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Feature Article

Case Study: Using DITA to Develop a New Information Architecture at BMC Software

BMC Software is a leading provider of enterprise management solutions that empower companies to manage their IT infrastructures from a business perspective. Delivering Business Service Management (BSM), BMC Software solutions span enterprise systems, applications, databases, and service management. To better support the integration that BSM solutions provide, the Information Development organization is using the Darwin Information Typing Architecture (DITA) to pilot XML-based structured authoring and advanced content management.

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Best Practice

International Standards and their Impact on Technical Communication and Content Management

International Standards are becoming a fact of life in the world of business today. Conceivably, businesses in North America are required to meet quality standards as spelled out in ISO 9001, environmental standards as spelled out in ISO 14001, health and safety standards as spelled out in OHSAS 18001, regulatory standards like Sarbanes-Oxley and 21 CFR Part 11 as well as many other standards specific to the industry in which they operate, such as FAA, SAE, W3C. This article discusses the need for standards and their impact on business; who is responsible for their development and how they are developed; how they will impact technical communication and technical communicators world-wide; and why technical communicators need to become involved in their development

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Content Modeling to Assess Standards

With all the standards out there, can you just pick one and start authoring? Well, it depends. This article describes content modeling to assess standards, focusing on determining expectations and ensuring the standard can meet those expectations

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Deconstructing the Standards

Standards and content management go hand in hand. Content is stored in a definitive source as reusable elements that can be reassembled as required to form numerous and different information products. Because content can be used in so many different ways, it needs to conform to standards. You need standards for authoring, standards for making information accessible, standards for graphics. In this issue of *The Rockley Report* we deconstruct some of the standards, focusing on why standards are important, and how they impact content management. We open with a case study that describes how one company implemented DITA, the Darwin Information Typing Architecture. Wendy Shepperd, Information Development Manager for BMC Software describes how they are using DITA to pilot XML-based structured authoring and advanced content management.

Other articles continue the discussion of standards:

- Standards help to set expectations. “Content modeling to Assess Standards” discusses the importance of using models to document your expectations, against which you can assess the various standards
- Standards not only apply within organizations; they also apply across international boundaries. Ralph Robinson, the Canadian Delegate of the Working Group on ISO/IEC/JTC1/SC7/WG2, takes a look at international standards and their impact on both technical communication and content management, urging technical communicators to get involved in setting the standards that will affect their work.
- In “Content Management Systems and Web Standards”, Jim Byrne, founder of the Guild of Accessible Web Designers, discusses why web standards are important in a content management environment, specifically, how following standards makes content accessible to all audiences.
- Sara Porter, Assistant Professor of Computer Graphics Technology at Purdue University, helps us to understand the SVG (Scalable Vector Graphics) standard, providing numerous examples of its uses and benefits.
- Standards are not only useful when applied to the content that goes into a CMS; they are also useful in helping to classify content management systems. Erik Hartman, Director, Hartman Communicatie BV in the Netherlands discusses the ins and outs of CMSML, a markup language for content management systems. CMSML makes it possible to have one international database of criteria for content management systems, which can be accessed through many websites all over the world.

Scott Abel rounds out the issue with a look at SCORM and the Digital Talking Book standards, outlining what they are and listing additional resources where you can read more about them.

We welcome your feedback. Please send comments, as well as suggestions for stories in future issues to kostur@rockley.com. Our Call for Submissions describes the kind of stories we're looking for and how you can submit articles for publication in future issues.

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Feature Article

Case Study: Using DITA to Develop a New Information Architecture at BMC Software

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BMC Software is a leading provider of enterprise management solutions that empower companies to manage their IT infrastructures from a business perspective. Delivering Business Service Management (BSM), BMC Software solutions span enterprise systems, applications, databases, and service management. To better support the integration that BSM solutions provide, the Information Development organization is using the Darwin Information Typing Architecture (DITA) to pilot XML-based structured authoring and advanced content management.

Background

Solution selling presents special challenges to our Information Development organization. In particular, our traditional infrastructure does not accommodate reassembling content to support the variety of product combinations that BSM solutions require.

The need for us to customize BSM solutions by integrating different software solutions, combined with the maturation of tools for XML-based authoring, make this an ideal time to implement a new information development strategy. After researching materials about content management and studying success stories from companies who have implemented structured authoring, we launched a pilot project with the following goals:

- Develop a new information architecture and infrastructure to support integrated solutions
- Improve the quality of our deliverables
- Make information development more efficient
- Reduce localization costs

Issues

We determined that our new architecture and infrastructure would need to meet the following requirements:

- Scalable across departments and content types
- Customizable across products and functions
- Non proprietary architecture
- Robust enough to meet complex functional requirements
- Affordable
- Maintainable, given our available resources

What we did and why

We chose to limit the content set for the pilot to accommodate developing an end-to-end solution in a reasonable amount of time. This article discusses the analysis and design phases of the project as they relate to the information architecture, entailing two primary tasks:

- Developing information models or “blueprints” for our new information architecture
- Developing the corresponding XML models to implement the information architecture

Developing information models

After a thorough content audit and analysis, we developed information models for two types of content: system messages and installation. We created Excel spreadsheets to represent the models, which documented the structure of each required component, without regard to technology. For example, the messages model has a component called **message module**, which defines the structure and necessary elements for documenting an individual system message.

Developing XML models with DITA

To develop the XML models, we adopted DITA as our starting architecture. Why DITA?

- We can customize DITA to meet our needs.
- The DITA toolkit offers a head start in developing DTDs and transforms.
- DITA takes full advantage of XML by focusing on modularity. By steering writers toward a compo-

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ment-based authoring paradigm, DITA promotes reuse and consistency in content and structure.

- The DITA community encourages rapid growth of technology through exchange of ideas and techniques. We joined the OASIS DITA Technical Committee to stay informed of changes, learn from other members, and influence further development of the DITA specification.

To date, we have completed the XML models for one information type (system messages) and are working on the second type (installation). In addition to converting 1,000 pages of content to the new XML architecture, we developed a working prototype that demonstrates the following features of our new strategy:

- Generating multiple deliverables from a single source through conditional processing (based on DITA maps)
- Generating a deliverable in multiple output formats
- Reassembling and integrating content by modifying DITA maps
- Changing common content once and proliferating the change to all affected deliverables

Upcoming challenges

We continue to face challenges as project development proceeds. Limited resources prevent us from moving as quickly as we would like. Given our substantial volume of information, implementing the new strategy across the company will require significant investments of time and effort. Also, any transition strategy must accommodate our classic products *plus* new standards from acquired companies and partners — another significant hurdle.

