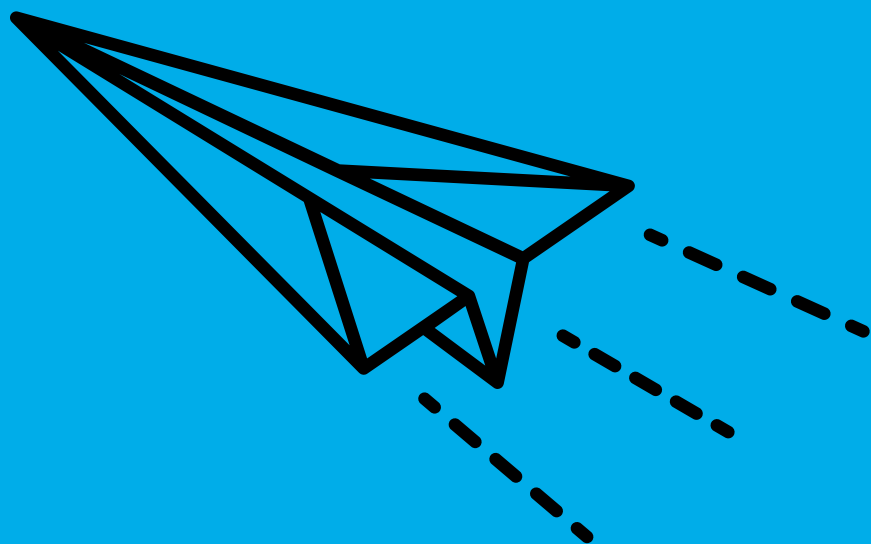


Energising Aerospace Companies

Behind AS9100 Revision D

By David Key
1st September 2016



AS9100:D

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Executive Summary

The introduction of *AS9100 Revision D (Rev D)* to the aerospace industry in the final quarter of 2016 will present a significant challenge to every employee in every aerospace business across the globe.

No longer will it be sufficient for such companies to innovate in products and services alone: Rev D is demanding evolutionary change to underlying business practices. This includes:

01

A new, value-driven approach to process management

02

A tenfold increase in risk management activities

03

An emphasis on ongoing change management

So it might be easy to look on Rev D as a burden. After all the transition from Revision C will fall on Quality Managers: who are being asked to drive radical change like never before and ownership will now fall to the Board, who for the first time will need to have a comprehensive understanding of the requirements. All that will require effort and possibly a significant shift in thinking.

But Rev D is also a real opportunity to energise staff and for those companies that wish to take this opportunity it will present a massive prize. It will enable them to fully unlock their organisation's potential.

Having been involved with AS9100 since the times of Revision B and with over 6000 aerospace employees already using Isoma to manage compliance, we have built a wealth of knowledge and resources to aid managers in the transition: as we did when Revision C was introduced. More detail on those can be found at the end of this paper.

Introduction: What's the Big Deal?

» In some aerospace organisations it must be very strange being a Quality Manager right now. Some degree of schizophrenic ambivalence must be a job requirement: at least in order to stay sane. How else could any normal person be expected to be responsible for a management system that is...

01

There to uphold quality—but commonly ignored by everyone other than the Quality team.

02

Often referred to as a business management system but seen to be inferior or subsidiary to the 'real' IT systems which drive operations.

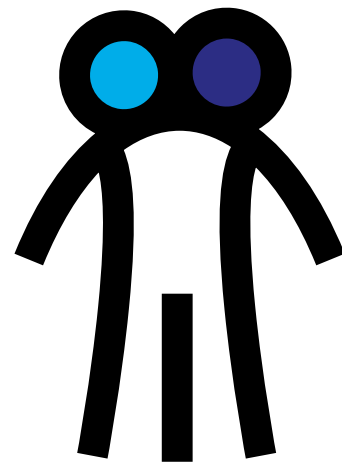
03

Expected to run with minimal budget, minimal resources and little senior management oversight?

For many aerospace Quality Managers and their organisations this is reality: QMSs / BMSs / IMSs are viewed as little more than lip service mechanisms for maintaining an accreditation tick in the box. So for these poor people, Rev D, with its brand new leadership requirements, repositioning at the heart of the organization and true alignment with top-level business goals, cannot come quickly enough. Rev D will be front and centre of the organisation.

