

What is the role of technical writers in fostering accessibility?

Victoria Genin, Marc-Alexandre Jacques, Tiphaine Monange

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With the creation of international standards and the rise of public awareness, web and software accessibility have become a topical issue. Yet, it seems like accessibility is still rarely taken into account by technical companies who prefer to focus on innovation. Part of the usability and accessibility of a software is based on its documentation. As technical writers, we wondered which role technical writers have to play in fostering accessibility. The information used in this article was drawn from three main sources. In addition to reading articles written by accessibility researchers, we carried out two surveys to study the scope of accessibility in the creation and navigation of user interfaces: the first one was sent to disabled users and the second one to professionals. We also interviewed a highly experienced technical writer trained in accessibility. The results led us to conclude that technical writers definitely have a key role to play in fostering accessibility standards – either by increasing their cooperation with developers or by implementing accessibility solutions themselves.

Keywords : Accessibility, User Experience, Usability, Disabilities, Technical Writing

Introduction

In recent years, the creation of international accessibility standards, such as the Web Content Accessibility Guidelines (WCAG) defined by the Web Accessibility Initiative (WAI), has helped raise awareness on the necessity to create a similar user experience for both abled and disabled people. The application of international accessibility standards is a legal constraint in many countries. Yet, an overview of the online user experience of disabled people is enough to realise that not all websites implement those standards and that seemingly accessible ones still call for improvement. Conforming to accessibility standards should be a priority for website designers and companies for ethical and commercial reasons. Indeed, leaving out so many potential customers and users can have costly consequences.

We can wonder who should be responsible for implementing accessibility solutions. Web and software developers are the first professionals to come to mind. However, other professions can play a direct role in fostering accessibility. Documentation is always provided as a means to help customers when they have difficulties navigating an interface. Could providing an accessible documentation improve the user experience of disabled people? Can technical writers help foster accessibility early in the development process? The purpose of this article is to answer these questions.

In this article, we will first circumscribe accessibility and compare the application of the current accessibility standards with the actual user experience of disabled users. We will then focus on the analysis of two questionnaires and an interview we carried out to collect qualitative and quantitative information about accessibility from both sides of the spectrum – disabled users and professionals. Finally, we will discuss our findings in the light of the current and future challenges that face technical writers to create a comfortable user experience for a diverse audience.

Accessibility and usability

Definition of accessibility

The W3C Web Accessibility Initiative defines accessibility as the fact that “people with disabilities can perceive, understand, navigate, and interact with the Web, and that they can contribute to the Web” (Shawn Lawton Henry, 2005). The consortium adds to these disabilities technical and human difficulties to adapt to new interfaces, related to a low-debit Internet connection or a lack of practice in the elderly population.

Software accessibility, even when used in a professional context that tends to exclude these particular difficulties, follows the same guidelines and philosophy. Accessibility constitutes a particular user experience context that must be taken into account during the conception of software and user assistance. It plays a part in the navigation comfort of the user and the conformity of a product to international standards.

Standards versus experience

Following the W3C recommendations, an effort has been made in the latest years to enhance user experience according to set standards of accessibility. W3C now includes in its standards the necessity of including alt attributes in images, which is now widely recognized on a website to accommodate screen readers. Several legislations such as the 2005 accessibility law in France (Loi pour l'égalité des droits et des chances, la

participation et la citoyenneté des personnes handicapées) seek to enforce these standards all around the technical world. Yet, they are often cast aside in the fast conception process of developers who lack the time to follow them, especially as the necessary added reflection and coding are considered expensive and time consuming. The accessibility standards are therefore rarely required by their customers. What's more, the diversity of disabilities and experiences also makes the process of making a website accessible to all seem daunting.

On top of that, if it is necessary to follow regulations and guidelines, it is not sufficient for websites to be considered accessible. The practical and subjective experience of users has to be taken into account: websites have to feel accessible, otherwise users are likely to resort to coping strategies (Aizpura A., Harper S., Vigo M., 2016). The respect of code and labeling standards leads to an interface compatible with screen readers and other accessibility tools. However, that effort alone does not provide a comfortable experience. More creativity and attention to the habits, background and abilities of each specific audience are required when it comes to restructuring the whole documentation construction to create a comfortable experience that efficiently tackles specific problems. In the case of navigation labels, "if users do not understand navigation labels, even the best user interface cannot help them navigate" (Leuthod, S. Bargas-Avila, J.-A., Opwis, K., 2008). That is where the technical writer could, in our hypothesis, take a particular place in the elaboration of accessible interfaces.

