



Oblivious Organizations and Content Management: Not Yet Ready for Prime Time



JoAnn Hackos, PhD, CIDM Director

Gert Kindergarten, marketing director at Hyperactive Software, has just returned from the KMWorld conference. He attended two sessions espousing the advantages of moving documents into a content-management system and using XML markup to enable reuse¹ and repurposing². He announces to his staff that the company needs to “get into” content management right away for all its marketing and customer documents, especially the product manuals. His senior writer suggests calling in a consulting team to help.

At the first meeting with Gert and members of the marketing team, Dr. Q asks

- ◆ Who creates the marketing and customer documents today?
- ◆ What process is used to create, review, approve, and publish these documents?

Gert and Georgina, the lone technical writer, explain that many people in the company create the documents. Three research and development (R&D) teams write their own product specifications and a few of the engineers and programmers put together the user manuals for the products. The field installation and maintenance team in customer support creates install guides and maintenance manuals that go to some customers. Customer services, the phone team, develops FAQs for the company's Web site and creates ad-hoc documents that they send to customers in response to queries.

In brief, documents are created everywhere by everyone. They each develop the documents any way they like, with no common look and feel. Company officials have vehemently opposed hiring technical communicators for the R&D teams. They feel that the engineers know the products best and should be able to write about them. Marketing materials are created independently by many different marketing staff and even by executives who regularly post announcements to the company intranet and Internet sites.

When it comes to publishing the final versions in print and on CD-ROM, once again, staff members use a wide variety of processes, each developed and implemented independently. They use several different printers and generally burn their own

CDs and ship them to the fulfillment house to be included with the product CDs.

In the Information Process Maturity Model (IPMM), Hyperactive Software is a Level 0: Oblivious. In an oblivious organization, management does not yet recognize the need for standard publications. We generally don't learn about oblivious organizations, however, until they hire their first technical writer. That writer has the inaugural view of the mess the documents are in and is often charged with trying to do something about it.

Despite the marketing director's interest in content management, Hyperactive Software is not yet ready for prime time. They need first to pursue several important and potentially difficult steps toward standardization before content management makes sense.

- ◆ Review who creates documents and what documents they are creating (an inventory of existing materials).
- ◆ Understand the processes being used throughout each document-development life cycle.
- ◆ Query customers, both internal and external, about the successes and failures of the current documentation set.
- ◆ Create a standard set of documents related to the products being delivered and the users' needs for information. For example, you might have installation, standard, and end-user standard documents.
- ◆ Adopt a standard document design that takes into account relevant differences among the standard document types.
- ◆ Create a template for each document type with common style names across the template set.
- ◆ Train staff members on using the standard.
- ◆ Institute a quality check process (run by the lone technical writer) to ensure that the outgoing documents follow the standard design and template.

Rest assured, these steps will not be easy to pursue. Dealing with an essentially ad-hoc organization is always difficult. In an oblivious organization (not yet ad-hoc), people don't see the

point of standardization. They value their independence in creating anything they want, rather than the need to deliver a common look and feel in the documents going to customers. Impressing everyone about the need for standardization is especially difficult when no experienced technical communicators are part of the picture. Amateur writers often have no interest in standards or patience with process. Because document development is not part of their regular job description, it's low on their personal priority lists.


Even if you are working with experienced technical communicators (more on Level 1: Ad-hoc organizations in the next installment of the e-newsletter), you are likely to encounter resistance from staff who have long been independent. We all know, of course, that even under the best of circumstances, communicators find it difficult to compromise on style preferences. Everyone thinks his or her way is best.

Quite clearly, an oblivious organization is not ready for content management. We find that if they invest in a content-management system, they will use it as an expensive file server with version control. Version control alone provides little calculable return on investment. The only path available to an oblivious organization wanting to take advantage of content management and reuse is through standardization.

Perhaps the best means of achieving some success is to ensure the support of a champion in senior management.

Georgina might be able to persuade Gert to become such a champion, but his position in marketing will likely preclude influence over R&D. Georgina needs to find a champion among the executives high enough in the company to influence all or most of the teams, such as R&D, services, and support.

Champions among senior management are most likely to emerge in response to customer pain. Customers unhappy with the current confused state of affairs are bound to be vocal about their problems. Georgina needs to ferret out the complaints and bring them to the attention of the right people. Gert in marketing may be that person, at least as a starting point.

Oblivious organizations are on the slow path toward content-management solutions. I've found that it often takes two years to move an organization one level in the IPMM. Georgina has her work cut out for her; she'll need plenty of stamina to survive two years of oblivion. Fortunately, just hiring her is a step in the direction of Level 1. 