We also face a number of technical challenges. While DITA provides a solid base, we still need to “make it fit” our BMC Software information models, meaning we have to develop numerous specializations for each information type.

Finally, particular DITA limitations present challenges for us. In the current toolkit, we cannot create custom attributes. (DITA developers plan to address this limitation in the future.) Also, we need an indexing solution; the current toolkit does not provide the support that we need. Nonetheless, the advantages of DITA clearly outweigh the limitations.

Attainable benefits

Based on our efforts to date, we believe that we can achieve the following benefits by implementing DITA-based information architecture at BMC Software:

- Create integrated content to support any combination of products
- Reduce shipment sizes, simplifying users’ experiences
- Develop advanced content, which customers are demanding
- Ensure that content is accurate and presented consistently
- Reduce localization costs
- Streamline information development

The pilot’s outcome

The pilot’s outcome is yet to be determined. On track to complete the pilot this year, we have finished information modeling and half of the XML modeling. Also, we are in the process of converting additional content to XML based on the new architecture.

What have we learned so far? We can summarize our key lessons as follows:

- Completing a thorough content audit before developing the information model is critical. Auditing the content ensures that the model will suit many different products.
- Information modeling takes an iterative approach and, thus, requires a significant amount of time. Factoring sufficient time into the project plan is essential.
- Information modeling should focus solely on content, independent of technology.
- DITA is a solid architecture that offers a great head start, but it takes significant effort to make DITA work for a specific implementation.

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An Interview with Wendy Shepperd

Why did you choose to implement in DITA?

There was a lot of background research in the company that went on before the project started. We came to a consensus that DITA had what we needed to implement our XML models. That fact that it had been turned over to OASIS helped to convince us that DITA was well on its way to becoming a standard. The key was that we would not have to start from scratch and would be able to leverage the knowledge of the DITA team. It was available, public, and a good head start.

It is a pretty impressive architecture. We are really impressed with the architecture and how it's working.

Did you look at other models/standards other than DITA?

There are a number of people in house who had an SGML background and knowledge of DocBook. We also had good understanding of XML and considered building XML DTDs from scratch. We considered everything that we felt was available and selected DITA. DocBook is robust, mature and an architecture worth considering, but is geared to printed books, as well as being more complex than they needed. We also felt that DITA was more flexible.

How did you map your models against DITA? What is the relationship between the two?"

We built the models without regard to technology, our goal being to determine the information objects. We also had a parallel project to learn DITA, understand the capabilities of DITA, and determine how we could implement it. Then we mapped our models to DITA, using all of the base structures in DITA we could, and then added the specializations that we needed for the content elements we identified as being missing in DITA. We made a conscious decision not to extend DITA unless we absolutely had to.

Where transforms are concerned, we used the entire set of DITA. For authoring, we used a subset of DITA. Pieces we didn't need, we hid from authors.

How will you work around the limitations you've identified?

For the pilot we are just going to use what DITA provides. There are some work arounds offered by the DITA developers but we have decided that the attributes that DITA provides will be sufficient for the pilot. The next version of DITA should have some extensions to better fit our needs.

We currently don't have a work around for indexing. We are researching options, but have not figured out how to deal with this yet.

What has been the most difficult part of the project to date?

One of the most difficult parts has been learning how to model the information and then learning how to write the specializations in DITA to map the model. Learning has been the trickiest because we had to learn both modeling and how to code the model.

Like any project, just getting the processes down for writing the DITA specializations and validating them against the model was difficult. We tried different approaches, a couple of iterations with input from Dan Day and Michael Priestly. There were things that we just didn't know about DITA that we had to figure out or that people had to tell us about.

Also, there is no dedicated team. And it takes a lot of time to code up all this stuff and to test it.

Have the writers shown any reservations about the modular approach?

The entire pilot team is behind the project. The change management issues will come later in the project. Change management is very important. We are trying to be as transparent as possible, so that we can communicate as much as we possibly can to other groups.

We have also had some challenges keeping the models and the implementation in sync as we start plugging in the content. When you plug in the content you are testing the model and you must revisit the model to accommodate how it evolves over time.

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Do you foresee any specific change management issues?

All the usual suspects. This is a paradigm shift from the way we author today. We currently author in a traditional method of writing books, where a writer owns the book from beginning to end. Now we are moving to a more collaborative environment, where authors provide models. That's probably one of the biggest challenges in changing processes in an organization. With any change management process, you have the continuum from early adopters to resisters. We see getting everybody in step as one of the biggest challenges. So, we've tried to get as many people involved in the pilot as we can, and to communicate as much as we can, while remembering that this is a pilot project.

Authors using DITA in the pilot have shown us that they are comfortable with DITA and the authoring environment. The tools have the ability to hide or show as much tagging as possible. Authors can see what they want to see. Pilot authors have been able to get up and running very quickly. The authors will not need to really know DITA and XML. The real issue is learning how to write in a structured scheme for reuse.

Best Practices

International Standards and their Impact on Technical Communication and Content Management

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International Standards are becoming a fact of life in the world of business today. Conceivably, businesses in North America are required to meet quality standards as spelled out in ISO 9001, environmental standards as spelled out in ISO 14001, health and safety standards as spelled out in OHSAS 18001, regulatory standards like Sarbanes-Oxley and 21 CFR Part 11 as well as many other standards specific to the industry in which they operate, such as FAA, SAE, W3C. This article discusses the need for standards and their impact on business; who is responsible for their development and how they are developed; how they will impact technical communication and technical communicators world-wide; and why technical communicators need to become involved in their development

The need for standards

Standards are becoming a fact of life in the world today and impact many different areas of our businesses. There are standards established by the International Organization for Standardization (ISO), such as ISO 9001, ISO 14001 that govern quality and environmental practices, regulatory standards established by government acts such as the Sarbanes-Oxley Act, industry-specific standards such as the SAE standards for the automotive industry and many others, as well as sector-specific standards such as those established by the W3C for the world wide web.

These standards provide the basis upon which organizations structure their processes and provide assurance to their customers that the resultant products will meet some predefined and accepted criteria. With so much of today's business being global in scope, these standards make it easier for companies to deal with others regardless of their location in the world. Imagine the cost and difficulty for an American company to audit the operations of a supplier in Germany or Japan to ensure that their processes will consistently yield the level of product quality they require. Failing that, a rigorous and expensive inspection routine would be required at the American point of use.

The existence of the ISO 9001 Quality Management System standard makes it far easier for American companies to deal with companies half way around the world when they are registered to this quality standard. You know how their companies operate and what processes they have in place to ensure the quality of their products. You also know that processes are in place to ensure prompt and effective

actions if below standard products are released into the market. All this without you leaving your office!

