The Productivity Paradox

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Moving to DITA-based authoring and implementing a component content management system (cCMS) comes with the promise of increased productivity for the information-development organization. Despite the promises, we have long recognized that productivity increases are difficult to achieve, especially when so many of an organization’s past practices have to change. Implementing DITA involves much more than adopting new tools. It means embracing topic-oriented structured authoring, learning how to manage topics to build deliverables, and adopting methods that facilitate reuse of content that is the same or nearly the same across multiple deliverables. The challenges of changing long-held habits are formidable indeed.

Since 2009, CIDM members and friends have come back, time and time again, to the challenges of change management. As managers, we desperately need to increase productivity, often in the face of progressively smaller teams and increased workload. We have viewed topic-based authoring, content reuse, and more automated publishing as offering solutions to our productivity problems. We want new ways to work so that we can offer more information-solutions to our customers, especially since they now demand content on more devices and content that is more closely oriented to their needs than the old PDFs.

We have leaned on John Kotter’s change management work at Harvard Business School, especially his best seller, A Sense of Urgency. We also were cautioned by Charles Duhigg’s account of the difficulties in changing in The Power of Habit. I have long urged managers to focus on the problems of change management rather than on the tools. Nonetheless, I’ve been curious to learn more about how things are going with DITA implementations since we began implementing DITA nearly 10 years ago.

In late 2014, I revised and conducted a new version of our 2009 CIDM productivity survey, The Productivity Paradox, to discover what has been happening with DITA implementations. It’s especially interesting to look at results now that many organizations have three or more years of experience with a DITA implementation. As I might have predicted, the results showed both positive and negative results.

Of the 91 respondents to the productivity survey, 52 percent have been using DITA for more than three years. Nine percent have adopted DITA in the last year, 21 percent in the last two years, and 10 percent in the last three years (see Figure 1).

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1 Harvard Business Press, 2008
2 The Power of Habit: Why We Do What We Do in Life and Business, Random House, 2014
Forty-three percent report that all of their authors are using DITA; another 32 percent have nearly all the authors using DITA. Eight respondents have subject-matter experts authoring in DITA, and seven have service and support authoring in DITA, indicating that a small number are moving DITA authoring out into the enterprise. In fact, one respondent each reported that people from human resources and marketing were using DITA to author content.

The key question, of course, is productivity. We asked respondents to report if their productivity had increased significantly or moderately, stayed the same, or decreased significant or moderately. As we expected, results varied widely.

As illustrated in Figure 2, 50 percent testify that their productivity has increased either significantly or moderately. Another 14 percent believe that productivity has remained about the same. Twenty percent and 16 percent respectively note that productivity has decreased moderately or significantly. Interesting testimonials, but what does it mean? To find out, we needed to look at the details.

Remember that we measure productivity by the cost of producing goods. For information developers, that means measuring the output, such as the number and types of deliverables published, in relationship to the cost of producing those deliverables. Costs include fully burdened staff costs plus the cost of tools and external services, such as translation, for example. That means if you have 10 writers producing 10 manuals and you implement the DITA standard, you should measure a lower cost of doing business. You might have lower translations costs; publishing might take less time; you might be able to produce more deliverables with the same number of people; or you might be able to produce the same deliverables with fewer people.

To better understand how respondents were thinking about productivity, we asked them to select from possible responses that we know people use when talking about DITA implementations. First, we asked them how they would measure success, giving them the opportunity to select more than one option.

The majority told us that they measure success chiefly by the percentage of topics used in more than one deliverable (70 percent), demonstrating that reuse is an important goal of DITA implementations. Fully 60 percent looked for reductions in publishing time, and 51% hoped for reductions in writing time.

Forty-two percent hoped for reductions in translation costs, and 35 percent point to reductions in the time required for translations, as shown in Figure 3. Given how we believe most organizations think about the benefits of DITA implementation, these views were what we expected.

We also asked people to tell us what they were actually measuring that would have an effect on productivity. You may be reusing a lot of topics, but you might not have seen an improvement in productivity if it takes more time to reuse topics than to write them over again.

The responses to this question were interesting. The majority (60 percent) measure the average time to complete development for an entire deliverable or the information-development process as a whole. Fewer (49 percent) measure the amount of time to perform specific tasks or to develop a single topic (30 percent). Others mentioned factors such as counting the number of defects filed and resolved, their ability to produce deliverables on schedule, and the time taken to republish content once errors were corrected or updates made.

