How Aligning Training and Technical Documentation Improves Customer Experience

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Companies that produce technical products and services must also produce a wide variety customer facing information products including printed training materials, web-based courseware, technical documentation and performance support tool. As users turn to these various information products, they are frequently confused because the information found in them can be conflicting, inconsistent, and of varying quality – leaving them guessing which source is to be trusted.

This paper describes the organizational issues that are at the heart of this problem, and offers a solution that incorporates a single-source production methodology enabled by XML technologies. The fundamental concept is to create a content-base of granular XML objects that can be re-combined and re-assembled to create the entire spectrum of information products including printed training materials, technical documentation, web-based courseware, and performance support tools. End-users benefit greatly as they are provided with multiple points of context to access the information, and are assured that no matter which source they go to, the content is consistent and reliable.

The User's Dilemma: Conflicting Information

How often does this happen? A user goes to a training class to learn a new skill. Weeks go by before they actually need to use the skill and retention has diminished. To refresh their skill, they turn to the technical documentation. The documentation is organized differently than it was in the training class, and the information (if they can find it all) is often conflicting. So, they turn to the next source - the company's customer support service. They look at this performance support system and get yet another organization of the content, with conflicting information. This inevitably leads to a call to the customer support line. Users in this scenario have no idea which presentation of the information is the "trusted source".

How does the organization create this problem?

The problem of creating inconsistent customer facing information is the result of upstream production problems. At the root of the problem is the fact that each of these information products are developed in silos organized around the modality of delivery. Separate teams form to support development of materials for instructor-led training events, web-based training, customer support materials, knowledge bases, technical documentation, etc. Each team requires its own writers, reviewers, subject matter experts, processes, tools, IT infrastructure and support.

An analysis of the actual content being produced in these silos reveals that a high percentage addresses the same subject matter. As a result of re-creating the same content from scratch for each modality, the organization of the information, terminology, and quality are widely inconsistent leaving the customer confused and frustrated.

Not only is it frustrating to the end-user, the production methodology is extremely costly the enterprise as well. To support each modality of delivery, the enterprise:

- Creates redundant content
- Validates the same information through an editorial process for each modality of delivery
- Maintains redundant teams
- Maintains redundant authoring tools & content management systems
- Repeatedly tasks Subject Matter Experts, typically one of the most limited and expensive resources in the organization.

The Foundation: Unified Content Strategy

The solution to the problem of redundant and inconsistent customer facing content is a methodology enabled by technology that increases the quality and consistency while significantly driving down production costs. The solution lies in a single source of "trusted" content from which all information products that cover the same subject matter can be generated.

Aligning the Organization

Aligning the organization is the first step in the process. Production of related information products should be developed in such a way that content is not needlessly recreated. In the new model, there is a logical division of labor across groups, Assuring that one "trusted source" is created, enabling the respective groups to add unique value to the knowledge base – as opposed to the groups inconsistently re-creating the same content. This is initiated by a joint task analysis. The joint task analysis normalizes the information structure across groups and identifies the supporting topic and titles. This critical step assures that as the end user looks for content, the organization of the information and the titles of the topics remain consistent from source to source.

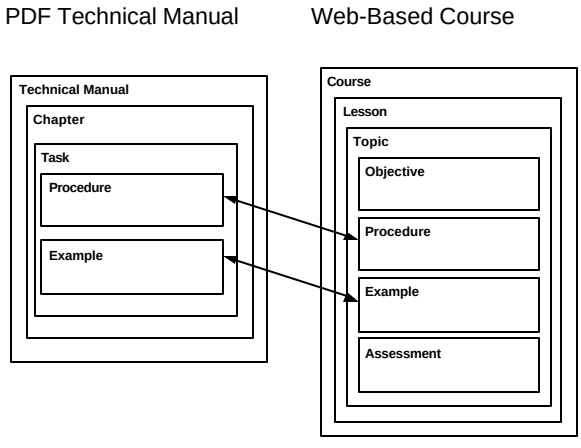
The task analysis identifies all of the required content and creates a skeleton of all of the publications. From this skeleton, work can be assigned across groups and a project plan developed.

