

How shifting to a more modern documentation process helps meet user needs

ANDRIAMANANTSOA Ornella, BENZAAMA Loubna, LEONARD Lucie, RESPLENDINO Emmanuelle
*Master 2 CDMM – Conception de Documentation Multilingue et Multimédia,
Université Paris Diderot – Paris 7, July 2018*

Abstract

Digitalization and technological innovations are exerting considerable impact today on technical documentation. In addition, we are seeing more and more collaboration between technical writers and software developers, which naturally is leading to a synchronous code and documentation production evolution.

The research offered herein is based on literature, key articles, survey reports, interviews with documentation and product managers from medium to large French software companies, and analysis of various documentation production process. The results highlight the importance given to documentation and its scope towards users.

To meet the needs of the industry, historical formats such as wikis and PDFs are changing to web-based and embedded formats, which are more accessible, visual, and user-centric. This change not only affects outputs, but also production processes through the merging the product code and documentation delivery. Nonetheless, such innovation is costly and bears limits. Are such technological exploits as smart assistants and virtual reality going to perform well enough to meet users' demands and needs in terms of documentation?

Keywords:

Innovation, user assistance, migration, software, industry, documentation, UX, user experience, collaboration

Introduction

The latest industrial practices and the increasing digitalization that is a hallmark of the Fourth Industrial Revolution imply new challenges and a paradigm shift in technical documentation. If new production processes require blending technologies, velocity, and systems impact, documentation development must be dynamic and responsive. In order to respond to this demand, documentation engineering teams are on alert and call upon development teams with each new product release and distribution.

Merging from legacy formats and structure is costly and time-consuming. Investing in migrations sometimes implies slowing down the release of new content or the need for more resources. How are these changes managed today? What role does single-sourcing play in the process? Investing in migrations implies slowing down the release of new content or the need for more resources.

Several assets, professions and skills are needed to obtain documentation that is seamless to the user. Will new profiles and new teams emerge? Collaboration is the key to maximizing documentation efficiency, as it fosters relevant changes in the processes. Today we are thinking about the documentation for the formats of the future (VR, AR, Chatbots) but what if on the overall text disappears?

Methodology

Our research began with the analysis of literature. We uncovered key articles that dealt with our hypotheses, after which we narrowed our focus to measurable information, such as survey reports published by Data Conversion Laboratory Inc. and explanations on documentation processes that we obtained during interviews.

To understand behavioral changes by companies and users with regard to documentation, we first classified the results according to our hypotheses about the future of documentation. We collected data from DCL's 2016 and 2018 trends survey reports, as well as from a TC World article that summarizes SDL's survey report on how technical product information impacts brand perception. Next, we compared the answers that centered on customer and company behaviors.

Our research on the matter of collaboration and migration was based on the analysis of the documentation processes in use by two different French software companies in 2018, one large and one a medium size company (Scality). Both companies recently deployed innovative documentation production methods, which helped us with process analysis.

We asked the manager of the documentation team at Scality to explain why the company is making such changes, and who is involved in the process. To understand what the limits of the documentation process evolution are, we based our research on the 2016 Technical Communication Benchmarking Survey. We also went through several articles that address the technological evolution.

Results and Discussion

a. TC World's summary about technical product information on brand perception (from SDL's survey)

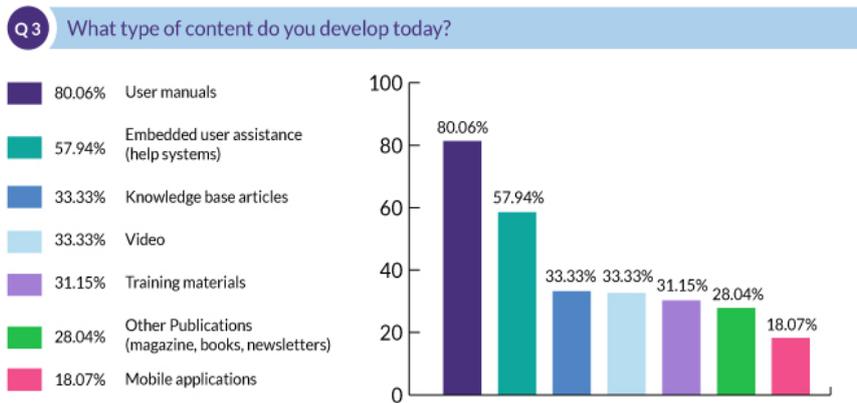
73% of BtoB and BtoC customers	say quality product information makes it more likely that they will recommend a brand to others.
81% of customers	want content available in their language.
65 % of customers	want content available in multiple formats.
61 % of customers	want content available on multiple devices.
53% of customers	use technical product information to learn more about a product before purchasing it.
8%	consider an actual customer service department of value in their purchase decision.

