



TSM STRYKER/BRADLEY CORNER

XML: A VEHICLE TO UPDATE ARMY DOCTRINE

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How do we ensure Army doctrine remains relevant?

The current TRADOC doctrine review and rewrite process is hard pressed to keep pace with operational lessons learned and organizational changes. We need to explore new and innovative ways to streamline the process so that doctrine remains current and relevant and can be clearly understood. Extensible Markup Language (XML) is one means that can assist proponents in management of posted information.

Put yourself in the brigade S3's shoes...

Major Flores, a Stryker Brigade Combat Team operations officer, is refining the long range training plan for his unit. His focus is on offensive urban operations. He has reviewed Joint Readiness Training and National Training SBCT Executive Summary Reports, SBCT initial impressions reports, and Center for Army lessons learned data. One of his references is FM 3-06, Chapter 6, *Urban Operations Considerations*.

FM 3-06 (1 June 2003) states:

“The urban operational framework (assess, shape, dominate, and transition) provides a structure for developing considerations unique to urban offensive operations. The considerations vary depending on the situation and scale of the operation.

Some considerations applicable to major operations that include an urban area will also be considerations at the tactical level focused in the urban area. However, no set rules exist. All urban operations are unique.”

He understands that tactics, techniques, and procedures (TTPs) for offensive urban operations are continuing to evolve based on operations in Iraq and Afghanistan. How does the field benefit from the lessons learned in theater? What are the mechanisms available to units to pass on recommendations to TRADOC for changes in doctrine? And, are the existing procedures for feedback submission responsive to the requirements of deployed units? Many commanders

believe that the doctrine process is not responsive enough for doctrine to remain relevant, given our fast-paced contemporary operating environment.

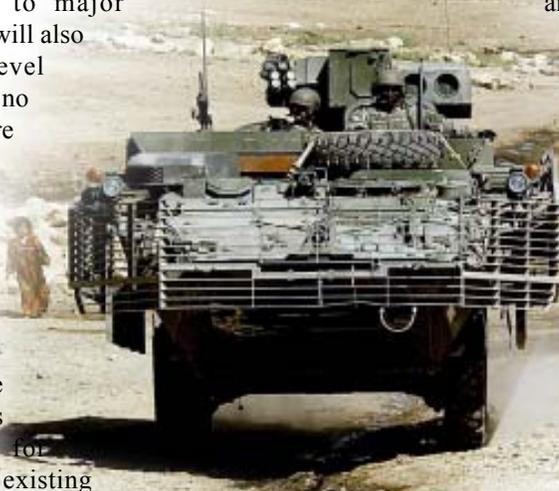
Why doctrine?

Doctrine exists as a common language between organizations. This “language” allows communication between formations, from joint forces to squads. Maintaining an up-to-date doctrinal database is crucial to mission success. Ensuring operational units have access to current doctrine, tactics, techniques and procedures, and incorporating theater lessons learned are proponent METL (mission essential task list) tasks.

Joint Publication 1-02 defines joint doctrine as “Fundamental principles that guide the employment of U.S. military forces in coordinated action toward common objectives.” Army doctrine contained in field manuals also consists of principles, terms, and TTPs. Doctrine applies across the range of operations and the spectrum of conflict. It focuses on how (not what) to think about operations and what to train. It provides an authoritative guide for leaders and Soldiers, while allowing freedom to adapt to circumstances. Army doctrine should follow and be consistent with joint doctrine. If conflicts arise between Army and joint doctrine, follow joint doctrine.

Fundamental principles provide the philosophical underpinning for initiatives and are designed to help leaders be adaptive, creative problem-solvers that military actions demand. They provide a basis for the Army to incorporate new ideas, technologies, and organizational designs. However, principles alone are not enough to guide operations. TTPs support and implement principles, linking them with associated applications. The “how to” of a TTP includes both descriptive and prescriptive methods and actions.

Tactics include the ordered arrangement and maneuver of units in relation to each other, the



terrain, and the enemy to translate their potential into effective combat power. Current tactical conditions in theater are effecting how commanders conduct planning, task organize formations, and employ units to achieve mission success. These variables greatly impact how we write doctrine and apply tactics.

A system does exist as a means for units to provide doctrine refinement feedback to proponents. It basically involves e-mailing the doctrine branch with specific recommendations with justifications; however, this system is labor intensive and time consuming. Extensible markup language (XML) provides a possible solution that vehicle commanders or proponents can utilize to update doctrine in a more timely and useful manner.