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Reference:
CIDM e-newsletter Volume 2, Issue 12

Ad-Hoc Organizations and Content Management



JoAnn Hackos, PhD, CIDM Director

OBLIVIOUS ORGANIZATIONS ARE ALIVE AND WELL

In response to my December e-newsletter article on oblivious (Level 0) organizations, I received two interesting accounts that are included in this issue (see the Responses to Oblivious Organizations). Both writers found themselves to be the first communicators in otherwise oblivious organizations. Both struggled to communicate the need for an organized structure in their work to their managers and colleagues.

This month, we turn to Level 1 of the Information Process Maturity Model (IPMM): the Ad-hoc organization.

INDEPENDENCE RULES IN AD-HOC ORGANIZATIONS

Dr. Q, the leader of our content-management consulting team, has been asked to work with Checko Systems, a huge manufacturing company with a wide range of products. When it was a fledgling start-up, Checko had a central technical publications organization.

Today, however, Checko has a number of autonomous documentation departments, each associated with a set of products. All that is left of the original central organization is a production unit. Dolores Jones, production head, is very interested in developing a content-management system to deliver documents to the company Web site and release them on CD-ROM. She needs the cooperation of all the other departments, some co-located and others distributed around the world at company plants. Some of these documentation departments were once part of the central group; others have had little or no contact with Dolores.

Dr. Q's initial investigation centers on structure standards:

- ◆ How similar or different are the documents created by the diverse, autonomous departments?
- ◆ If they are different in their information structures, do they share common desktop-publishing templates?
- ◆ Are common processes in place among the departments? Are the staff willing or able to cooperate?

After several meetings with documentation department leaders and Dolores Jones's team, Dr. Q concludes that she is dealing with a Level 1: Ad-hoc organization. Processes, information structures, and even templates differ markedly from group to group. Although all the documents are delivered to customers on a single CD-ROM, simple searches reveal that each document opened is a complete surprise. Terminology is not standard; tables of contents for similar products are different; the users cannot easily tell which product or release they are reading about when they use full-text search.

From the 30,000-foot view, a Level 1 in process maturity appears much like Level 0. The difference in a Level 1 organi-

zation, professional technical writers are, for the most part, responsible for document development. Some Level 1 organizations, like Checko, have department leadership handled by experienced communicators. Other Level 1 organizations, closer to Level 0, depend upon technical managers to supervise communicators. Still others have a mixed approach.

With so many diverse approaches to document design and information structure, Checko is not ready for corporate content management. Individual departments are too small to justify an investment in a formal content-management system (CMS). To justify a CMS, the departments will have to pool their resources, creating a unified approach to information development.

PREPARING A LEVEL 1 ORGANIZATION FOR CONTENT MANAGEMENT

For Checko to move into content-management, they may consider several possible strategies:

- ◆ Individual departments or even individual communicators may pursue single-sourcing solutions independently using their existing tools and templates. Their solutions, however, will be limited to the subject areas covered in their departments.
- ◆ The central production unit may continue to repurpose existing documents to PDF for electronic delivery with no changes. However, without agreement on a corporate-wide information design and the development of standard templates, customers will continue to be frustrated by inconsistency in the documents they receive.
- ◆ To achieve consistency, individual departments must form a coalition to develop information-design standards and implement common tools and templates for all the documents produced throughout the company.
- ◆ Once standards are in place, individual departments will need to train staff members to use the standards effectively.
- ◆ Standards in document design must be accompanied by developing unified processes. The same processes must be used in each sub-organization to develop documents so that documents are consistent, not only at the level of formatting but of content and style. For information to be shared in the future among different product areas, the level of detail and coverage, as well as the writing styles, must be the same.

In short, Checko must move from a Level 1 to a Level 2 in the IPMM by implementing rudimentary standards in three areas: process management, information design, and technology.

Making Content-Management Decisions

Level 2: Rudimentary describes the state that occurs when an organization begins to establish uniform practices and consistent designs. At Level 1, in which uniformity does not exist, creating a comprehensive and unified content-management solution is not possible. Unless the individual departments are large and rich enough to support independent CMSs, the best they can achieve is limited repurposing and single sourcing.

MAKING CONTENT-MANAGEMENT DECISIONS

Level 1 organizations have much work to do before they can move to more sophisticated content-management solutions. However, individual departments or writers may easily achieve some degree of systematic reuse without a corporate-wide initiative or even a department-wide initiative.

Individual communicators, working independently, often decide on their own to repurpose or single source their content. Repurposing refers to the process of delivering the same content in multiple media. For example, a writer may create content as a book and deliver that same content electronically using PDF, HTML, or a help system (HTML Help, WinHelp, JavaHelp, and others). Typically, the writer uses a conversion tool to develop the multiple output formats necessary. We have seen individual writers, working closely with a product-development team, create Help systems and PDF or HTML versions of their documents for delivery with the product.