94% of customers

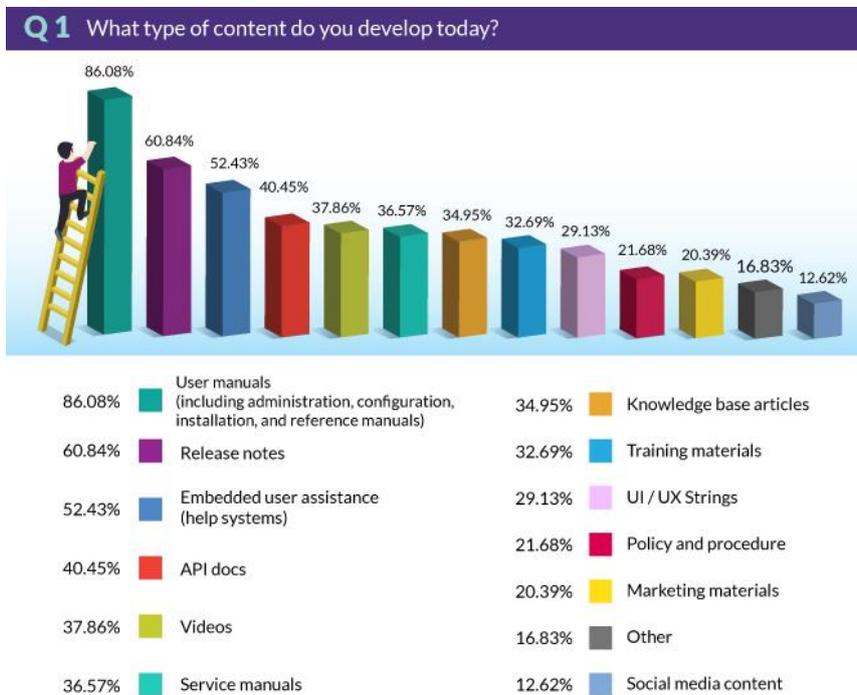
agree that having all information available on a single platform, in a single place or source, is important to them.

b. The most published content types in 2016 and 2018

The majority of User Assistance in both years was in the form of published user manuals (for 80% of respondents), while other types of content (e.g., embedded UA, videos, training materials) exchanged positions between 2016 and 2018. These formats are still among the eight most in use. We can also see the emergence of new types of content in the 2018 ranking. In two years, the use of non-static content slightly increased and the variety is more important in the second survey report.



DCL Survey Results (2016)



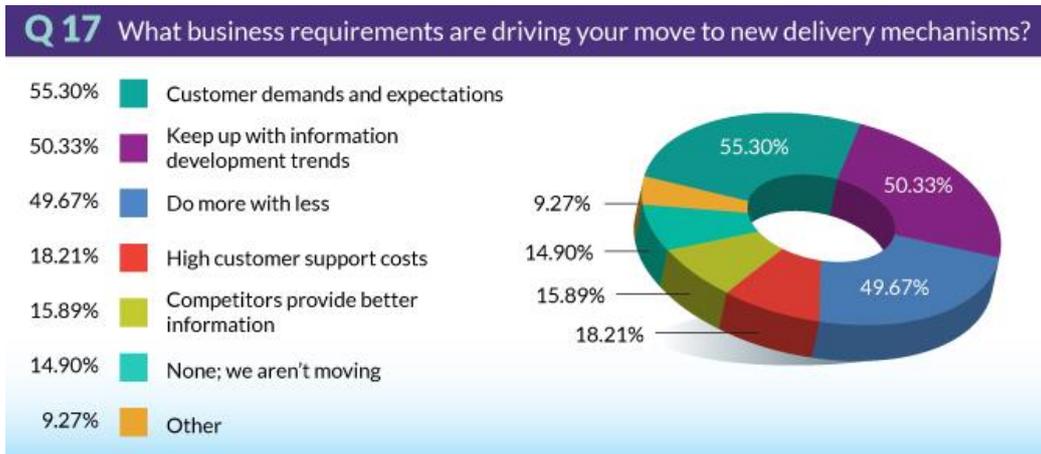
DCL Survey Results (2018)