As Paul Graaf states: "some top management may find this a difficult step to take". They surely will, and everyone involved in Rev D's roll out must be ready to address the inevitable management reaction as entire organisations grapple with the changes.

But Rev D will not only to help struggling Quality Managers to maintain their sanity. It also holds the tantalising prospect of being *the* unifying, universal improvement mechanism for all aerospace organisations.



Aerospace Quality Managers are being asked to operate on two fronts that are not compatible.

The management system is no longer just the domain of the quality manager. The requirement is to ensure that the QMS integrates with the business processes, thereby automatically demanding the involvement of all the process owners. Some top management may find this a difficult step to take, and cite confidentiality as a reason not to. However, **top management engagement and transparency leads to better business.** In many organisations, this in itself would demonstrate **top management leadership, drive internal stakeholder engagement and promote employee motivation** towards the stated goals and strategic objectives.



Paul Graaf,
Chartered Quality Institute

The Major Changes from Revision C

ALIGNMENT WITH ISO 2015

The High Level Structure (HLS) is the central tenet of ISO 2015 and of Rev D. Without the HLS it is difficult to align policy objectives with strategy, to clarify the organisational context and to make practical use of the process approach: all of which are now specified within Rev D. We believe it will add real value to aerospace companies.

Unlike management regimes and fashions that have gone before it, the High Level Structure contains all of the seeds for success.

- The HLS focuses the organisation on the value it delivers: not its meaningless functional silos;
- It is process-enabled, which when combined with a value-driven model, facilitates true business improvement: top-down, bottom-up and end-to end;
- It encompasses all activities: not just those that can be automated and creates a framework where all can be managed under the same roof: as **Mark Braham** points out to the right.

Of course there will always be the naysayers. There will be those that try and rail against a process-driven approach: preferring to stick doggedly to reams of ineffective procedures. There will also be those that follow the BPM route: adhering to the dictum that automation is the answer to everything.

But we believe that both groups will eventually see the error of their ways:

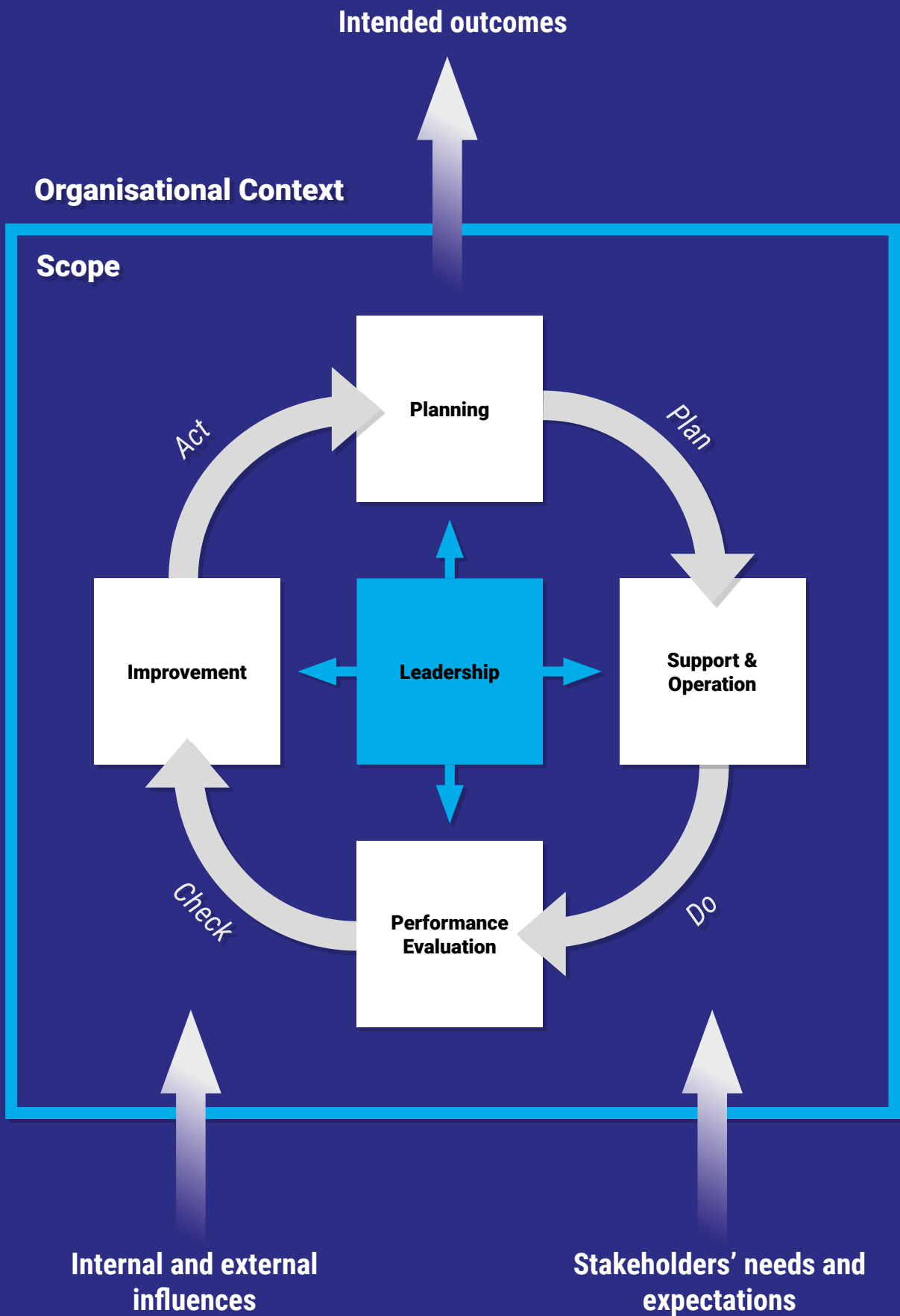
- The procedure adherents will see their competitors take market share as the effectiveness and agility improvements resulting from process cause and effect analysis have a marked impact. They will also most likely clash with their auditors.
- The automation crowd will finally see—as most CEOs have already seen—that you cannot exclude the human forever. To do so is expensive folly: especially in an industry like aerospace which has few transactional processes and many which are highly specialist or manual.

