

How To Remove Risks To Your ISO 9001 Accreditation

Updated risk management requirements demand more document control

Among the 19,500 business and technology standards that the International Organization for Standardization (ISO) supports, perhaps none is more popular than ISO 9001 – with good reason.

An organization's ISO 9001 accreditation says the enterprise applies rigorous quality management systems. Accreditation confers a badge of credibility that customers trust. Even firms not obligated to maintain ISO 9001 certification will do so anyway because of the message it conveys: Best Practices Followed Here.

ISO says some 1.1 million businesses and organizations worldwide have achieved ISO 9001 certification. The accreditation process involves extensive external audits of an organization's procedures to promote continual improvement, build quality in supplier-customer relationships, disseminate good managerial practices organization-wide, and more.

And ISO 9001 standards are only becoming more rigorous. For example, new 2015 standards require even more risk management integration across a company's quality assurance/ quality control (QA/QC) management systems.

According to the ISO committee publishing the 2015 revision to 9001 standards, the main changes address "a greater focus on the customer, risk-based thinking, aligning quality management system policy and objectives with the strategy of an organization, and greater flexibility with documentation." Industry experts say "risk management systems" are the main watchwords with the 9001 revision.

Certification is painstaking to achieve. Before the external auditor comes knocking, ready to poke through a firm's documents to assess whether its ISO procedures are actually practiced or are merely theories, the organization must internally test its quality management systems (QMS) and processes.

ISO 9001 certification is an administrative challenge. The trick for any organization is to manage risk and quality without burdening the enterprise with time- and creativity-sapping overhead.

Software can help

For example, Newforma® provides project information management (PIM) software to the building and infrastructure industry. Newforma products improve project controls pragmatically, without burdensome administration that saps creativity and productivity.



Fundamentally, the ISO requirements require an even tighter grip on QMS throughout an organization. This is a process at the heart of Newforma software. For example, it provides a unified view of scattered files – drawings, spreadsheets, digital models, databases, etc. – whether they are in folders on the local area network (LAN), in enterprise cloud storage services such as those from Nasuni®, Panzura® or Microsoft®, or in document management systems such as Microsoft SharePoint® or Bentley ProjectWise®.

Newforma software provides single-point access to project files without altering file locations. In addition to streamlining access to files, it provides functions to manage common building and infrastructure project processes, such as those to manage action items, documents, and submittals. It captures a comprehensive, auditable project record, accessible via the desktop or an expanding selection of mobile apps. The Newforma approach allows a firm to deploy bespoke ISO procedures within existing, well-established project delivery processes. It mitigates the clear and present risk of digital information fragmentation.

Working hand-in-hand with Microsoft Outlook® email, mobile devices such as iPad® tablets, and design authoring tools such as Autodesk Revit®, Newforma software gathers fragmented information trails into a consolidated, auditable project record. Tools to manage action items and control documents ensure quality and mitigate risk. It provides a flexible framework for consistent, repeatable QMS procedures. An example can illustrate.



Time to audit, mind the gaps

The new 9001 standard will arrive as many United Kingdom firms in architecture, engineering, and construction (AEC) are working toward compliance with the British government’s BIM Level 2 mandate, which specifies that firms tendering for publicly financed projects must implement common data environments (CDE) and BIM (building information modeling) execution plans. Further, they must be able to share design and construction models through a common file format, among other rules.

One Newforma customer that has already achieved BIM Level 2 compliance is UK-based architecture and engineering firm BDP, which is ISO 9001 certified and working towards compliance with other ISO standards. Alistair Kell, the director of information technology, explains that the firm’s ISO processes provided an

Management Handbook					
Number	Name	Status	Due Date	Close Date	Supporting Documents
QA-1.1	Project Director’s Brief	Completed	06/10/2013	03/04/2014	
QA-1.2	Client’s Brief	Completed		31/03/2014	
QA-1.3	BIM/CAD Procedures/Strategy	Completed		23/10/2013	BIS-BIM-strategy-Report.pdf
QA-1.4	Amendments to the BDP Process required for the project	In Progress			
QA-1.5	Project Delivery Protocols / Procedures	Completed		23/10/2013	BIS-BIM-strategy-Report.pdf
QA-2.1	Scope of BDP’s services	Completed	07/11/2013	12/11/2013	Scope of BDP Service.pdf
QA-2.2	Management Responsibility Matrix	Not Started			
QA-2.3	Programme including Profession Project Milestones	Not Started			
QA-2.4	Responsibilities Matrix	Not Started	01/10/2013		
QA-2.5	Business Risk Register	Not Started			
QA-2.6	Deliverables including proposed Reviews and Design and Technical Checking	Not Started			
QA-2.7	Team Launch and Site H&S Briefing	Completed	28/11/2013	08/01/2015	
QA-2.8	Consideration of Environmental Issues and Environmental Checklist	In Progress	16/12/2013		
QA-3.1	BDP Team Members and Roles	Not Started	29/09/2013		
QA-3.2	Authorisation of document issues	Not Started			
QA-4.1	Other consultants and their services	Not Started			
QA-4.2	Sub-consultants and their services	Not Started			
QA-4.3	Contact names and positions	Not Started			

established framework for project delivery that enabled BDP to become the first UK firm to achieve BIM Level 2 compliance ahead of the 2016 deadline.