Unfortunately, we also learned that many people really don't

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**Figure 2: Productivity change estimates**

**Q4 At this time in your implementation process, have you experienced a change in productivity?**

Answered: 83  Skipped: 8

- **Productivity has decreased significantly**: 22% (18)
- **Productivity has increased significantly**: 16% (13)
- **Productivity has decreased moderately**: 20% (17)
- **Productivity remains the same**: 14% (12)
- **Productivity has increased moderately**: 28% (23)
have any measurements at all. Their responses were based largely on anecdotal information. Several offered comments that point to their lack of measurements. One stated, “We have no time to compile measures that would quantify how bad things really are.” Another claims that it is too difficult to get authors to track their time. On a positive note, one respondent stated: “We don’t measure productivity. As we have increased our ability to provide useful content, more people in the organization have asked for our services.”

It is interesting that in the most experienced organizations with more than three years of DITA implementation, respondents tell us that project-planning time has increased (29 percent) while writing time (36 percent) and editing time (31 percent) have decreased among a group of factors they considered. In addition, higher percentages of the respondents report improvements rather than declines, including telling us that review time has decreased (22 percent), final production takes less time (58 percent), the cost of developing content has decreased (23 percent), and localization costs have decreased (28 percent). Interestingly enough, 31% tell us that time to manage the tools has increased, with only three respondents reporting that tool management time has decreased. I suspect these responses result from more complex tool suites than most information-development organizations have used before.

Consider some of the commentary on the question of measurements:

“Credibility of writers and pubs management has increased throughout the company.”

“Writing/editing time is reduced due to reuse. Ramp up time for new writers has increased. Production or publishing time got better in some ways, and worse in other ways. It was easier to publish a help file using a desktop tool, but the new tool chain (DITA>XMLauthoring> CMS) and network latency issues add an additional level of complexity which sometimes increases production time.”

“Content reuse and publishing via DITA requires much more stringent information architecture and forward-looking thought than the old “paint on a page” methods. So content authoring and publishing become longer and more difficult.”

“The tools are sub-par, even the very good ones. They are good only by comparison. They’re not intuitive enough, they’re slow, tagging takes time, and latency is slow. Basically, it takes minutes to perform a task that should take seconds.”

“Writing time takes the same, if not, more time, as there’s more planning and critical thinking (which is good!) up-front.”

Among those organizations reporting productivity decreases, we find that organizations seem focused on tool performance to increase productivity rather than people performance and change management. Forty-four percent report they are improving tool performance; fully 40 percent say they need to acquire better tools. Twenty-eight percent complain that they have not received the resources they need to improve. Only 20% are providing additional training to authors or improving their project management practices.
The measures used are about the same as those we see from all the respondents. Most look at production time (75 percent), writing-development time (69 percent), and topics used in more than one deliverable (62.5 percent). They look at the overall time to develop a deliverable (76 percent), the average time to complete the information-development process (64 percent), and the general time for writing, editing, and reviewing topics (53 percent).

The problems reported are also typical, with increases in planning, writing, editing, and tool-management time. Only final production activities appear to be taking less time to complete. Fifty-six percent report that they believe that the tools they are using are not as efficient as they might be, and they are not reusing content to the extent they predicted. They are, however, using conditional content and have experienced increases in collaboration time, which would appear to be a positive rather than a negative outcome.

The solutions to productivity challenges focus on improving tool performance (50 percent) and preparing authoring guidelines (43 percent), as well as completing an information model (36 percent).

Four respondents indicate that productivity has increased significantly. One reports that they have a very small team of authors testing the DITA/XML environment in a pilot project. Among the successful projects, they report that their project planning time and tools management have increased, but all the other measures (writing, editing, production, and localization time) have decreased.

Ten respondents report that productivity has declined either moderately or significantly. The reasons reported include not receiving the resources needed. They tell us that a CMS increase the level of complexity, and managing edits across multiple topics requires significantly more time and effort than editing a single document.

One experienced manager explains the productivity paradox: “We need to redesign content to create topics. People don’t understand why they should have to do this.”

Another says: “Structured writing is taking more time than expected. More to consider when writing topics than people are used to thinking about, especially [the] connection to multiple projects.”