Developing international standards

The development of international standards is a long process built on worldwide consensus within the affected industries/disciplines. Each country that is a signatory to ISO has a national standards organization that maintains an advisory group that provides inputs into the standards drafting process. These advisory groups are made up of representatives from the specific business area that the standards are being developed for. These groups hold meetings with, seek inputs from, consult with respected members of their national business communities, and draft suggestions and recommendations to their respective national standards body. The national bodies then table their positions at meetings of all ISO signatory nations and through consensus these drafts evolve into a draft standard. The draft standard is submitted to members of the various advisory bodies for vote and when the majority of the voting bodies agree on the standards' contents, it is released through ISO as an international standard.

Once in place, the national standards body for each country will determine if the standard is voluntary or regulatory in nature. If standards are mandated as regulatory, they become standards that all in that industry must follow. A good example of this type is the standard for the manufacture and recording of music CD ROMs. Every country abides by the same rules so that a music CD purchased in Romania can be played on a CD player made in Japan and sold in Calgary, Alberta. Voluntary standards such as ISO 9001

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or ISO 14001 are ones that organizations and/or industries can choose to adopt if they wish. In the case of these two, many nations have adopted them as their national standards for quality management and environmental management.

International standards and technical communicators

Currently there are efforts underway to develop standards for software and systems engineering, covering a wide range of activities such as Tools and Environment, Documentation, Evaluation and Metrics, Life Cycle Management, Integral Life Cycle Processes, Software Integrity, Process Assessment, Data Definition, Functional Size Measurement, and Software Measurement. This group is officially known as ISO/IEC/JTC1/SC7 or Joint Technical Committee 1, Subcommittee 7 of the joint International Organization for Standardization and International Electrotechnical Commission standards bodies. Canada participates in this activity through the Standards Council of Canada, which manages the National Standards Systems for the country, and its various subcommittees are comprised of numerous Working Groups that provide this valuable industry representation. Working Group 2 assists with developing a “Canadian position” on potential standards for documentation within the discipline of Software and Systems Engineering. Members of this Working Group as well as other interested parties funnel comments and suggestions through its “prime” or delegate who develops the formal recommendation to the Secretariat of SC 7 in Canada. The Canadian Secretariat then tables the “Canadian position” at formal ISO meetings. Each country has a working group that represents their country’s position; the positions of all the countries for a standard are amalgamated to form an international standard. For communicators, decisions being made concerning documentation will have a direct impact on how we structure our documentation, from user guides and reference manuals to software packaging. In fact, even the documentation relating to software development will be subject to some formal standards.

These future standards will impact both the structures that documentation will take as well as the content that it will contain. Every aspect of how we communicate with the users of the product will have specific requirements to meet. This will assist us in developing usable documentation in formats that our user communities will accept, it will ensure that software is developed using standardized methods and pro-

cesses, and, hopefully, it will ensure that the information required for documentation will be available to those of us developing it. These future standards work well with a content management environment, which, by its nature, advocates standards for the creation, use, reuse, and storage of content. In a content management environment consistency is key and standards, once defined, can be supported – even enforced – by the structure defined in a DTD or schema and by processes, such as workflow, that dictate how content flows through the content life cycle.

Why we should get involved

Technical communicators need to be involved in the development of these standards for the same reason that we even exist – to be the user’s advocate. We are the experts on what is needed, what formats work, and how documentation should interrelate with the applications and the users. The involvement of technical experts in individual fields of endeavor is the foundation upon which international standards development takes place. By gathering the knowledge from experts around the world the drafters of international standards ensure that the resulting standards will be acceptable and usable by the practitioners in their field. Who better to assist in the drafting of international standards for documentation than technical communicators? Who better to represent the user community than those of us who have been supporting users in the organizations we work for? And, who better to take the standards and implement them in a content management strategy? Working Group 2 is fortunate to have active representation from technical communicators in Canada, the United States, Australia, Japan and Britain but more input from people representing a greater range of expertise is always welcome.

Summary

International standards are now a fact of life, and their growth in the future is assured. There will be international standards at some time in the future governing software and systems engineering, and these will have a significant impact on how we work. Technical communicators need to get involved in the development of these standards to ensure the standards are practical, usable, and address the needs of their users. If there are going to be rules to follow, then we need to be involved in their establishment, and in their implementation!

Information Architecture

Content Modeling to Assess Standards

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With all the standards out there, can you just pick one and start authoring? Well, it depends. This article describes content modeling to assess standards, focusing on determining expectations and ensuring the standard can meet those expectations

As XML has increased in popularity, so has the number of standards created to support content. As organizations move towards implementing a content management solution to help them author, reuse, and manage content, technical publications and IT departments are struggling to learn about standards, wondering whether to use an existing one, or to create their own. And, the learning curve is steep—there’s DITA (the Darwin Information Typing Architecture), DocBook, SPL (Structured Product Labeling, used in the pharmaceutical industry), and SCORM (Shareable Content Object Reference Model, used in the learning industry), just to name a few. But, how do you know if adopting an existing standard will support your needs? And, why bother creating your own when there are standards out there for you to follow. Like most things in technical communication, the answer is, frustratingly, “it depends”. In this case, it depends on the nature of your content, and on what you want to do with it (e.g., how do you want to structure it and reuse it), both of which can be determined through content modeling.

Standards exist for many reasons, many of which are described in Ralph Robinson’s article on International Standards and Sarah Porter’s article on the SVG standard (both articles appear in this issue of *The Rockley Report*). Standards exist so that “things” (CDs, graphics, appliances, aircraft) can be built and used in the same way, over and over again. Following a standard makes creating a product a repeatable process regardless of who is creating it, and it makes using a product transparent to users, regardless of who made it. Following an authoring standard makes the structure (and sometimes content, if your standard includes reusable content) consistent from information product to information product, regardless of which author created it, and it makes using the information product easier for users. When users have documentation (or an interface) created according to a standard, they know what to expect, in what order. Standards set expectations. But, because standards set expectations,

you have to know that the standard you follow will accommodate those expectations, from both the creation and use perspectives.