In single sourcing, the writer selects different content for different media, typically a subset of the content developed for the printed books. Again, conversion tools may help label and select content for different outputs. For example, the writer may use a subset of book content in a help system by appending conditional labels to the print version of the document. Some help-development systems allow conditional formatting during the conversion process; sophisticated desktop publishing tools like Adobe FrameMaker allow for conditional labels to be included in the original documents.

In the same way, individual departments may use desktop-publishing or help-development tools to support repurposing or single sourcing the content they produce, without regard to the rest of the publications developed by the organization.

INDIVIDUAL INITIATIVE IN LEVEL 1 ORGANIZATIONS

In observing many Level 1 organizations, we have always noted the strength of individual initiatives that foster innovative approaches to delivering content. But it is this individual behavior that limits Level 1 organizations to ad-hoc approaches that succeed only when they are limited in scale. For an organization to work toward a uniform, standardized solution involving more than a handful of people, staff members will necessarily have to work together. Ad-hoc organizations, by definition, do not have the degree of collaboration or cohesiveness necessary.

Once staff members in a Level 1 organization decide that they will benefit by working together and agreeing on stan-

dards in process, design, and technology, they are already on their way to becoming a Level 2.

CENTRALIZING PRODUCTION

Level 1: Ad-hoc organizations often begin to standardize by developing a central production team that is responsible for final deliverables. Typically, such centralization occurs when it becomes cost-effective for an organization to publish technical documents jointly. The organization decides to issue a single CD-ROM with all their documents or place the documents on a joint Web site.

Typically, the work of a central production team is repurposing. They take the documents produced by the writers in different parts of the corporation and issue them as a unit. Costs are saved because only a few people are responsible for production activities (producing PDFs, creating CD-ROMs, posting to a Web site) rather than everyone working independently or in departmental groupings.

With a central production team, an organization may consider implementing content management for Web delivery (Web content-management systems automate the deployment of content to a Web site, often cutting final production time from weeks to hours or minutes). An organization may even consider converting existing documents to XML to avoid the tweaking often required with proprietary authoring systems. Or, an organization may move document development into SGML or XML to avoid the conversion process.

In such cases, I have observed the format of the original desktop published documents is maintained. The popular DOCBook DTD provides a cost-effective means to author in a non-proprietary language without making any changes to existing book structures.

However, smoothing the production process, automating many activities, and using non-proprietary tools results in significant returns on investment. By reducing production costs and time, documents are not only less expensive and less time consuming to produce but more time is left before production to ensure accurate content.

BEYOND REPURPOSING

Level 1 organizations are not yet ready for content management. They need to establish uniform processes, information designs, and templates before they can successfully manage content in a comprehensive manner. Simple repurposing of identical documents into multiple deliverables provides an initial solution but offers little opportunity to increase efficiency or provide more flexible deliverables to customers. Simple single sourcing, in which elements of content are conditionalized for multiple outputs, can be effective on a small scale but becomes difficult to manage as the number of conditions grows and multiple conditions must be applied to portions of the same text. Without the means to store content modules and assemble them to produce unique deliverables, a Level 1 organization will achieve limited success.

To manage content for reuse in multiple contexts requires a modular rather than a document approach to information design. To manage content that can be reused in multiple deliverables requires a comprehensive information model, one that identifies the categories of content beyond the document level. In the next installment of this series, I discuss the organizational requirements behind a successful content-management solution that provides continuing opportunities for growth. □

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Reference:
CIDM e-newsletter Volume 3, Issue 1

Heading toward Maturity, Level 2: Rudimentary Organizations



JoAnn Hackos, PhD, CIDM Director

INDEPENDENCE RULES IN AD-HOC ORGANIZATIONS

Dr. Q, the leader of our content-management consulting team, has been working for several months with Checko Systems, a huge manufacturing company with a wide range of products. Checko is determined to reorganize its documentation staff into a more coordinated group to take advantage of the cost savings and benefits of content management.

Checko still has a number of autonomous documentation departments, but they are rapidly restructuring them back into a central organization. They have management support for the change, but they expect it to take two to three years to complete. Right now, however, two of the largest departments have joined forces.

Taking Dr. Q's advice, the new Checko central documentation team is working on its Information Model. They are

- ◆ beginning a preliminary user study to discover what customers think about the documentation and how they use it
- ◆ working to define standard information types, such as procedures, concepts, and reference materials, that all the writers will be able to use
- ◆ deciding which information types are appropriate for each user duty and set of tasks

Now, just because Checko has a plan to move to Level 3 of process maturity doesn't mean it's going to be easy. In fact, the level of complaining has already gone up significantly. The staff members don't necessarily agree on which information types are needed or how they should be defined. They don't have much information about their users and don't know how to begin their user study.