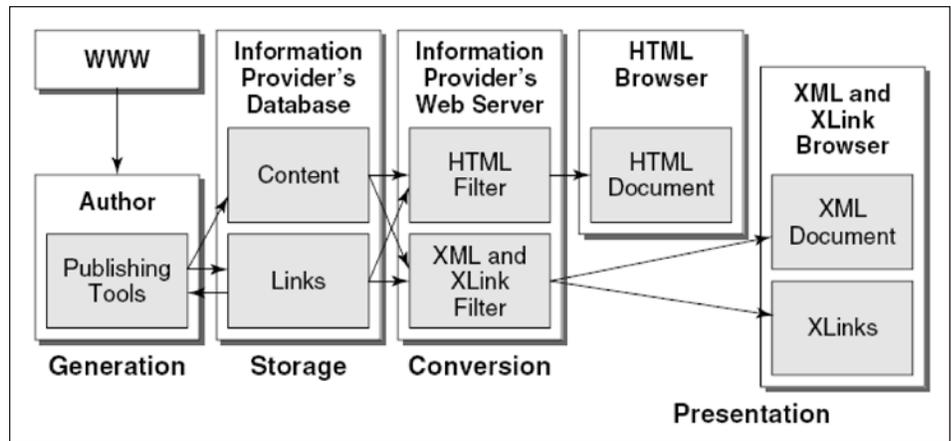
A Possible Solution

So what is XML anyway?

Extensible markup language is a flexible way to create standard information formats and share both the format and the data on the World Wide Web. It improves the functionality of the Web by letting you identify your information in a more accurate, flexible, and adaptable way.

Where did it come from?

Development of XML began in 1996; the technology isn't new. Before XML, there was SGML (Standard Generalized Markup Language), which was developed in the early '80s and widely used for large documentation projects. The development of HTML (Hyper Text Markup Language) started in 1990. The designers of XML simply took the best parts of SGML, guided by the experience with HTML, and produced something that is no less powerful than SGML; however, it is vastly more regular and simpler to use. It must be said that SGML is mostly used for technical documentation and much less for other kinds of data; with XML, it is exactly the opposite. XML is a pared-down version of SGML, designed especially for Web documents. It allows designers to create customized TAGS (a special word inserted in a document that specifies how the document, or a portion of the document, should be formatted), enabling the definition, transmission, validation, and interpretation of data between applications



Four Stages of Web Assembly

and organizations.

This web is assembled in four stages:

Generation. Authoring tools normally are content-centric — in other words, they concentrate on the task of creating content. However, when creating content (such as writing articles), authors usually use other interlinked resources (such as Web pages), and authoring tools could be specifically designed to support authors in capturing these interrelationships in the form of links.

Storage. Authoring tools that support capturing link information would require that we not only store the content generated by authors but also store the linking information. On a conceptual level, it is not important exactly how content and links are being stored — whether they use XML-based formats, databases, or other means of storage. The important issue is that we store links separately from content while also ensuring that the content model and the link data model are integrated.

Conversion. While the content is stored in a database or a content management system, the links are kept in a separate linkbase. When we create this information, it is necessary to convert the information to a form that can be utilized by appropriate presentation tools.

Presentation. Presentation can be based on very different technologies; but since our focus is highly interlinked information, we assume the use of various Web-based technologies, such as HTML or XML/XLink. (See diagram above.)

How do I use it?

To do something useful with XML data, we need to be able to programmatically

process the XML file. The World Wide Web Consortium (W3C) defines the term XML processor as a software module capable of reading XML documents and providing access to their content and structure.

The advantage of adopting XML as the Army standard for updating doctrine is that any processor provides the user the functionality needed to accomplish this goal. Developers should rarely (if ever) need to write their own XML processors. In theory, developers should be able to leverage the best processor on the market for their particular environments while avoiding compatibility issues.

With a standard XML processor, doctrine readers can programmatically read any XML document and access any element name, body, or attribute. Even if doctrine writers produced the XML document on a Windows-based system, doctrine readers could easily ship it off to a mainframe system and use the mainframe's XML processor to interact with the same data. This illustrates the true functionality of XML. It is an open and effective mechanism for exchanging structured data between proponents and doctrine readers.

Conceptually, the solution is quite simple. If core content in FM 3-06, *Urban Operations*, could be created once and then directly referenced by all units that need it, users could be assured they are viewing the "trusted source" no matter the context in which they view it. In terms of man hours, a single source of content requires a fraction of the development, resource, and maintenance costs.

