



# Flawless XML Change Management

The business case for a new best practice for managing documents and files

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The document change process is an obvious candidate for a new corporate best practice. Documents evolve regularly, and sometimes their value rests on being 100% up to date. Yet many are unaware that software exists that can ensure XML documents are updated in a streamlined, standard, automated way.

In today's knowledge economy, flawless handling of significant documents and files is essential to the speed, cost, and reliability that drive business success. Many files representing mission critical information are structured and stored in XML. What many companies don't know is that there is a way to manage these files with confidence through all of the changes, merges, and creation and updates of dependent documents.

For the health and continued success of the corporation this process needs to be robust and rigorous. Yet there are many challenges to updating XML documents. Typically, a multidisciplinary team is involved in meticulously updating or amending significant documents. The documents are large, complex, and subject to frequent change. Often a change in content or structure must be replicated throughout a library of documents.

What's needed is a focused, enterprise-ready XML change management software suite to replace the many tools companies have deployed in patchwork. Typically, different teams use different tools in an inconsistent fashion. This creates risks in a process that is designed to reduce risk.

To shift that dynamic, leaders are deploying a common company-wide approach based on consistent software. Any new corporate best practice in this area must be "structure aware" and capable of identifying all changes to both content and structure of a document or file with 100% accuracy. Every change in any document – nothing less will satisfy.

## 10 reasons to automate XML change management:

1. Accuracy
2. Efficiency
3. Timeliness
4. Traceability
5. Assured deployment & consistency
6. Governance
7. Compliance
8. Process streamlining
9. Customer satisfaction
10. New revenue opportunities

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### About the Sponsor: DeltaXML

Providing unmatched XML comparison and merging solutions, DeltaXML helps deliver accurate and reliable identification and management of change within XML documents and data. Supporting hundreds of companies globally including members of the Fortune 500, DeltaXML works together with its partners to provide integrated change management functionality in some of the world's leading enterprise software platforms.

To learn more about DeltaXML and our products please visit the website at [www.deltaxml.com](http://www.deltaxml.com)

## Significant documents

Today’s businesses require speed, cost-efficiency and perfect quality. This is simply the expectation and the competitive environment. For significant documents, the requirement is more crucial.

Significant documents or files are those that point to executive-level concerns. These may include risk, regulatory or customer compliance, governance, brand value, intellectual property (IP), and efficiency. Figure 1 lists a few examples of significant documents.

Companies know that they cannot afford to risk having significant documents be out of compliance, out of date, or out of synch. Yet the nature of a healthy business is that these documents and files change regularly.

Some of the reasons to revise these documents include:

- keeping up with continuous improvement – such as a product manual or standard operating procedure
- developing a specific variant of a generic or master document – such as a commercial contract
- revising all the variants when a master document is altered, often as a result of a policy change
- adding new content, often as the result of legislative or compliance obligations

Driven by compliance or legal concerns, companies often want to understand all the changes that led to the current revision. In some circumstances, they want to go further, to track the development of the document through the preceding revisions back to the original source. This is challenging with large, complex files.

For significant documents, being able to identify change is the first step. Being certain that you have identified each and every single change – no matter how trivial – is essential. Only 100% accuracy is acceptable in this domain.

### XML: structure and content

The Internet led to the widespread adoption of Extensible Markup Language (XML) as the primary format for structured documents in the 21st century. The advantages of XML include that it is both human and machine readable, with mark-ups or changes only shown as needed. It’s portable across platforms, and it can be customised for a specific domain.

An XML file has not only the content or words, but also additional information that defines both physical and logical structures within the document. The benefit: XML

Document type	Function	Significance of updated document
<b>Manuals &amp; technical documentation</b>	Define products & usage	Customer satisfaction with ability to gain full value Ensure subject matter experts (SME) approve changes – to comply with regulations
<b>Standard Operating Procedures (SOPs)</b>	Define processes & behaviors	Ensure employee can deliver value reliably – quality Ensure subject matter experts (SME) approve changes – to comply with regulations
<b>Contracts</b>	Outline expectations for partners and employees	Engage on clear footing with legal clarity
<b>Transaction records</b>	Track actual activities	Ensure traceability and prove compliance
<b>Brand or product definitions</b>	Describe trade secrets and define values	Intellectual property (IP) protection, market differentiation

Figure 1: Many types of documents and files are significant for various business reasons. All of these require changes to be made in a flawless, 100% assured manner.

permits content to be created once and then used in many different ways. This offers enormous flexibility and dramatic cost savings for the user.