Kell says part of the process of achieving ISO compliance depends on the strength of audit points in order to detect gaps in processes (such as the project's BIM execution plan) that can be documented and then corrected. Project teams achieve these checks and balances with action item functions that are built into the firm's dashboards accessed through a project specific Project Handbook driven by Newforma software.

IT Director Kell says, for example, "We have 46 QA activities included as part of our standard project setup, along with hyperlinks to the relevant BDP procedures." The 46 audit points are then sequentially addressed with completion dates defined and monitored through Newforma Project Center, the product used by BDP. The firm's Project Handbook then provides links to the tailored information and allows QA auditors to simply view and access the relevant material.

At the beginning of every BDP project, the team uses a QA template of standard action items encoding the firm's ISO procedures. A job runner, or project manager, then assigns due dates and team members to each task; every item has a link that enables a drill-down to more information about the action. Newforma's mobile apps, Outlook integration, and timely notification of tasks coming due keep project teams focused and productive.

Kell and his team also use color-coding against milestones:

- Red means the action is not completed within the defined timescale.
- Amber means the QA point is not yet done but the due date has not passed.
- Green means it's all good: The QA point has been completed within the timescale.

"It's simple and efficient," Kell says of the system.

Since continuous improvement is also a very important aspect of ISO 9001 compliance, Kell says BDP teams devised what they call a "project director's brief," which is as simple as its title. It's no more than a one- or two-page note accessible to team members who need to refresh their memories of project scope. "There's always a continual review of our compliance procedures," he adds. "What we've developed now, which any project manager can use, is an ability to see compliance with any sector. We have a much more granular means of looking at our compliance."

"Action items are huge to the process," says Rick Saladino, director of strategic accounts for Newforma and a veteran of ISO accreditation planning and execution as a software executive. "If I can link transparent, actionable tasks to key

project deliverables – all of which are trackable – and easily focus on what's not closed, this is huge to achieving a complete audit trail that's reportable."

The bottom line with ISO processes, Saladino adds, is that firms have to establish a series of checks and balances that are in accordance with the specific ISO standard. "With an audit, you want to be sure that the processes you've developed as a company are being followed exactly as you've developed them."

Velocity with quality

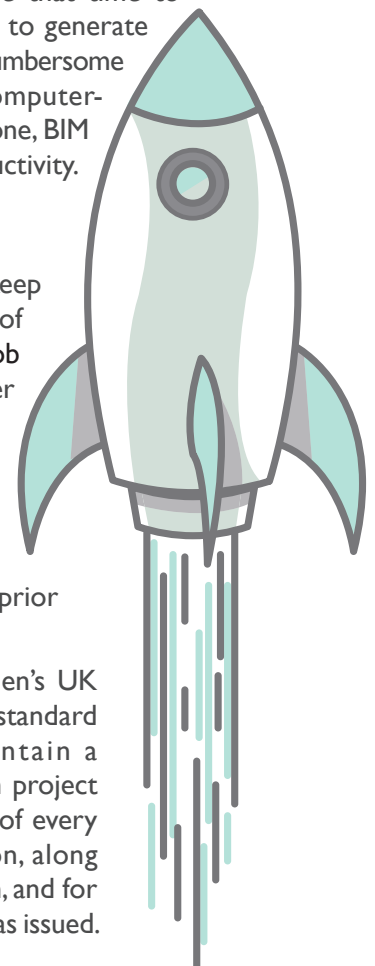
The relentless pace of technological advancement puts pressure on existing QMS procedures, so proactive refinement is essential. BIM provides an example.

BIM allows design teams to build a project virtually before breaking ground physically. In virtual construction, teams explore new ideas, throw away the bad ones, and quickly iterate to optimize the design. BIM's benefits are well-documented: eliminated waste during construction, optimization to the needs of the client, and reduced operating costs over the lifecycle of the built asset.

But BIM puts pressure on document control processes developed for the systems BIM replaces. For example, BIM enables thousands of two-dimensional construction drawings to be generated from a three-dimensional model in minutes. Compare that time to the hours or days required to generate drawings using the more cumbersome methods of 2D CAD (computer-aided design). In that way alone, BIM can be a great boon to productivity.

"But only if your revision management and quality assurance procedures can keep up with this increased flow of model deliverables," says Rob Stephen, an account manager for European and Middle Eastern markets for Newforma. Each drawing revision is still a contract document that needs to be logged and quality-checked prior to issuance.