My main concern is that many businesses are still using multiple management systems and having multiple certification audits [...] I would prefer an integrated business with a single management system. Annex SL (i.e. the High Level Structure) will play a significant part in achieving this.



Mark Braham,

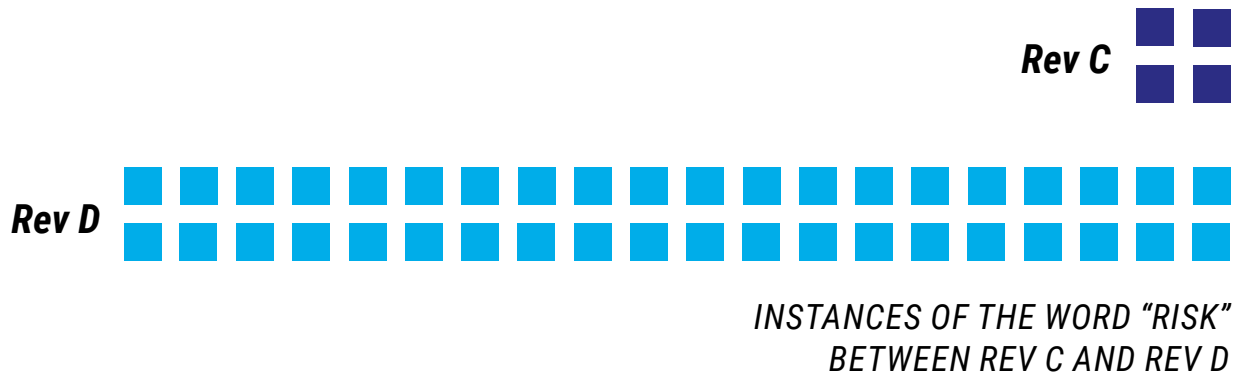
Head of Business Assurance, The AA & CQI Standards Panel Team Leader



THE HIGH LEVEL STRUCTURE

THE INCREASED FOCUS ON RISK

Revision C mentioned the word “risk” four times; Rev D mentions it forty times. A similar ratio is found in the 2015 version of ISO; which after all is the underlying template for Rev D.



However, in all of the new standards risk is not addressed in isolation. Rather it forms part of the joint concept of risk and opportunities, which encourages organisations to use risk to identify opportunities for improvement. Both are joined at the hip and one is of little use without the other.