Determining expectations

One of the most important activities in developing your content management strategy is understanding what content you need to deliver to meet your products’ and users’ needs. You need to understand how the content is created, how it is delivered, how it is used and by whom. We refer to this as gaining an “intimate understanding” of your content as well as the processes to create, review, deliver, and otherwise “manage” it. You gain this understanding by conducting a content audit as described in our book, *Managing Enterprise Content: A Unified Content Strategy*. [1] When you do an audit of your content, you start to determine opportunities to reuse both content and structures, which you then formalize in a content model. During the content audit, you determine expectations (what information is required to support your information products and your users) and in content modeling, you document your decisions. Content modeling takes your findings from the audit further; you identify which information products you need to create and the information (elements) they will contain. You determine how each element is constructed (down to the section, paragraph, and potentially, even the sentence level), and you determine if an element takes reusable content. You identify the metadata that describe your elements, and you create writing guidelines that tell authors how content should be written for optimum reuse and usability. You determine how elements are stored, how they will be shared, how they will travel through your workflow, and how they will be compiled into your various outputs. Thus, content models become the road map for your content management strategy.

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The process of content modeling involves identifying all the information requirements for a particular project or department (sometimes, even for the entire organization) and determining how all of that information is put together. As such, the content modeling process forces you to consider all information requirements and to assess what information is available to meet those requirements. The content model becomes the “catalog” of all information products produced within your organization (or within the scope of your project) and outlines the necessary elements for each of them. Content models are the formal statement of your expectations – they state “this is what you expect the information product to contain and this is how you expect it to be structured.” Creating information products based on content models ensures their consistency and ensures the process of creating them is repeatable, regardless of the author.

Why not just select a standard and start writing?

Content modeling is an important first step to selecting a model because the standard you choose may not fit your content, and it may not support your needs for reuse, or for collaboration. The content audit and modeling exercise will give you a complete understanding of your content, from both the creation and delivery perspectives, and allow you to fully assess the impact of implementing an authoring standard in your organization or department. The content model also helps you to fully understand and define your opportunities for reuse, both of content and of structure. (For a description of the distinction between reusable content and reusable structure, refer to “Issues in Information Modeling” in the June 2004 issue of *The Rockley Report*.) [2] In short, content modeling will help you to assess whether a standard (such as DocBook) meets your needs and how you may need to extend the standard. For example, DocBook is a book-based, software documentation model that has many built-in models to cover many typical software documentation applications. If you produce software documentation, it’s worth looking at because it can be implemented pretty much “out of the box”. But, you need to have something to assess it against. This is where content models come in. Just as review criteria provide editors with guidelines to review against, models provide information architects guidelines to assess standards against.

Content modeling is also critical if you plan to implement DITA. DITA, as described in our recent whitepa-

per on “The Role of Standards in Content Management”, is a powerful model that focuses on reuse with a topic-based core. [3] However, a common misconception is that DITA defines everything you want in your models. The DITA DTD defines only base models and its developers expect that you will create your own topic types to accommodate your own information needs. You may find that the standard DITA offering is sufficient for your needs or you may find that you need to extend it. But you won’t know this until you model your content to determine your content types. The Introduction to the Darwin Information Typing Architecture states that:

The basis of the architecture is the topic structure, from which concept, task, and reference structures are specialized. Extensibility to other typed topics is possible through further specialization As a notable feature of this architecture, communities can define or extend additional information types that represent their own data. Examples of such content include product support information, programming message descriptions, and GUI definitions. [4]

So, while DITA provides general topic structures such as concept, task, and reference, you can further specialize by identifying which concept, which task, and which reference. This is what your content models will specify, semantically.

Summary

There are numerous content standards and defined structures available for you to use. (You can find many of them at <http://xml.coverpages.org/xmlApplications.htm>.) However, content modeling is – and will continue to be – a critical activity in content management implementations. It allows you to specify your own structure so you can determine if an existing standard will accommodate your needs. Your models are your blueprint, specific to your information products, and to your users. They are the formalization of your expectations for your information products. Standards are useful, but applied too broadly, they can become limiting, not allowing you to create information products that support your products and users. While some standards should be universal, some standards will always remain specific to your organization and to your users. Whatever standard you choose must allow you to meet those expectations.

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Tools and Technology

CMSML: A Standard for Describing and Classifying Content Management Systems

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The number of content management systems is still growing strong. And with the trend of enterprise content management buy-outs and new players in the market, the complexity of these numerous content management systems increases. A means of describing and classifying content management systems would be helpful. This article gives the ins and outs of CMSML, a markup language for content management systems provided by CM Professionals.

How to find your way

For people who are looking for the right content management product, there are many reviews of tools available, some on paper, but most online. There are online overviews that provide a list of products with features and sometimes allow users to compare products, e.g. CMS Review with the Comparator Tool [1]. There are also in-depth reports about a selection of content management systems, such as those published on Tony Byrne's CMS Report [2]. And, AIIM has produced several maps of the ECM process, such as the ECM Puzzle Poster. [3]

Each tool is perhaps appropriate for getting a rough idea or a second opinion about a set of content management systems, but the main problem is that it's almost impossible to use a combination of these tools for combined 'advice' about the systems. That is because these online overviews, reports, and other tools lack a generic set of definitions, facets, and tool repository.

A helpful tool: CMSML

In 2003, some people [4] took the initiative of developing a public domain classification based on an XML Schema. This CMSML would help professionals to better understand the ins and outs of enterprise content management systems. CMSML is both XML and public domain because they wanted anyone to be able to use the information.

In 2004, Hartman Communicatie improved and expanded the XML Schema. This new CMSML was given back to CM Professionals [5] for further development at the 1st CM Summit, November 2004 in Boston.

The advantage of CMSML is the use of a certain 'controlled' vocabulary that is supported by an ontology. Furthermore CMSML is a faceted classification system, which means that people can select products based on their own characteristics or properties.

CMSML makes it possible to have one international database of content management products, which can be accessed through many websites all over the world. People can use the CMSML-related classification method to compare the systems more easily, e.g. for a short list. In the database, each product has its own detail page with many features filled in.

However, in its "Cautionary notes" the 2003 Gilbane Report on CMSML [6] already warned that CMSML and related tools cannot automatically choose "the right" CMS. It's a starting point for a CMS evaluation and selection process; at best it can provide you with a short list of possible systems..

Using CMSML

CM Professionals will provide an online overview of systems, based on CMSML. The form that vendors fill in is an output of the XML Schema. Every change in the XML Schema revolves in a change in the online form. The Schema is designed to be flexible and extensible for future changes, based on discussions from CM professionals and ideas from users and vendors.

The main advantage of a public domain XML Schema is that several websites can collaborate with it through syndication. Thus vendors will only have to fill in and update their product on one website; all other websites will automatically present the latest data.

For visitors the advantage is obvious, because they will only have to check one website to get all up-to-

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date information available. Of course, no average visitor has a need for an overview of all systems available world-wide. A selection based on features is very welcome here, e.g. systems available in their own region. Website publishers can predefine such selections but still provide more information if needed.