Definition of the role of the technical writer in the usability process

Which role can technical writers play then to mediate between the demands of a diversity of singular user experiences and those, no less pressing, of common standards and rules?

Technical writers define the modern user experience. Their role is essential in imposing minimalism and efficiency in the documentation. They are indeed at an optimal place to play a part in solving difficulties, instead of imposing coping strategies, since technical writers define the way every specific type of user uses the product when they are lost or confused. The global goal of a user-based documentation is to make sure the information is fully clear and available to the user, disabilities and obstacles notwithstanding. While different, accessibility and usability clearly interact within the scope of technical writing. It is up to user experience to provide a framework to understand and guide how users may perceive an interactive artefact from diverse facets including aesthetics, affect or trust (Aizpura A., Harper S., Vigo M., 2016).

Minimalism is one way of reaching that goal, since it forces the technical writer to avoid information overload by selecting and writing very sparsely. As the first non-developer users of the interface or website, technical writers are also instrumental in pointing out when too much information is conveyed in a single page, which can be problematic, for example, when it comes to screen readers. That being said, the basis of minimalism relies on the notion that the user already instinctively knows about how to operate the system globally. Such assumptions can be misleading when documenting a feature in an accessible way: which certainties can we rely on in the wide scope of possibilities and specific strategies covered by disabilities ? The recommendations of minimalism also heavily rely on the disappearance of text, which makes it tempting to use more images. To blind users, this represents a new obstacle. How to remedy that and keep the user autonomous?

Methodology

As three technical writers, we started by making inquiries in our companies about accessibility standards. Our three companies are important international software and computer services companies, therefore giving an interesting and relevant overview of current practices.

Study of the scientific literature

To broaden our investigation, we studied the scientific literature on the question of accessibility from Elsevier and the following journals: the International Journal of Human-Computer Studies, Computer Standards and Interfaces, Procedia Computer Science, and the Journal of Business and Technical Communication. What struck first is that most of the research work on user experience and accessibility focuses on the blind, leaving out many other conditions that prevent users from accessing and interacting with web content. This might be due to the fact that sight seems like an obvious prerequisite to using websites and interfaces. Yet, other disabilities are obstacles to navigating a website: deaf people can have trouble watching videos, motor-handicapped people can have difficulties with cursor management, seeing images can be problematic for color-blind people, etc.

Another recurrent topic is the scope of the international accessibility standards. Even when they are applied, standards do not seem to provide a totally satisfactory user experience to disabled people (Leuthod, S. Bargas-Avila, J.-A., Opwis, K., 2008).

Researchers also point out the importance of communication between the professionals involved in the process of efficiently producing accessible material, making it a prerequisite to improving accessibility issues. This highlights the importance of identifying the key players who are responsible for implementing the standards. If WCAG are clear about the reasons behind such an initiative and the methods to implement it, the question of who is in charge is not covered as exhaustively.

Surveys

We carried out two surveys with a quantitative approach to get a better understanding of the situation in France, in 2016: one aimed at disabled users, to assess their experience of web and software interfaces and documentation, the other one aimed at web and documentation professionals, to understand in what measure they are concerned about the accessibility question.

In the first one, we inquired about how familiar disabled people were with international accessibility standards, as well as their opinion on their application. We also asked about the difficulties they had to face as disabled users – depending on their disability – and which coping strategy they resorted to, if any, in order to use inaccessible websites and technical documents.

With the second survey, we aimed at getting insight into the other side of the accessibility question, by looking at those who implement international accessibility standards. Our survey encompassed every profession involved, since there are more than one could think: technical writers and web, software, and mobile developers. This survey helped us determine how aware professionals are of the accessibility question, and how

often they implement accessibility solutions at work. We also asked them if the accessibility question was part of their training. Given the high response rate from technical writers, we inquired deeper into the possible interventions of technical writers in fostering accessibility standards.

Interview with an accessibility expert

For a more qualitative approach, we interviewed a highly-experienced technical writer who has been working in an international software services company for over a decade and spent the last years of her career making her company's documentation accessible. We collected her thoughts on the role technical writers can play in fostering accessibility and on the tools that she uses to fix accessibility issues. We also asked about her interactions with developers and about the scope and the possible limitations of her action.

Surveys results

Disabled users - 16 respondents

Figure 1 displays the types of disabilities of the respondents. The majority of the interviewees have mobility impairments such as developmental coordination disorder or dystonia. A third of them have a visual disability such as blindness or color blindness. A little more than ten percent have an hearing impairment.