Risk in ISO 9001:2015 [...] is general, that is, it is a concept that can be applied anywhere in an organization, including planning.



Chad Kymal & R. Dan Reid,
Quality Digest 21.8.2015

Whatever we call it, there is a consequential practical application that is important for all to understand.

With Rev D, opportunities for improvement should be actively sought across all parts of the organisation. The auditors will be looking for proof of that; and the High Level Structure makes it much easier to achieve. From the organisational context, to its goals, objectives, resultant value chain, processes, plans and operational structure: the HLS enables cause and effect

to be analysed in very great detail so that it can be subsequently improved and managed. It also enables all operational aspects of the business to be integrated within a single system for that purpose.

Revision D of the AS9101 standard is a game changer in the world of management system auditing because, for the first time ever, auditors are expected to formally delve and report on the organization's business process effectiveness in reaching results.



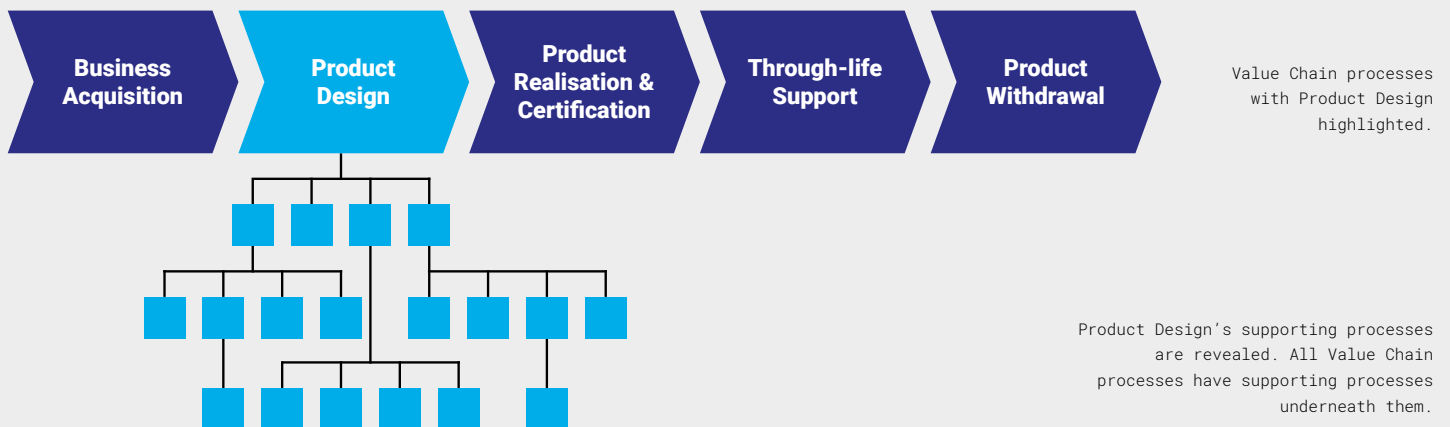
Sidney Vianna,
Director of Aviation, Space & Defense
Services at DNV Business Assurance

The idea is simple: look at your business holistically; identify its underlying risks wherever they may be and continually improve them. Risks will never disappear entirely: as one risk is reduced another may appear out of the blue. Thus risk management in Rev D should be viewed as the primary continuous improvement process.

THE CONCEPT AND IMPLICATIONS OF THE VALUE CHAIN

The introduction of the High Level Structure represents a major shift from previous standards management – not just in Rev D but right across the ISO spectrum.

THE VALUE CHAIN



Its main effect is to focus the organisation on the delivery of value to its customers and its stakeholders as described in its organisational context.

It does this through the concept of the Value Chain: an idea which goes back to 1985, when Professor Michael Porter introduced it in his widely-acclaimed book "Competitive Advantage". It has since become the preferred model for business transformation or operational excellence and is behind the design of most of the world's leading businesses.

The value chain looks at a business from its highest level processes—those which deliver end to end value from its supply chain, through its core operations to its customers. It does this in preference to describing a business in terms of its functions (e.g. engineering, manufacturing, distribution etc.) since the latter confers no understanding of the creation and flow of value. If written correctly, processes do.