There are already some examples of CMSML-based overviews: CMS Review with the Comparator Tool and the Hartman Communicatie ECM Overview [7]. At the Hartman ECM Overview, every listed product is displayed with zero up to five 'stars' according to their specific features. In this case the criteria are based on the facets of editing, content management, document management, records management, workflow management, and information retrieval.

What's next?

Even after the second phase of improving the XML Schema, the work has not finished yet. In particular, the facets have to be revised and expanded. The first generation CMSML used the facets "creation, management, delivery, and lifecycle enhancement". We have to consider if the AIIM-facets "capture, manage, store, deliver, and preserve" need to be incorporated as well, as questioned by Bob Doyle [8].

For Enterprise Content Management Systems, the second CMSML uses the facets of editing, content management, document management, records management, workflow management, and information retrieval. But more facets need to be added, such as scalability, usability, security, interoperability. We need to develop criteria and heuristics to define these facets and thus describe and classify content management systems. These facets and criteria have to be discussed and developed in an international - and likely academic-oriented - discourse, for which CM Professionals is an excellent platform.

A next step would be the development of an international - and perhaps decentralized - CMS Lab in which content management products are tested according to these facets and criteria. Some initiatives are already there, e.g. the Washington iSchool CMS Evaluation Lab.

CM Professionals is already working on an ontology, which has a direct relation with the CMSML controlled vocabulary. And of course some facets of the CSMSL will appear in the CM Pros Poster, based on

the AIIM Puzzle Poster and Bob Boiko's CM Possibilities Poster [9].

The CMSML has to syndicate and replicate with as many websites as possible, which needs consultants, vendors, website publishers and professionals to cooperate. This is a major effort the CM Pros CMSML Project has to accomplish.

Finally, the development of a more user-centered dialogue would help end users to find their way through the many facets, criteria and products. A user-centered dialogue is necessary because we cannot expect end users to have a mindset in which terms like records management, aggregation, native XML and such are common.

CMSML is - and must remain - a public domain, industry-wide, collaborative online effort to seek agreement on the core features and functions of a CMS. As a CM Pros Project, we will look for agreement from analysts, industry experts, vendors, and users, both inside and outside CM Professionals.

We will also encourage consultants to not only use the CMSML for themselves, but also to publish the CMSML-based overview feeds on their websites. Thus they can select the most appropriate systems for a short list together with their clients. Because it's not only the outcome of such a quest that's important but also the discussion about the required criteria. Without understanding the question you cannot understand the answer.

CMSML is in a second stage of development, but much work still has to be done. CM Professionals will discuss the further development of CMSML at the 2nd CM Summit on 11 April 2005 in San Francisco [10]. Everyone is invited to join the CM Summit!

After the Summit a White Paper will be published on the CM Professionals website [11] and the discussion will go on at the special CMSML mailing list [12].

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Summary

There are many methods to help people make the right choice about tools, such as advice from consultants, reports, and overviews of systems. CMSML is a markup language for describing and classifying content management systems. CMSML is now a project within CM Professionals, the content management community of practice (<http://www.cmprofessionals.org>).

Erik M. Hartman improved and expanded the CMSML and is now working within the CM Pros community on developing more facets and heuristics for classifying enterprise content management systems.

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Understanding the Scalable Vector Graphics Standard

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In this article I will discuss the standard called Scalable Vector Graphics, or SVG. I begin with a brief explanation of what SVG is and conclude by explaining why SVG is important to adopt and use. The article is written in “non-program speak” and is intended to give a brief, high-level explanation of a very robust and deep technology, including what it is, why use it, and additional advantages of SVG

Note: This article includes a link to an SVG sample that is only available online from www.rockley.com/TheRockleyReport.

Where do standards exist

Standards are everywhere and can be seen in everyday life. They can be government regulated, such as airline and rail standards. They can be industry endorsed, such as ISO, QS, and ANSI. They can be represented in the real world, such as standards of measurement. They can be represented in the virtual or technological environments, such as technology standards of the W3C, IETF, and SAE. They can be de facto standards that are owned by one company but have evolved into standards over time by way of widespread adoption, such as Flash, EPS, and PDF. One thing is certain. The creation and adoption of standards help lead to technological advances. Agreement on standards and cooperation in their use helps companies, designers, programmers, and users to understand a common body of knowledge. Standards provide “playground principles” for getting people to work in a consistent manner. They also help to assure smaller companies a market for their products. Finally, instead of everyone investing in the conceptual research necessary to describe a proprietary technology, using an open source standard technology helps companies to advance beyond the development phase.

What is SVG

Scalable Vector Graphics (or SVG) is a standard developed by the W3C (World Wide Web Consortium) for two-dimensional vector graphics and graphical applications. SVG is defined as “a language for describing two-dimensional vector graphics and graphical applications in XML.”[1] In non-technical terms, SVG is the vector graphics standard for the Web. Unlike other de

facto proprietary vector graphics standards (Flash/SWF owned by Macromedia or DXF/DWG owned by Autodesk), SVG is open source. Right click an SVG image and you can view the source, which is written in XML, another W3C standard. (Please note that currently, depending on which browser you use, you may need to install a plug-in viewer to do this. The most popular SVG viewer is available, free, from Adobe at <http://www.adobe.com/svg/viewer/install/>.)

There are many aspects to SVG files. SVG images can be static or animated, they can be displayed on PDAs, cell phones, as well as on Web sites.

Why use the standard called “SVG”

Most people, when asked, “What is SVG” say “it is a competitor to Flash.” Although this COULD be true in many situations, this is similar to saying that “the raster formats of EPS and TIFF are competitors”. Simply stated, both Flash and SVG should be used when they are the most advantageous solution. Designers need BOTH. Flash files work better in some cases, and SVG works better in others. Hence, it is important to thoroughly understand the many traits of SVG.

Language compatibility

SVG is written in XML. This fact alone is at the very core of why we use standards. Standards allow for information (data) to be shared. If SVG was not written in XML, it might be used just for producing “pretty” pictures, “flashy” animations. But because SVG is XML, it has all the benefits of working with other XML-compatible languages (MathML, ChemML, SOAP, SMIL). It also allows additional code or mark-up (ECMAScript/JavaScript, CSS) to be easily inserted, and provides fluency in handling and transforming data by using other languages to create

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SVG (Perl, Java). One obvious strength of SVG can be seen when creating data-driven graphics, used to connect front-end graphics to back-end business processes and data, such as e-commerce systems and corporate databases. (See Adobe's example of a ticket sales system at <http://www.adobe.com/svg/overview/datadriven.html>.) Data in the form of XML is linked, threaded, and formatted in an SVG display along with a full color vector image.