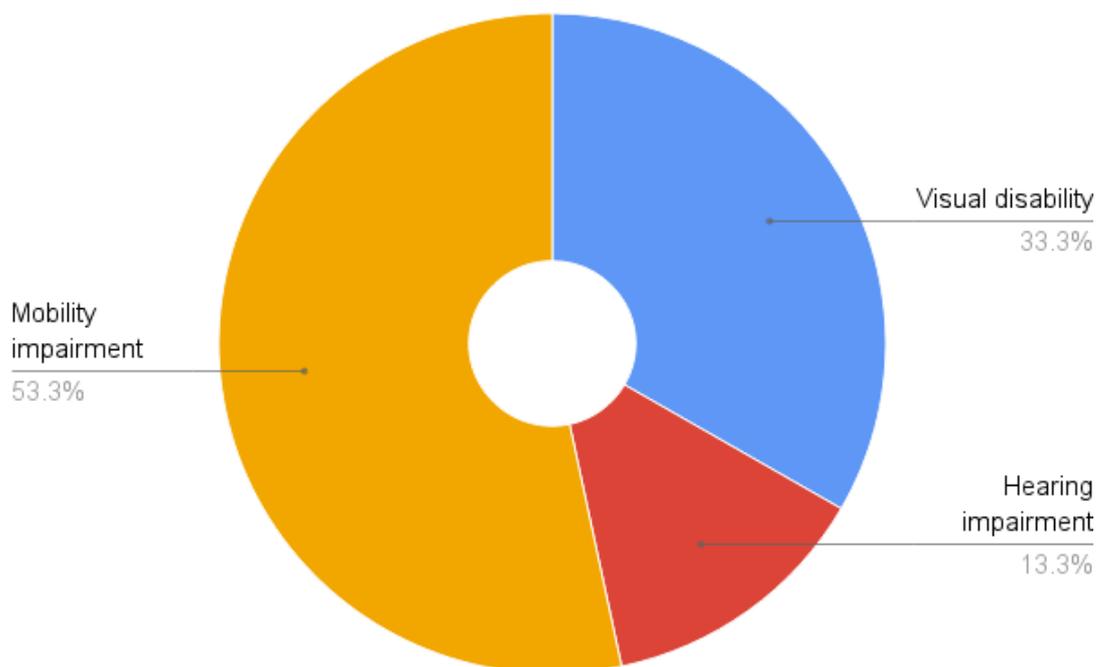


Figure 1 - Disabilities of the respondents

When asked if they had already had difficulties when using the internet or a software, a vast majority of the respondents answered positively. What is interesting to note is that

more than a third of them answered that they did not have any trouble doing so, as can be seen in Figure 2.

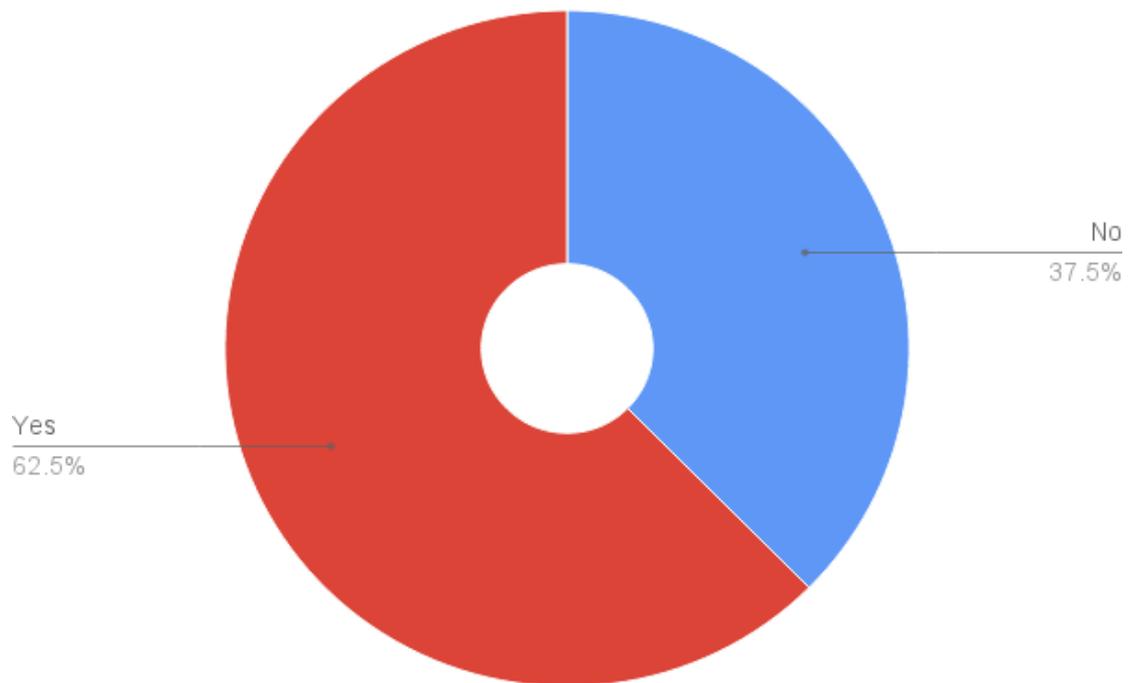


Figure 2 - Have you ever faced difficulties navigating a website or a software?