If for example, the organisational context was 'the manufacture of electronic aerospace products'; the value chain might represent some sort of product lifecycle: showing value increasing at each step from business acquisition to product withdrawal. At the outset the value is minimal: consisting of individual

electronic components which do little until they are joined together. As they are combined they firstly become a circuit board: increasing the value slightly; individual boards may then be added to switches and dials to become a complete unit; increasing the value even more and finally the units are packed and shipped, ready for being sold. At each part of that production chain, value is added.

But the value is also dependent on the quality of the parts as it is on the unit's use at the customer.

The quality of the goods you produce depends on the quality of your production process. At each step of the value chain, fixing a problem is approximately 10 times faster and cheaper than doing so in the next phase. Process quality management is essential to the continuous improvement of your production operations.

Verena Majuntke,
Bosch

Take Bosch for example: who operate The Rule of Ten. This states that it is not just rapid error detection that is vital to quality improvement. The key is solving problems as they arise at the earliest points in the value chain. For example, solving a simple inventory logging issue in Goods Inwards could create an on-going saving which is tenfold greater than the solving of an issue in the product assembly/manufacturing process.

So for a value chain to be optimised; its incoming supply chains also need to be optimised: one at a time. That is more than configuration management – it is about optimisation of the entire supply chain process: right down to the separate processes that each supplier uses to manufacture its own particular component. Whilst in the past most organisations have measured the quality of their products, very few have measured the quality of the processes that create them. Rev D provides a real opportunity to do this.

Managing suppliers throughout the aerospace supply chain remains a major challenge for the industry. The chain is very long, and within the supply base, there are sources that serve multiple industries. Because the industry is so dependent upon this supply chain, it isn't surprising that AS9100 includes a number of additional expectations for identifying and maintaining suppliers.



Journal of Engineering Management and Competitiveness (JEMC) Vol. 2,
No. 1, 2012, 11-15

It is also about the maintenance of value when the customer uses the product: which implies optimisation of the customer experience too. That might involve an extension of the manufacturer's service processes into its customers' operations and even a shared use of parts of its management system.



THE EMPHASIS ON CHANGE MANAGEMENT

The organization shall determine the processes needed for the quality management system and their application throughout the organization, and shall evaluate these processes and implement any changes needed to ensure that these processes achieve their intended results



ISO 9001:2015 standard text,
BSI

Once the organization has identified its context, value chain and the processes that support it, all must be continually improved. That means they must be changed and that change must be managed right down to the level of inputs, resources (people, machines etc.), activities, controls, outputs and KPIs.

That implies a number of things:

- There must be a system for simply and effectively implementing, recording and managing that change
- Staff must be energised too. Without their engagement, no change will ever be effective. Welcome to the Kinetic Age

THE INTRODUCTION OF KNOWLEDGE MANAGEMENT

Knowledge Management has always been a precursor to the successful implementation of a standard.

In essence it is the first phase, embodying the capture and clarification of the information that is required for operational management. This will inevitably include tacit and explicit knowledge. This is shown in Fig 4.

Yet knowledge management as an explicit, separate discipline is relatively new and Knowledge Managers are as rare as hen's teeth. But that should not prevent any organisation addressing the principles as outlined above. The essence is the capture of implicit knowledge—that which is in people's heads, and explicit knowledge—that which is written down, in a common form that is easily understood by all and made readily available to them. The best format for that is a process, probably written in a plain language style like IDEF0, which also facilitates links to more detail: such as procedures, work instructions and training videos.