Graphics compatibility

SVG is a 2d vector non-proprietary format that other software can import, open or export, save to. When companies/developers agree on a standard, they can save money by adopting it rather than investing in their own designs. For example, if railroads were not based on a standard size, rail cars would have to be designed to ride on various sized rails. By using a non-proprietary standard, no one company (or vendor) makes all the profit. As the standard is owned by no one, there is no vendor lock-in. For further information, see <http://steltenpower.com/OS4entrepreneurs.pdf>. [2]

Cross-platform compatibility

A standard image format is one that is cross-platform compatible and supported by the majority of graphics applications. Cross-platform capability is important because if someone tries to use a native file format (like Photoshop's .PDS) and send it from a Mac to a PC, the file may not open correctly. Operating systems all handle graphic files somewhat differently, but SVG makes them platform transparent. As SVG continues to evolve and expand, more and more software will adopt SVG. Already well established vector illustration software (*Adobe Illustrator*, *Microsoft Visio*, and *Maya*) can save or export to SVG. And newer, software aimed at certain niches have adopted the SVG standard as well, including *Inkscape* (an open source 2d vector illustration software) and *Mobile Designer* (a robust commercial application that exports to animated SVG files for display on the Web as well as cell phones).

Collaboration between programmers and designers

Cross-platform compatibility also allows for collaboration between programmers and designers in the creation of SVG files. SVG files can be created by both software and by hand coding. Generally it takes both

ways to deliver a powerful output. Designers will use design and illustration software that either saves or exports to SVG. Programmers will take these template designs ("skins", if you will) and either thread them with static XML data files or establish real-time links with databases. For example, a designer who uses a Mac can create an illustration in *Adobe Illustrator*, then save it to SVG. The programmer, who uses a PC, can open the file and add to it (by hand-coding), providing database linking, ECMAScript, SMIL animation, etc. For examples, see <http://www.adobe.com/svg/demos>. Note how Adobe markets SVG to both designers and programmers.[3]

Additional advantages of SVG

The above topics describe what SVG is and why it is an excellent standard to adopt in many situations. There are other reasons for using SVG beyond the fact that it is an open source standard.

Clock-based animation

If you have ever authored a SWF file using *Macromedia Flash*, you have seen an excellent example of frame-based animation, which shows new items in each frame. (SWF is the form that Flash files are saved in when you publish them to the Web.) SVG, on the other hand, uses clock-based animation, not frame-based. It relies on the computer's clock to determine the changing animation in the file. These different types of animation should be considered when determining the content of the design. Imagine, for a moment, that you are a famous director and are creating a motion picture. For one scene, you choose to have the camera pan across a skyline of New York City. As the camera pans, each frame shows new items (different buildings, trees, cars, etc.). This is an example of when to use *Flash* and frame-based animation. Each frame is used to show new objects.

For the next scene, you choose to have the camera remain in one spot, while a car chase ensues on one street. The start of the scene has the car very far off in the distance, then, as the scene progresses, the car gets bigger; the car scales up within the environment. This is an example of when to use SVG and clock-based animation.

However, SVG *can* mimic the new-objects-in-a-scene that is customary with frame-based animation. It does so by having all objects present in the file, with the

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visibility turned off or on at given times or actions (e.g. mouseclicks).

With the general goal of creating small, efficiently sized files (especially for a cell phone display output where the rule-of-thumb is to limit a file to 30kb or less), use clock-based animation. SVG is best at animation that involves:

1. Zooming in and out of a design. For example, zooming in on a mechanical assembly of a gearbox to see the details.
2. The scaling of certain objects up or down. For example, the shape of the car in the car chase mentioned above.
3. The manipulation of an object that always appears on screen. For example, to illustrate a running horse, a designer can simply move its legs and body to simulate galloping.

Understanding when to create content that is best suited for SVG animation will lead to smaller file sizes.

If you are reading this online, click [here](#) to view a sample SVG file.

Interpreted on the client side

What does this mean? Think of the client as the user of the computer (you, me, Uncle Bob). Anything that gets interpreted (by the browser, viewer, operating system, etc.) on this user's computer is being "interpreted on the client side." If a file is interpreted on the server side, when called upon by Uncle Bob's computer, it flies through cyberspace (the Internet connection) as a pre-compiled packet of data. Having a packet of data can include raster images that are stored as pixels, or *Flash* files that are pre-compiled. This can lead to larger file sizes. SVG, however, sits on the server as text (XML text to be specific). When called upon, it flies through cyberspace as text, and once on Uncle Bob's computer, will blossom into a graphic.

Ultimately the goal of any standard is to have parties agree upon the format/design so that the technology associated with the standard can move past the "arguing" phase and technology can advance. SVG is a robust standard that can be seen in the displays of today. More importantly, it is a standard that will be seen in the displays of tomorrow.

Support of global content

Globalization of content is becoming an imperative with many organizations. This means that text and graphics must be localized to the language where the content is to be distributed. Graphics with callouts and text have always posed a problem when content is localized because multiple versions of the same graphic must be created to support the multiple languages. SVG supports text in layers. In other words, you can have a layer for French, German, Japanese or any designated language that is overlaid on the graphic as required. This results in huge savings in the localization of graphics.

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People, Processes, and Change

Content Management Systems and Web Standards

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The World Wide Web Consortium (W3C) defines a set of standards for publishing content on the Web. The standards relate to the code used for adding structure to web pages, how those pages are presented to users, and scripting languages used to add dynamic elements to those pages. This article discusses why web standards are important in relation to Content Management Systems (CMS).

The need for web standards

CMS vendors are constantly repositioning their products to align them with the latest buzz-words and industry fashions, so it's easy to be deflected from concentrating on the most basic, but important issues – like ensuring the web pages you create will work with the browsers used by visitors to your sites. However, no web designer or CMS vendor can predict with any certainty the type of browser visitors may use. So, what strategies can web designers and CMS vendors adopt to cope with the problem of the “unknown web browser”?

Web standards are certainly a big part of the answer because standards are fundamental in coping with the issue of visitor diversity. Following web standards in the form of pages marked up with valid code and Cascading Style Sheets (CSS) provide the best chance of consistently serving content to an audience likely using a number of different “user agents”. Those user agents could be anything from a standard web browser to an assistive technology such as a screen reader.

Standard markup? What's that?

