

Reference Linking Solution - *Mitigate*

*Compliance Risks and Improve
Workflow*

IHS Whitepaper

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The Information Dilemma: Losing Time Losing Money

Research, safety shutdowns, re-work, audits, and meetings -- all these activities cost engineering departments time. Spending time on activities that could be avoided equates to losing time. Losing time quickly results in losing money, particularly when the lost time results in schedule delays, lost production, or longer time to market.

Executing projects or continuing operations without a standards compliance infrastructure in place easily leads to spending time on activities that could have been avoided such as trainings and briefings related to safety shutdowns, responding to audit findings, conducting root-cause investigations, and performing re-work. Effective operations and project execution requires that the right information is available at the right time to make the right decisions. Having work crews wait while an engineer and safety officers determine if a hoisting and rigging plan meets requirements or having to re-visit an electronic component design to determine if quality standards are met, directly impacts project budgets.

Achieving standards compliance requires that a wide range of personnel have access to critical engineering and technical documentation. Everyone needs to be using the same version of the standard. In cases where multiple standards are available, everyone needs to be using the same standard. Effective standards management aids these actions.

Standards Compliance Actions -- Some Work and Some Don't

Engineers, designers, researchers, and technicians find using specifications and standards both a benefit and a problem. But operating in highly competitive or regulated industries or competing on a worldwide basis makes standards compliance a necessity rather than an option. Standards management is one of the challenges faced by companies working to assure standards compliance on projects or within companies. Typical standards management approaches include establishing extensive corporate libraries, electronic document control, frequent quality assurance audits, and elaborate documentation development and approval processes.

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The corporate library is a prevalent entity. Purchasing hardcopy standards sets from developing organizations has been done for years by large multi-national corporations and small engineering firms.

Challenges faced when using a library include providing timely access to the information and keeping standards up to date. Access is typically needed outside standard business hours. For companies with multiple offices, the logistics of providing everyone information from a central location is both time consuming and costly.

Since engineers, researchers, and other technical personnel are impatient do-it-yourselfers, they use corporate libraries grudgingly.¹ Most of them would rather search for references themselves and often have their own copies of reference standards. This creates multiple information silos with duplicate,

outdated, and sometimes conflicting standards being used across the company.

Due to the prevalence of compliance issues, independent quality assurance organizations often include standards compliance as a primary audit area. Since quality assurance audits resulting in findings of non-compliance with standards and specifications results in adverse cost and schedule impacts, proactive companies try to build checks into the early phases of projects. These checks may become part of the document approval and work authorization processes, usually requiring quality assurance reviews and sign offs. However for timely project execution, documentation approval cycles are often looking to be streamlined rather than expanded. Also, simply assuring that the procedure writer or project manager knows which version of a standard is being used does not assure that the personnel implementing the documentation know which standards and which versions are required. In this case, having a quality assurance approval on a document may provide a false sense of security regarding standards compliance.

Let's look at two scenarios using some of these standards compliance actions and the potential outcomes when implementing them.

Scenario 1: What will your staff say to the auditors?

Monday is the start of a week-long audit by the state's environmental compliance department. During the in-brief,

the lead auditor asks to speak to couple of the maintenance engineers and operations personnel. The staff knew about the upcoming visit and had been reviewing training records and procedures all week. Quality assurance had signed off on all the procedures.

Friday afternoon during the out-brief, the auditor noted that due to findings at other company offices, standards compliance was a key concern.

The result of the audit was that in almost every instance of standards compliance reviewed the maintenance department and operations staff was working from difference versions of the same standard. In some cases this resulted in the potential for non-compliance conditions with state requirements. In other cases, the potential for safety and environmental violations was identified.

Let the corrective actions begin!

Since there is a potential for non-compliance with state requirements, operations must be shut down until compliance is demonstrated. The audit did not include the entire population of operations and maintenance procedures. However, since there were problems with every procedure reviewed, staff will need to review all remaining procedures and determine which standard is being used by all responsible parties.

This audit only included operations and maintenance. Since the finding is significant, upper management directs a company-wide quality assurance audit.

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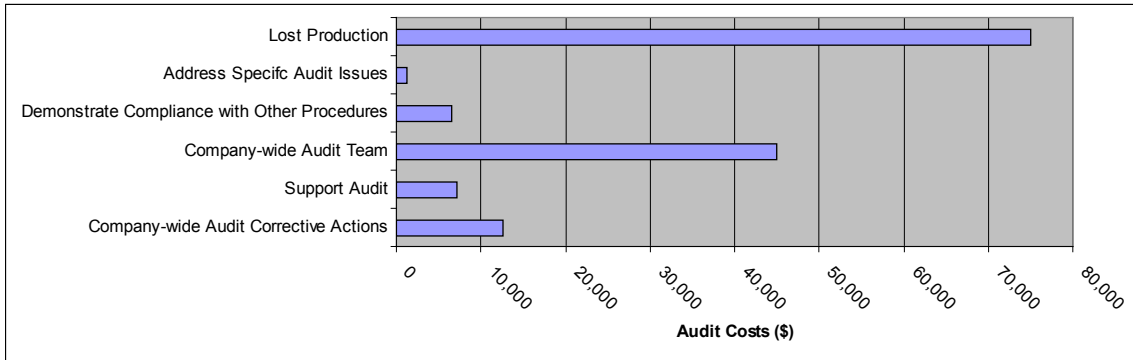


Exhibit 1 -- Disconnects in standards compliance can result in multiple sources of avoidable costs.