The surprisingly high number of negative answers might have to do with the fact that most interviewees seem to only use accessible websites or software. This result might mean that disabled people make the choice not to use technologies that are not accessible. Inaccessibility minimizes the audience reach: when a piece of software or a website is not accessible, it leaves out part of its potential users.

We then asked the interviewees if they knew of the current web accessibility standards. As can be seen from Figure 3, only 37.5% of them knew of one or more accessibility standard.

This is a surprising finding because we might think that disabled people, being the primary beneficiaries of web accessibility, would know about it. This result clearly shows that there is a lack of awareness on this issue, even among disabled people.

For those who knew about web accessibility standards, they cited the following ones:

- Web Content Accessibility Guidelines (WCAG)
- Authoring Tool Accessibility Guidelines (ATAG)
- User Agent Accessibility Guidelines (UAAG)
- Référentiel Général d'Accessibilité pour les Administrations (RGAA)

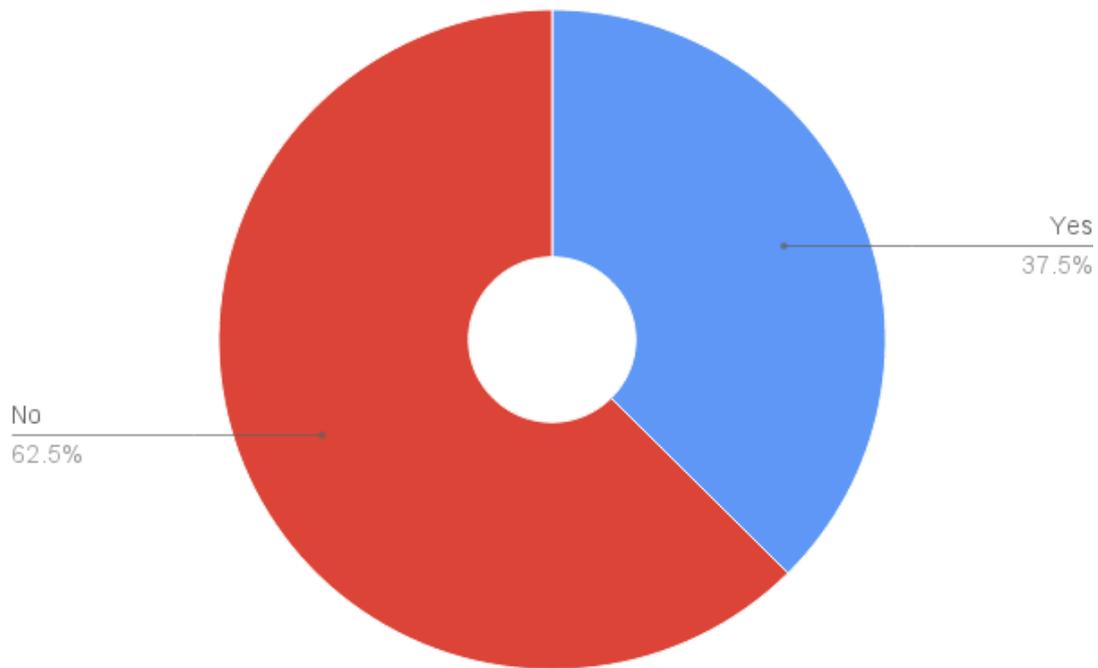


Figure 3 - Do you know the current web accessibility standards?

A high percentage of the surveyed persons persevere in navigating a website or using a software when they face difficulties. It seems that most of them have found a workaround to continue their navigation. Here are their strategies:

Handicap	Strategies
Visual impairment	<ul style="list-style-type: none"> • Zooming on the page or on the font. • Not using what is inaccessible and cross-checking the information that is available.
Hearing impairment	<ul style="list-style-type: none"> • Looking for subtitles.
Mobility impairment	<ul style="list-style-type: none"> • Looking at the organization of the web page/software, looking deeper in the different menus and sections to try and find the right information. • Asking people for help.

When asked if they relied on documentation when they have problems navigating or using a software, a very high percentage of the respondents said that they did not. 42% of them never do and 28% almost never do.