If we compare the productivity issues during the first two years with productivity issues after two years, we see a clear trend. As organizations gain experience and expertise, if they have adopted best practices, and if they are managing change effectively, productivity improves and people are positive about their move. We see the shift in the next group, reporting on three years of implementation activities.

Responses from Teams That Have Adopted DITA Within the Last Three Years

Nine individuals responded to having adopted DITA within the last three years, with 56 percent reporting that their productivity has increased moderately or significantly and 44 percent reporting that productivity has decreased moderately or significantly.

The measures are once again the same. Sixty-two percent measure the time to create a deliverable. Fifty percent measure both the average time to complete the information-development process and the average time to complete information-development management.
development tasks. The reported changes are interesting. Once again, final production time has experienced the greatest change, with 44 percent reporting it takes less time and 22 percent reporting it takes more time. Localization costs have decreased for 33 percent. Tool management time has increased for 22 percent.

Only 33 percent have seen writing time increase and editing time decrease. The strongest responses note that reusing content takes more time for negotiation and revision (89 percent), and tools are not as efficient as they should be (56 percent). All report that they are working to improve tool performance, and 50 percent are providing additional training to authors.

One company experiencing a moderate decline in productivity reports that their major problem is tools. They have experienced frequent crashes, long publishing times, a lack of global search-and-replace functions, and poor spelling/grammar checkers, problems that might not have occurred with desktop publishing tools. As a result, writing time and final production activities are taking more time, and time to manage tools has increased.

However, an incomplete implementation process means that writers must work in both document and topic worlds, requiring that they think differently depending on the context of their work. One organization believes that a complete move to topic-based authoring will improve productivity. They hope to realize productivity improvements as they build more reusable content into the repository.

**Responses from Teams Using DITA for More Than Three Years**

Forty-seven of the 91 responses came from organizations that have been using DITA for more than three years. Eighty-five percent have all or almost all of the information developers in the company working in DITA. Six report that human resources, marketing, and service and support are involved in the DITA implementation.

Fifty-two percent of these respondents report that their teams have increased productivity either significantly or moderately, as shown in Figure 4. Another 20 percent report that productivity has remained about the same. Only 29 percent indicate that productivity has decreased either moderately or significantly.

The primary measurement is the percentage of topics used in more than one deliverable (84 percent). Other high-scoring measurements include reduced translation costs (50 percent) and reduced publication time (57 percent). The primary process measurements are the average time to produce a deliverable (54 percent) and the time to perform specific tasks (44 percent). One respondent reported that they have little reuse, and writing topics is considered very difficult because writers seem unable to design what their customers need. Another stated they don’t have time to measure the problems.

The majority of the experienced organizations report that writing, editing, and review time has decreased. Fifty-seven percent report that production time has decreased and total costs of developing content has also decreased. At the same time, planning time has increased (29 percent), a fairly consistent figure that is viewed by most as a positive trend.

Thirty-six percent report that the time managing tools has increased, with no one reporting a decrease in tools management time. One respondent complained that “translation production has increased—we now have to import content, set publishing options, publish and proof. Before, we just had to proof. The proofing process takes a long time. Also, we don’t have an efficient way to incorporate translators’ comments once we’ve imported the content.” Another points to problems managing conditional publishing attributes and content variables. Another says that they have too much reuse at a “sub-sentence” level, which suggests that little or no reuse planning has occurred.

![Figure 4: Productivity of teams with more than three years of DITA experience](image-url)
Figure 6 shows the items judged to affect productivity among these organizations. Note that the largest percentage use conditional processing, while fewer use DITA conrefs, keyrefs, or subject scheme maps, the contributions to the specification after the first release. I suspect that some of these more experienced organizations have not upgraded their use of DITA to follow the most recent changes in the specifications. I feel that the changes in DITA 1.1 and 1.2 and the coming additions in DITA 1.3 go a long way toward simplifying management of topics for reuse. It is unfortunate that these experienced organizations may not be continuing to evolve with the upgrades to the specifications.

The primary solution that 42% of this group point to is acquiring better tools or improving tool performance. At the same time, 15 percent believe that productivity will continue to decrease. Unfortunately, only two of these are working on authoring guidelines and a better information model. Five are working on providing additional training or improving content management. Rather, most who blame the tools are appearing not to be aware of other productivity problems and are doing little to improve their situation.