EXPLICIT KPI REQUIREMENTS

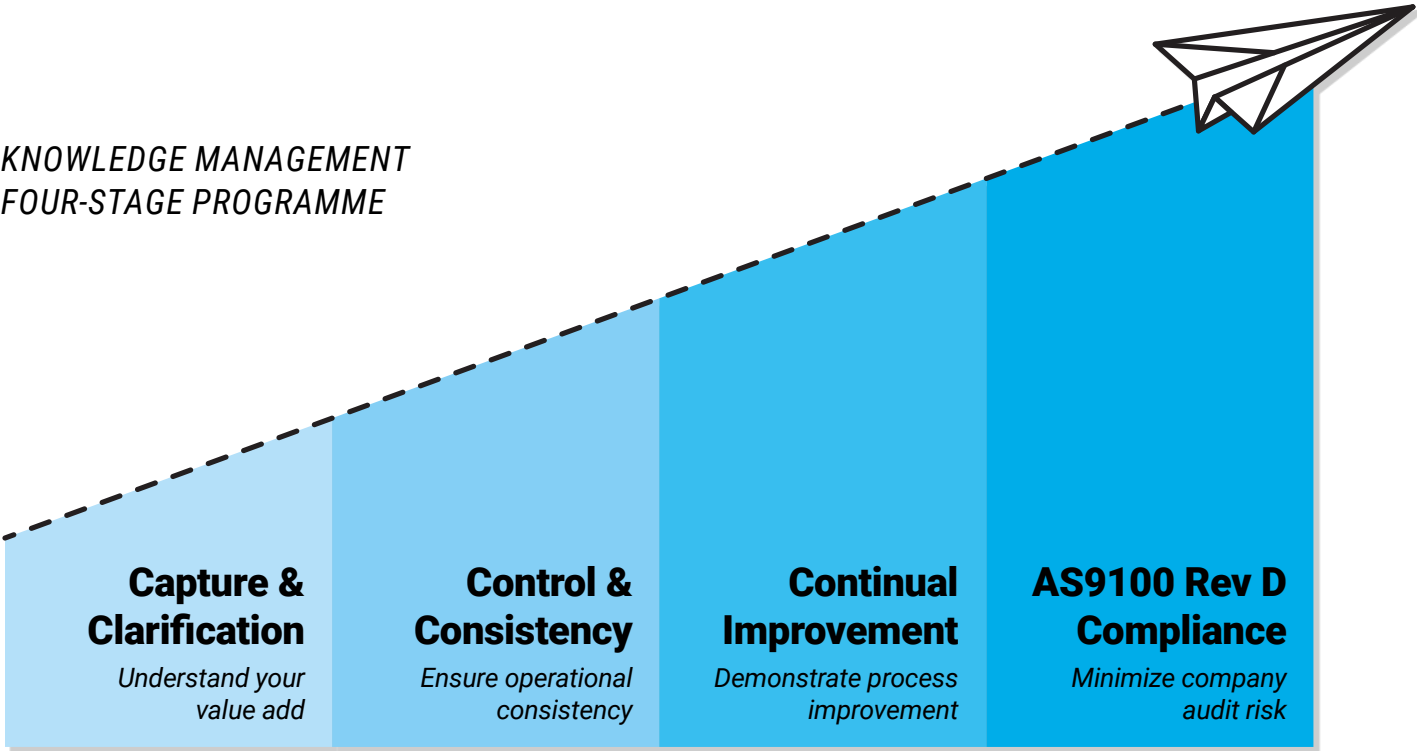
A Key Performance Indicators (KPI) requirement naturally follows from the High Level Structure. Once you set goals you surely need to measure them.

Once you create a value driven structure (the operational processes which sit under the value chain) you create a natural means to do that. Each level of process detail represents a new possibility for measurement and thus creates a cascade of Key Performance Indicators which aggregate to meet the overall corporate goal.

Conversely without the process structure, the implementation of KPIs is made much more difficult. Simple work instructions and procedures do not allow for any understanding of cause and effect; nor do they facilitate any means of live measurement.

KPIs go hand in hand with the ISO 2015 structure on which Rev D is built.

KNOWLEDGE MANAGEMENT FOUR-STAGE PROGRAMME



The Opportunity



**Integrate
systems**



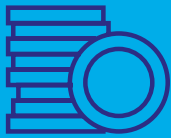
**Embrace business
improvement**



**Boost
innovation**



**Unlock latent
potential**



**Reduce
costs**



**Energise the
workforce**



**Embed continual
improvement**



**Accelerate
change**



The alignment of Rev D with the new 2015 ISO regime is undoubtedly a positive move.

It represents a great opportunity for aerospace companies to truly embrace business improvement and to integrate the management of all standards, compliance and operations within a single system.

But it also has the potential for much more profound change. By providing a practical mechanism for operational transformation—the integration of compliance with operations—it also

lays the ground for true business transformation—energising staff, embedding continuous improvement and opening the door for a new wave of innovation across the industry.

If aerospace companies embrace just a fraction of this potential, they should see a positive return in their results. If they embrace it wholeheartedly: who knows what could be achieved.