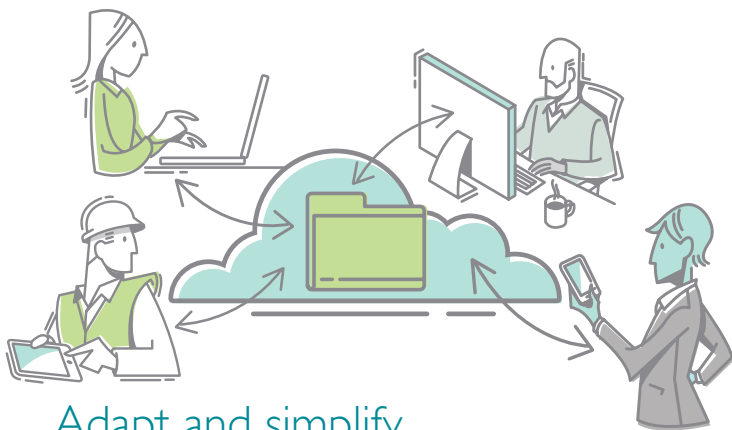
And if you're one of Stephen's UK clients, the British BS1192 standard recommends firms maintain a document register for each project to track the key attributes of every model and drawing revision, along with logging when, to whom, and for what reason each revision was issued.



And for good reason: Drawings, and increasingly, 3D models, are a design firm's primary fee-generating (and litigation-generating) deliverable. So it's not a bad place to focus a QMS procedure.

Traditionally, document control quality management procedures were cumbersome and filled with manual steps, wholly appropriate in the days of 2D CAD when drawings were revised one at a time. But in today's age of collaborative 3D modelling, BDP and Stephen's other UK-based customers have turned to Newforma's document control solution, which integrates with Autodesk Revit to issue and manage batches of model-based PDF drawing sets. It also automatically populates the project drawing register with revision information matching each published drawing.

"Newforma document control replaces the manual, error-prone steps in the process," says Stephen. Free to focus their efforts exclusively on quality control, it allows companies to enjoy the productivity and collaboration benefits of BIM while still adhering to the QMS procedures that ensure client satisfaction and mitigate risk.



Adapt and simplify

Michael O'Toole, an associate in the Building CAD/BIM Design Services group at engineering consulting firm WSP Global, is already focused on the risk management upgrades that the new standard requires. "We used to have about 20 procedures" for some quality systems, he says, but through their audit prep work, the firm cut it down to nine by identifying unnecessary complexity.

O'Toole is part of a team that leads the auditing process within some divisions of Canada-based WSP. O'Toole's Boston-based team will train other WSP divisions to become ISO certified.

WSP, like many in the industry, has been on an acquisition tear. WSP recently closed its acquisition of storied engineering company Parsons Brinckerhoff, and had earlier acquired Flack + Kurtz, which is how O'Toole made his way to the company. (O'Toole worked for a company acquired by Flack + Kurtz!)

Acquisitions generate much work for O'Toole's group.

"What we do is mimic what the external auditors do,"

he says. "We need to ask what the auditor's going to ask." So if an auditor is going to ask the project team to open a job number to look over meeting notes, a schematic, or submissions, that's what O'Toole's team will ask for in testing their ISO 9001 procedures – especially their QA/QC processes. He uses Newforma's products for submittals, a critical area of document control for QMS which he'll be looking to expand with the new ISO 9001 revision. "As far as the document controls we work with, I think we're only scratching the surface on the possibilities" with tagging systems and document control technology, O'Toole says.

"We're at a critical juncture in the [design and construction] industry," says Allen Preger, a vice president of global customer accounts and a co-founder of Newforma. Technology is exploding on jobsites, replacing traditional, paper-based methods. Workers on jobsites have mini-computers on their phones, collecting, sharing and receiving expanding amounts of data.

"It's been a boon to individual productivity and collaboration, but not all that data is landing in the right spot," he says. "With the proliferation of construction-focused apps and file-sharing tools, how do you mitigate the risk of all that information being scattered in the wind, or in the cloud? In light of these transformative changes, it becomes critically important that firms revisit existing QMS procedures, and put something new together [in their processes] that is repeatable."

Project managers used to issue instructions with business letters, typically referenced with a QC code and filed by their personal assistants. "That's been largely replaced by email, mobile apps and project collaboration sites in the cloud, creating disconnected silos of project information that challenge existing QMS procedures," Preger says.

From Newforma's perspective, the key is simplicity, with the ability to seamlessly adapt technological innovations to existing quality management systems, as well as the flexibility to adjust to any standard. It shouldn't matter whether a person is using a punch list* app on a construction site, reviewing emailed contract changes in an airport, or resolving design conflicts within a 3D modeling tool, Preger says. As long as it all can be audited as part of the project record. "This plays to our strengths."

*Also known as a "snag list" in the UK or "defects list" in Australia

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