At least one respondent in the experienced but negative minority admitted to not having data, only anecdotes. Another explained, “We can’t get a huge hunk of writers to believe reuse is even possible, much less desirable, between mobile and desktop content. We have a big mess. Writers ignore the information model, refuse to update it for new requirements. insurrection when they don’t really understand the problems or solutions.”

**HIGHLY SUCCESSFUL ORGANIZATIONS WITH THREE YEARS OR MORE OF EXPERIENCE**

Among highly successful organizations that have implemented DITA more than three years ago, 50 percent report decreased writing time, 55 percent report decreased editing time, and an astounding 72 percent report decreased production time. About one quarter report that planning time has decreased and tools management has increased. Overall, the cost of developing content and localizing content has decreased.

These highly successful implementations are not without their continuing challenges, however. One respondent reports that writing and editing time has been reduced because of topic reuse. However, time for training new writers has increased. They still struggle with network latency, a very common problem, which sometimes increases publishing time.

Another respondent reports more planning time is required for new projects, but the time to update existing projects has gone down. The need for better management is clear. As one respondent tells us: “Content reuse and publishing via DITA requires much more stringent information architecture and forward-looking thought than the old “paint on a page” methods. So content authoring and publishing becomes longer and more difficult.” This same individual explains that they needed DITA to provide content reuse, consistency in publications across the enterprise, and publishing to different formats. Their previous toolset didn’t allow them to accomplish these goals.

These respondents report the same reasons for their success that we have seen throughout the survey responses. Ninety percent write topics once and reuse them in multiple deliverables. They use conditional and variable content. Interestingly, 41 percent are using DITA 1.2 keyrefs, which were not available when they began using DITA. Another 18 percent report using SubjectScheme maps to add metadata to content.

These successful organizations have experienced increased collaboration among authors, although the reuse negotiations require more time. Remember that many of the same organizations had little if any collaboration before DITA.
As we find generally, even with their high degrees of success, 50 percent would still like the tools to be more efficient. One respondent explained: “Productivity took a definite hit during the conversion and during the first few months after conversion. It takes time for the team to understand the new system and to start finding the most efficient ways to navigate through the 1000s of topics in the new system.”

Despite the success, 62 percent report working to improve tool performance, and 37 percent report needing to acquire better tools. Providing additional training for authors is still a requirement for 38 percent, indicating that improvements require constant vigilance.

One manager mentions that she knows of many other organizations that are switching tools. She believes that the churn implies that the tool developers in general may not be providing the functionality or performance required. It may also be, of course, that tools are being blamed for shortcomings in change management.

Organizations that have been using DITA for more than three years may also still be using their original tool configuration. Since DITA authoring tools and cCMSs with DITA capabilities have expanded and improved in the past three years, some of the more experienced organizations may find themselves handicapped with less than the best current tool support. We know of many organizations that have been slow to update, even when their vendors have improved the user experience, the functionality, and the performance of their systems.

**Conclusions**

The comparison between successful new implementations in this study and less successful older implementations suggests that process and tools changes have occurred. Organizations new to DITA implementation have been tools available to support their writers. They have better resources for training and consulting. The practices have improved, with more information and experience available to help with information modeling, information architecture, topic-oriented writing, reuse of content, and the functionality of DITA 1.1 and especially DITA 1.2, which urged organizations to replace conditional processing with key referencing.

Many of the most serious problems reported in the study and the follow-up questions pointed to change management issues. Older implementations appear to be most challenged with productivity problems. They report that they have not seen the gains in productivity that they expected at the beginning.

The productivity paradox is this: years of experience using DITA do not necessarily result in the expected productivity gains. Once an implementation gets started badly, it seems to stay that way or get worse. Newer implementations are learning from the early adopters. The methods of training and supporting writers have improved, with many more examples available for doing the implementation the right way. The consulting community has expanded, with more opportunities for training and change management. The number of books focused on DITA implementation has increased with many more good ideas for new practitioners.

These improvements in practices have helped new organizations adopt the DITA standard and do so successfully. Now we need to find ways to help some of the early adopters recover. The examples we find from the significant successes of the majority of early adopters is fast providing a collection of best practices that are now available and ready for the new adopters to incorporate. Best practices with a focus on change management provide the direction that will result in a success. Productivity and flexibility both improve if DITA adoption is done well.