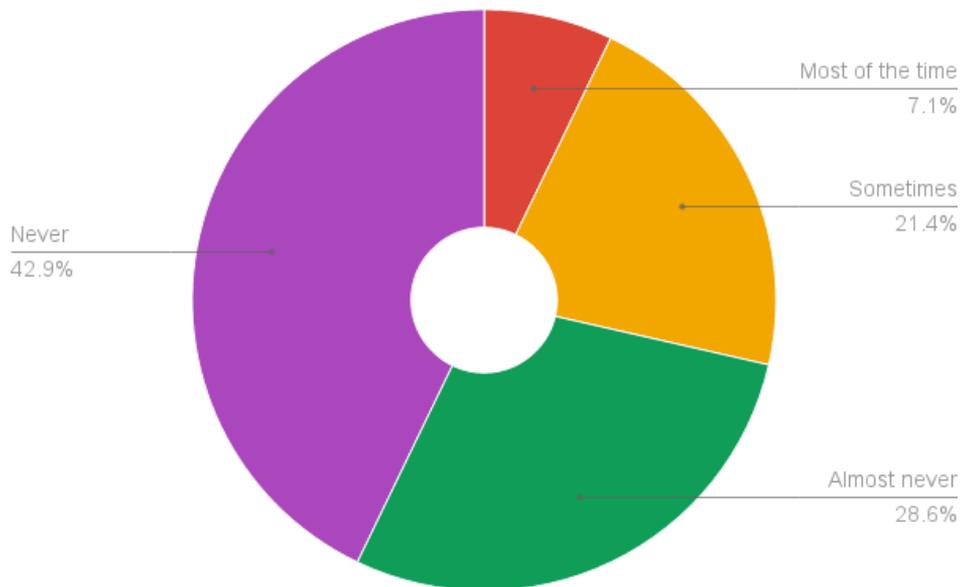


Figure 4 - Do you rely on documentation when you face usability or navigation issues?

The reason for such a high rate might be found in the answer to another question. 91% of the respondents specified that they had faced navigation problems when looking at online helps or documentation.

The different problems that they have already faced are the following:

- Keyboard navigation not working.
- Poor content indexing, bad search engine, poor information architecture.
- Poor choice of colors – not contrasting enough or too flashy.
- Lack of subtitles in tutorials.
- Use of terms that are too technical or too difficult to understand.
- Unclear information.

Problems related to finding information in the documentation appear as more troublesome than those simply related to the use of the software. It is clear from these results that technical writers do have a role to play in fostering accessibility. Indeed, technical writers are the ones responsible for organizing the information in the most intelligible way possible, using terms that can be understood by every reader, and adding subtitles to the media that they create.

Professionals survey - 62 respondents

The fact that disabled users encountered such difficulties is not surprising judging by the professional response to our survey. As can be seen in Figure 5, 70% of surveyed professionals know of the current accessibility standards. The numbers are similar for technical writers and developers.