Costs estimated using the following assumptions:

Daily Production Revenue	\$10,000
General Labor rate	\$30/hr
Professional Labor rate	\$75/hr
Consultant rate	\$1,500/day

Scenario 2: Problems in the field.

While performing upgrades to an old pumping station, a crew foreman realizes that the bolts and several other fasteners aren't going to work with the existing equipment.

The project manager is briefed. While trying to find the cause for the discrepancy to assure the right corrections are made, the project manager spends almost an hour on the phone with staff from the corporate regional library determining which standards need to be reviewed. The standards will arrive tomorrow.

The standards arrive in the field at lunchtime. After lunch, comparison of design documents, standards, and field manuals shows that different versions of the same standard were used. A message is left for the responsible design engineer. He calls back the next day and notes that the corporate library in his office only contains the latest version of the standard.

The crew sits while the design is reviewed and revised.

The old version is faxed to the engineer for review. New calculations are required with independent verification.

The engineering calculations are performed, checked, and changes made to the construction documents. The changes are brought out to the field the next day to assure version control is maintained.

After most of the crew has been simply hanging out for three days, work is resumed using the revised construction documents. The project is completed behind schedule and over budget.

Costs estimated using the following assumptions:

Project Manager rate	\$50/hr
Library/admin staff rate	\$30/hr
Design Engineer rate	\$50/hr
Senior Professional rate	\$75/hr
Crew rate, 12 person crew	\$30/hr

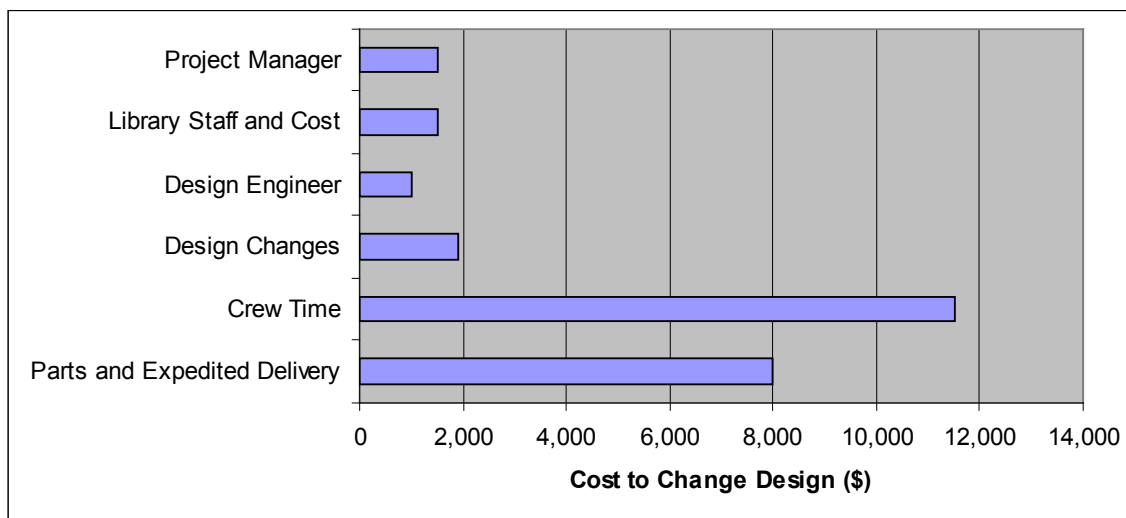


Exhibit 2 -- Lack of standards control can result in avoidable cost and schedule delays.

Achieve Compliance, Reduce Costs, and Improve Workflow with an Alternative Compliance Strategy

Consider the workflow and compliance scenarios if your compliance strategy is based on the direct association of all external critical data, such as industry standards, with your internal business requirements.

All the procedures and documents for your project are available over the company intranet. Project personnel in different offices all have access to the same procedures. The procedures which reference a specification or standard from ANSI, ASME, ASTM, IEEE, IEC, or ISO include an embedded link. The link allows the user to click the reference and immediately access the information being referenced in the procedure.

No matter where in the world or when, the standards applicable to that procedure for that project are displayed. The version accessed is the latest version issued or a specific version of the standard.