Note: We use the terms “XML” and “documents” to include not only XML documents, but also XML-like files based on derivatives or variants of XML. These include Darwin Information Typing Architecture (DITA) used in publishing, Extensible Business Reporting Language (XBRL) used in finance, and dozens of other XML markup languages.

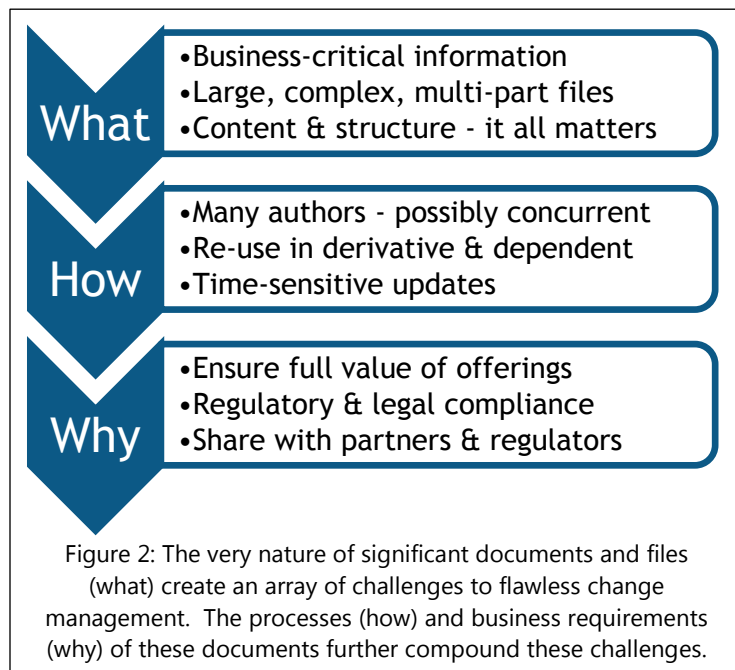
### Why it’s hard to be flawless

Because an XML document contains both content and structure, it is essential to identify changes not only to the content but also to the structure. This is challenging for many reasons.

**Frequent change.** As stated above, these documents are routinely revised. The frequency or time-sensitive nature of these changes can create challenges. For example, changes for compliance purposes often have a deadline.

**Size and complexity.** With virtualization there are no longer limits on size or complexity of the “document”. As a result, many documents have steadily grown larger and more complex.

**Multiple authors and editors.** Editing a significant document typically involves several specialists working on the same document.



*“Before the introduction of DeltaXML, inspection and validation of completed work was based on a) the revised version of the document, and b) knowledge of the expected changes. We are now able to present a ‘Before and After’ view of the modified document that clarifies the nature and location of the changes, thus increasing the reliability and completeness of the inspection process. It is our intention to introduce this methodology into all our inspection and validation activity.”*

*IT Documentation Specialist  
Major European Aircraft Manufacturer*

**Derivative documents.** Often there is an original plus a series of subordinate or dependent derivative documents. For example, a master set of terms and conditions will be used in a slightly different version for each client or transaction.

**Parallel changes.** Some documents need to be produced in a very short timeframe, so multiple changes are made by different authors at the same time. This is common with large complex legal documents.

Figure 2 shows challenges to flawless XML change management in several major categories. These are the what, the how and the why of change management for significant documents.

The very nature of significant documents and files (what) create an array of challenges to flawless change management. The processes (how) of change management also typically create challenges. Perhaps most pernicious, business requirements (why) of these documents further compound these challenges.

### Current approaches

Tracking or logging changes by hand is simply not reliable enough in critical areas. There are three widely used automated approaches to document change management today. Each has limitations or weaknesses that people have learned to live with or to work around.

*“One of our client-led projects necessitated that we provide an accurate and detailed comparison output showing the ‘red-lined’ changes between versions of contracts. These were produced using our Rapidocs document automation technology in Open Document XML format. After an exhaustive search and evaluation, we found that many products do not support that format. DeltaXML tools were by far the best fit for our needs.”*

*Stuart Robinson, Project Manager  
Epoq Legal Ltd.*

### Track changes

Any word processing user is familiar with track changes. It is intuitive and user-friendly. However, the changes identified may be selective and it’s not fool-proof. Why?