Level 2 organizations are on a journey from Level 1 to Level 3. As a result, they are in a very uncomfortable position with a lot of changes to make. The more changes, the more instability that staff members will have to deal with.

PREPARING A LEVEL 2 ORGANIZATION FOR CONTENT MANAGEMENT

For Checko to move into content management as a Level 2 organization, they have decided on a centralization strategy:

- ◆ To achieve consistency, individual departments merge to form a centralized organization with links to other independent publications groups within the company.
- ◆ The new, merged group begins to develop information-design standards and implement common tools and tem-

plates for all the documents produced throughout the company.

- ◆ The merged group will provide training on the new standards and tools for their own staff and the staff of the remaining independent departments.
- ◆ They will also begin to develop a set of processes to govern their activities that can be tested and then passed on to others.

Level 2: Rudimentary describes the state that occurs when an organization begins to establish uniform practices and consistent designs. As a Level 2 organization consolidates and unifies, it becomes increasingly ready to implement a content-management solution. It is important to point out, however, that the changes recommended here take time and concerted effort. If the company as a whole is unstable or the publications organizations encounter resistance, the process will be slowed and may be derailed.

Level 2 organizations, we find, are particularly unstable. There is great pressure to slip back into the ad-hoc world. But even if you don't achieve full Level 3 maturity at first, by experiencing what it will take to manage the change, the next effort should go more smoothly.

MAKING CONTENT-MANAGEMENT DECISIONS

Level 2 organizations are actually doing the work needed to prepare for content management and are beginning to institute content-management related activities.

As the staff members work through aspects of their Information Model, they should identify a potential pilot project to institute the new design ideas.

The pilot project is characteristic of all content-management planning, but it is particularly important for Level 2 organizations because they are not used to working collaboratively.

The pilot project must be a collaborative effort, involving representatives of the primary stakeholders in the content-management project. Stakeholders may include training and technical support, as well as possible customer representatives. If information is to change for the better and be brought under control, the potential internal users of that information should be involved in the redesign.

It is not necessary to take a modular approach to content development to institute content management, but a modular approach is necessary to take full advantage of reuse and repurposing goals. Without modules in place, writers will continue to develop entire documents on their own, in their writing flow

and context, which will make reuse difficult. By developing modules and standardizing the design of the modules with information types, writers can develop content that is meant for reuse. New documents can be created out of modules that work effectively together because they are designed with the same standards in place.

Level 2 organizations are building a path to comprehensive, development-level content management and reuse, rather than simple repurposing of text into variations.

CENTRALIZING PRODUCTION

In a Level 1 organization, production teams generally concentrate on delivering books or PDFs of books to customers in print and electronically. As the Level 2 organization moves toward a more modular approach to information design, the production team will have to rethink its processes as well.

Modular content is, almost by definition, more difficult to control than whole books. Smaller chunks of content need to be correctly assembled into appropriate contexts either for delivery as books or into the networked relationships of a Web site. I believe that production teams have a considerable challenge in organizing how they will deliver content, both as static content organized into deliverables during production and as dynamic content that is updated on a regular basis.

Production teams will often find themselves moving quickly into technology to support Web content management and portals if they become serious about dynamic delivery. Maintaining dynamic delivery in the future is virtually impossible without technology support.

However, at Level 2, the production team is engaged in planning, not yet implementation. The content is not ready for full deployment through virtual assembly methods. The writers are just beginning their Information Model and considering a pilot project. The production team needs to be part of the deliberations and recognize how the changes in document development will impact their delivery methods.

It's not too early to start planning, even if the planning will take a year or so before you are ready to implement.

Another consideration to take into account it may be advantageous to implement a Web content-management delivery technology to handle your whole documents in PDF or HTML form before you move to a more modular approach. Automating document assembly and delivery may result in significant time and cost savings and may be implemented earlier.

BEYOND REPURPOSING

Level 2 organizations are not yet ready for content management. They are proceeding in the right direction by establishing uniform processes, information designs, and templates before they can successfully manage content in a comprehensive manner. You may already have simple repurposing of identical documents into multiple deliverables in place. You may

also be using conditional text to send portions of documents on different delivery paths.

The goal in Level 2 should be focused on restructuring documents and processes, not on immediate solutions. The solutions will come in Level 3. Nevertheless, the path is now being set that will enable successful content management.