Information Architecture

The second aspect of the problem is to align the publications themselves such that they share common content. This requires the development of an information architecture where related publications are analyzed and designed upfront to share common content. The goal is to create a single repository of granular content objects that can be recombined and published to multiple outputs. The same installation procedure, for example, could be reused within an instructor-led training course, web-based course, technical manual and knowledge base.

XML: The Enabler

The ability to reuse the same content within different publication types and delivery modalities depends on the content being created and stored as granular objects. For example, a procedure initially authored in a technical manual must be stored as a discrete object apart from the technical manual that references it. This way, the procedure object can also be referenced by a technical manual as well as a web-based course or performance support system.



Modular Content

The illustration depicts how the same Procedure and Example objects are referenced within a PDF-based technical manual and a web-based course.

Reuse across document types also requires that the same content object to be rendered to different modalities. This requires that there be a separation of the content from its presentation. XML provides this ability. XML coupled with XSL technologies (XSL, XSLT, and XSL-FO) allow the same piece of content to be rendered to HTML, PDF, Wireless and other formats. For example, an installation procedure will have different XSL/XSLT/XSL-FO applied for publishing to the PDF Instructor-Guide, SCORM-compliant Web-Course and HTML Customer Self-help application l.

XSL Publishing

The Solution: Integrated Solution

There are a range of available point solutions that solve aspects of the problem of creating a single source content base, however they are lacking in their ability provide the fully integrated, end-to-end solution necessary to meet the needs of all of the constituencies.

Proprietary Point Solutions

Learning Content Management Systems (LCMS) is a point solution developed to support efficient production of web-based courseware. Efficiency is gained via reuse of learning objects, collaborative authoring, authoring templates, and workflow.

However, there are significant pitfalls in adopting an LCMS.

- Content can only be reused within a web-based course. A learning object can be reused across

web-based courses, but there is no way to reuse that learning object outside the scope of a course.
- Lack of flexibility. The system's templates are hard-coded, which do not allow for customer-specific schemas.
- There is no way to reuse content from other sources, such as a technical manual, within a course. This adds the problem of inconsistent customer-facing information because "trusted source" information found in a technical manual must be replicated for web-based delivery. The problem compounds when the "trusted source" is updated and all the derivative copies need to be maintained.

Desktop Publishing Software (DPS) plus a Content Management System (CMS) provides a point solution for developing modular reusable technical documentation. Like the LCMS, this point solution that provides efficiency within a group producing technical documentation via collaboration, structured authoring and workflow. However, this combination also has some pitfalls when addressing the consistency and quality of customer facing information.

- Reuse is limited to DPS tool only. Content found in a technical document must be re-created for use in any alternate delivery modality. For example, an installation procedure must be re-created for use within a web-based course. This has downstream effects as the "trusted source" is updated and all the derivative copies must be found and updated.
- Requires a proprietary integration into a CMS and relies on the underlying system's ability to support "virtual documents" assembled from granular objects.
- There is no support for web-based training.

Off-the-shelf XML solutions

XML authoring software plus CMS offer a solution to single source publishing for multiple outputs and can help normalize customer facing information. By combining XML authoring tools with a CMS that offers XML services, it is possible to reuse parts of documents across document types. Like the above solutions, the solution provides a measure of efficiency via content reuse, workflow, and structured authoring, but falls short of meeting the entire range of use requirements.

An approach that supports modular XML based content is a start. However, the current best of breed of solutions have been targeted to technical documentation only and have some drawbacks:

- Blending training and technical documentation requires a costly integration of the CMS, authoring tools, publishing tools, and training runtime services, and Learning Management Systems. This integration of disparate tools and services creates a disjointed authoring and previewing experience and a very inefficient workflow.
- The solution is dependent on the proprietary XML services provided by the CMS. CMS were not designed to handle the very granular XML needed for single source publishing and do not provide adequate search capability and scalability.