- Typically, it can be turned off by the user – either deliberately or inadvertently.
- The task may prove too difficult for the tool so it fails to track all the changes, e.g. changes to tabular data may not be recorded.
- Editing applications for structured documents are less capable in this area than for office text documents.

### “Diff engines” or differencing

In the software development arena, differencing tools are common. These tools tend to be line based – e.g. they look at a line at a time. As a result, they are unable to recognise and capture change at the structural level.

### Content management

Content management (CM) systems ideally manage the entire lifecycle of documents and files, as shown in

Figure 3. However, many CM systems are weak in the review and comment, revise and finalize phases. Why? Typically they only consider content changes, and ignore XML structural changes, which can be critical to document updates and evolution. Some prominent products use a line-based diff approach also. Fortunately, more and more CM products build in a better approach.

### Custom solutions

Many have built a custom solution to compare XML documents. However, most work only for files developed or used in one application. They are not adequate to adapt to the diverse and regularly changing large corporate environment.

### Shared challenges

There are some weaknesses that are common to all the approaches outlined above.

- Many tools result in a multitude of different ways to represent change.

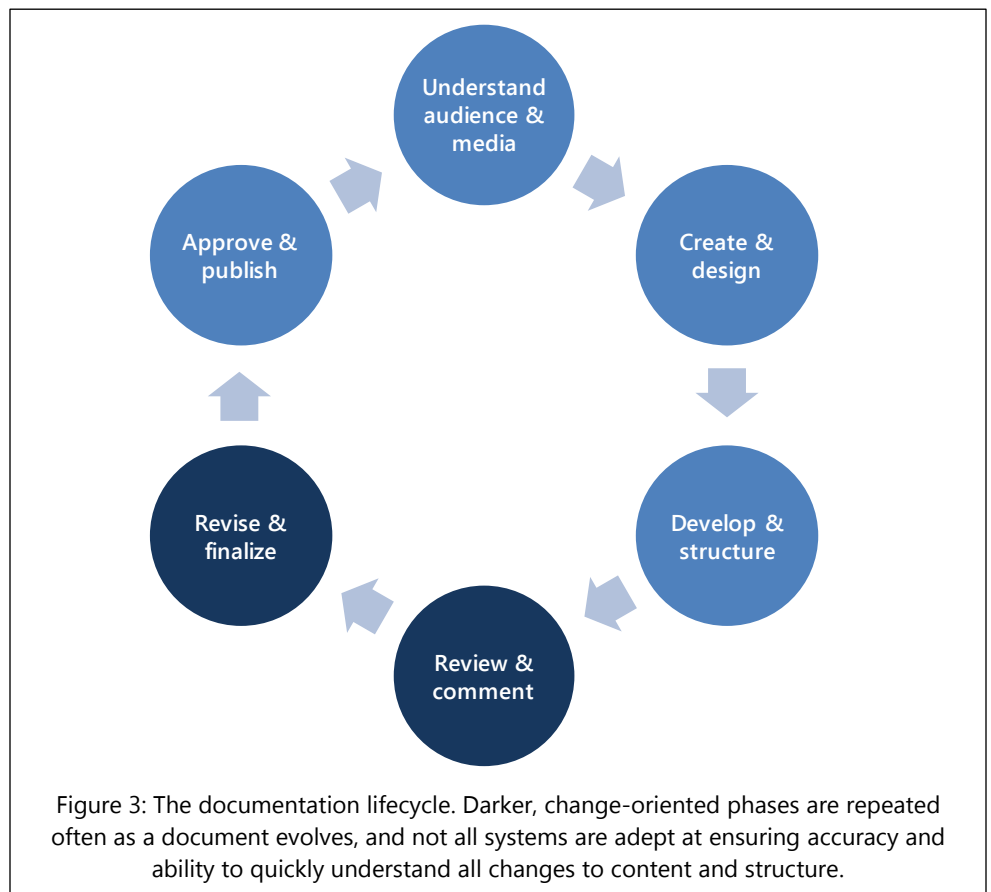


Figure 3: The documentation lifecycle. Darker, change-oriented phases are repeated often as a document evolves, and not all systems are adept at ensuring accuracy and ability to quickly understand all changes to content and structure.