A word of warning... We know of several organizations that decided to create modular content by splitting apart existing documents and then hoping to make sense of the chunks later. Don't try that; you'll regret it later. At least one organization we've worked with found that rethinking the chunks took more time than creating new modules would have

Modular writing is not about new formats. It is actually a different way of thinking about content. Splitting existing documents into pieces accomplishes almost nothing on the path to modular design and may actually hinder putting good information into the repository. Just think of all the unnecessary, interconnected content that you'll have to find and throw out or rewrite. Do the rethinking first and the modular construction later.

TIMING THE EFFORT

Generally, we have found that for large organizations of 20 or so members, the effort of moving from Level 1 to Level 3 takes at least two years. Some staff make the mental transition quickly, others wait to see what happens, and the laggards never change but spend a lot of time criticizing everyone else. You also have to convince other parts of the company that you are focused on change.

Making the changes to your information design is often your own affair in technical publications. However, you may also have to convince product managers and engineering directors that the information across products needs to become standardized. That convincing will take time.

And it will take a vision. Many organizations find that cost savings are the only motivation for change, while others are convinced only if the change can be directly linked to overall customer satisfaction. Develop a comprehensive vision. Clearly define where costs will be saved, most commonly in translation or production where time-to-market can be decreased, and how the information redesign and delivery method will address current customer issues. Deliver this message and sell your vision as often as possible to anyone who could negatively affect the outcome of your project. □

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Reference:
CIDM e-newsletter Volume 3, Issue 2

Process Maturity Found: Level 3: Organized and Repeatable



JoAnn Hackos, PhD, CIDM Director

SETTLING ON MATURE PROCESSES

We've been following Dr. Q as she works with information-development managers building more mature organizations. Checko Software, at level 2, was making considerable progress toward restructuring. Sonoita Technologies spent 3 years working out effective processes and practices. It was quite a struggle at times, particularly when Don Blue, publications manager, faced a potential revolt from some of the writers who preferred working on their own. In a few cases (a very few, fortunately), the staff members decided to move on.

Since the first of the year, Don has felt his staff has “made it.”

- ◆ They completed their first comprehensive user study. They discovered, to everyone's surprise, that the first-level technicians at their telecom customers were not given the documentation from Sonoita. Instead, they received on-the-job training and a field notebook of the procedures they needed to follow.
- ◆ They had succeeded in developing common standards with their sister organization on the east coast. Agreeing on standards had been difficult because both groups thought their way of doing things was best. Finally, they were able to reach a compromise that seemed the best of both.
- ◆ The new process standard was still proving to be a challenge. Too many staff writers still felt it was easier to dive into a new project rather than developing a content plan and estimating project hours. The project management training planned for next month should at least ensure that everyone was using the same vocabulary for the planning activities.

Despite the clear progress they had made, Don was alert to the possibility of backsliding. Until they all had experience living in a more mature business environment, they would struggle with change. Don hoped that his recent promotion to Director of Technical Publications signaled senior management's support for their efforts.

LEADING A LEVEL 3 ORGANIZATION TOWARD A CONTENT-MANAGEMENT SOLUTION

A small team representing both of Sonoita's technical publications teams (east and west coast) has begun to investigate content management. Linda Rubioto had attended the Content Management Strategies conference in 2003 and was excited about everything she'd learned. She had assembled a team

interested in knowing more and leading a possible implementation project. The team members are working on several issues:

- ◆ understanding the requirements of their customers for specific content, especially the planning and surveillance engineers they had interviewed and observed during the site studies
- ◆ relating the customer needs for information to a set of clearly defined information types
- ◆ standardizing the information types so that they contained a standard set of content units

Once they had defined the information types and related them to customer needs, they would have the rudiments of their Information Model.

Don has invited Dr. Q to assist with their content-management planning. Dr. Q decides to host a stakeholders meeting. They have invited representatives of other departments, including

- ◆ Training
- ◆ Customer Support
- ◆ Marketing and Communications
- ◆ Contracts and Proposals

Each of the stakeholders may prove to be interested in joining the content-management initiative and supporting the investment in hardware and software. Without their contributions, technical publications would not be able to support the full cost. If other departments participate in the analysis, they will each strengthen the business case needed to obtain approval and funding from the Sonoita board of directors.

Dr. Q encourages the stakeholders to create a vision of how they could work together to develop modules of information and contribute them to the customers. They envision what the new information-development environment would look like if they are successful in reaching their goals.

BUILDING A BUSINESS CASE

Linda's team takes responsibility for building the business case. They need to develop evidence of the business goals that will be supported by content management. They must also analyze the benefits to the company and its customers and balance the benefits against the costs of the system and its implementation. Dr. Q points out that costs will include

- ◆ software licenses for a database and the content-management system

- ◆ hardware in the form of servers and other infrastructure to support the implementation
- ◆ system integration to make all the pieces of software work together and to build those custom pieces not available out-of-the-box
- ◆ training for the staff in new authoring tools, as well as the repository
- ◆ additional staff to support the content-management system
- ◆ development of a comprehensive information model
- ◆ scheduling of activities and monitoring progress

Don recognizes that the project is not going to happen overnight. He wants to plan on 12 to 18 months for the planning and implementation. He has the regular work of the department to manage at the same time, but with the help of Dr. Q and her staff, they are able to plan a reasonable level of involvement for the team.