c. Evolution of company publication plans

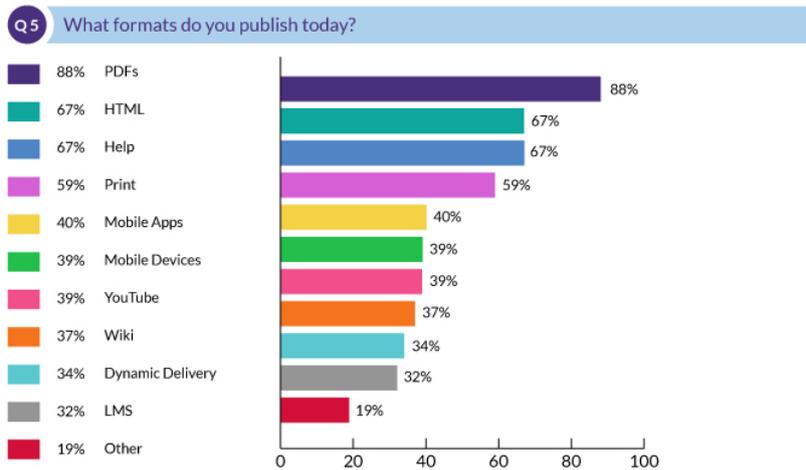
For more than the half of respondents, the main business requirements driving the move to new delivery mechanism are related to customer demands and expectations, development trends and production optimization.

In 2016, 88% of respondents published PDFs, with more than half (65% to 70%) also planning to publish web-based and responsive content during the next three years. The last survey from 2018 shows that one third of respondents want to export almost 100% of their content into PDFs while the rest plan to publish into web-based formats.

The wish to produce web-based content is still strong across both periods, however statistics show that these goals are not yet achieved as in 2018 the PDF format is still in far greater use than the other formats (contrary to 2016 expectations).

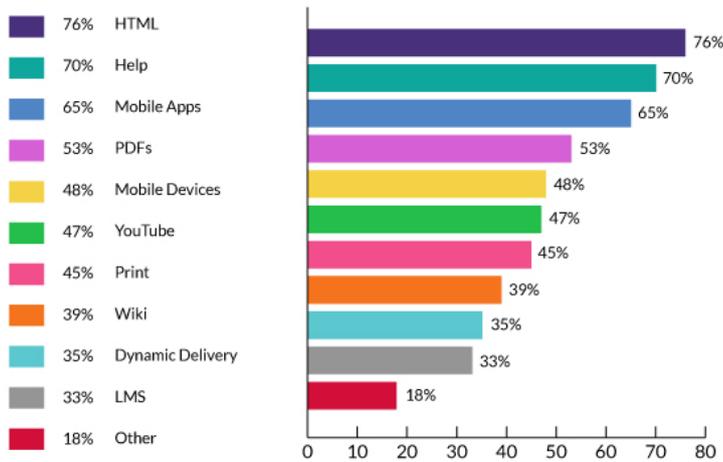


DCL Survey Results (2018)



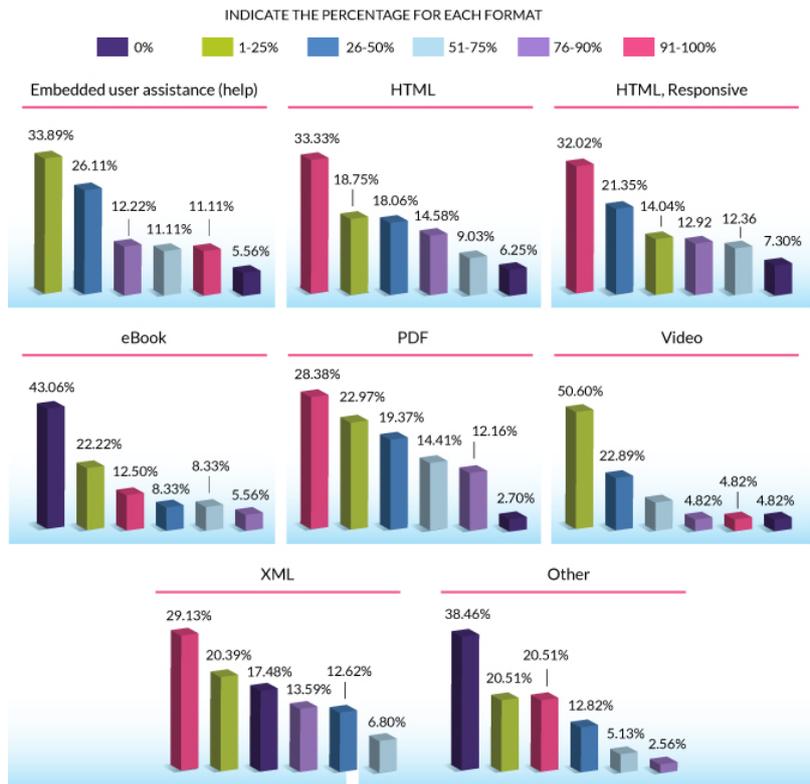
DCL Survey Results (2016)

Q6 How do you plan to publish your content in two to three years?