The vast majority of the registered **organizations were unaware of the changes being imposed** by that standard and, indirectly, **how those changes would affect their audits and certificate programs.** Some enlightened people, realizing the need to educate their clients and interested parties on the forthcoming changes, ran webinars and other means of conveying the industry-mandated changes [...] **one of the major lessons we all learned from the last transition process was the need for better communication.**



Sidney Vianna,
Director of Aviation,
Space & Defense Services at
DNV Business Assurance,
North America.

Transition Practicalities

TIMINGS

As at the time of writing this paper, the timings for Rev D's introduction are as follows.

AS Standard	Business area	Expected release date
9100	Manufacturing	October 2016
9101	Audit	November 2016
9110	Maintenance	November 2016
9120	Distribution	December 2016

TIPS

As we have already discussed, Rev D has real, transformative potential but the practice of implementing it may nonetheless hold a few traps for the unwary. So here are a few tips taken from our experience of successfully implementing Rev C and the new ISO:2015 regime.

TIP 01

BRING YOUR PEOPLE WITH YOU

Rev D is an evolution rather than a revolution, but it nonetheless represents a major change. Not only will such change require leadership—which the standard specifies—it will also require facilitation. To be effective that must be both human and systemic. Capable change managers applying recognised change management techniques will be needed to implement Rev D just as much as capable systems. With Rev D, the more you can deploy at scale

the better. After all, everyone will need to come on board eventually. So think about the required changes, prepare for that being continuous and use professional techniques to identify and manage the inevitable resistance you will face across the organization.

TIP 02

PLAN FOR THE LONG HAUL

Whilst the technical changes may be able to be dealt with relatively quickly, the cultural changes are likely to take much longer and require much more effort. Don't let this catch you unawares. Use effective planning to avoid overstretch.

TIP 03

USE YOUR SYSTEMS TO DRIVE CULTURE CHANGE

Rev D will focus your staff on new ways of working so your systems should support, reinforce and encourage those behaviours. Use them to proactively drive the culture change. Ensure your systems engage everyone.

TIP 05

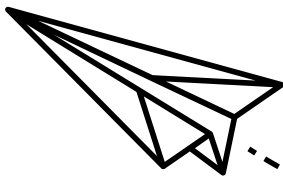
UNIFY YOUR STANDARDS MANAGEMENT

Whilst it will also take time for the High Level Structure which underpins both ISO and Rev D to be applied to the design of all standards, don't be fooled into thinking that the management of standards cannot be unified now. They can be—and the prospective efficiency savings are enormous. All it takes are capable systems and the will to do it.

TIP 04

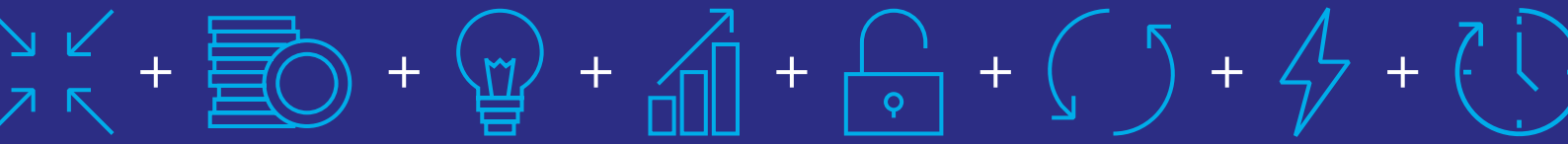
CONSIDER THE BIG PICTURE

Across larger or distributed enterprises, standards have rarely been managed consistently. Through its unified structure, the newly aligned ISO & Rev D regime should encourage this, but it will take time. In the meantime, policies and systems need to be in place to iron out the bumps.



CHECK LIST

- ☒ Plan to avoid overstretch.
- ☒ Use professional change managers and recognised change management techniques to overcome resistance
- ☒ Ensure your systems engage everyone
- ☒ Have back up policies and systems in place during the transition
- ☒ Integrate your standards management regardless of Rev D



Conclusion



No longer will it be sufficient for aerospace companies to innovate in products and services alone: Rev D is demanding evolutionary change to underlying business practices.

Rev D is a real opportunity to energise staff and unlock an organisation's latent potential. It has the capability of becoming *the* unifying, universal improvement mechanism across the aerospace industry.