STARTING SMALL

Don and Linda both recognize the importance of starting small with a well-defined pilot project. They'll need to keep all the stakeholders at bay for a while once the pilot begins. Bringing in all of the other departments will make the initial project far too complex to succeed.

They know that many changes in organization and process are ahead. It isn't enough to buy a product; an organization has to make changes in the way it handles its work. For the first project, they should start with a small set of previously well-structured information and work through the entire process. Developing baseline measurements will also be important for them so that they have specific points of comparison with the new system in place. □

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Reference:
CIDM e-newsletter Volume 3, Issue 3

Process Maturity Found, Level 4: Managed and Sustainable



JoAnn Hackos, PhD, CIDM Director

FEELING COMFORTABLE WITH MATURE PROCESSES

ODS continues to surprise Dr. Q. She's been following their progress for several years, ever since the software engineering area of the company earned a Level 4 in process maturity from the Software Engineering Institute (SEI). Implementing Level 4 processes had enabled ODS to turn things around from a money-losing to a money-making company. The careful application of systems thinking helped ODS management recognize that they needed to abandon some parts of their older technology and focus on customer-driven changes to their new products.

Cindy Andaluse had been promoted to senior information-development manager after the long-time manager had left for another company. She was aware of the progress he had made in stabilizing processes within the organization, but she also knew there was much to do for the technical communicators to equal the accomplishments of the software and hardware engineers. Cindy walked into a budding Level 3 organization; her job was to move it to Level 4.

Cindy worked closely with Dr. Q to define the characteristics they needed to have in place to be recognized as a Level 4 in the IPMM (Information Process Maturity Model):

- ◆ Strong development processes to support the information life cycle and complete dedication among staff members in following the processes. The three geographically distributed locations of the ODS information-development team meant that common processes were somewhat difficult to institute.
- ◆ A new prominence for customer studies. Although they had conducted several customer studies in the past three years, Cindy wanted everyone to be involved in knowing customers better.
- ◆ For several years, ODS technical communicators had a standard template and standard information types fully developed. Everyone was quite committed to following the templates as they developed their documentation set. Cindy knew, however, that they wanted to use a more modular approach to design, in keeping with the modular design of the flagship product. The developers were already using object-oriented design methods; publications needed to follow suit.
- ◆ As a new director, Cindy had been given budgetary control over the department's activities. They had gathered considerable data about the cost of individual projects. Now Cindy wanted to find new ways to reduce development costs while improving the quality of deliverables.

Dr. Q made it clear to Cindy that she had a strong base from which to work but she needed to solidify the previous gains and introduce more innovative approaches into the department. Without innovation, it was all too likely that they would develop a complacent attitude and become increasingly bureaucratic. Dr. Q pointed out that she had seen too many Level 3 organizations turn into dead-end bureaucracies because everyone worked so well. If an organization failed to pursue continuous innovation and improvement in processes and products, they would cease to be interesting places to work. Cindy and the previous manager had attracted a first-rate staff; they needed to keep them motivated.

INNOVATION IN DESIGN

John Marcus headed the ODS content-management team. For the past two years, John had led the development of their CMS. Everyone was using a standard Document Type Definition (DTD) and an XML editor to create their documents, but they were still creating books. John was anxious to move toward a modular approach, but that would take a rethinking of their information design. Here was an opportunity, though, to pursue an innovative approach to information development that Cindy was pushing.

John had heard Mark Baker talk about subject-based design at the Content Management Strategies conference. He set up a team of staff members interested in information architecture to devise a modular approach based on subject matter rather than products. The team found a solution linked to the object-oriented design of the product. The engineers were creating use cases around functions that customers wanted to perform with the product and developing suites of functionality related to those business tasks. John's team decided to follow the same pattern.

They started with an analysis of the customer goals and tasks, based upon the results of three previous customer studies. Once they had a matrix of duties (like customizing the installation and administering the operating system) and tasks (like redesigning the user interface and adding new software to the system), they were able to identify content associated with each cell in the matrix.

Writers in the group were assigned certain tasks on which to develop content. For each cell, the assigned writer identified the knowledge, skills, and abilities (KSA) required to be successful in performing the task. At the same time, an instructional designer from the sister training organization identified the learning objective associated with the task. Together, the writer and instructional designer determined what content needed to be developed, what skills the user needed to have

from training, and what abilities in terms of analysis, design, and task execution were needed to complete the task.