Integrated Solution for Blended Delivery

The ideal solution provides an integrated work environment for the entire XML lifecycle and creates a cohesive experience for legacy conversion, authoring, editing, reviewing, publishing, and distribution.

Capture: The solution must provide a means for subject matter experts to contribute using tools that don't require a substantial change in current processes which typically use Word, Framemaker, and Web-based capture tools.

Convert: Because most content currently exists in proprietary non-XML formats, the platform must support conversion of common document formats such as Word and Framemaker.

Store and Manage: The solution must be "well-behaved" in the current IT environment and leverage existing content and available services wherever they already exist. This requires that the solution be able simultaneously sit atop multiple repositories. Any publication should be able pull resources from where they exist. For example, a new web-course should be able to reference a procedure stored in a document management system and a multiple choice question found in an assessment repository.

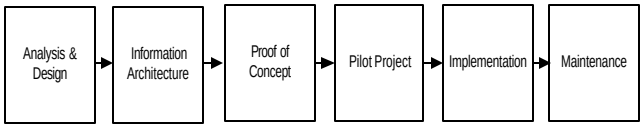
Assemble: The environment must support easy ways of assembling new publications from existing content. The assembly process requires robust search capabilities across multiple content repositories, ability to easily link content into a target publication and preview it. The ability to preview changes on-demand is critical to simplifying the publication assembly process. This requires a tight integration with the publishing engine.

Consume: This is the payoff for the end-user. Because the content was assembled from a single source of trusted content, where ever the user turns to find information, the content is consistent. The procedure in the SCORM-compliant web-based course, the PDF Instructor guide, PDF technical manual, wireless devices or on-demand knowledge base is the same. Its context

may be different and it may look different, but the content is consistent.

Roadmap to an XML Architecture

The migration to an XML architecture does not nor should not happen overnight. There are many technical and organizational issues that must be addressed for the initiative to succeed. Migration of an organization to an XML architecture must be iterative and must build on a base of success. Typically the process follows these steps.



Analysis: In this phase, an organizational audit is conducted that identifies groups that are creating redundant content. The publications of those groups are analyzed to identify those that can share common content. Publications where redundant content is identified become candidates for the new information architecture. An "as-is" baseline of production costs of the current production model is measured for a ROI calculation. Legacy content is analyzed to determine candidates for conversion to XML.

Information Architecture: The related publications are modeled in XML schemas (XSD) and are aligned to enable reuse across publications. XSL/XSLT/XSL-FO are developed to render the publication. Subject Matter Expert knowledge capture templates are identified. The capture tools can be a native XML form, Word Template, and/or a Framemaker template. In the case of Word and Framemaker, conversion utilities must also be developed to convert the unstructured data into XML for input into the repository.

Proof of Concept Prototype: A small team develops a set of publications using the newly developed templates. This is an iterative process that refines the XSD and XSLs. The work product is a set of related publications which validate the concept of single-source publishing, and a business case that includes an estimated ROI and internal and customer benefits..

Pilot Project: The concept is rolled out to a limited team for a single topic. In this phase the workflow is refined to ensure that there is an efficient division of labor. A change management plan is created that aligns production activities. The work product is a set of production ready publications. The actual ROI is calculated and business case validated. This is used to prepare the organization for an enterprise-wide implementation.

Implementation: The change management and workflow plans are rolled out on a larger scale. Implementation is staged and the process is adjusted as it is rolled out to successively wider populations.

Consumption: End users are provided a menu of content services to access information. Be it a training class, a technical manual, performance support system, web-based course or PDA, the information delivered is the "trusted source".

Summary

A single source approach to content development improves the customer experience and dramatically drives down production costs. The by-product of this approach is a content base of granular XML objects. Once the content is in this format it can be dynamically assembled and published to new customer facing services such as premium subscription services, on-demand publishing for partners and customers, e-books, just-in-time performance aids, and tailored training programs to name just a few. For many of the same reasons organizations demand consistent customer-facing marketing materials, consistent customer-facing information products create a vastly superior customer experience, which ultimately leads to competitive advantage.

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