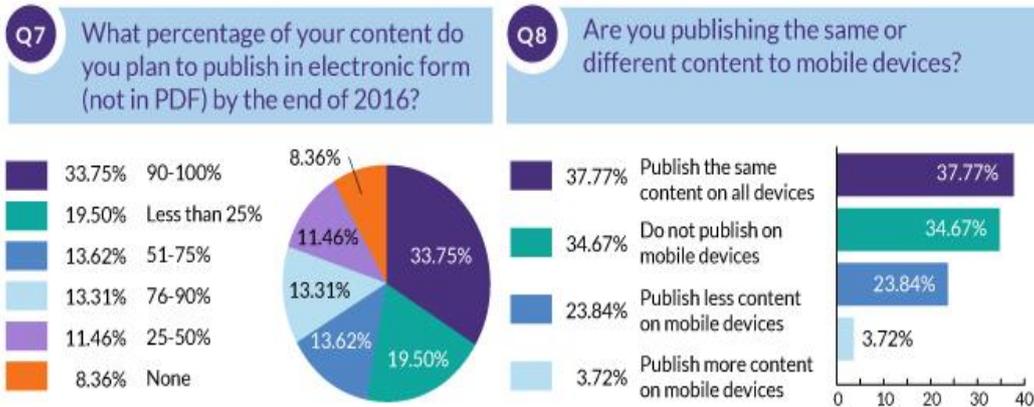


DCL Survey Results (2016)

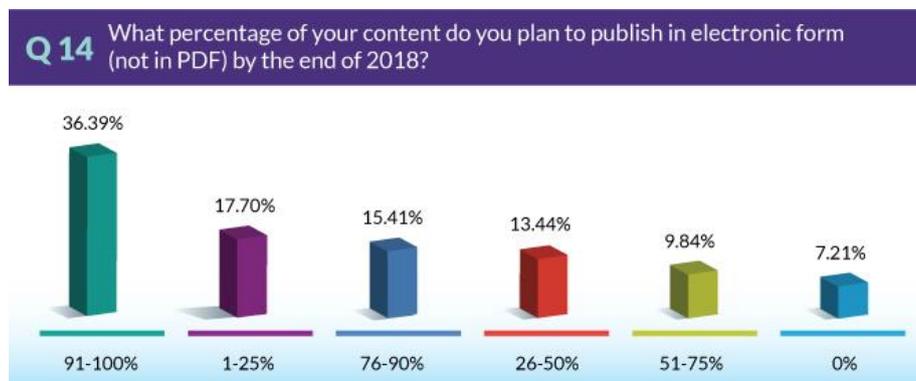
Q15 What formats do you plan to use in two to three years?



DCL Survey Results (2018)



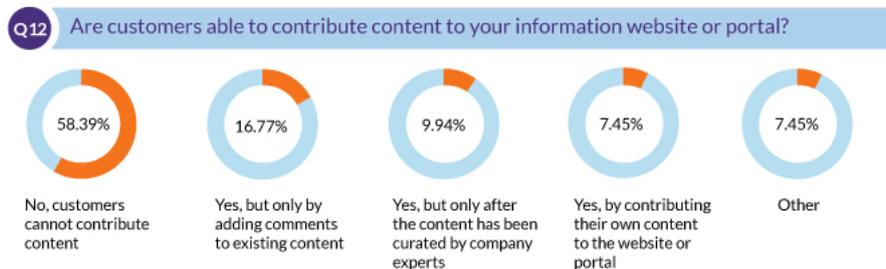
DCL Survey Results (2016)



DCL Survey Results (2018)