The writers could then focus on developing the best content to help users gain an understanding of the task. Some of the information was conceptual, some procedural, and some was detailed reference material. The instructional designers focused on creating learning situations in which the learners had to use the information to solve particular problems related to the task. Their scenario-based training modules helped users relate use of the product to their real-world situations. Once they had analyzed the situation with the help of the conceptual information, they could easily apply the procedural steps necessary to complete particular tasks.

The new information design developed by John's team and executed by the combined force of writers and instructional designers was revolutionary for ODS's customers. One customer called the CEO to tell him that he had never found product information so valuable before.

A LEVEL 4 CONTENT-MANAGEMENT SOLUTION

John and Cindy analyzed their current content-management solution to determine if it could handle the changes to the information design that had been developed by the information architects. The system was certainly comprehensive. They already were using workflow, version control, security, and automated publishing of their XML content into HTML, PDF, and print. But could the current solution handle a modular approach to information design?

FINDING THE BEST SOLUTION

John, Cindy, and Dr. Q conduct an analysis of the existing CMS. So far, ODS has used the system to manage documents and control production processes. Their analysis shows that the CMS was not originally designed to handle the control and assembly of individual modules. Nor does their current DTD support modular writing. They need a new solution.

First, they investigate the possibility of using the open source IBM DTD called DITA (Darwin Information Typing Architecture). DITA is modular by design. They can easily adopt it to the modular structure they have in mind concepts, procedures, and reference material. They will need to customize the DTD for their particular content, but the structure adapts easily. John is able to design the new DTDs.

Dr. Q suggests that they hire a system integrator to adopt the existing CMS to their new requirements. The integrator is able to provide a linking structure and a method of assembling modules dynamically using a topic-map architecture.

Getting the new technology in place is only half the battle. The ODS technical communicators and instructional designers are unfamiliar with modular, subject-based composition. Cindy puts together a team and a pilot project to transform their core information. As Dr. Q suggests, developing a small set first in the pilot project enables them to test the solution with an enthusiastic team before they try to transform the entire department.

Although there are skeptics in their midst, the very nature of a budding Level 4 information-development team means that most staff member are willing to give the new idea a try. They have all been intimately involved in studying their customers. As a result, they recognize the need for innovation in information delivery to better meet customer needs. The entire department is user-focused, which means that managers and staff work well together in developing a vision of a new user experience once the information transformation is complete. □

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Reference:
CIDM e-newsletter Volume 3, Issue 4

Process Reinvented, Level 5: Optimizing



JoAnn Hackos, PhD, CIDM Director

GOING BEYOND THE ORDINARY

“Does a Level 5 of process maturity exist in the information-development world?” wondered Dr. Q. The Software Engineering Institute, from time to time, reports on a Level 5 organization, based on their analysis of software development. Most often, however, Level 5 activities are confined to particular projects that are run exceptionally well. Whole organizations that operate at Level 5 are few and far between.

Dr. Q has been concerned about the apparent lack of Level 5 information development. She helped ODS define their Level 4 processes earlier in the year and has watched them begin a transformation to a greater focus on customers. However, Level 5 organizations would be in the thick of customer studies, relying on customer input to guide innovation. In these tough economic times, Dr. Q hoped that a Level 5 organization might emerge in a leadership position.

A favorite Level 5 candidate a few years ago had seen its role dissolve in the face of layoffs, budget cuts, and the somewhat reluctant retirement of their inspirational leader. Under better conditions, this leader had surpassed almost every other group she worked with. They were recognized for their expertise in the user experience at the highest level of management. Their senior manager held a respected position in the senior leadership group. He had gained for his team a significant role not only in innovating in publications and training but also in assuming responsibility for the design of user-friendly software interfaces for the products.

Unfortunately, as their industry lost economic ground, the underpinnings of this department's support were weakened. Even after winning an award of excellence from the corporation at large, they could not withstand the pressures to retreat.

DEFINING AN OPTIMIZING ORGANIZATION

In the absence of a clear role model for Level 5 of the Information Process Maturity Model (IPMM), Dr. Q felt it necessary to create a comprehensive picture of an optimizing organization. She was acutely aware of Clayton M. Christensen's management standard, *The Innovator's Dilemma* (Harvard Business 1997). In it, Christensen argues that older companies in the high-tech industry are likely to be challenged by the innovations of newcomers. The newcomers are able to react more quickly and are hungry enough to take chances on new ideas.

Many of the organizations in the Center for Information-Development Management were part of mainstream high-tech companies. In fact, most of the publications managers running these organizations had been in the field for 20 to 25 years.