- Tool idiosyncrasies mean the output may not itself be a standard document – it will have nuances specific to the software developer. This creates a need for further review before using or taking action on the output.
- Users may not have the domain knowledge to appreciate the importance of the changes.

The result: variability and inconsistency. Lack of a standard best practice for the organization. This unreliable reality raises the risk of incorrectly tracking XML document changes. It's also quite inefficient.

## Best practice automated solution

Ideally, companies create a best practice for changing XML documents and files, particularly for significant documents. In regulated environments, such as pharmaceutical labelling or aircraft maintenance manuals, a robust change control procedure is mandatory.

Yet creating a best practice means all XML files could use this approach. Throughout this document we provide use cases explaining how certain types of documents can benefit from having a best practice process for change.

What does best practice look like for XML change management?

**Coherent:** One focus for XML change management in significant documents is reducing risk. Humans are always a key source of error and risk. So to the extent possible, the XML change management system is automated in software. The current approaches mentioned above are software but what's different is the availability of a coherent software suite.

**Consistent:** The same approach would be used across the enterprise and for all use cases. This approach would apply when revising or updating a file, comparing two versions, merging three or more versions, updating all derivatives from a master, or updating the master itself. The key to devising a Standard Operating Procedure (SOP) is not just identifying all the changes but understanding the true significance of each change and defining a completely standardised mechanism to process all changes.

**XML-savvy:** To get good comparison results for structured documents, the system must fully understand not only the structure of XML, but all the syntactic

details. For example, XML attributes cannot be handled as text. To handle whitespace correctly it must read the schema and understand certain XML attributes. The system must also understand XML methods for representing standard text items. The same applies to change identification at the word level, especially if there are references to external content.

**XML output:** To make changes easy to process, it's ideal to represent them in XML. The system output is an XML "delta file" showing changes or redlines between any number of documents. This has the advantage of representing the changes within the original XML document.

An XML-format delta file provides new opportunities for managing change in an automated way. The XML

### Use Case 1: Documentation of regulated products and systems

Regulated products such as aircraft, vehicles, and pharmaceuticals as well as manufacturing processes and installations such as data centers, communication and utility networks have large libraries of technical information that define what it is, what it does, and how it has been configured or updated over time. Often the data is vital commercially and also under strict regulatory control. Companies must continuously revise and review these XML files to keep up with reality and underlying regulations. To satisfy regional requirements, they may also exist in multiple languages and with variations to ensure local compliance. Key benefits of standard best practice change management:

- Operational efficiency: to identify and concentrate editing/reviewing time only on items that have changed.
- Risk avoidance: knowing that all the changes – both to the content and the XML structure - have been identified and validated for compliance reasons.

representation of the changes can assist in identifying both unimportant changes and highlighting critical changes.

Fortunately, there is such a system on the market. DeltaXML offers a suite of software for XML Compare and Merge that are used worldwide by large enterprises in business critical areas. It is used today in publishing, printing, software, telecommunications, pharmaceutical and healthcare, government, aerospace, financial, legal and business services, manufacturing, and academic environments. In addition, leading content management systems have incorporated this patented change management technology into their offerings.

Of course, to set up a best practice process, it's important to understand the context. Beyond the specific task for which the tools will be deployed, knowing the nature of the business process which this activity supports is at the heart of gaining full value business.

## The business case

### Operational efficiency & timely changes

Reducing hours for Subject Matter Experts (SMEs) to edit and maintain documents and files can generate significant benefits in costs and time. Being able to go directly to every change in a large or complex document without scrolling through it is one factor. Confidence that the editing tools capture 100% of changes is another. The more complicated the document the greater the benefits. Complexity comes from:

- the size and complexity of the document itself
- the size and diversity (geographical, functional or technical) of the editing team
- the number of documents to update
- the frequency with which changes to the document are required or expected

### Modify once, deploy many times

Where significant documents follow the common parent-child paradigm, being able to manage and approve edits to a master document and then deploy those changes to a series of dependent variants can greatly reduce the overall amount of work required. It can transform the process to bring a whole class of documents up to a new revision level.