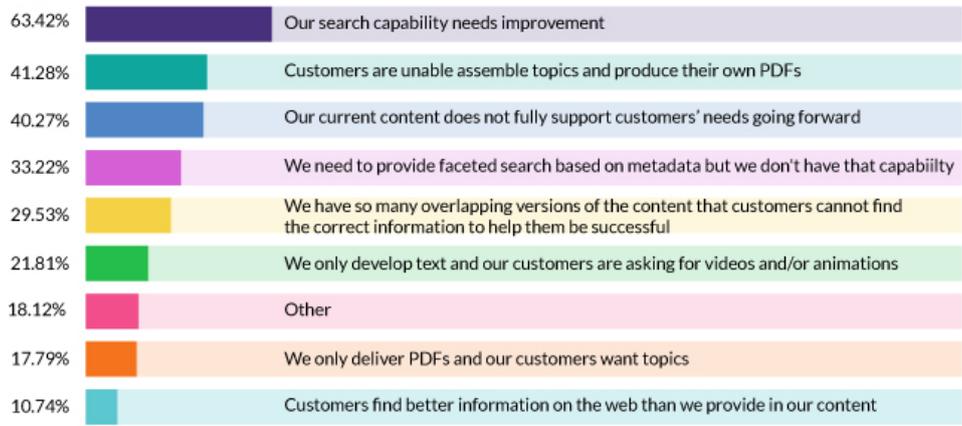
d. Customers' demand and needs

In the 2016 Survey, almost 60% of respondents thought that customers would not be able to contribute to content. Most also stated that their content did not meet customer needs (Q17), and indeed DCL's 2018 survey shows that more than 40% of respondents think that their customers ask mainly for searchable and personalized content and videos. Companies emphasize the fast search criterion while more than a third of customers insist on the need for personalization and more interactive multimedia content.



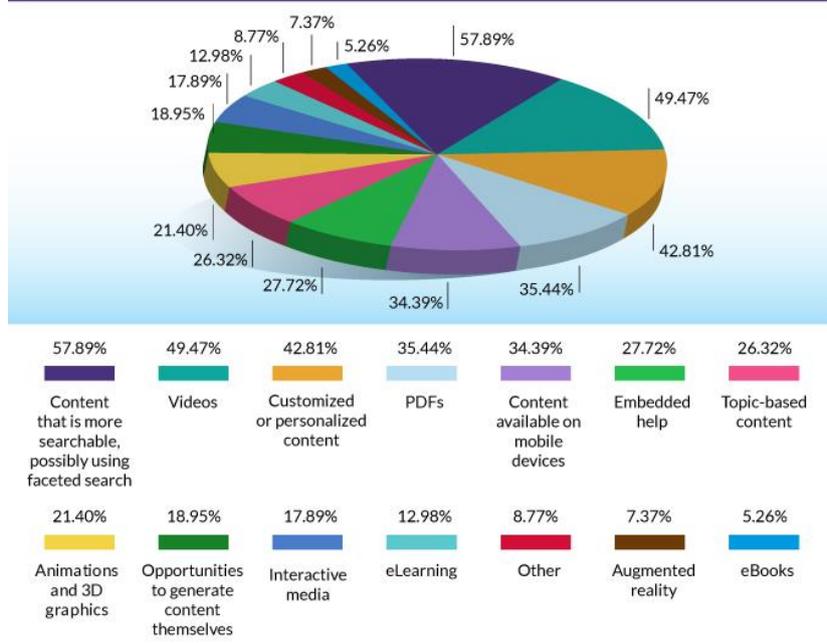
DCL Survey Results (2016)

Q17 What are the shortcomings of publishing your content as it exists today?



DCL Survey Results (2016)

Q19 What types of content delivery are your customers asking you to provide?



DCL Survey Results (2018)

While the surveys provide some measure of understanding with regard to the companies' behaviors towards documentation publication, the short time lapse between the two survey periods does not provide the amount of data needed to track long-term trends and opinions.

The Need for Empathy

The word "empathy" here is used within the context of user experience. The results collected show that the modernization of documentation processes contributes first to meeting user needs. There must be as many documentation deliverables available as there are user profiles in order to comply with user needs and foster product efficiency. Indeed, the need for documentation comes from the clients and users. In the event that new user habits emerge, technical documentation formats must be adapted. The use

of smartphones or tablets, the increasing connectivity of similar devices, and the need for quicker access to information are key factors in the emergence of these habits. Consequently, we find ourselves with a sample of users that include both people who are gradually digitizing themselves and people who are digital natives. Thus, the majority of users opt for online documentation.

To define the type of documentation and the way in which it is provided, it is also necessary to know compatibility criteria for the aforementioned users. Involving customers in the development and maintenance of user assistance formats enables companies to provide highly adapted content, and to evaluate the effectiveness of their content. Multiplying supports benefits firms that aim at several users. It is from this observation that we can say that customer needs become company needs.

Added-Value for Companies

The surveys show that the majority of respondents aim to produce a variety of digital technical documentation. It is important to consider that companies are also customers, aware of development trends and customers habits. Thanks to the BtoB market, some firms also become users of the technical documentation of other firms, which allows them to assess innovation needs in terms of technical documentation. If we go further in this notion of empathy and customer behavior, we see that brand identity and attractiveness play an important role in the implementation of change management. Until recently, product documentation was intended for users or people who had already purchased a product. Today, though, the target audience is no longer just the user who has already bought the product but potential buyers of the product as well, in an attempt to learn the characteristics and operation of the product prior to purchase. This serves as a reminder of the importance of access to information and transparency, though it is also a question of proving -- through documentation that can be consulted by a general audience or by a limited audience -- that the product in question is much better than that sold by competitors. Companies thus wish to ensure the alignment with the general innovation strategy for their products, as well as take a step forward or remain in line with the current digitization trend and an optimization of costs.