Technical evolutions such as XML, Web services, SCORM (Sharable Content

Object Reference Model), aim to provide the specifications necessary to enable content developers with the ability to produce content that is sharable, reusable, and most importantly interoperable, have provided the underpinnings to turn the concept into a reality. With these standards, it is now possible to develop content once and reuse it across multiple delivery modalities, including Web courses and printed documentation. Information identification, information storage, information structure, publishing, and data transfer are a few positive potential applications of XML.

Information identification

Information identification is the capability to find, retrieve, report, change, or delete specific data without ambiguity. This applies especially with information stored in databases.

Information storage and provisional authorization

XML is portable and nonproprietary; it can be used to store textual information across any platform. Because it is backed by an international standard, it will remain accessible and processable as a data format. This affords the author several options in posting information, such as portals, internet, and shared drives.

Authorization systems have assumed the following model: "A user makes an access request of a system in some context, and the system either authorizes the access request or denies it." By using provisional authorization the user request will be authorized provided he (and/or the system) takes certain security actions such as signing his statement prior to authorization of his request.

Information structure

XML can therefore be used to store and identify information structures, especially for complex document sets or data sources, making it ideal for an information-management to serving the Web. This is its most common Web application, with a transformation system to serve it as HTML until such time as browsers are able to handle XML consistently.

Publishing

The original goal of XML to combine the three topics (identity, storage, structure) as a means to get all the benefits of document management, control and publishing to the Web (as HTML) as well as to paper as portable document format (PDF). PDF is a self-contained cross platform document, in other words, a file that will look the same on the screen and in print. PDF allows reproduction of published material on several different platforms. However, PDF can never be a stand alone system used to update data. One critical shortfall is that PDF files do not encode information that is specific to the application software, hardware, or operating system used to create or view the document. It does not adapt to the window size nor the reader's preferred font size and font family, moreover, Adobe Reader, a standard PDF viewer, has historically been slow to start and caused browser instability, particularly when run alongside other browser plug-ins.

Data transfer

XML can be used for enclosing or encapsulating information in order to pass it between different computing systems which

would otherwise be unable to communicate.

Proponents' role in collecting, analyzing, and publishing emerging doctrine

Proponents play a critical role in collecting, analyzing and publishing emerging doctrine. Comments from various units participating in CTC rotations and SBCT Lessons Learned conferences suggest that doctrinal feedback and refinements are slow to post in field manuals. The current system at the Infantry School for submission of doctrinal feedback relies on the unit sending comments via e-mail to doctrine@benning.army.mil or on a DA form 2028. How can TRADOC shorten the review and rewrite time between comments from units to FM publication? TRADOC would need to establish a secure homepage which would have links managed and maintained by proponents. Field manuals, theater lessons learned, and CTC trends would be posted by proponents and available for review. XML would be the system used by TRADOC by which units would provide feedback on doctrinal topics. Moreover, by using XML as our system, recommended changes can be posted directly to the draft and approved manuals. Security and provisional authorization would be maintained by ensuring that the site is password protected. The proponent chief of doctrine would be responsible for conducting a periodic review of all recommended doctrinal refinements. Each recommended refinement would be reviewed, staffed, and posted, if the specified criteria are met.

Maintaining doctrinal relevance

In conclusion, as SBCT units continue to reset and unit lifecycles start to take shape, there are a variety of training gates and milestones that units must undergo. The successful implementation and integration of innovative concepts to assist a commander in training his formation are paramount. Execution of training plans must be based on proven best practices and nested within existing doctrine.

Recommendation — To receive, staff and publish emerging doctrine, our system must keep pace with the needs of units preparing for combat. The receipt of data is the first critical step of this detailed process. By adopting XML, as a means to update data, receive feedback, and post documents proponents will substantially quicken this process. Further review of internal staffing protocols for doctrinal should be consistent between all proponent organizations in order to reduce publication time. Presently the Combined Arms and Tactics Directorate (CATD) and the SBCT Transformation Team (STT) are drafting new field manuals for the SBCT squad, platoon, and company. The STT and CATD are exploring the possibility of implementing XML technology to enhance document production efficiency. To ensure Army doctrine remains relevant, we must remain responsive to the concerns of our commanders. XML is only one of several formats available to TRADOC to efficiently update military documents.

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