There have been many different versions of HTML and XHTML since the World Wide Web was invented in the early 90s. The “rules” for using each version are encapsulated in the standards published by the World Wide Web Consortium (W3C). The rules dictate the tags (markup) you are allowed to use, in what order, and how the tags will be interpreted by web browsers. For example, text within header tags is interpreted as a heading, and text within paragraph tags is interpreted as paragraphs.

What are advantages of using a CMS that produces standard markup?

The advantages of using web standards apply regardless of the tools used to create and manage a website. However, using web standards is even more important when using a CMS because the choices you make in template design, and the quality of code generated by the system (if indeed the system generates code) can end up propagating across hundreds, if not thousands of pages.

The main advantages of using web standards include:

- Money can be saved and money can be made
The most obvious savings come from lower bandwidth costs; pages tend to be smaller and load more quickly. What is not so obvious, however, is that faster loading pages can also generate additional traffic and revenue. For example, when Multimap.com redesigned their site using web standards they estimated they would save 40,000 Gb of bandwidth per year, but they also found that advertising revenues increased. The quicker loading pages encouraged people to spend more time on the site and consequently, advertising revenues went up. [1]
- Greatly reduced development time for future redesigns
Separating the structure of content (i.e., headings, lists, images, paragraphs) from the way that content is presented opens up opportunities to create multiple views of that content with little additional effort. A visit to CSS Zen Garden website (<http://www.csszengarden.com/>) is a must to see this in action; click a link and the page is redesigned on the fly. [2] Content management systems have always been sold based on their ability to re-purpose content. Using web standards makes this even easier, as clean structured con-

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tent can be more easily re-purposed to audiences with different presentation needs.

- Production and maintenance costs are lower

When following web standards, you no longer have to produce multiple versions of pages to cope with the quirks of different browsers. The time and effort previously required to create and maintain browser sniffing scripts can now be re-deployed to add value to the site for visitors.

- Freedom from proprietary technologies

Using Web standards can free organizations from being held captive by browsers dependent on proprietary tags and rendering behavior. For example, IBM's move to Open Source desktop has reportedly been held back because their web-based systems were built on top of the non-standard Internet Explorer web browser. [3] Content management systems should not generate web pages that will only work on a particular browser or a particular platform.

- Pages can be tested for errors

Code validators such as the W3C validator (<http://validator.w3.org/>) can check pages for errors in markup. [4] However, without standards, you can't check for errors because there are no rules to check against. The advantage of a CMS is that content creation can be farmed out to "unskilled" users (in theory at least). The disadvantage is that human error is unavoidable. Ideally checking and repair tools should be built into the CMS, because the ability to test and repair pages is essential.

- Greater search engine visibility

Search engines are able to index web pages more accurately if the content on those pages is well structured. For example, when keywords appear in page headings, many search engines give extra weight to those words when indexing the page. A web page where headings are improperly marked up is likely to suffer in the search rankings compared with a page with the same content marked up correctly. A CMS can come to the rescue by adding structure (e.g., input forms with fields for headings and other structures) when content is being put into the storage system.

- Content is future-proofed and backward compatible with older browsers

Pages built using web standards will display more consistently across browsers and platforms,

including older browsers. Your content will not necessarily look the same in an old non-standard compliant browser, but the bottom line is that the content will still be available.

Web standards can help make pages accessible to disabled people

The de-facto guidelines for measuring the accessibility of a web page are outlined in the W3C Web Content Accessibility Guidelines (WCAG). Checkpoint 3.2, a Priority 2 checkpoint states, "Create documents that validate to published formal grammars." [5] If you want to ensure that your sites conform to at least AA WCAG – a minimum requirement, for UK local government sites, and recommended for educational sites – then using standard markup is a requirement.

If you spend time making a website accessible, does that mean you will have to compromise on visual design or hold back from incorporating interactive features? Absolutely not. This is one of the biggest myths about accessible web design. Accessible web design is about being flexible in your approach, about offering more, rather than fewer choices. For example if you are thinking of adding video to your site, then great, go ahead. However, you also need to think about how you can increase your audience reach by offering the content of that video in alternative ways (e.g., by providing a transcript or close-captions for deaf or hearing-impaired individuals).

Accessibility is where you really cash in if your CMS uses standard markup and CSS for presentation. Not only can you present the same content in many different ways, but visitors to your site can decide for themselves how they want to access it. For example, they can increase the size of the text, change colors and contrast, or substitute their own style sheets to create entirely new designs. Designing in flexibility is key to accessible web design, and it is also the most efficient approach because you can't possibly anticipate the diverse needs of every visitor to your site.

Accessible sites that use web standards can look great

Examples of great looking and accessible website are showcased every month on the Guild of Accessible Web Designers site at <http://www.gawds.org>. [6] The winner of the March 2005 Site of the Month is the World Wide Fund for Nature's Earthly Goods Online Store (<http://shop.wwf.org.uk/store/Home.aspx>).

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Previous winners included Haringey Council (<http://www.haringey.gov.uk/>) and the National Crime Squad website (<http://www.national-crimesquad.police.uk/>). Many more accessible and well designed sites can be found by visiting sites created by Guild members, e.g. Minz Meyers, Research Kitchen (<http://www.researchkitchen.de/blog/index.php>). [7]

Summary

A CMS should help rather than hinder attempts to create standards-based web pages. It should provide ways of marking up content in a standard compliant way, for example, by using a WYSWYG tool or by interfacing with other tools, or provide a way to transform existing structured content automatically into structured web pages. Ideally there should be tools to clean up content entered by users, for example, when content is cut and pasted from Word documents, and to highlight errors, allowing them to be fixed.

Efficiently managing a large website implies the use of a CMS—so make sure the next one you pay good money for gets the basics right—and helps you to publish pages that will be available to all of your potential visitors.

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- [7] Many more accessible and well designed sites can be found by visiting sites created by Guild members: <http://www.researchkitchen.de/blog/index.php>

Additional resources

- Web Standards Project: <http://www.webstandards.org/>
- W3C Authoring Tool Accessibility Guidelines 1.0 <http://www.w3.org/TR/ATAG10/>

Content Standards Of Interest To Content Managers

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There are a variety of content standards that may come into play when developing content management solutions. This article provides an overview of two useful standards that may be of interest to those creating learning content or serving the content needs of those with visual impairments.

Sharable Courseware Object Reference Model

The Sharable Courseware Object Reference Model (SCORM) allows learning content to be developed in chunks and reused whenever and wherever needed. Chunks, once created, are stored in a content repository where they can be retrieved and reused, by authoring and publishing tools that support the SCORM standard.