Two-Tier Adaptation

We have noticed a significant decrease in the number of customers using customer services due to the progressive availability of online product information (8% in 2018). This is profitable for companies because it provides relief to customer and support services while also improving the customer experience. Both entities benefit from this, but each must also adapt to changes, even though habits and trends are already settled. Indeed, these changes represent in a race to innovation, a time of adaptation mainly societal and professional is necessary. The uniqueness of each company and each customer makes this adaptation time variable.

Furthermore, another factor that comes into play is that product varieties, short product development cycles, global markets etc. have increased the complexity of technical documentation. To address this complexity and those continuous releases, modern content management methods are applied (e.g., automated reuse, conversion and localization).

Why Do Companies Produce PDFs?

Companies often start building their knowledge and documentation bases with a wiki, a content delivery mechanism that offers a simple syntax and markup language, is usable from a simple web browser, and which is suitable for contribution. Indeed, everyone in the company is able to contribute. Nonetheless, as the knowledge base grows it becomes evermore difficult to keep all the content organized, which subsequently can make it difficult to find needed information via a search engine. It is for this reasons that many companies have chosen to produce PDF documentation.

Easier to structure, maintain and personalize, PDF documentation provides an adequate solution for those overwhelmed with wikis. PDFs can be produced from different content, such as text editor files and structured languages content.

PDF solutions are powerful and offers many possibilities, however the format does present some significant limitations. First, the format struggles with images. Even in a high-resolution setting, some images do not render correctly at PDF generation, which is a substantial issue with regard to screenshots or pictures in a procedure. Another issue with PDF, particular concerning software companies, is in the rendering of command lines. Command lines are often formatted with several spaces in one line, and this number has to be respected to use the command. PDF generation considers two consecutive spaces to be a syntax error and “corrects” the two spaces to one, a function that is nearly impossible to fix and which thus leads to command lines examples that users cannot copy and paste.

Users and developers need a change of output to solve these issues, with both having different technical needs in terms of documentation. Developers and technical writers require easily buildable and maintainable formats that enable all technical information to be correctly rendered. Users need a practical and usable documentation. Such a change in the documentation output and strategy should serve as a selling argument.

Collaboration between teams within the company is the key to a successful change in the documentation, in particular the technical services, team, the engineering team, and the marketing team.

The technical services team, who are customer-facing, help to identify the information users need in the documentation. The reorganization of content that is necessary when the output changes from PDF to HTML, is made possible thanks to this collaboration.

The engineering teams help to set up the environments and the tools needed to produce and maintain HTML. They often chose tools that will ease their collaboration with the technical writing team to produce documentation.

The marketing team is also involved in documentation, as synchronizing the company’s look and feel is key to successful branding, alongside the product management that helps find the right place to display the new documentation output.

Scality Process on Migration from PDF to HTML

At the first firm we observed, the first step was to identify where the HTML documentation is displayed. The product managers and the marketing team took the decision, choosing to integrate the documentation in the UI (User Interface), where the product is managed and monitored.

The UI is only accessible to partners and customers through credentials once the product has been installed, thus rendering unnecessary the need for installation documentation - a new documentation portal is also needed to host it all.

The documentation team at Scality uses MadCap Flare. The team set up the new HTML target on the existing documentation and consults with marketing as necessary on the matter of CSS elements.

The development teams worked on creating a new space in the UI and portal for the documentation that will host the generated HTML. Once the HTML was set up, the technical writers worked with technical services to adjust the content to fit user needs.

From Portal Help to Embedded Help

Embedded help is a priority for large software companies. The objective is to generalize User Assistance panels to as much as possible for our brand coverage for the next release.

As we are working in the software industry, we are involved in the creation of embedded help in a strategy of progressive disclosure of information.

Example

At the second firm analyzed, embedded help consists of tooltips or panels of user assistance that are available by pressing the F1 key. UA panels display after a tooltip accessible from a hover on a command or dialog box. The objective of tooltips is to describe the command in short. The User Assistance panel enables the writers to reuse task topic and feature procedures in the software itself.

How, though, do key actors of the software industry conduct change from tools and formats in User Assistance?

Migration from an online portal to embedded help is where single sourcing and structured languages shine. For instance, the use of conditional text enables thought of “reuse” even after the text has been written.

For harmonization purposes, an analysis is conducted on existing Webhelp and Tooltips on the need for UA Panels and the opportunity for reuse of existing content.

We are working in DITA Architecture with applicable concepts and tasks in minimalist formats, condensed enough to appear in User Assistance. The analysis can lead to changes in documentation as well as repetition of sections of documentation with different conditional text to suit several guidelines per formats.