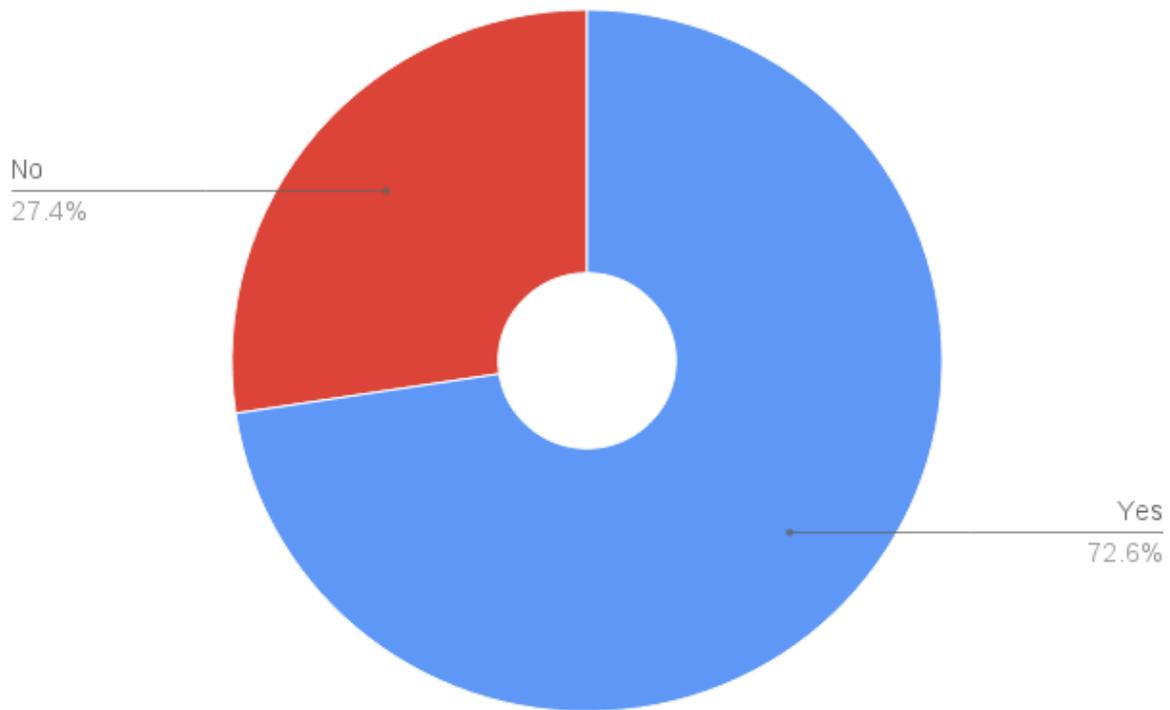


Figure 5 - Are you aware of problems inherent to web accessibility?

Even if this last number can seem quite high, it means that 30% of the respondents do not know these accessibility standards. It is quite telling considering that they are the ones who are supposed to implement accessibility solutions.

The fact that accessibility is rarely mentioned in their academic curriculum might explain this result. Indeed, only 22.6% of the surveyed professionals had heard about web accessibility over the course of their studies.

One of the main conclusions that can be drawn from the answers to this survey is that companies do not seem to consider accessibility in their processes. Indeed, 75.8% answered that they never implement accessibility solutions, when only 8% of them do. There is a clear difference between technical writers and developers. While around 26% of the developers implement accessibility solutions, only 17% of the technical writers do.

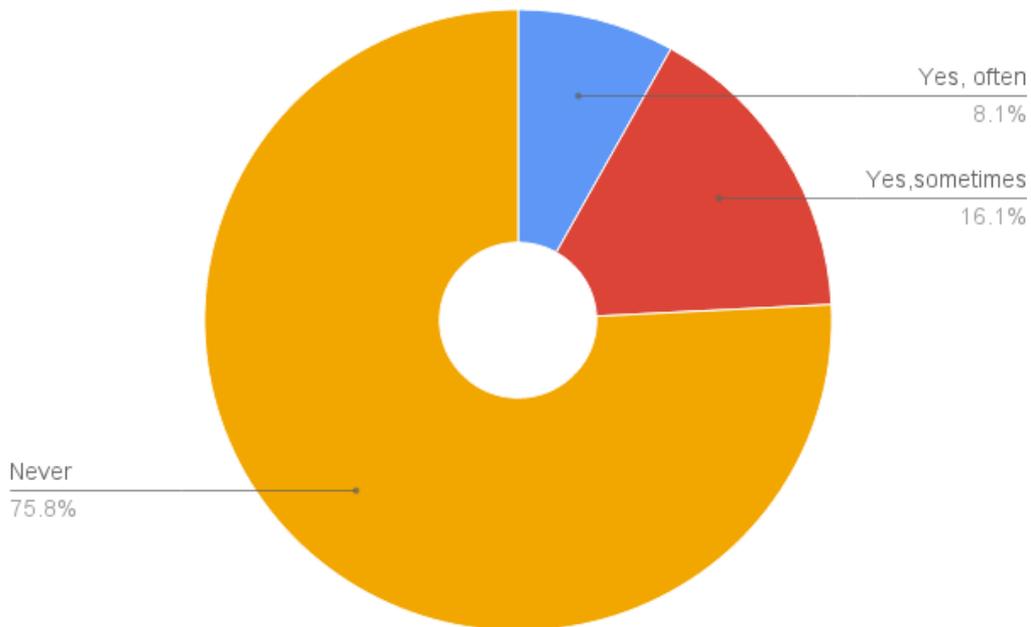


Figure 6 - Do you implement accessibility solutions at work?

In another question, only answered by those working as contractors, we asked the respondents if the companies they were working for included accessibility in their specifications. 74.1% answered that their customers never do, whereas only 1% of them answered that they often do.

