standards are specifically designed to support the overarching quality, environmental and other fundamental MSs. CSCS standards, for example, share the "Plan – Design – Operate – Maintain – Improve" structure, which can easily be integrated into both the "Process" model of ISO 9001 and the "Plan – Do – Check – Act" model of ISO 14001 and similar standards [5]. On the content side, integration of processes, resources and objectives as sub-components should not represent a problem either, due to the specific purpose of augmenting standards to add valuable content to the otherwise minimal standardized MSs. Overall, therefore, integrative augmentation seems like a good and meaningful choice for organizational MSs.

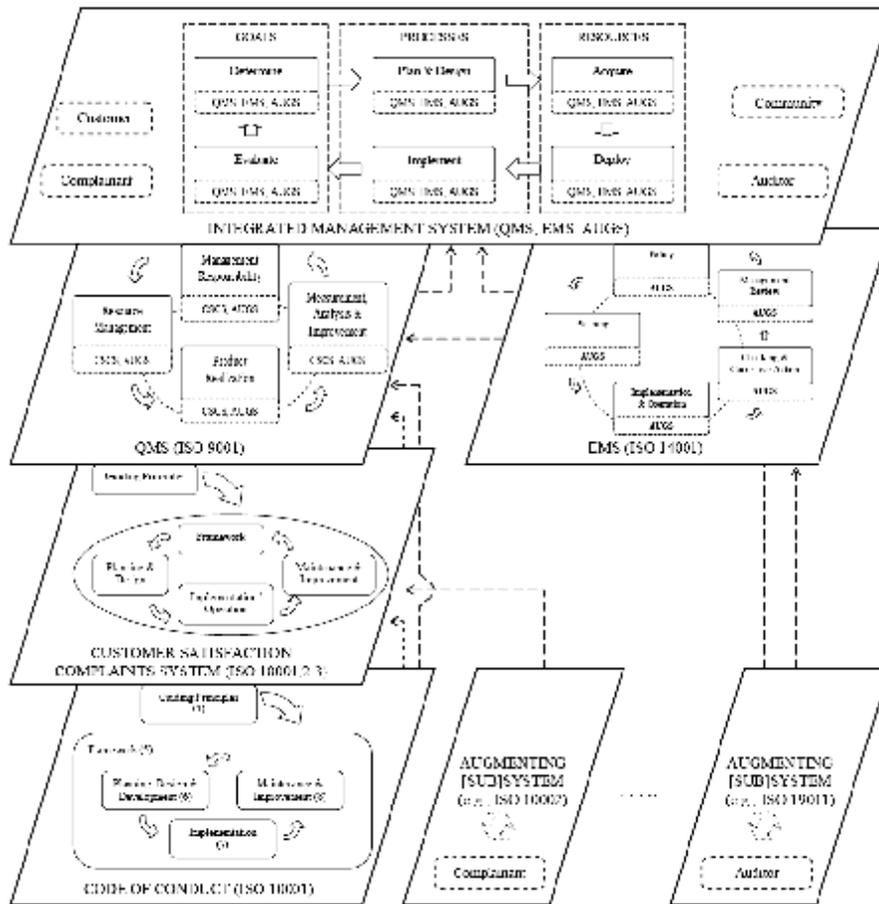


Figure 3. Integration of Augmenting Systems (based on [4])

5. CONCLUSION

It is now evident that the realm of standardized management systems will continue to be characterized by an increasing number of different standards available for use in organizations, and consequently, by integration as the only meaningful way to deal with and benefit from such a development. This “many standards, one system” notion is recognized by the “*Handbook on the Integrated Use of Management System Standards*” (IUMSS) that the International Organization for Standardization will soon publish. However, apart from the well-known so-called

“requirement standards”, such as ISO 9001 and ISO 14001, which the IUMSS Handbook particularly focuses on, a whole other group of standards has an outstanding potential for application and integration. These standards augment the performance of a specific component of a management system, and include such models as ISO 10001, ISO 10002, and ISO 19011. This paper looked at the directions in which standardized systems have been going, and concentrated on the discussion of integrative augmentation as a particularly promising direction, both in theoretical and practical terms.

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