The purpose of single sourcing is to publish from one source to several outputs (several formats, several audiences). Conditional text is a tool that enables writers to customize the text content for every output in the same document. In our experience, though, we observed conditional text being used to share the same message with the same audience, while complying with the company’s style guide.

Each section will have to be updated, and as such we could say that in the end this produces more work for writers. We could also consider, though, that this will enable us to manage a lot of formats in the same file.

The granularity of reuse can be as coarse or as fine as possible. Even if we never use chapters in the software itself, it contains links to said sections of the online portal. The

most reused elements are steps and short descriptions of commands, which enable writers to describe the command and how to use it and can thus be translated into the goal and how to accomplish it.

We started by analyzing Action and Context bars and their tooltips to assess the accuracy of the commands, and the pertinence of migrating to Panel help in the coming version of the product.

The analysis was made in collaboration between developers and the Technical writer owner of the documentation. We need to be familiar with the documentation and product to be able to choose the information necessary to the user in the interface. Migration is a crucial opportunity to review and update existing documentation, to comply with new standards and style guidelines. As such, it is difficult to give this task to a new member of the workforce due to the stakes in selecting information. It could be seen as an opportunity as well, however, as by hiring someone specifically for the purpose of working migration introduces a fresh eye.

Why Do Companies Produce Embedded Help?

Though rationally limited by size, embedded help provides a great capacity to innovate in documentation. For instance, active graphic elements can be integrated to demonstrate feature behavior (e.g., videos, animated gifs). Such content can be essential in describing commands to the broadest possible audience, in fact, as it does not necessitate translation and users can be made to understand much more. Moreover, active visuals are better at attracting attention and are less likely than words to obfuscate the message.

User-centric documentation in several outputs on the cloud or on site imply thinking through the usability of content for every content output. New graphic formats involve more data and network activity on the server. In addition, there is the challenge of developing methods to easily update existing content later, in the maintenance part of the documentation cycle.

User Assistance also takes the form of Knowledge Bases and company-owned blogs. Accessibility to these tools is assured by links in the Online Help, but as embedded help they require more and more space for users. Will such formats still be relevant?

PDF, Knowledge Base, Blogs...migration is also responsible for the disappearance of some documentation formats.

Of course, the workload increases for every team engaged in the process, as everyone will need to continue working on their projects while also allocating some time every week to initiate the change.

An example of progressive disclosure of information



Companies and Team Resources at Stake

Innovation in User Assistance requires the collaboration of several decision makers, as it represents both additional cost and a workload increase. For the technical writers, implementing new methodologies means learning new software authoring tools, new norms (such as DITA), and new skills. Writers will need to train to develop somewhat

different skills, depending on whether they are writing for embedded help, for video, or for chatbots. Training Industry Report stated that in 2014 large companies in the US allocated an average budget of \$17.4 million to employees training. Also, training and implementation increases the workload of the teams and unless additional writers are hired this can result in a productivity decrease.

Even if innovation is a cost and documentation is considered to be a cost, we still need innovation in User Assistance to remain a relevant actor in the field.

Nowadays in large corporations, innovation is decided by top management, implemented by tools teams or in software release teams, and dealt with by developers, writers and test engineers.

Merging skills

We see a merging in strategy that consists of delivering code and documentation while at the same time following agile project modes. One issue is that specifications are at times replaced by what could be identified as proof of concepts, and though writers deliver samples of doc more often the documentation must be heavily reviewed later.

As far as embedded help is concerned, implementation of progressive disclosure implies code infrastructure changes and collaboration between developers and writers. Writers and decision-making executives need to produce specifications of what is needed in the code in order for the writer to be able to use structured authoring in the interface. Writers, when writing specifications for code enhancements, increase their need for collaboration with developers and understand how what can be seen as seamless in your profession can appear unclear to another collaborator.

Agile Method

Collaboration is one major principles of the agile method that also serves to make teams aware of their responsibilities.

The agile method in companies is represented with how the workflow is organized to favor collaboration, ease of maintenance, and productivity. A great example of the agile method in software companies is the manner in which code and documentation are treated.

When using versioning systems, keeping the documentation repository alongside the product's code repository helps improve the product's cycle. First, the code and the documentation are developed at the same time, meaning the teams work closely together and respect the same deadlines, thus ensuring consistency and rigor within the company.

Also, the documentation is included in the product's lifecycle, maintained, versioned and reviewed the same way.

Lastly, the documentation review process occurs at the same time as the product's code testing, which results in the simultaneous release of both the code and the documentation.

What Does the Future Hold for User Assistance?