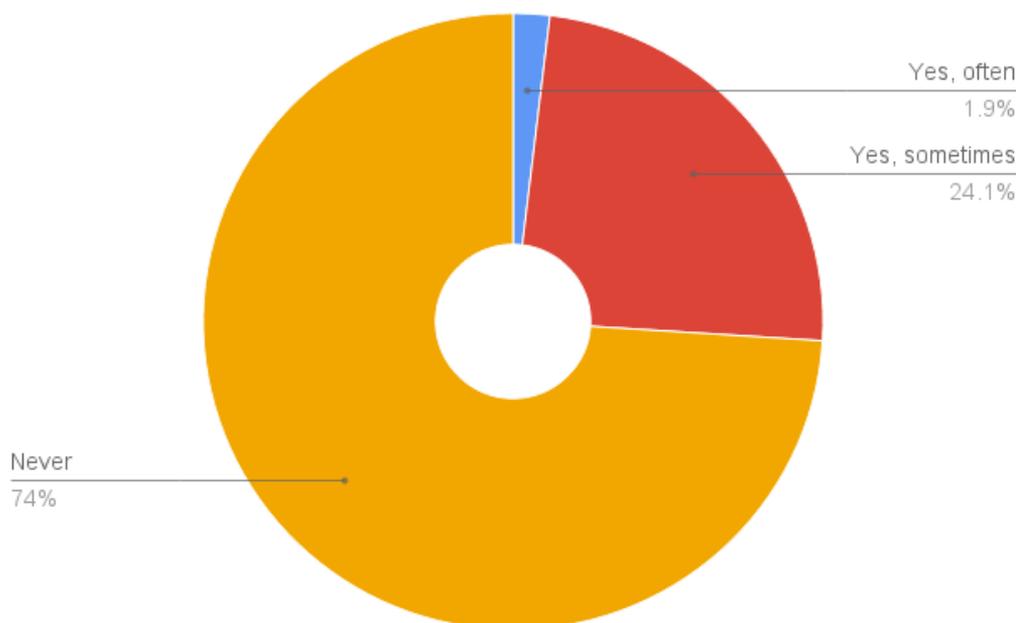


Figure 7 - If you work as a contractor, do your clients include accessibility in their specifications?

There are two main reasons for this lack of consideration for accessibility from companies:

- Accessibility is expensive: making an application accessible can cost up to €130,000, and an accessible Flash module costs up to €30,000.
- Innovation conflicts with accessibility: according to the technical writer we interviewed “there is always a tenuous balance between being on the cutting-edge

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of the latest technologies (...) and going slow enough to make sure accessibility is being carefully considered.” And it is clear that companies tend to favour innovation over accessibility.

IT professionals do not seem to think that accessibility is important either. Indeed, less than 20% of the surveyed professionals think that accessibility is essential to the success of a project, as evidenced by Figure 8.

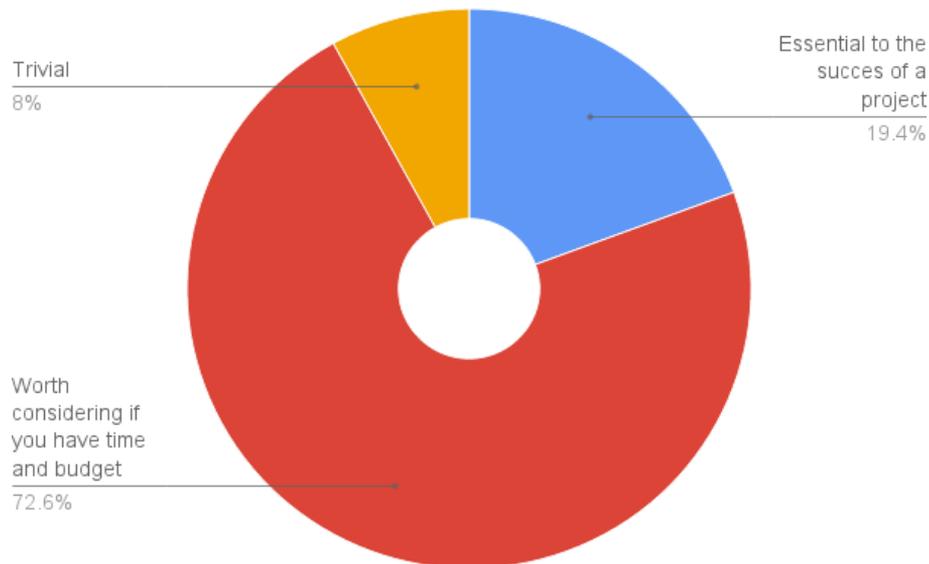


Figure 8 - Do you think accessibility is ...?

Defining a role to play in accessibility for technical writers

From our research and the results of the two surveys we conducted, we can conclude that there is a low level of compliance and awareness on accessibility. When the role of technical writers is to make their documentation usable by the widest audience, we can see that this is conflicting and that technical writers should play a role in fostering accessibility.