## Use Case 2: Legacy translation to new software or document definition

Translating a large number of documents to match a new definition of the brand's style sheet constraints would normally be a fairly tedious export/import operation. Moving from source to destination format happens when technical authoring departments merge after an acquisition or merger, or when they supersede the software and/or a document definition in which they produced a library of documents. Key benefits of XML best practice change management:

- Automate translation to become a batch process greatly reduces effort.
- Automating checking of results for proper handling and no omissions for only important issues keeps risk low, and is available when the translation output is XML.

*"When the same documents are updated every year—and the edits are sometimes minor, sometimes significant—tracking the updates can help everyone involved. We can now provide PDFs that highlight the changes in the text, which helps prevent unnecessary proofing or review of unedited text. It also makes communicating exactly what has changed to sales and support teams easy. With DeltaXML DITA Compare, we don't need to rely solely on actual tracked changes being turned on, and can in fact compare a document to any previous version."*

*Chad Crume, Director Content Management  
BARBRI, Inc.*

### Deploying a best practice across the corporation

Like any best practice, the value comes from being certain that everyone performing a particular task is performing the process in the same way throughout the business. Anyone from across the business can make changes without additional training. This allows for moving people around the business confidently, knowing they are trained the same. Greater familiarity with a common tool reduces errors and speeds up the activity.

### Traceability

Traceability generates a process-level improvement, thus contributing to efficiency. Where traceability through a full audit trail is mandatory, the benefit also addresses a key governance concern for the client – minimising the risk of subsequent litigation or legal action.

### Governance and compliance

Governance is about improving the overall quality and traceability of the editing process to mitigate and minimize risk. This XML change management approach assures that the process and software have captured 100% of relevant changes and brought them to the attention of the document owner for review. Traceability and the opportunity to audit document changes are an added bonus. It is almost impossible to put a financial value on this, but compliance risks can be extremely costly, both short-term and long term.

### Process streamlining

When the output from a comparison is itself an XML file, it creates the possibility to automate further process steps. This is often the best way to minimize errors and omissions, and it can accelerate the process of producing an amended document. One area where updates need to be highly responsive is for an information service about fast-changing legal or financial topics. The content service's value is tied closely to the timeliness of content updates.

## Use Case 3: Software configuration data

Technology has made a big shift away from hard-coded functionality to embedding the functionality in firmware. Code is periodically updated and downloaded into the device. This is going on everywhere, and with the Internet of Things (IoT), at a scale that demands full automation. An example is a complex network of communications devices. A new update, or patch, can be configured to match the device as manufactured or delivered. The challenge for both the network equipment manufacturer and the network operator is that each instance may have a different configuration, and it may have changed as part of the initial installation or subsequent maintenance. However, as a structured data set the XML compare and merge tool set will work perfectly well. Benefits of XML best practice:

- Automation of firmware updates to many devices is efficient and immediate
- Updating can be assured and timed for best results on an ongoing basis

### Revenue opportunities and customer satisfaction

In the example above the company will potentially benefit by offering a more responsive premium service to its customers. This timeliness delivers a significant competitive advantage.

Another opportunity exists for the end user of the document who wants visibility into document changes. The example here is publishing standards. When a new standard is released, users of that standard welcome not only the new standard but also a red-lined version showing how the new version updates the previous version. ISO and other standards bodies are now using this approach. In addition to boosting customer satisfaction, they are providing a new service, often online and on-demand.



## Flawless future

In a knowledge economy, preserving and protecting the company's knowledge is mission critical. Whether reducing risk of non-compliance, product misuse, partner misunderstandings, or breach of IP, ensuring 100% accurate document and file change, compare, and merge is essential.

Because this problem has been so challenging, many companies are no longer seeking a solution. The users only know the world of tools they use today, and executives are not likely to know there is a better way.

Fortunately, some content management and publishing

software systems are building in this robust change management. So, whether the organization seeks out an XML change management solution directly or finds a larger platform in which this capability resides, the opportunity for flawless XML change management is available.

In a fearsomely competitive world, it is essential to protect the company's business. Fortunately, adopting a new corporate best practice in this area will also deliver considerable operating efficiencies, improved consistency and quality, and reduced operating costs. In ensuring this process, some organizations have also found new ways to delight customers and generate ongoing revenue.

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