They had a lot of experience in putting excellent processes in place and were successful in introducing innovations. However, they also experienced significant internal pressure to cut costs.

They were often able to invest in content-management systems (CMS) to save costs but found themselves stymied when they tried to change the way information was delivered to customers.

These observations drove Dr. Q to outline the requirements for design and development that might characterize a Level 5 information-development organization.

CHARACTERISTICS OF A LEVEL 5 ORGANIZATION

In discovering a Level 5 organization, an astute observer might be surprised by its external similarities to a Level 1: Ad-hoc organization—everyone appears to be acting independently, but their independent behaviors have a context:

- ◆ Technical communicators in a Level 5 organization are self-actualizing. Although they work closely together on information development, each team member is charged with the responsibility for developing content that is most useful to customers.
- ◆ Communicators take personal responsibility for understanding their customers' needs. They are involved in user groups, call on customers regularly for insights into requirements, and have even begun to look at the customers of their customers for new ideas.
- ◆ Communicators are accustomed to following standards because they know intimately how important standards are, not only in making their own jobs easier by taking time out of mundane processes, but also by invoking consistency of presentation that reassures readers that they have found what they are looking for.

No one in a Level 5 organization needs prodding to follow templates or maintain best practices in the information-development life cycle. They know that a lot of hard work has gone into designing effective information standards and that the best practices the department has instituted actually save everyone from boring work. In fact, Dr. Q knows that one of the hallmarks of a Level 5 organization is the enthusiasm of the staff for best practices and new ideas and the esteem with which they are held by the rest of the organization.

Dr. Q's vision of a Level 5 organization centers on a customer focus around innovation. Rather than be satisfied at following industry trends in areas like electronic delivery, content management, and minimalist design, a Level 5 organization would learn lessons about information development directly from its customers.

“I'd like to see technical communicators on the front line with the customers,” Dr. Q explained. “It's too easy to take direction about customers from marketing, sales, or even engi-

neering. But these organizations don't pay much attention to how customers use information to learn and maintain products." As a result, she advocates several new roles:

- ◆ Never write an installation manual in the office. Send writers out with engineers on the first few installations of a new product. Have them watch what happens and take lots of notes. After the installations, make sure the writer works with engineering, production, and maintenance to learn how the problems will be solved in the next installation. As the problems are solved and best practices are worked out, the installation procedures will emerge.
- ◆ Get writers direct lines to key customers. These customers are interested in calling when they run into usability problems or are confused by instructions. Rather than be frustrated by a lack of detailed knowledge of the documentation in customer support, these privileged few can directly call a writer who will find a solution. Together, the customer and the writer reinvent the instructions so that they actually work.
- ◆ Organize an advisory council of customers interested enough in documentation that they'll spend time reviewing ideas and giving advice. Use advisory council members as entry points into customer site visits. Use site visits to conduct analyses of customer goals and tasks that will become a basis for modular content.

Spending time with customers is recognized as a core activity in a Level 5 organization, not something you do only after everything else is done first (which usually means never). What role, then, does content management play in a customer-focused organization? Doesn't the pursuit of continuous innovation preclude the use of technologies that tend to reinforce standards? Aren't standards stultifying? How can an organization be innovative when everything has to be written in the same way?

A LEVEL 5 CONTENT-MANAGEMENT SOLUTION

Like the Level 4 group at ODS, described in the Level 4 article last month, a Level 5 organization has a strong content-management solution in place. Standard templates promote modular content development. Library services like check in/check

out, version control, and security assure standard practices. An information model, based on comprehensive metadata, facilitates accessibility to information by writers and customers alike. Modular content is published in collections that are customized for particular customer characteristics (geographies, industry specialties, job roles, and so on). Modular content published on portal-like Web sites enable individual users to find the specific modules they need to answer questions, pursue troubleshooting solutions, and support cross-product innovations.

In a Level 5 organization, content management is simply part of the infrastructure, a little like email. Once you have it, you can't figure out how you existed without it.

What is the role of innovation and its relationship to content management? A sound content-management solution must be able to accommodate the special needs of a highly innovative organization:

- ◆ A Level 5 content-management solution needs to be developed with flexibility in mind.
- ◆ Information designers must be able to update existing information types and create new ones in response to customer needs.
- ◆ Metadata needs to be designed to accommodate the needs of users rather than only accommodating the needs of information developers. With dynamic metadata, information can be directed to specific user needs through search (pull) and updating (push).
- ◆ A solution must have the capacity to grow with expanding needs. In a Level 5 organization, more opportunities are quickly uncovered to manage information creatively for the benefit of customers. □

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Reference:
CIDM e-newsletter Volume 3, Issue 5