Team work

The main role of technical writers is to work closely with the development team to be the bridge between developers and users. This role is to make the products the developers work on usable and accessible to as many people as possible through an intelligible documentation.

However, because they are the first testers of the software, technical writers can act as a go-between for the users and the developers. When they first test software, technical writers can easily alert developers about accessibility issues in the interface. Also, in some cases, such as at a prominent 3D software company, the documentation department edits the tooltips created by developers to ensure a quality of the text that is clear and up to the standards.

The technical writer that we interviewed defined the role technical writers can play as follows: “I think technical writers can play an important role in alerting development and marketing teams about accessibility issues, especially as documentation and product become more seamlessly integrated in cloud offerings. I think our role is often more one of alerting developers about accessibility concerns, as, unfortunately, accessibility is often an afterthought, given as one more extra task to an already overburdened developer. (...) So, I do really think there is a role that is ours for the taking – to become an accessibility advocate”.

Tools for technical writers

Even though developers are usually responsible for ensuring that websites and software are accessible, technical writers have at their disposal specific tools to make their documentation more accessible. Professional practice and surveys enabled us to draw a list of the specific tools that place technical writers at the forefront of accessibility.

Technical writers have to conceive their documentation with the notion of accessibility to the largest numbers in mind. They have to write instructions in a way every user finds usable. For instance, technical writers should be careful with the use of spatial cues that might not be understood by everyone. Any interface element should also be described in a non-visual way, so that blind users can understand the instructions too.

They can also use the DITA standard to make documentation accessible to screen readers while maintaining it. DITA enables accessibility through the use of the `aria` attribute on image tags and the `rowheader`, `scope`, and `headers` attributes in tables. Following the standard helps create a structured documentation that is easily transformable to XHTML.

In addition, several major IT companies have created accessibility checklists for documentation aimed specifically at technical writers. These checklists are meant to be used as guidelines to produce accessible technical documentation in XML, HTML, or PDF.

Finally, technical writers can use two features developed by Adobe to make the PDF documentation accessible to screen reader users: Acrobat Reader Quick Check and Acrobat Reader Full Check. These tools check that there are alternative descriptions on images and that all content is contained in the document structure.

For a diverse user experience – future challenges

In recent years, the global mode of conveying information has become more and more visual. To make documentation accessible to the largest numbers, corporate recommendations on minimalism can be tempted to rely heavily on images. The addition of contextual help in interfaces also creates a stronger bond between user interface and documentation. This visual effort is a central trend in modern documentation, also demonstrated by the multiplication of video tutorials and infographics. But this intuitive documentation paradoxically creates accessibility problems.

Firstly, replacing multimedia content with text does not make for an equivalent experience. Compensating visual content by an exact written description does not adequately bridge the gap between accessible and inaccessible. It is up to the technical writer to develop new ways of conveying information intuitively for blind and visually impaired audiences, by integrating their own prerequisites and the notion of space. Secondly, the latest innovations in the field of documentation often do not include

accessibility concerns, as evidenced by the results of our inquiries and our own professional experience. In that sense, the insertion of contextual help within the interface marks the beginning of a potentially favourable evolution, as it erases the need to give indications of space within the interface and enables technical writers to collaborate more closely with developers and UX designers. Still, this new technology must be made compliant with screen readers, as blind and visually impaired users are the most vulnerable category within software that has often not been conceived with them in mind, as stated by a majority of developers. Infographics also must be visible by color-blind people, through contrast, chosen colors, and a choice of symbols to replace color symbolics.

Conclusion

Managing disabilities has the potential to become a new stepping stone for technical writers. They have the skills to open up information and documentation to wider audiences. Technical writers can also become an integral part in the conception processes of websites and software, as they become more and more complex in their functionalities. As the wish to widen software audiences continues to spread within the technical industry, the technical writer has the opportunity to advocate for all kinds of accessibility features. Video tutorials and contextual help can be either a step forward or a new set of obstacles for disabled users. It is therefore up to the technical writing community to define new standards of documentation, in order to enable every type of user to access the information in an inclusive way.

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About the authors

Tiphaine Monange was born in 1991 in Rouen, France. Before turning to technical writing at Dassault Systèmes, she worked as an apprentice in translation for Sage. She is now starting her career with a focus in UX design.

Victoria Génin is a French technical writer. She did a Master's degree in International Studies during which she wrote a dissertation on the decline of seaside tourism in Great Britain. Then, she turned to technical writing and started working at IBM.

Marc-Alexandre Jacques first graduated in translation studies. After three years of experience translating software documentation, he turned to technical writing and now works for Moody's Analytics.