In all cases, the right information is provided at the right time. Decisions and activities within the project are executed with confidence.

Accomplish More than Compliance Using Reference Linking

Using a linking system from procedures to specification and standards content assures that requirements are available to staff that need them reducing the likelihood of noncompliance issues. Improved compliance with specifications and standards provides a variety of benefits such as reduced downtime to address corrective actions, increased market share due to production increases and rejection decreases, expanded markets due to increased interoperability and compatibility, cost reductions associated with maintaining project schedules, and reducing time to market. There are also less tangible benefits such as improved company reputation and standing within the marketplace.

Companies using linking systems to specifications and standards also raise their return on investment related to purchasing specifications and standards.

Enabling instant access when and where it's wanted increases the use of the reference documents – improving the company's return on investment.

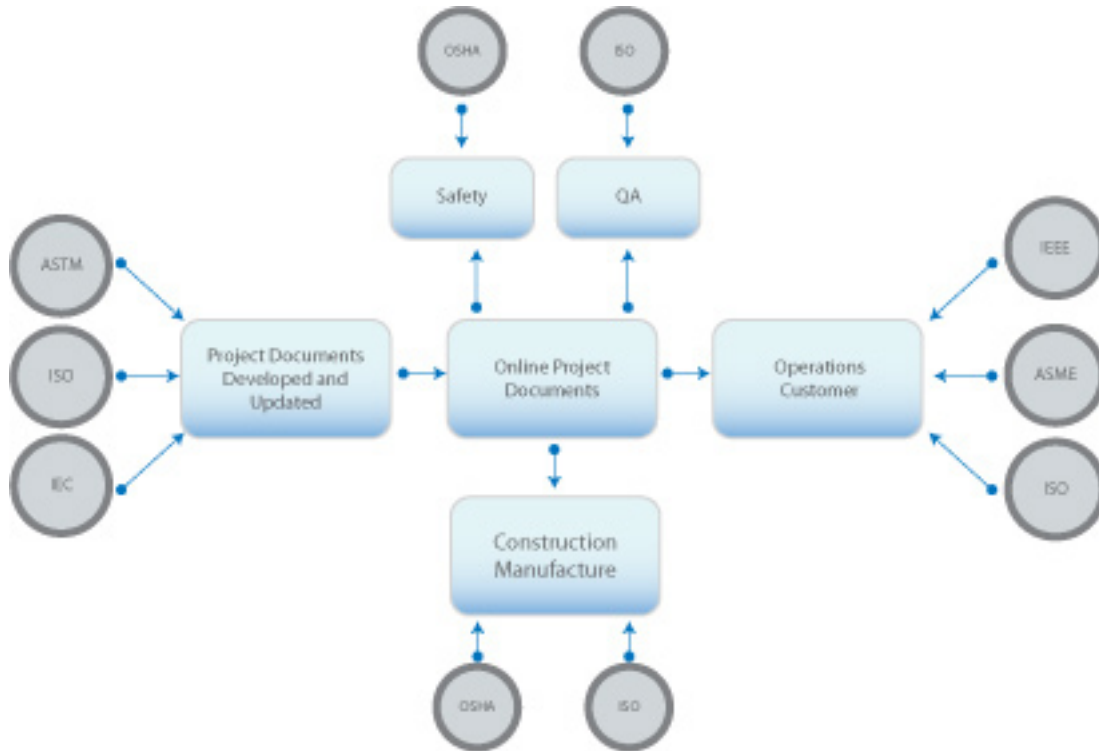


Exhibit 3 -- Project phases may use different standards or versions causing compliance questions.



Exhibit 4 -- Reference linking provides the same standards and versions to all project phases avoiding adverse cost, schedule, and quality impacts.

IHS Offers a Reference Linking Tool

IHS Reference Linking Solutions provides users with secured direct access to external standards, specifications, and regulations from within their own documents and workflow processes. This solution allows users to work more efficiently by ensuring that the appropriate external documents are always available when they're needed and that all employees throughout an organization are using the correct version of a document.

Contact IHS at 1.303.397.2896 today to discuss your linking needs and start experiencing the compliance and workflow improvement benefits of using a reference linking system.

About the author: A mechanical engineer, Shannon Walker-Lembke worked as a consultant, manager, and regulatory compliance specialist in the nuclear and environmental industries for more than 15 years. During that time, she participated in operations, quality, and safety audits and assessments from all sides -- the auditor, the party being audited, and management responsible for developing and implementing corrective actions. She also worked on nuclear facility construction projects from initial scoping to beneficial occupancy and start of operations. She continues to provide quality and health and safety consulting for corporate policies and procedures.

(Endnotes)

1 Strouse, Roger. *Corporate Information Centers in the Year of Accountability*. Online Jul/August 2001, Vol. 25 Issue 4, p86.