The goal of SCORM is to facilitate the creation of durable, affordable, accessible, platform- and tool-independent Reusable Learning Objects (RLOs).

SCORM is part of the Advanced Distributed Learning (ADL) initiative, sponsored by the U.S. Office of the Secretary of Defense (OSD), and is a collaborative effort between government, industry and academia to establish a new distributed learning environment that permits the interoperability of learning tools and course content on a global scale. According to the ADL website (<http://www.adlnet.org/index.cfm?fuseaction=abtadl>), "ADL's vision is to provide access to the highest quality education and training, tailored to individual needs, delivered cost-effectively anywhere and anytime."

If you'd like to learn more about how SCORM might benefit your organization, check out the ADL Solutions at Work website where you'll find a multimedia demonstration (<http://www.adlnet.org/flash/adl-demo.cfm>) featuring a fictional example of how the standard might be used to create just-in-time learning materials designed to assist emergency response teams and members of the armed services during a chemical or biological attack.

Additional SCORM Resources

Technology Report: Sharable Courseware Object Reference Model Initiative (XML Cover Pages): <http://xml.coverpages.org/scorm.html>

SCORM: Clarity or Calamity? (Online Learning Magazine): http://www.onlinelearningmag.com/online-learning/magazine/article_display.jsp?vnu_content_id=1526769

Digital Talking Book

The Digital Talking Book (DTBook) standard is a new XML file format standard coordinated by the DAISY Consortium and the Library of Congress' National Library Service for the Blind and Physically Handicapped (NLS).

The non-profit DAISY Consortium is promoting DAISY (Digital Accessible Information System) XML standards throughout the world and urges publishers to provide materials in the new file format.

"Publishers can help libraries serving persons with disabilities by providing XML files in DTBook or in other XML vocabularies that can be transformed to this rapidly advancing standard," says George Kersch, secretary general for the DAISY Consortium.

For the blind and visually impaired, this technology has literally opened up the doors to education. Students with visual impairments can listen to a textbook on their PC or read it using refreshable Braille. In the past, students have had to wait six months or longer for an accessible textbook to be made available to them in the format they require.

Thanks to a reauthorization of the U.S. Individuals with Disabilities Educational Act (IDEA), signed by President Bush on December 3, 2004, students with visual disabilities will have the same access to educational materials as their sighted peers.

In the News

The requirements of the Act set in motion the use of a standard national file format for the production of textbooks in electronic files. This will make conversion into accessible formats such as Braille, large print or digital text much faster.

Additional DAISY Resources

The DAISY Consortium: <http://www.daisy.org>

What is a Digital Talking Book?: http://www.daisy.org/about_us/dtbooks.asp

DAISY DTBook Specifications: <http://www.daisy.org/publications/specifications.asp>

Contributors

Contributors

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Pamela Kostur is a Principal with The Rockley Group, specializing in information analysis, information modeling, and structured writing to support a unified content strategy. Pamela has over 18 years experience developing information solutions. During that time Pamela has completed many projects and presented papers at numerous conferences on topics including iterative usability, miscommunication, structured writing, editorial "magic", building and managing

intranets, creating usable online documentation, unified strategies for web-based learning, information modeling and analysis. Pamela is a co-author of *Managing Enterprise Content: A Unified Content Strategy* with Ann Rockley and Steve Manning.

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Steve Manning is a Principal with The Rockley Group and has over 16 years experience in the documentation field. He is a skilled developer of online documentation (WinHelp, HTML Help, Web sites, XML, and Lotus Notes) and has created single source production methodologies using key online tools. Steve has extensive experience in project management and has managed a number of multiple media, single source projects. Steve teaches "Enterprise Content Management" at the University of Toronto, and is a frequent speaker at conferences (ASIS, AUGI, STC, ACM SIGDOC, DIA) on the subject of XML and Content Management. Steve is a co-author of *Managing Enterprise Content: A Unified Content Strategy* with Ann Rockley and Pamela Kostur.

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Ann Rockley

Ann Rockley is President of The Rockley Group, established to assist organizations in adopting content management, unified content strategies, and information architecture for content management. Ann has been instrumental in establishing the field in online documentation, single sourcing (content reuse), enterprise content management, and information architecture of content management. She is a frequent contributor to trade and industry publications and a featured speaker at numerous conferences in North America and Europe. Ann is the author of *Managing Enterprise Content: A Unified Content Strategy* with TRG Senior Consultants Pamela Kostur and Steve Manning.

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Call for Submissions

The Rockley Report publishes original material related to content management, including its goals, its implementation, the technology required to support it, and its affect on organizations. If you're interested in submitting to *The Rockley Report*, we'd like to hear from you. Please send us your ideas for articles in the following categories:

- **Best Practices** – Articles in this category describe content management in the “ideal” world and suggest how to put those ideals into practice in the “real” world. Best practices focuses strategies, activities, or approaches that have been shown through research and evaluation to be effective.
- **Information Architecture** – Articles in this category explore the relationship between information architecture and content management, including topics such as building a blueprint for a content management strategy and content modeling.
- **Tools and Technology** – Articles in this category investigate the technology required to support content management.
- **People, Processes, and Change** – Articles in this category discuss management issues related to content management, such as changing roles and writing in a content management environment.
- **Gaining Management Support** – Articles in this category provide strategies for helping management understand the benefits of content management, focusing on topics such as building a business case for content management and calculating ROI.
- **Case Studies** – Case studies explore how companies are implementing content management and focus on what they did and why, their benefits, and their lessons learned.

If you have an story you'd like to submit, please write a 250-word description of your topic, the category you think it best fits, then send it, along with a 100-word bio, to Pamela Kostur at kostur@rockley.com.

Next Issue

Planning a content management initiative but don't know where to start? Putting next year's budget together and need to include content management? The next issue of *The Rockley Report* takes you through building a business case, providing you with case studies and guidelines to help you plan for and realize the opportunity to implement your content management strategy.

The next issue will be available to subscribers in late June.

We'd love to hear from you. If you're interested in contributing an article on some aspect of content management to *The Rockley Report*, please contact kostur@rockley.com. We'll send you our authoring guidelines and get you started.

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We'd love to hear from you. What do you think of the *Rockley Report*? What would you like to see in the future?

If you have any questions, comments or suggestions, please feel free to let us know. The easiest way to reach us is via email. Our Editor, Pamela Kostur, can be reached at kostur@rockley.com.

Visit our corporate website at www.rockley.com, or the website for our book, *Managing Enterprise Content: A Unified Content Strategy* at www.managingenterprisecontent.com.

We hope you enjoyed this issue, and hope to hear from you soon.