The 2016 Technical Communication Benchmarking Survey shows that the two major obstacles that prevent technical writer teams from ensuring content consistency are a

lack of unified content strategy (42%) and the software tools designed for the job (41%). Lack of collaboration was also blamed (38%). The survey also raised the problem of awareness, with 23% of the respondents saying that advances in technical communication content development are invisible to others across the enterprise.

The documentation process is shifting and evolving, to produce user assistance that is clearer to the users, resulting in documentation that is easier to understand, and which also saves time. As technology marches on, companies must keep their user assistance up to date and in coherence with their products. However, what could User Assistance be like for augmented reality, virtual reality, or even artificial intelligence? How can we introduce a clear and efficient documentation in augmented reality? In virtual reality? Moreover, what are the limits to this constant evolution?

Embedded Help is Not Something New

In 1997 Microsoft introduced an embedded help feature known as Clippy (aka, Clippit) the Office Assistant in their Word software. Clippy provided tips from time to time and was always present, in case the user needed help. The feature was a complete failure and Microsoft finally removed it from its software in 2007, after disabling it by default in Windows XP. In the 1990s, AI systems were not as advanced as they are today. We now know that the main issue with Clippy was its omnipresence. Seen as “fun” at the start, Clippy quickly became irritating as it constantly tried to help the users perform simple tasks. Clippy was even blamed for holding people off virtual assistants for nearly a decade. The smart system concept resurfaced with Apple’s Siri in 2011, with which users can send texts, emails, make appointments and search the web, just by talking to their phone.

Chatbots

Businesses are moving away from user interfaces (UIs) that are not very intuitive, to more immersive ways to access information. Considering the growing trend in messaging application, many companies now feature chatbots in their websites. Unlike more traditional user assistance, with a chatbot the user can ask for a precise bit of information, targeting it clearly, and thus avoiding going through a long and complete documentation, in which it can be tricky to target the specific piece of information the user needs.

Chatbots can feature a conversational UI only, or they can use artificial intelligence. Designing a chatbot with only a conversational UI, it is necessary to anticipate all of the possible speech the user may employ, so the chatbot can identify what it is being asked and thus be useful. For instance, a simple word such as “yes” will require that the chatbot is able to recognize “yes”, “yup”, “yeah”, “yep”, and so on. If the chatbot is the documentation portal and its purpose is to help the user find the most suitable information for their case, the chatbot can be configured with predefined answers.

Augmented reality and virtual reality

The ever increasing increasing popularity of augmented reality (AR) and virtual reality (VR) has given way to another way of learning. Computer-based training and web-based training, such as e-learning modules, have already found their place. Thanks to AR and VR, though, we now talk about virtual training. It is possible to provide information about one’s environment through augmented reality. With the glasses on, the user can see their surroundings, and the information is displayed, thus implying

that the user has the object of their training right in front of them. Except, for example, if a technician wants to train or practice beforehand and does not have the machine. Virtual reality can provide the context. Thus, combining augmented reality with virtual reality leads to an immersive training: augmented reality provides the information for the context and virtual reality provides the context for the information, making user assistance even more precise and functional.

Artificial intelligence is necessary to make chatbots, augmented reality, and virtual reality more efficient, as it can figure out the user's needs and provide the corresponding information. Without AI, chatbots can reach their limits very quickly. You need to anticipate the users' questions and need, and possible answers. The main problem with AI is that it needs time to get smarter and it only improves if people keep using them, but if the users find the system has its flaws, they will simply not use it, making it impossible for the AI system to improve.

Conclusion

What we can confirm today is that people are more and more digital and expect documentation that is as powerful as the connected objects that assist them and are part of their daily lives. Nothing comes close to having an all-in-one interface, but what is the true cost? Customer support is required less and less, unlike development teams, which are transforming to fit the needs of companies. Short-term co-working teams are emerging within firms and these temporary skills merging transforms the workforce including documentation specialists. Assistance technologies such as Apple's Siri, Amazon's Alexa or Google Now are already well established, and they've improved a lot over time. Digital transformation leaders also intend to put users into immersive environments like Virtual Reality and Augmented Reality. Can we expect the user assistance will follow this trend? Will the future users' guide be a voice telling you what to do and with which you can interact? There is still much progress to be made and the financial issue is critical for both manufacturers and consumers. On the one hand, companies have to invest many resources in the production and dissemination of IA technologies dedicated to documentation, while on the other hand not all customers have the means to purchase such products. Making AI compatible with a searchable, reusable and relevant documentation is still too complex and the information delivered by this technology remains incomplete at this time. It is for this reason that innovation in technical documentation is not as fast as technological innovation. Knowing that all this automated data processing comes from algorithm, semantic complexes, rules implemented by professionals, we can say this is more a human issue to address than a technological one.

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