To take advantage of this, aerospace companies must adapt quickly. In particular, they should do the following:

01

UNIFY AND INTEGRATE

Operate a single management system which truly embraces business improvement and integrates the management of all standards, compliance and operations under one roof.

02

EMBRACE THE CULTURAL CHANGE

Embrace and address the cultural changes which are likely to be much more profound, will take much longer and require much more effort than the technical changes of Rev D. This will require capable change management. Whilst the technical changes will be more comfortable for most QMs, it is the successful management of the cultural changes that will have the greatest impact on business performance.



Make change fly with
our free plans, tools
and techniques to
make Standards change
easier, quicker and
more effective.



Further Help



Having been involved with AS9100 since the times of Revision B and with over 6000 aerospace employees already using Isoma to manage compliance, we have built a wealth of knowledge and resources to aid managers in the transition: as we did when Revision C was introduced.

INDIVIDUAL GUIDANCE

One to one help and guidance on all aspects of AS9100 Rev D's implementation.

From system set up to effective change management, we offer personal advice and guidance. Just call **David Key** on **0113 366 2091** if you would like to arrange or discuss this.

SUPPORTING MATERIALS

A range of supporting materials, from online forums to documents.

As part of our drive to help companies manage the Rev D change we'll be offering a range of free insights into the changes, from blog posts to white papers. For details on accessing our range of material please **David Key** on **0113 366 2091** or email us at **info@esquared.systems**

WEBINARS

Free weekly webinars from October 2016 up to and beyond the transition date.

As part of our commitment to make standards change easier, E-Squared have partnered with Advanced Certification and Pecan Partners to offer free webinars on the change to ISO:2015. Running from October 2016 up to and beyond the transition date, the webinars will share plans, tools, tips and techniques to make the change easier, quicker and more effective. The seminars also qualify for CPD points. To attend or view previous webinars visit: www.esquared.systems/category/webinars



WEBINAR

DETAIL CHECK

Totally free
+
Qualifies for CPD points
+
Expert speakers
+
Practical solutions

WEBINAR 1 LESSONS FROM ISO 2015

- Hear an auditor's perspective on the transition
- Pick up vital tips for successful accreditation in Rev D and ISO 2015

WEBINAR 2 PLANS TO AVOID OVERSTRETCH

- Take away an effective, 4-phase programme
- Manage tight timescales
- Ensure support throughout the transition

WEBINAR 3 TECHNIQUES TO OVERCOME RESISTANCE

- Improve project success rates
- Deploy at scale
- Prepare for continuous change

WEBINAR 4 SYSTEMS WHICH ENGAGE EVERYONE (PART 1)

- Drive culture change
- Become a single point of focus for the whole company
- Simplify and reduce the costs of standards management

WEBINAR 5 SYSTEMS WHICH ENGAGE EVERYONE (PART 2)

- Part 1 recap
- Isoma System demonstration

We believe change begins with people

So we create business transformation systems to **engage and energise the workforce**, not just automate it.



About E-Squared

“ E-Squared believes change begins with people: so business transformation systems should energise a workforce, not just automate it. That’s why we create highly engaging software which unlocks business potential and empowers people to create enterprise-wide, positive change. Our flagship product Isoma is designed to be the ultimate business transformation system. Highly configurable, it delivers increased competitive advantage through the application of our unique Kinetic Code. ”

From the early 2000’s process automation was sold as the universal panacea for all business needs, including business improvement, transformation and change management. However as many of us have experienced, change cannot take off without engaging the hearts and minds of the people affected, and automated systems stifle business innovation by removing the human element. We feel it’s time to put people back in charge: and we formed **E-Squared** to do just that.

After acquiring the pioneering **Qmap** software in 2008, we developed a range of products that have led to **Isoma**: the ultimate business transformation platform. Isoma truly energises a workforce and empowers it to deliver enterprise-wide positive change. Highly configurable, it unlocks latent potential to deliver increased competitive advantage through the implementation of our unique **Kinetic Code**: our formula for creating powerful systems that enhance business performance.



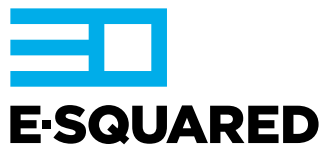
David Key is managing Director at E-Squared and for the past 8 years has led the implementation of standards change management in a range of industries, from major aerospace organisations to public sector national defence.

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